P 1. SEEK AND YOU SHALL FIND: IS ROUTINE DOPPLER ULTRASOUND SCREENING FOR DEEP VEIN THROMBOSIS IN TRAUMA WARRANTED?

Presenter: Ashley Thompson MD | Memorial University Medical Center
Thompson A, Miller K, Eversley-Kelso T, Shaw E, Dunne J, MacNew H

Introduction: Previous studies have documented that routine duplex ultrasound screening (RDUS) has been effective in diagnosing deep venous thromboses (DVT) in high-risk asymptomatic trauma patients and may decrease the incidence of subsequent pulmonary emboli (PE). Therefore, we sought to determine if RDUS in all trauma patients would be as effective in diagnosing DVT and reducing subsequent PE.

Methods: Prospective data were collected and retrospectively reviewed on 13,111 critically injured patients over a 5 year period from 2014-2018. Patients were stratified by age, gender, injury severity score (ISS), Glasgow Coma Score (GCS), body mass index (BMI), presence of cancer and use of RDUS to diagnose DVT. Patients were divided into two groups, those that received weekly RDUS and those that did not. Multivariate regression analyses assessed RDUS and demographic variables as independent risk factors for mortality, hospital length of stay (HLOS) and development of DVT and PE.

Results: Mean age of the study cohort was 45 ± 25, mean ISS was 11 ± 9, mean GCS was 13 ± 3, 63% were male. Venous thrombosis rate was 1.6% (1% DVTs and 0.8% PE). Patients receiving RDUS were significantly younger (44.5 ± 24.4 vs 46.4 ± 25.9, P < 0.001), more often male (64% vs 61%, p < 0.001), more severely injured (12.2 ± 9.4 vs 10.2 ± 9.1, < 0.001), had a decreased GCS (13.7 ± 3.3 vs. 14.0 ± 3.0, p < 0.001), were more likely to have cancer (3.3% vs 0.4%, < 0.0001) compared to those that did not receive RDUS. In addition, patients receiving RDUS had significantly increased HLOS (7.3 ± 12.7 vs 5.9 ± 8.6, p < 0.0001), VTE (2.3% vs. 0.7%, < 0.0001), DVT (1.6 % vs. 0.3%, p < 0.0001) PE (1.0% vs. 0.5%, P < 0.0001) and mortality rates (5.8% vs. 3.9%, p < 0.0001) compared to those that did not receive RDUS. Multivariate regression analysis revealed increasing age, injury severity, BMI and decreasing GCS as significant risk factors in the development of DVT and PE, increased HLOS and mortality (p < 0.001). In addition, multivariate regression analysis revealed RDUS as a significant risk factor for the development of DVT, PE, increased HLOS and mortality (p < 0.0001).

Conclusion: RDUS is a significant risk factor in the identification of DVT, PE, increased HLOS and mortality. Additional studies are warranted to determine the cause for increased PE and mortality rates in patients receiving RDUS.
P 2. UNDERSTANDING THE SAFETY AND EFFICACY OF DEEP VEIN THROMBOSIS PROPHYLAXIS IN TRAUMATIC BRAIN INJURY PATIENTS: A SINGER CENTER RETROSPECTIVE REVIEW
Presenter: Alexa P Soult MD | Eastern Virginia Medical School
Soult AP, Collins JN, Burgess JR, Martyak MT

Introduction: Venous thromboembolism (VTE) is recognized as major complication in trauma, especially traumatic brain injuries (TBI). The literature recommends beginning chemical VTE prophylaxis within 72 hours of admission, but controversy surrounds early initiation of chemoprophylaxis and potential exacerbation of the TBI. Studies have shown that starting chemoprophylaxis significantly reduces VTE rates, but the preferred agent remains unclear. The purpose of this study is to provide guidance for appropriate use of VTE chemoprophylaxis in TBI patients.

Methods: A retrospective chart review was performed for 263 patients evaluated by the trauma service from 7/1/2017 to 3/1/2019. Data was abstracted from the electronic medical record for patients admitted at least 48 hours with TBI. Information obtained included mechanism of injury, Injury Severity Score, Abbreviated Injury Scale, Glasgow Coma Scale, type of TBI, hospital day VTE prophylaxis initiated, chemoprophylaxis used, and incidence of DVT evaluated by duplex ultrasound if clinically indicated, PE, progression of TBI, and death.

Results: Ninety-two (35%) patients used heparin, 121 patients (46%) used enoxaparin, and forty-nine patients (19%) did not receive chemoprophylaxis. On average, chemoprophylaxis was started on hospital day three. There were sixteen patients (6.2%) that had progression of TBI after starting VTE prophylaxis. It was significant for intraparenchymal hemorrhage (IPH) to progress over subarachnoid (p=0.01) but otherwise, there is no difference between types of TBI. When comparing enoxaparin, heparin, and no VTE chemoprophylaxis, both enoxaparin and heparin had statistically significant increase in rates of TBI progression in comparison to no VTE chemoprophylaxis (p=0.02). Comparing enoxaparin to heparin, there was increased progression of TBI in the enoxaparin group (n=12) versus heparin group (n=4), however, not statistically significant (p=0.13) Of those who progressed, 7 of 16 (43.7%) required operative intervention, one received heparin and six received enoxaparin. In comparing day of VTE chemoprophylaxis initiation and progression of TBI, there was no statistical significance (p=0.28) starting 48 hours after injury. There was no difference between the groups in rates of DVT, PE, or mortality.

Conclusion: At our trauma center, we have relatively low rates of VTE in TBI despite well documented increased risk in this population. Starting chemoprophylaxis in TBI patients remains a concern. In our population, patients with IPH were at increased risk of progression especially after starting enoxaparin on or before hospital day three. These patients may benefit from heparin administration or initiation of pharmacologic prophylaxis after hospital day three.
P 3. DOES GENDER MATTER? A MULTI-INSTITUTIONAL ANALYSIS OF TEG/ROTEM PROFILES FOR 1565 TRAUMA PATIENTS WITH SEVERE HEMORRHAGE

Presenter: Alison Smith MD, PhD | Tulane University School of Medicine

Introduction: Thromboelastography (TEG) and rotational thromboelastometry (ROTEM) are routinely used in patients with severe hemorrhage in many trauma centers across the country. Several recent studies have demonstrated a hypercoagulability survival advantage in female trauma patients. The objective of our study is to elucidate survival based on gender differences in TEG and ROTEM values from multiple trauma centers in patients with severe hemorrhage.

Methods: A retrospective review of consecutive adult patients who received massive transfusion protocol (MTP) at seven Level I Trauma Centers was performed from 2013-2018. Data were stratified by gender and then further examined by TEG or ROTEM parameters. Results were analyzed using univariate and multi-variate analysis.

Results: A total of 1565 patients were included with 70.9% male gender (n=1110/1565). Female trauma patients were older than male patients (43.5+0.9 vs. 41.1+0.6 yrs, p=0.01). On TEG, females had longer reaction times (6.1+0.9 min vs. 4.8+0.2 min, p=0.03), increased alpha angle (68.6+0.8 vs. 65.7+0.4, p<0.001), and higher maximum amplitude (59.8+0.8 vs. 56.3+0.4, p<0.001). On ROTEM, females had significantly longer clot time (99.2+13.7 vs. 75.1+2.6 sec, p=0.09) and clot formation time (153.6+10.6 sec vs. 106.9+3.8 sec, p<0.001). When comparing by gender, no difference for in-hospital mortality was found for patients in the TEG or ROTEM group (p>0.05). Multivariate analysis controlling for confounders showed no survival difference for male patients (OR 0.92, 95% CI 0.68-1.3, p=0.60).

Conclusion: Although a difference between male and females are found on TEG/ROTEM for certain clotting parameters (reaction time, alpha angle, maximum amplitude, and clot formation time), no difference in mortality was observed between the two groups. Prospective multi-institutional studies are needed to further validate these results.
<table>
<thead>
<tr>
<th>TEG Clotting parameters</th>
<th>Male N=112</th>
<th>Female N=249</th>
<th>Normal range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reaction time, avg min (SEM)</td>
<td>4.8 (0.3)</td>
<td>6.2 (0.2)</td>
<td>1.8-0.8</td>
</tr>
<tr>
<td>K, avg min (SEM)</td>
<td>2.0 (0.40)</td>
<td>1.7 (0.1)</td>
<td>3.7-3.4</td>
</tr>
<tr>
<td>Alpha angle, avg degrees (SEM)</td>
<td>53.7 (0.6)</td>
<td>68.0 (1.8)</td>
<td>47.6-77.7</td>
</tr>
<tr>
<td>Maximum amplitude, avg mm (SEM)</td>
<td>56.1 (0.4)</td>
<td>59.8 (0.8)</td>
<td>49.7-72.7</td>
</tr>
<tr>
<td>Mortality, n (%)</td>
<td>239 (26.2)</td>
<td>61 (24.5)</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ROTEM Clotting parameters</th>
<th>Male N=196</th>
<th>Female N=266</th>
<th>Normal range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clot time, avg sec (SEM)</td>
<td>75.1 (2.8)</td>
<td>95.9 (13.7)</td>
<td>43-82</td>
</tr>
<tr>
<td>Clot formation time, avg sec (SEM)</td>
<td>106.9 (3.3)</td>
<td>153.6 (18.6)</td>
<td>48-127</td>
</tr>
<tr>
<td>Alpha angle, avg degrees (SEM)</td>
<td>56.7 (0.7)</td>
<td>65.0 (0.8)</td>
<td>65-70</td>
</tr>
<tr>
<td>Max clot firmness, avg mm (SEM)</td>
<td>57.0 (0.7)</td>
<td>56.0 (0.8)</td>
<td>50-72</td>
</tr>
<tr>
<td>Mortality, n (%)</td>
<td>55 (27.8)</td>
<td>69 (25.5)</td>
<td>-</td>
</tr>
</tbody>
</table>
Introduction: Blunt abdominal trauma generates a formidable aggregate of morbidity and mortality on an annual basis. The spectrum of clinical harm spans from occult injury to life-threatening extravasation with mostly predictive injury patterns albeit with some exceptions.

We report a case of a 16-year-old un-helmeted female driver of an off-road motorized vehicle who collided with a parked vehicle at high speed. Prior to progressive agitation and loss of consciousness, she endorsed diffuse abdominal pain. She arrived intubated with initial systolic blood pressure of 150mmHg and sinus tachycardia to 180 beats per minute. Shortly after the primary and secondary survey, she developed severe hemodynamic instability, increasing abdominal distension and a positive FAST. She underwent emergent surgical exploration. A large volume of intraperitoneal blood was evacuated, and four quadrant packing was completed. A systematic survey revealed no solid organ, hollow viscus or vascular injury. A ruptured ovarian mass with associated heterogenous tissue was identified and characterized by malformed calcific nodules and pili. The suspected teratoma was deemed as the hemorrhage source and controlled with right oophorectomy. Final pathology was consistent with a ruptured 21cm mature cystic teratoma. Mature cystic teratomas represent the majority of ovarian teratomas and are historically regarded to represent benign pathology, consisting of varying component derivative of all three cell layers. There is a paucity in the literature regarding the incidence of ruptured mature cystic teratomas causing hemorrhage shock but should be resected if they are a source of significant bleeding following trauma. After surgical resection, the patient quickly recovered and was discharged from the hospital without complication.

In a time-sensitive clinical scenario, a broad differential and methodical survey allow for proficient and accurate diagnosis.
**P 5. DICHOTOMY IN FASCIOTOMY? PRACTICE PATTERNS AMONG TRAUMA/ACUTE CARE SURGEONS WITH PERFORMING FASCIOTOMY WITH PERIPHERAL ARTERIAL REPAIR**

Presenter: Anna Romagnoli MD | University of Maryland School of Medicine  
Romagnoli AN, Morrison, JJ, DuBose JJ, Feliciano DV

**Introduction:** Failure to perform an adequate fasciotomy for a presumed or diagnosed (by preoperative neurological examination and elevated compartment pressure) compartment syndrome with a peripheral arterial repair is a potential cause of preventable limb loss. The hypothesis of this study was that there are many principles of fasciotomy that are uniformly accepted by surgeons and that consensus guidelines could be developed.

**Methods:** A 20-question survey on practice patterns of fasciotomy was distributed to trauma and acute care surgeons of a major surgical society which had approved distribution.

**Results:** The response to the survey was 160/1066 (15%). 92.5% of respondents were fellowship-trained in trauma and/or acute care surgery, and 74.9% had been in practice for fewer that 10 years. Most respondents (71.9%) stated they would be influenced to perform a fasciotomy before an arterial repair based on massive swelling of the extremity (55.6%), elevated compartment pressure (52.5%), delay in transfer >6 hours (47.5%), or obvious distal ischemia (33.1%). A prophylactic fasciotomy (no preoperative neurological examination, no measurement of compartment pressure) would be performed in the setting of a "tense" compartment (87.5%), ischemic time >6 hours (88.1%), and in the setting of a large volume resuscitation (31.3%). Compartment pressures were selectively measured by 69.4% of respondents, with 72.5% utilizing a Stryker needle device.

**Conclusion:** While there is some general consensus on indications for fasciotomy by trauma and acute care surgeons, there is marked heterogeneity in opinions on the precise indications in selected scenarios. With missed compartment syndromes continuing to occur, these data strongly suggest the need for a consensus conference and/or a meta-analysis to guide future care.
Introduction: Tracheobronchial injuries are reported to occur in ≤2% of all chest trauma. Mortality ranges from 4-30%, and blunt mechanism carries a higher mortality than penetrating: 23% vs 15.8% respectively. We present a case of tracheal rupture following crush injury to the chest treated with primary surgical repair supported by an ultra-lung protective strategy and ECMO.

Methods: Case report and review of the literature

Results: A 23-year-old male was brought to the hospital after being crushed between a scissor lift and a doorway. He arrived in obvious respiratory distress with massive subcutaneous emphysema across his chest, neck and face. He was tachycardic and tachypneic with an SpO2 in the high 80s. Awake intubation was performed using topical anesthestic and flexible bronchoscopy. With the airway secure, he was quickly sedated and bilateral chest tubes were placed with no airleak noted. Due to the high suspicion for an airway injury, he was taken immediately for CT scan which revealed pneumomediastinum, pulmonary laceration/contusion to the bilateral upper lobes, and a large 1.5cm defect in the posterior trachea at the level of the carina extending into the right main stem (RMS) bronchus. He was taken immediately for surgical repair. EGD done first demonstrated no esophageal injury. Flexible bronchoscopy confirmed a large defect at the level of the carina. He was then placed on venovenous extracorporeal membrane oxygenation using a percutaneous femoral vein to femoral vein technique for support during repair. Bovine pericardium was used as a patch for the injury and secured circumferentially. A pedicled intercostal muscle flap was placed as a buttress between the repair and the esophagus. Three 28 Fr chest tubes were left for drainage. Post-operatively the patient was maintained on VV ECMO and lung protective ventilation for 13 days. The rest of his hospital course was uneventful. He was discharged on day thirty-six. He has been seen in followup, and is doing extremely well.

Conclusion: Several case reports have demonstrated the successful use of ECMO with tracheobronchial injuries as a rescue strategy allowing safe surgical repair, and even as a primary treatment modality. ECMO was used in our case as a pre-emptive lung protective strategy for severe pulmonary confusions as well as a method to reduce the need for positive pressure ventilation across the tracheal repair.
Traumatic tracheal injury and pulmonary contusions: buying time with ECMO

April A. Grant MD, Edward B. Lineen MD, Nicolas Brozzi MD, Rodrigo Vianna PhD MD, Matthias Loebe PhD MD & Ali Ghodsizad PhD MD

Introduction: Tracheobronchial injuries are reported to occur in ≤2% of all chest trauma. Mortality ranges from 4-30%, and blunt mechanism carries a higher mortality than penetrating: 23% vs 15.8% respectively. We present a case of tracheal rupture following crush injury to the chest treated with primary surgical repair supported by an ultra-lung protective strategy and ECMO.

Presentation:
A 23yo male was brought to the hospital after being crushed between a scissor lift and a doorway. When EMS arrived he was awake but with labored breathing. En route, his respiratory status worsened leading to left needle decompression. On arrival, GCS 15, HR was 107, BP 121/66, RR 30, SpO2 89% on non-rebreather with 100% FiO2. He had massive subcutaneous emphysema of his face, neck, and chest with severe tachypnea. Awake intubation was successfully performed. Bilateral chest tubes were placed.

Imaging:
With the airway secure, he was taken for trauma CT scans which showed pneumomediastinum, pulmonary laceration/contusion to the bilateral upper lobes, and a large 1.5cm defect in the posterior trachea at the level of the carina extending into the right main stem bronchus. Thoracic surgery was consulted and he was taken emergently to the operating room.

Operating Room:
EGD was negative. Bronchoscopy was done demonstrating a large tear in the posterior trachea at the carina and extending into the right mainstem bronchus. He began to desaturate in the OR so he was placed on venovenous ECMO through bilateral femoral veins. Primary repair was done through a right posterolateral thoracotomy utilizing bovine pericardium.

PostOp:
The patient remained on ECMO and ultra-lung protective ventilation for 13 days post-operatively, allowing ultra-low tidal volume ventilation and healing of the tracheal repair and pulmonary contusions. He was discharged on post-operative day 36. Six months after the injury he is doing well.

Summary: ECMO can be used to support repair of major airway injuries.

The authors have no relevant financial disclosures.
Introduction: Farm equipment injuries demonstrate complex injury patterns that include combinations of blunt and penetrating mechanisms. Added complexity in care for these patients includes remote location and regional access to capable trauma centers.

CASE REPORT: A 15yo Amish male presented as a trauma alert with a penetrating chest wall injury secondary to equipment malfunction on his family farm. A hay bale belt fractured and a 12" piece of alligator lacing was ejected at high velocity impaling him in his right chest (picture.) Due to remote location of the farm, the patient was taken by private vehicle to a local clinic where basic hemorrhage control was performed with pressure dressing prior to transport by EMS to a rural medical center. There patient stabilization was initiated with intubation followed by placement of a chest tube for hemopneumothorax and blood product transfusion. Helicopter transfer to a combined adult & pediatric level 1 trauma center was arranged. On trauma center arrival, the patient was met by both the Adult Trauma and the Pediatric Surgery teams in a combined care model. He was tachycardic and normotensive but required 3 units of PRBC, 2 units of FFP and TXA given in-flight to achieve this. On exposure he had a large right chest wall defect with embedded foreign body. He was taken to the OR for chest exploration. The foreign body was carefully removed from the chest wall and lung along with a large portion of free-floating rib. The chest was inspected demonstrating a blast-like injury to the upper lobe with significant contusion and imbedded bony fragments, and significant lung laceration. Bony fragments were removed and hemothorax evacuated. The chest was closed following thoracostomy tube. The skin was left open due to large soft tissue defect. In subsequent days he would return to the OR for debridement and eventual skin closure. He has since returned to good health.

CONCLUSIONS: This case highlights the challenges with rural trauma and inherent delay in transfer to definitive surgical care due to remote location of these patients at the time of injury. This case demonstrates coordinated and combined effort on behalf of the local clinic, rural hospital, ground EMS, helicopter EMS and the combined adult/pediatric trauma center. The injury from the high velocity farm equipment projectile resulted in a hybrid injury pattern that required careful consideration in the clinical management as it fit outside the typically seen blunt or penetrating mechanisms.
An 87-year-old man was seen in the trauma bay after a high-speed motor vehicle crash. An impressive seatbelt sign across his chest was the only notable abnormality on physical exam. The patient initially reported only mild chest wall pain. He was awake and alert, and normotensive but with borderline narrow pulse pressure.

Before the secondary survey had been finished, the patient had more pronounced narrow pulse pressure and became anxious. A unit of packed red cells was administered with little improvement. While chest x-ray and abdominal extended Focused Assessment with Sonography for Trauma (eFAST) exam were negative, a large pericardial effusion was visible in the subxiphoid eFAST window (arrows, Image 1).

The patient had a history of coronary artery disease and stroke and took dual antiplatelet medication. Given his injury mechanism, hemodynamics, and clinical symptoms, the effusion was deemed traumatic hemopericardium. He was immediately taken to the operating room for decompression of pericardial tamponade. He was intubated in the operating room only after having been prepped and draped for immediate median sternotomy. A bulging pericardium was encountered following sternotomy, and approximately 300-400 ml of blood and blood clot were evacuated. The patient’s hemodynamic status improved immediately. On thorough cardiac evaluation, a 2x2cm right ventricular hematoma was noted, without active bleeding or expansion. The pericardial sac was left open and two large Blake drains were placed prior to sternal closure. The patient was admitted to the intensive care unit, extubated on postoperative day 1, and his drains were removed on postoperative day 3. Transthoracic echocardiography demonstrated cardiac function at the patient’s baseline without residual effusion. He was discharged home from the hospital on postoperative day 6. At his 2-week follow-up visit in clinic, staples were removed from his sternal incision, and he had no complaints.

Hemopericardium causing tamponade after blunt trauma is exceedingly rare, especially in the absence of an associated sternal fracture. This patient had a combination of symptoms often seen in cardiac tamponade, i.e. narrow pulse pressure and a feeling of anxiety or sometimes “impending doom”. Immediate decompression of the tamponade, ideally in the operating room via median sternotomy, or in the trauma bay via anterolateral thoracotomy, if need be, is essential. Endotracheal intubation to “secure the patient’s airway” often leads to cardiac arrest if done without preparation to immediately evacuate the hemopericardium thereafter.
Introduction: Injury to the celiac artery secondary to a blunt mechanism of trauma is an extremely rare injury that accounts for only 1% to 2% of all visceral vascular lesions. Although rare, this injury is associated with a significant mortality. Despite this high mortality, there are currently only a few published case series of blunt celiac artery injuries in the literature. This study sought to review all cases of blunt celiac artery injuries that presented to our Level 1 trauma center over a five-year period.

Methods: This was a retrospective chart review of all patients who presented with a traumatic blunt celiac artery injury between January, 2012 and March, 2017.

Results: A total of 10 patients met inclusion criteria for this study. The majority of patients were male (7/10, 70%), the average age was 38.3 ± 16.1 years, and overall mortality was 20% (2/10). On average, patients spent 10.2 ± 6.5 days in the hospital, 4.4 ± 4.5 days in the ICU, and 1.6 ± 2.0 days on the ventilator. The majority of patients presented with either an intimal dissection (3/10, 30%) or an intraluminal thrombus (3/10, 30%). Other injuries included pseudoaneurysms (2/10, 20%), complete avulsion (1/10, 10%), and an intimal dissection with thrombus (1/10, 10%). Of these injuries, 2 (20%) were noted to have retrograde flow on imaging studies. The majority of patients (8/10, 80%) were managed non-operatively and 5 (50%) patients were discharged home on aspirin. One patient who was initially managed non-operatively required an unplanned return to the OR for ischemic bowel, liver, and stomach. There were no other complications noted.

Conclusion: Traumatic blunt injury to the celiac artery is rare. Although there are multiple treatment options, there is currently no consensus in regards to management guidelines. In this case series, the majority of patients were successfully managed non-operatively suggesting that endovascular or open treatment can be reserved for those patients who are hemodynamically unstable at the time of presentation or for those patients who fail medical management.
<table>
<thead>
<tr>
<th>Patient No.</th>
<th>Mechanism of Injury</th>
<th>Grade of injury</th>
<th>Management</th>
<th>ISS</th>
<th>Cause of Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MCC</td>
<td>Abduction</td>
<td>Open Fracture</td>
<td>54</td>
<td>Hemorrhagic shock</td>
</tr>
<tr>
<td>2</td>
<td>MVC</td>
<td>Fracture</td>
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<td>27</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>MVC</td>
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<td>Non-operative</td>
<td>34</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>MVC</td>
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<td>10</td>
<td>-</td>
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<tr>
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<td>Endovascular aneurysm</td>
<td>43</td>
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</tbody>
</table>

MCC: motorcycle crash, MVC: motor vehicle crash.

Table 1. Patient presentation, management, and outcomes.
Introduction: Known predictors of mortality in burn patients include TBSA, age, and inhalation injury. Minimal data exists on laboratory values as a predictor of mortality. We identified laboratory values routinely obtained on admission that may act as a surrogate for an inflammatory response and organ dysfunction. We hypothesized that specific laboratory derangements seen on initial blood draw will predict mortality in burn patients.

Methods: Patients admitted to Cook County Hospital Burn Unit from 2013-2019 were retrospectively analyzed. Patient profile included TBSA greater than 15%, 2nd and 3rd degree thermal injuries and ages 1-86. Exclusion criteria included electrical burns, dead on arrival, or significant polytrauma. Variables studied were gender, age, TBSA, presence of inhalation injury, and results from the initial basic metabolic panel, complete blood count, and phosphate level. Data was analyzed by bivariate analysis via Mann Whitney U testing.

Results: 130 patients were included with an average age of 40.8 (SD 22) and TBSA of 31% (SD 22). The female to male ratio was 1:1.2 and 30% (n= 39) had inhalation injury. Variables of significance in predicting mortality were serum creatinine, albumin, glucose, and phosphate. Average creatinine for survivors and non-survivors were .85 and 1.13 mg/dL, respectively (p =0.01). Average albumin for survivors and non-survivors were 3.26 and 2.3 mg/dL, respectively (p =.003). Average glucose for survivors and non-survivors was 138 and 233 mmol/L, respectively (p <0.001). Average phosphate for survivors and non-survivors was 3.48 and 6.04, respectively (p <.001). There were no significant differences in the mean sodium, potassium, or hemoglobin levels associated with mortality.

Conclusion: Serum creatinine, albumin, glucose, and phosphate levels obtained on admission are significant predictors of mortality in the acute setting. This can be used as a framework for future studies in risk stratification of burn victims.
**Introduction:** Respiratory insufficiency secondary to rib fractures is a major problem in trauma. Pain limits the patients’ ability to achieve adequate airflow which in turn increases length of stay and potential pulmonary complications. Here we present a case in which intercostal cryoneurolysis enabled a drastic improvement in the pulmonary function patient with refractory hypoxia secondary to rib fractures.

**Methods:** A 60 year old male involved in an MVC rollover, with cervical spine fractures, left rib fractures 3 through 9 with left pneumothorax was admitted to the ICU due to hypoxia. He was placed on hi-flow nasal cannula and a left chest tube was inserted. He struggled with inability to wean due to hypoxia. He could not participate in pulmonary toilet or physical therapy due to desaturation when removing hi-flow. Intercostal nerve block with Exparel failed to improve his status. On hospital day 6, he underwent VATS with cryoneurolysis of intercostal nerves 3 through 9. His surgery was delayed until this time due to concern for osteomyelitis, which excluded him from rib fixation.

The procedure itself began with a video assisted thoracoscopic surgery. Trocars were placed into the pleural space and a camera introduced. Lysis of adhesions and evacuation of hemothorax was performed as needed. Once the thorax was free of adhesions and hematoma, the cryoablation probe was introduced. Starting at the 3rd rib, maintaining at least 2cm from sympathetic chain, the tip of cryoablation probe was placed inferior to the rib and the machine cycled to ablate the nerve, moving down to each inferior rib space until completion.

**Results:** On post-operative day 1, he was weaned to 4L nasal cannula, had significant improvement with pulmonary toilet, and was walking greater than 100 ft with minimal assistance. He was transferred to the floor on post-operative day 2, and discharged to home on post-operative day 4. On his 2 week follow-up, he was not taking any narcotics and was ready to return to construction work.

**Conclusion:** IC was first used in thoracic surgery in the 70s and had been largely forgotten about in place of thoracic epidural catheters. However, its utility in trauma has not been fully explored and could be the next breakthrough in preventing the negative respiratory sequelae of severe chest wall trauma. The benefit of IC seems to be in the long-term function of the analgesia, allowing for healing without affecting breathing mechanics.
Introduction: The relationship of trauma patients and local primary care providers (PCP) may have implications for underlying disease management and injury prevention. This relationship has yet to be explored. We sought to describe the relationship between trauma patient home location and number of primary care providers available in their county.

Methods: The trauma database of a rural Level 1 trauma center was queried for all trauma patients greater than 18 years of age for the year 2017. The corresponding year’s data for primary care providers in applicable counties was obtained from the Health Resources and Data Administration. Ratio of trauma patients to number of primary care providers and summative statistics were performed for each county. Z-score was used to describe significant values, with p <0.05 indicating significance.

Results: Initially, 3511 records were screened, with 2467 meeting inclusion criteria. Average age was 56.3 years, standard deviation of 22.6 years. Average ISS was 7.53, standard deviation of 10.4. A county contained an average of 59 trauma patients (range 1-913). For the year 2017, there were 10353 PCP’s statewide, with 42 of 67 counties containing trauma patients and a total of 9345 PCP’s, an average of 222 per county (range 6 to 1336). Average trauma patient/PCP ratio per county was 0.67 (standard deviation of 1.42). Four counties were found to have significantly higher ratios than the average: 6.35 (Z=3.98, p< 0.001), 5.53 (Z=3.41, p<0.001), 3.50 (Z=1.99, p=0.0233), and 3.06 (Z=1.67, p=0.0475). Of these significant counties, two were designated “rural” and two were designated “urban,” indicating detection of high ratios in both settings. Data visualization using mapping software suggests discordance between general population/PCP ratio and trauma patient/PCP ratio.

Conclusion: The ratio of trauma patients to primary care providers at a county level can be used to describe significant imbalances in a trauma center’s catchment area. In this study, four areas of the trauma system were found to have high numbers of trauma patients but low numbers of PCP’s. This ratio may have implications for trauma systems development, co-morbidity detection during trauma hospitalization, and follow-up. The utility of this ratio warrants further examination. Limitations of this study include trauma patients taken to other facilities and lack of PCP utilization data.
Introduction: Shock Index (heart rate / systolic blood pressure) is an accurate indicator of mortality in the general trauma population; however, there is a paucity of literature that describes its efficacy in the burn patient population. Our purpose is to evaluate whether shock index is a reliable indicator of mortality in burn patients.

Methods: The National Trauma Data Bank was queried for patients with isolated truncal burn (ICD-9: 942.xx and ECODE mechanism: burn) treated at all US trauma centers from July 1, 2011 to June 30, 2015. The burn area was assessed based on the abbreviated injury scale and injury severity score coding for burn. Patients with total body surface area (TBSA) 20-89% and 2nd/3rd degree were included. General demographics (age, gender), and underlying diabetes mellitus were studied to elucidate which factors correlated with high risk of mortality or complications. Logistic regression was then performed to evaluate the statistical significance of these risk factors.

Results: During the 4-year study period, there were a total of 2452 2nd/3rd burn patients with TBSA 20-89%. Of all burn patients, survivors (N=2150) had a shock index of 7.2, whereas non-survivors (N=302) had a shock index of 9.8. This difference is not statistically different (p 0.142); however, in patients with TBSA>40% (N=687), survivors had significantly lower shock index than non-survivors (0.801 vs. 0.920, p<0.001)

Conclusion: Shock Index is a poor predictor of mortality in patients with burns 40%. In trauma patients with severe burns, shock index may serve as a fast and efficient triage tool upon patient arrival.

Table. Comparisons between survival and mortality in patients with truncal burn (20-89% TBSA, 2nd to 3rd degree) (N=2452)

<table>
<thead>
<tr>
<th></th>
<th>Survivors (N=2150)</th>
<th>Non-Survivors (N=302)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>40.0</td>
<td>59.7</td>
<td>&lt;0.001$</td>
</tr>
<tr>
<td><strong>Male (N, %)</strong></td>
<td>1581 (73.6%)</td>
<td>199 (65.9%)</td>
<td>0.006#</td>
</tr>
<tr>
<td><strong>Diabetes (N, %)</strong></td>
<td>138 (6.4%)</td>
<td>61 (20.2%)</td>
<td>&lt;0.001#</td>
</tr>
<tr>
<td><strong>ISS</strong></td>
<td>14.4</td>
<td>20.7</td>
<td>&lt;0.001$</td>
</tr>
<tr>
<td><strong>Shock index</strong></td>
<td>7.2</td>
<td>9.8</td>
<td>0.142$</td>
</tr>
<tr>
<td><strong>TBSA with ISS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iss=9 (TBSA=20-29%)</td>
<td>1165 (56.2%)</td>
<td>49 (19.3%)</td>
<td>&lt;0.001#</td>
</tr>
<tr>
<td>Iss=16 (TBSA=30-39%)</td>
<td>457 (21.3%)</td>
<td>56 (29.2%)</td>
<td></td>
</tr>
<tr>
<td>Iss=25 (TBSA=40-89%)</td>
<td>528 (24.6%)</td>
<td>197 (58.5%)</td>
<td></td>
</tr>
</tbody>
</table>

$ Student T test  # Chi-square test
Introduction: Dissemination of cervical cancer most commonly occurs via direct local extension and lymphatic channels. The most prevalent sites for distant metastasis are lung, liver and bone. Rarely will cervical cancer metastasize to other sites, with just one reported case of metastasis to the neck.

Case Description: We present the case of a 73 year-old female with a history of HPV+ squamous cell carcinoma of the cervix (stage IB1), who on initial PET/CT (2010) had metastatic disease to her peri-aortic lymph nodes. For this, she underwent definitive concurrent chemotherapy, with cisplatin, and whole pelvis irradiation followed by cesium implants. In June, 2018, she presented with a new left-sided neck mass. On exam she had a 3cm hard mass fixed to her lower left sternocleidomastoid muscle. PET/CT revealed a hypermetabolic left supraclavicular lymph node measuring 2.6x2.4cm and a left infraclavicular mass measuring 3.3x2.2cm. Upper panendoscopy didn’t identify a second primary cancer. TruCut core biopsy of the left neck mass revealed poorly differentiated invasive SCC, positive for high-risk HPV genotype via in-situ hybridization. The differential diagnosis was delayed distant hematogenous metastasis from her 2010 cervical cancer or lymphogenous spread from an unknown second head and neck primary. Knowing that both tumors tested positive for HPV, the oncologic team covered both possibilities when forming a treatment plan. The patient was immediately started on four cycles of carboplatin, Taxol and Avastin chemotherapy, followed by definitive radiation therapy of the neck.

Discussion: Of the more than one hundred HPV genotypes, only thirteen are described as high-risk for leading to cancer. High-risk HPV genotypes accompany almost every case of cervical cancer1. In-situ hybridization confirmed high-risk genotypes in both specimens but didn’t specify which of the 13. To accomplish this, both specimens would need to be reevaluated using electrophoresis and PCR-specific HPV genomes. Results would provide additional support needed to confirm this as a case of metachronous metastatic SCC of the neck from previous SCC of the cervix.

Conclusion: SCC of the cervix is almost solely caused by high-risk HPV genotypes. Knowing this patient’s supraclavicular lymph node was also positive for high-risk HPV SCC, without evidence of a second primary tumor, it can be inferred that this is the second known case of supraclavicular lymph node metastasis from SCC of the cervix. These clinical factors should be considered during evaluation of any neck mass in a patient with previous history of cervix malignancy, independent of the timeframe.
Introduction: In high energy trauma, the prevalence of a noncontiguous injury in a different spine region (NCIDSR) is as high as 20% when one spine injury is found. In patients with low-energy falls ≤ 5 feet, the risks of NCIDSR are not well studied. We hypothesize that there is no increased risk of a NCIDSR after detection of a spine injury in low-energy falls.

Methods: Patients ≥18 years with falls ≤ 5 feet were retrospectively identified from a level 1 trauma center registry from March 2013 to March 2019. Spine injuries were classified into 3 regions (cervical [C], thoracic [T] and lumbar [L]). Concomitant C7/T1 and T12/L1 injuries were not considered NCIDSR and were classified as C and T injuries respectively. The risks of NCIDSR for each spine region were calculated. A p-value of < 0.05 indicated statistical significance.

Results: 7872 patients (mean age± standard deviation, 69 ±20 years) were included, with a median (interquartile range) Injury Severity Score of 5 (4-10). C, T and L spine injuries were found in 355 (4.6%), 526 (6.6%) and 440 (5.6%) patients respectively. Spinal cord injuries were noted in 14.2%, 1.9% and 1.3% of the C, T and L spine injuries respectively. Compared to patients without C spine injuries, those with C spine injuries had similar risks of noncontiguous T spine injuries (7% vs. 6 %, p=0.5) and L spine injuries (5% vs 5%, p=0.7). A C spinal cord injury was also not associated with an increased risk of a T or L spine injury compared to patients without C spine injuries. However, a T spine injury was associated with an increased risk of a noncontiguous L spine injury (12.7% vs 4.9%, p<0.0001) compared to those without T spine injuries. Controlled for age and gender, a C spine injury was not associated with an increased risk of a noncontiguous TL spine injury (odds ratio=0.89 [95% confidence intervals 0.63-1.26]).

Conclusion: In low-energy falls, the risk of NCIDSR is not increased after detection of a C spine injury. However, T spine injuries are associated with a noncontiguous L spine injury. Selective rather than routine total spine imaging after initial detection of a spine injury is appropriate in this cohort.
Introduction: Evaluate the relationship between opening intracranial pressure and outcomes in a large series of TBI patients, with a focus on mortality and the relationship with the threshold of 20 mmHg.

Methods: The trauma center registry was queried for consecutive blunt TBI adult patients undergoing ICP monitoring between 2007 and 2017. Patient characteristics and the risk of death were evaluated using a sequential multivariable binary logistic modeling approach. Generalized additive model (GAM) was used to evaluate the functional relationship between OP and risk of death. Odds ratio (OR) and 95% confidence interval (CI) are provided as measures of strength of association and precision, respectively.

Results: A total of 182 blunt severe TBI patients, 121 patients had OP>20. The two groups were similar in their clinical and demographic data with the exception of the OP>20 group had a higher head/neck abbreviated injury score (HN-AIS) (4.58±0.74 vs 4.31±0.80, p=0.03) and a higher admission INR (1.42±0.96 vs 1.21±0.29, p=0.029). All-cause mortality was significantly higher in the OP>20 group (52.5% vs 25.6%, p=0.003). When fitting the GAM, we found that the relationship between OP and log odds of mortality is linear. No evidence of a non-linear or piece-wise linear relationship was detected. Multivariable logistic regression analyses demonstrated that OP (OR=1.06; 95% CI=1.03-1.09), age (OR=1.04; 95% CI=1.01-1.07), injury severity score (ISS) (OR=1.06; 95% CI=1.02-1.10), and HN-AIS (3.62; 95% CI=1.92-6.86) were independently associated with increased odds of death per unit increase while adjusting for sex, race and year.

Conclusion: Elevated opening pressure is strongly predictive of death after severe TBI regardless of a specific cutoff value. Even at low levels of OP, the risk of mortality is still evident. There is an associated 6% increased risk of death for each incremental increase in OP. Additionally, incremental increases in HN-AIS score strongly influences mortality in severe blunt TBI patients and should be consider in morbidity-mortality prediction models.
Introduction: Bullet embolism is a rare but serious complication of penetrating trauma for which there is limited data in the literature for optimal management. Hemodynamically stable patients can undergo endovascular retrieval and subsequent bulletectomy. A multidisciplinary approach involving trauma surgeons and interventional radiologists may be ideal. The authors present lessons learned from a series of two cases managed by an interdisciplinary team.

Methods: Case 1- 41-year-old male with multiple gunshot wounds to the torso with bullet that embolized from the right subclavian vein to the right ventricle. Endovascular snare retrieval and subsequent removal via a right femoral vein cut down was performed. The inguinal ligament was divided for proximal exposure. Bullet migration to the pulmonary artery was noted at time of retrieval, however, the bullet was successfully captured and removed.

Case 2- 21-year-old male, with gunshot wound to abdomen with bullet lodged in the retro-hepatic inferior vena cava. Endovascular snare retrieval and removal via right femoral vein cut-down was again performed. The venotomy and bulletectomy was performed in the IR suite. An iatrogenic arterial injury was sustained during cut-down which was immediately identified and repaired.

Conclusion: The trauma team should consider several technical and procedural details when managing these patients. Life threatening complications including arrhythmia, cardiac tamponade, and pseudoaneurysm can result from embolized bullets to the cardiovascular system and heart. Femoral vein access for endovascular retrieval should be established well below the inguinal ligament so that proximal and distal control of the vessel can easily be obtained and subsequent venotomy and bulletectomy can more easily be performed. Complications related to endovascular retrieval include further dislodgement of the bullet into deeper, more critical vasculature, vessel wall injury, or damage to cardiac structures. Having a cardiothoracic surgeon on standby is prudent as chorda tendineae rupture is a concern with right ventricular bullet extraction. Finally, the venotomy and bulletectomy should be performed in the operating room or a hybrid suite with OR capabilities such that necessary lighting and equipment are available to perform the operative procedure and avoid iatrogenic injury.
**P 19. A CASE OF FAT EMBOLISM SYNDROME OCCURING EARLY FOLLOWING POLYTRAUMA**

Presenter: Janelle-Cheri Millen MD | Ocala Health

Millen J, Watson C, Clark J

**Introduction:** 1. highlight an early case of fat embolism syndrome, occurring within 6 hours of injury 2. share a management challenge and how it was addressed.

**Results:** Fat embolism syndrome describes a clinical entity occurring due to embolization of bone marrow fat, typically resulting in altered mental status and respiratory insufficiency. This is a relatively rare phenomenon and the body of literature describing it consists mainly of case reports.

We report a case of 17 year-old female who was trauma alerted within minutes of being hit by a motor vehicle. Her initial evaluation was significant for deformities to bilateral clavicles, and lower extremities. X-ray and CT evaluation revealed bilateral clavicle, left distal tibia, left proximal fibular, right proximal femur, right proximal ulnar, right superior and inferior pubic rami, bilateral sacral ala, right ribs 2-4, left rib 2, right zygomatic arch fractures. Of note, CTA chest revealed evidence of bilateral pulmonary contusions, right < 5% pneumothorax and CT brain was negative for any evidence of intracranial hemorrhage. At the time of admission, she was noted to have a GCS of 15, with no focal deficits and was maintaining oxygen saturations of 95-100% on nasal cannula, in no respiratory distress. Her urine drug screen was noted to be positive only for tetrahydrocannabinol (THC).

The patient’s bilateral lower extremities were splinted and she was admitted to the Trauma Progressive Unit. Within 4 hours of her admission she was noted to be vomiting and became unresponsive immediately thereafter. Vital signs were normal, with the exception of hypoxia, confirmed on arterial blood gas. Repeat CXR, CT brain and CT chest revealed no changes to account for this clinical development. Following a brief return to a GCS of 15, her mental status again declined to a GCS of 7 prompting intubation for airway protection and transfer to the trauma intensive care unit.

This clinical picture raised the concern for fat embolism syndrome and MRI brain performed revealing scattered punctate foci of abnormal signal in the watershed areas and deep gray matter on T2 and diffusion weighted images. Differential diagnoses for these findings included fat embolism syndrome, global anoxic ischemia and diffuse axonal injury. Of these, fat embolism syndrome was the one which correlated to her clinical picture. She progressed to develop significant cerebral edema with refractory elevations in her intracranial pressures necessitating bilateral craniectomies.

**Conclusion:** Our case report adds to the sparse body of literature on this subject.
P 20. OUTCOMES REVIEW OF RIB PLATING VS NON-OPERATIVE MANAGEMENT
Presenter: Jared H Griffard MD | University of Tennessee Medical Center, Knoxville
Griffard JH, Martins DA, Campbell MA, Daley BJ, Taylor JE

Introduction: Rib fractures are associated with significant morbidity and mortality in polytraumatized patients and are responsible for significant healthcare cost and admissions to an intensive care unit. There is considerable variability in the management of these traumatic injuries, especially the modality of treatment (operative vs non-operative) and timing of operative intervention. Although the Eastern Association of Surgical Trauma guidelines recommend early operative intervention in patients with flail chest, the decision to pursue operative management is multifactorial: considering the patients' baseline health, co-morbid conditions, burden of traumatic injuries, and patient preferences. Currently, there are not strong recommendations regarding operative fixation in patients a non-flail chest rib fracture pattern.

Methods: We reviewed our TQIP database and collected data from patients aged 18-99 who underwent open reduction internal fixation of ribs from January 2016-July 2019. We examined the length of stay, ICU length of stay, ventilator days, ISS, age, discharge disposition, and packed red blood cells transfused. Similarly, we collected data from patients aged 18-99 who had 1 or more rib fractures from January 2016-July 2019. We plan to compare these results in a 4:1 ratio of patients managed non-operatively to patients managed with operative intervention.

Results: Between January 2016 and July 2019, 36 of 4320 total patients diagnosed with rib fractures underwent operative fixation of one or more ribs. Of these patients, 31 patients were males and 5 were females. The mean age was 59.1 years, with a mean ISS of 19.2 and length of stay of 11.3 days. There were 22 patients who did not require mechanical ventilation in this group, and the mean ventilator days in the patients who required mechanical ventilation was 8.9 days. Only 4 patients did not require ICU admission, and the mean ICU length of stay was 8.4 days. The discharge disposition of this group included 2/3 being discharged to home with or without services and most of the remainder were discharged to a nursing facility. One patient expired in this patient group.

Conclusion: We have currently completed the data collection for the operative intervention group and will perform a multivariate analysis comparing patients with similar ages and Injury Severity Scores who did not undergo operative fixation in a 4-to-1 ratio. We hope to show that the patients who underwent operative fixation had decreased ICU and overall length of stay, decreased ventilator days, and were more likely to be discharged to home.
P 21. TRAUMATIC DECOMPRESSION OF THE JEJUNUM: A CASE OF SMALL BOWEL PERFORATION FROM HIGH SPEED MOTOR VEHICLE CRASH
Presenter: Jeffrey M Stern MD | Virginia Commonwealth University
Stern JM, Anand RJ

Introduction: Free intraperitoneal air is a common general surgical emergency that is rarely encountered in acute traumatic settings. Air not contained by hollow viscus organs implies a hole must exist. In the setting of motor vehicle blunt trauma, deceleration injury causing injury to the mesentery is the most common mechanism of bowel injury. Focal perforation not related to a mesenteric injury and ischemic bowel is a conceptual mechanism (balloon popping) that is rarely encountered clinically. We present a rare case of a focal perforation of the jejunum after a high speed motor vehicle crash (MVC).

Methods: A 60-year-old restrained rear seat passenger presented to our level-1 trauma center with severe abdominal pain. She had been wearing a 3 point seat belt that was tighter on her waist than her shoulder and at the time of the crash her upper body was thrown forward allowing her head to strike the seat in front of her. She was hemodynamically stable and underwent trauma workup. Chest/pelvis X-rays and FAST exam did not reveal a significant bleeding source and did not show free air. Computed tomography (CT) scans were performed of the head, neck, chest, abdomen and pelvis. CT scan of the abdomen showed large volume free intraperitoneal air (Figure 1) and L4/L5 compression fractures. Given the peritoneal physical exam finding and free air on CT scan she was taken emergently to the operating room.

Results: Operative exploration revealed free intraperitoneal air upon entry into the abdominal cavity as well as murky fluid throughout the mid abdomen. A focal perforation (< 1 cm) was discovered on the antimesenteric surface of a segment of jejunum. The surrounding bowel and mesentery was normal in appearance with no inflammation or phlegmon and no other intraperitoneal traumatic injuries discovered. The perforation was repaired primarily in two layers and the abdomen was closed. Post-operative course was uncomplicated, NGT was removed on POD #2, and diet was advanced with early return of bowel function. Antibiotics were continued for four days and she was discharged on postoperative day 5.

Conclusion: Focal perforation of the small bowel from high speed blunt trauma is a rare isolated injury. Deceleration injury to the mesentery with bowel ischemia is the most common injury to the small bowel in MVC trauma. Close attention to physical exam and radiologic findings allow for early diagnosis and treatment of these injuries.
Figure 1. CT abdomen showing free intraperitoneal air. Abdominal CT window with lung window inset right.
P 22. SHOT THROUGH THE HEART: NONOPERATIVE MANAGEMENT OF RETAINED CARDIAC MISSLE FROM ACCIDENTAL SELF-INFLICTED GUNSHOT WOUND
Presenter: Jesse Coleman DO | Mercy Medical Center
Coleman JA, Myrie DA

Introduction: Report of an interesting case of a self-inflicted gunshot wound to the chest with retained ballistic in the ventricular myocardium. A patient presents with penetrating chest and through-and-through left upper extremity trauma from his muzzle loader unintentionally discharging after being dropped while exiting his vehicle. Radiographic imaging demonstrated multiple injuries to include comminuted fractures of the left radius and ulna, left fifth rib fracture with upper lobe pulmonary contusion, and a 1.1-cm metallic fragment embedded in the left ventricular myocardium without pericardial effusion. The retained cardiac missile was treated conservatively without adverse sequelae.

Figure 2: Axial and coronal computed tomographic images of retained metallic ballistic in the left ventricular myocardium.
P 23. WEST VIRGINIA’S ROAD TO RECOVERY: A RETROSPECTIVE STUDY OF HOW THE SUBSTANCE ABUSE TREATMENT PROGRAMS HAVE INFLUENCED THE NUMBER OF TRAUMA PATIENTS WHO TEST POSITIVE ON URINE DRUG SCREENING
Presenter: Jessica V Hale DO | Marshall University
Hale J, Winalski J, Murray J, Farzad A

Introduction: Over the past decade, the State of West Virginia has battled a substance abuse epidemic. According to the National Institute on Drug Abuse, the State of West Virginia experienced 833 drug overdoses deaths involving opioids in 2017. This rate is double the rate in 2010 and threefold higher than the national rate of 14.6 deaths per 100,000 persons. Another study showed that West Virginia was also No.1 in expenses from the opioid epidemic, such as health care, substance abuse treatment, and criminal justice costs. The efforts to long-term recovery for individuals within the State of West Virginia has resulted in a plethora of treatment and support services over the last ten years, each designed to overcome the challenges of substance abuse disorders. With the steady increase in the number of addiction treatment programs in West Virginia, the aim of this study is to determine if the number of positive urine drug screens for trauma patients presenting to rural emergency departments in West Virginia and surrounding states has decreased. This data will also provide a trend of positive urine drug screens that can be used to determine if the substance abuse disorder initiatives affect the number of trauma patients in that community.

Methods: Most trauma patients routinely get an initial urine drug screen when first presenting to the emergency department or as a transfer. We examined the urine drug screens of all trauma patients presenting at Cabell Huntington Hospital in Huntington, WV as well as the local transfers over the last 5 years. We plotted the number of positive urine drug screens in accordance with when the different substance abuse treatment programs were initiated to see the trend of positive urine drug screens.

Results: There is only preliminary data available for urine drug screens previous to the substance abuse treatment programs. There is further data that is being collected and statistical analysis will be completed when more data is collected.

Conclusion: We theorize that the number of positive Urine Drug Screens for trauma patients presenting to the Emergency Department will decrease with the addition of local treatment programs. Our study aim is to determine if availability of treatment programs made an influence on the number of positive drug screening for trauma patients. However, a statistical analysis will be performed once all data is collected.
P 24. HETEROTOPIC OSSIFICATION: A RARE CAUSE OF TRAUMATIC BOWEL PERFORATION
Presenter: Jonathan B Moss MD | University of Tennessee Medical Center, Chattanooga
Moss JB, Koestner TH, Dart BW

Introduction: Heterotopic ossification (HO) is the formation of bone in tissues that do not usually ossify. HO in abdominal scars causing bowel trauma is exceedingly rare. Extensive review of the English literature has revealed only one case of heterotopic ossification causing bowel perforation after some form of trauma. Our case is the first reported incidence of traumatic fracture of heterotopic ossification causing penetrating trauma resulting in bowel perforation.

A 92-year-old man was seen in the emergency department with complaints of abdominal pain. He was seen, imaged, and treated the previous day in the emergency department after he was involved in a motor vehicle accident. All imaging and work up proved unremarkable, and he was ultimately discharged. He then re-presented one day later with diffuse abdominal pain. On examination, the patient was in obvious distress. His abdomen was distended and peritonitic. A computed tomography (CT) scan was obtained and compared to the CT scan performed the previous day and revealed development of free intraperitoneal air. Also seen on CT scan was what appeared to be ossification from his xiphoid to his umbilicus.

The patient was taken emergently to the operating room for an exploratory laparotomy. A midline incision was made along the patient’s prior incision and was carried down to what appeared to be heterotopic ossification. The abdomen was bluntly entered and there was noted to be a large amount of succus. A fragment of heterotopic ossification was discovered that had fractured and penetrated the small bowel. This piece of bowel was then removed and a side-to-side small bowel anastomosis was then performed using a GIA stapler. The remaining heterotopic ossification was then excised. Pathology report revealed four segments of bone ranging from 2 cm to 8 cm consisting of trabecular bone with unremarkable marrow.

Heterotopic ossification resulting in traumatic bowel injury is a rare entity with few cases ever reported. Surgical treatment is almost always necessary. In those in whom heterotopic ossification is producing symptoms, even in the absence of trauma or bowel perforation, surgical excision is also suggested.
Figure 1
Radiographic images: A. Transverse CT image of the abdomen revealing fractured HO with intra-abdominal free air. B. Sagittal CT image of the abdomen showing HO from the xiphoid to umbilicus with intra-abdominal free air.
P 25. IS TIMING REALLY EVERYTHING? EFFECT OF TIME TO RADIOLOGIC IMAGING ON PRESENCE OF ACTIVE CONTRAST EXTRAVASATION IN BLUNT SPLENIC INJURIES

Presenter: Jonathan R Zurcher MD | Wake Forest University School of Medicine
Zeller KA, Zurcher JR, Gaffley M, Stutstrim AE

Introduction: The management of blunt splenic injury (BSI) has shifted to non-operative management (NOM) in hemodynamically stable patients. Contrast extravasation (CE) on computed tomography is one of several factors that has been associated with increased rates of NOM failure. We hypothesized that the presence of CE may be temporally related to injury and thereby affect the clinical significance of CE.

Methods: IRB approval was obtained for retrospective review of patients sustaining BSI at a tertiary referral center from 2012-2014. CE was documented by radiologists and patients on anticoagulation were excluded. Primary outcome compared time of injury to presence of CE on imaging. Secondary outcomes evaluated grade of injury and ISS related to the presence of CE.

Results: 194 patients met inclusion criteria and 36 had CE on initial CT with age range from 6-91. There was no significant difference for primary outcome both unadjusted 0.867 [95% CI 0.734-1.023] and when adjusted for age, sex, ISS, and injury grade 0.862 [95% CI 0.725-1.025]. There was a significant increase in rates of CE with grade III splenic injury 14.961 [95% CI 2.950-75.889]. ISS alone was not associated with increases in presence of CE 0.988 [95% CI 0.950-1.028].

Conclusion: There did not appear to be a relationship between the time of radiologic imaging and time of injury on the presence of CE. Sample size may be a limitation, and a higher powered study may help answer this question more definitively.
P 26. NOVEL USE OF RESUSCITATIVE ENDOVASCULAR BALLOON OCCLUSION OF THE AORTA TO STABILIZE A TRAUMA PATIENT WITH CARDIAC CONTUSION
Presenter: Jordana B Herr | University of South Florida
Herr JB, Davis DM

Introduction: Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) stabilizes patients at risk of cardiovascular collapse or circulatory arrest in hemorrhagic shock. REBOA is not indicated for use in cardiogenic shock (CS), but intra-aortic counterpulsation balloons (IACBs) have demonstrated improvement of cardiac function in CS. The following case demonstrates that REBOA can successfully stabilize a patient in CS to achieve an appropriate diagnosis and intervention.

Case: A 29-year-old man involved in a highspeed helmeted motorcycle crash presented to the hospital trauma surgery team. On primary survey, he was alert, normotensive with IV fluid boluses, and tachycardic, with airway patent and muffled breath sounds bilaterally. Secondary survey revealed displaced sternal fractures and pelvic, rib, and left-sided long bone fractures. Focused Assessment with Sonography in Trauma was negative. Shortly after fluid bolus, he became hypotensive to 60/30 with tachycardia prior to imaging. Repeat ultrasound was suspicious for pneumothorax. Bilateral chest tubes were placed. He remained hypotensive, despite vasopressive medications and continued fluid resuscitation. REBOA was deployed in zone I of the aorta with immediate improvement of blood pressure. The balloon was repositioned in zone III, and the patient maintained hemodynamic stability. CT revealed no significant thoracic, abdominal, or pelvic bleeding. A PA catheter was placed and numbers were consistent with cardiogenic shock. Final diagnosis was myocardial contusion due to blunt thoracic trauma. He was maintained with aggressive fluid resuscitation and appropriate vasopressor support, and the REBOA catheter was able to be removed in the ICU.

Discussion: Blunt cardiac injury occurs in about 75% of blunt chest traumas, most commonly from motor vehicle collision. Cardiac contusion is a wall motion abnormality of the ventricles following blunt thoracic trauma without a myocardial infarction. IACBs in patients with CS after myocardial infarction have initially decreased heart strain and improved cardiac output. This patient was temporized with REBOA similarly to IABCs, allowing for imaging, obtaining the correct diagnosis, and initiating the correct treatment. He may have otherwise undergone an exploratory laparotomy for hemodynamic instability in the setting of trauma. This patient was able to avoid an unnecessary procedure that would have placed unnecessary cardiac stress while also reducing cardiac demand and end organ malperfusion. This case demonstrates that REBOA can successfully temporize the effects of cardiac contusion to allow for proper diagnosis and treatment.
P 27. THIGH BURNS FROM ELECTRONIC CIGARETTE LITHIUM ION BATTERY COMBUSTION: A CASE STUDY AND REVIEW OF THE LITERATURE
Presenter: Joseph Costa MD | Staten Island University Hospital Northwell Health
Cooper M, Costa J, Champion N, Long K

Introduction: Electronic cigarette (EC) devices have gained significant popularity over the past 12 years as an alternative to conventional cigarette smoking. Many of these devices are constructed and assembled in foreign countries without standardization or federal safety regulations. With the increasing use of ECs, there has been an increasing incidence of spontaneous battery combustion resulting in burn injuries. This case study presents two instances of spontaneous lithium-ion battery explosion injuries that occurred while the device was held in the users’ front pants pocket. The resulting injuries were second and third-degree flame burns to the lower abdomen, groin, and thigh.

Methods: A literature review was conducted using the PubMed database to search for additional cases of electronic cigarette burns published in the last five years.

Results: The search resulted in 17 articles referencing 136 cases of primarily thermal injury from flame burns. The average total body surface area (TBSA) burned was 4%, most commonly involving the right thigh and groin. Extensive burn injuries were managed with excision and skin grafting while less extensive injuries were managed with non-excisional debridement and local wound care.

Conclusion: Despite the numerous case reports, there have been no significant changes in the construction and use of these devices. EC burn injury is an emerging public health concern and providers must continue to familiarize themselves with the associated injury potential of ECs and their underlying treatment. This case report is unique in the extent of photo documentation of burn injuries as demonstrated by the numerous figures highlighting the device, clothing, and burn injuries at presentation, intraoperatively, and postoperatively.

| Table 1 Literature review of electronic cigarette battery combustion injuries from 2016-2019 including our patient cases |
|---|---|---|---|---|---|---|
| Author(s) | Date | Cases (n) | Avg. Age (Range) | Sex (M/F) | Avg. TBSA (% Range) | Mechanism of Injury |
| Nicol KI, et al | Mar-16 | 2 | 39, 39 | 2M | 3.5 (3-4) | Flame burns |
| Bahr L, et al | Sep-16 | 1 | 24 | 1M | 8 | Flame burns |
| Brownson EG, et al | Oct-16 | 15 | N/A | N/A | N/A | Mostly flame burns, chemical burns, blast injuries |
| Cason M, et al | Nov-16 | 1 | 23 | 1M | N/A | Flame burn |
| Archambault BA, et al | Nov-16 | 1 | 59 | 1M | N/A | Flame burn and blast injury |
| Hassan SK, et al | Dec-16 | 1 | N/A | N/A | (2-5) | Mixed chemical burns and flame burns |
| Jiward AE, et al | Jan-17 | 10 | 27 (18-46) | 9M, 1F | 5.95 (1-27.25) | Flame burns |
| Patterson SB, et al | Jan-17 | 2 | 44 (41, 46) | 2M | 0.75 (0-5) | Flame burns |
| Foran, et al | Apr-17 | 1 | 30 | 1M | <1 | Flame burn, high pressure injection injury |
| Arnaout A, et al | Jul-17 | 2 | 35 (22-63) | 13M, 1F | 2.5 (0.5-7) | Mostly flame burns |
| Treid D, et al | Jul-17 | 3 | N/A | 3M | 8 (5-13) | Mostly flame burns |
| Hickery S, et al | Aug-18 | 14 | 28 (19-50) | 13M, 1F | 4.7 (1-10) | Mostly flame burns |
| Harshman JI, et al | Oct-18 | 2 | 34 (31-36) | 2M | 7 (3-11) | Flame burns |
| Manapa T, et al | Oct-18 | 8 | 25 (17-47) | 8M | 8 (4-16) | Mostly flame burns |

**Totals:**
- 138 cases
- 33 cases
- 105M, 10F
- 4.00 (0.5-27.25)

TBSA: total body surface area, LWC: local wound care
**P 28. CLINICAL FACTORS LEADING TO DELAYED RETURN TO WORK AFTER BLUNT CHEST INJURY: A SURVEY OF TRAUMA PATIENTS**

Presenter: Mary Kate Bryant MD | WakeMed Health & Hospitals

*Bryant MK, Reynolds K, Brittain C, Udekwu P*

**Introduction:** Minimal data exists regarding return to work (RTW) after trauma, which can be used as a benchmark of functional recovery. This study investigated factors leading to delayed RTW and quality of life after blunt chest injury.

**Methods:** We conducted a survey of patients with 3 or more rib fractures and length of stay 3 or more days at a level one trauma center from 2014-2016. Survey data was combined with clinical data from the trauma admission. Chi squared tests and univariate linear regression models were used to compare demographics and clinical outcomes.

**Results:** Of 324 patients recruited, 79 (24.4%) completed the survey (mean age 56.1 y [14.2]; mean injury severity score (ISS) 14.9 [6.6]). No significant differences between survey responders and non-responders existed, except gender (46.8% female vs. 29.5%, respectively, p=0.005). Median time to RTW was 4.9 [5.3] months. Patients who RTW >3 months had a mean 7.6 day longer hospital stay (p=0.001, 95% CI 3.50,11.67) and 3.4 more rib fractures (p=0.007, 95% CI 1.02,5.83) than those with RTW.

**Conclusion:** This study quantifies the patient, injury, and hospitalization factors leading to delayed return to work and long-term functional impairment after rib fractures. Patients should be educated on the prognostic factors which can prolong their physical recovery after blunt chest trauma.
Table 1. Survey response data (n=79) on return to work and functional status after blunt chest trauma

<table>
<thead>
<tr>
<th>Description</th>
<th>Survey Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean number of years between discharge and survey</td>
<td>4.21 [SD 0.66]</td>
</tr>
<tr>
<td>Employed prior to trauma*</td>
<td>45 (57.0)</td>
</tr>
<tr>
<td>Retired prior to trauma*</td>
<td>27 (34.2)</td>
</tr>
<tr>
<td>Employed after trauma</td>
<td>34 (43.0)</td>
</tr>
<tr>
<td>Retired after trauma</td>
<td>29 (36.7)</td>
</tr>
<tr>
<td>Changed employment status after trauma</td>
<td>19 (24.0)</td>
</tr>
<tr>
<td>Returned to work in 3 months or less</td>
<td>20 (55.6)</td>
</tr>
<tr>
<td>Returned to work after greater than 3 months</td>
<td>16 (44.4)</td>
</tr>
<tr>
<td>Change in job duties due to injury</td>
<td>11 (31.4)</td>
</tr>
<tr>
<td>Median months return to independent ADL**</td>
<td>3.0 [IQR 1.5-4]</td>
</tr>
<tr>
<td>ADL function stable after injury</td>
<td>48 (61.5)</td>
</tr>
<tr>
<td>ADL function worse after injury</td>
<td>30 (38.5)</td>
</tr>
<tr>
<td>Received outpatient PT** or OT** services</td>
<td>56 (72.7)</td>
</tr>
<tr>
<td>Overall self-reported health at time of survey:</td>
<td></td>
</tr>
<tr>
<td>Excellent or Very good</td>
<td>28 (37.3)</td>
</tr>
<tr>
<td>Good</td>
<td>30 (40.0)</td>
</tr>
<tr>
<td>Fair or Poor</td>
<td>17 (22.7)</td>
</tr>
<tr>
<td>In the past month:</td>
<td></td>
</tr>
<tr>
<td>Limited in daily activities because of physical health</td>
<td>38 (50.0)</td>
</tr>
<tr>
<td>Limited in daily activities because of mental health</td>
<td>18 (24.3)</td>
</tr>
<tr>
<td>Accomplished less than planned because of physical health</td>
<td>37 (49.3)</td>
</tr>
</tbody>
</table>

*Remaining patients disabled or unemployed

**ADL=activities of daily living; PT=physical therapy; OT=occupational therapy
Introduction: The most recent Western Trauma Association guidelines advocate computed tomography angiography (CTA) for any suspected vascular or aero-digestive injuries in all zones and give zone II injuries special consideration. However, multiple recent studies demonstrated the safety of CTA implementation in a “no zone” approach where management is based on clinical presentation (hard vs. soft signs). The aim of this systematic review is to examine the diagnostic accuracy of CTA in the “no zone” approach in stable patients with penetrating neck trauma.

Methods: An electronic search of three databases (PubMed, Medline, Cochrane Review) identified 115 records from 2000-2017 using the keywords “penetrating neck injury,” “penetrating neck trauma,” “penetrating cervical” combined with “CTA,” “computed tomography angiography.” A meta-analysis was not performed due to substantial heterogeneity in methods across the studies.

Results: A total of 5 prospective and 8 retrospective studies meet the inclusion criteria. The sensitivity of CTA ranged from 83 to 100%; specificity, 61 to 100%; positive predictive value, 30 to 100%; negative predictive value, 90 to 100% (Table). Three studies reported high sensitivity and specificity for the detection of vascular injuries, but low specificity for aero-digestive tract injuries. When stratified by clinical presentation, CTA has a sensitivity of 89.5 to 100% and specificity of 61 to 100% in stable patients presenting with soft signs. In a mixed group of stable patients with either hard signs or soft signs, the sensitivity of CTA is 94.4 to 100% and specificity is 96.7 to 100%. Among patients presenting with hard signs, the sensitivity of CTA is 78.6 to 90% and specificity is 100%.

Conclusion: Computed tomography angiography demonstrated a reliable high sensitivity and specificity for detecting injuries in penetrating neck trauma in stable patients. Unstable patients with hard signs should always undergo immediate neck exploration. Only select stable patients with hard signs might benefit from CTA. These results support the management of penetrating neck trauma using “no zone” approach” based on physical examination and the use of CTA in stable patients.
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Study Type</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
<th>PPV (%)</th>
<th>NPV (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ibraheem</td>
<td>2018</td>
<td>Retrospective</td>
<td>90</td>
<td>100</td>
<td>100</td>
<td>90</td>
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<tr>
<td>Madsen</td>
<td>2016</td>
<td>Retrospective</td>
<td>94.4</td>
<td>96.7</td>
<td>87.2</td>
<td>98.7</td>
</tr>
<tr>
<td>Madsen</td>
<td>2016</td>
<td>Retrospective</td>
<td>95.3</td>
<td>97.2</td>
<td>87.1</td>
<td>99.1</td>
</tr>
<tr>
<td>Bodanapally</td>
<td>2016</td>
<td>Retrospective</td>
<td>92</td>
<td>89</td>
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<td>--</td>
</tr>
<tr>
<td>Schroll</td>
<td>2015</td>
<td>Retrospective</td>
<td>83</td>
<td>100</td>
<td>100</td>
<td>94</td>
</tr>
<tr>
<td>Prichayudh</td>
<td>2015</td>
<td>Retrospective</td>
<td>100</td>
<td>61</td>
<td>30</td>
<td>100</td>
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<tr>
<td>Van Waes</td>
<td>2012</td>
<td>Prospective</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Inaba</td>
<td>2012</td>
<td>Prospective</td>
<td>100</td>
<td>97.5</td>
<td>81.5</td>
<td>100</td>
</tr>
<tr>
<td>Osborn</td>
<td>2008</td>
<td>Retrospective</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Inaba</td>
<td>2006</td>
<td>Prospective</td>
<td>100</td>
<td>93.5</td>
<td>70.6</td>
<td>100</td>
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<tr>
<td>Woo</td>
<td>2005</td>
<td>Retrospective</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Munera</td>
<td>2002</td>
<td>Prospective</td>
<td>100</td>
<td>98.6</td>
<td>92.8</td>
<td>100</td>
</tr>
<tr>
<td>Munera</td>
<td>2000</td>
<td>Prospective</td>
<td>90</td>
<td>100</td>
<td>100</td>
<td>98</td>
</tr>
</tbody>
</table>
P 30. CANNULATION FOR VENOVENOUS EXTRACORPOREAL MEMBRANE OXYGENATION AFTER LIGATION OF THE INFERIOR VENA CAVA IN A BLUNT TRAUMA PATIENT  
Presenter: Katherine M Kelley MD | University of Maryland School of Medicine  
Kelley KM, Bittle G, Scalea T, Kaczorowski D, Galvagno S, Menaker J, Lauerman M

Introduction: A 31 year old male pedestrian was brought to our facility via helicopter after being struck by a truck. He was intubated in the field, was hypotensive en route, and arrested on arrival. Bilateral chest tubes and zone 1 resuscitative endovascular balloon occlusion of the aorta (REBOA) were placed with return of spontaneous circulation. Emergency exploratory laparotomy identified a splenic hilar injury and a zone 1 retroperitoneal hematoma. He had a splenectomy. Retroperitoneal exploration revealed an infrarenal IVC injury. The IVC injury extended posteriorly and was associated with large volume hemorrhage. An initial attempt at primary repair failed and the IVC was then ligated. Progressive intraoperative difficulty with ventilation and oxygenation worsened by the completion of the case. Bronchoscopy demonstrated copious frothy secretions. An extracorporeal membrane oxygenation (ECMO) consultation was obtained. A head CT showed small epidural and subarachnoid hematomas. Based on the patient’s high ventilatory support and poor gas exchange he was cannulated for venovenous ECMO (VV-ECMO). Because the patient’s IVC was ligated, VV-ECMO cannulation was performed via the right IJ vein utilizing a single double lumen catheter placed under fluoroscopic guidance. His respiratory failure improved and he was decannulated from ECMO on HD 10. The patient had a prolonged ICU course with an open abdomen requiring multiple operative procedures and eventual vicryl mesh placement with an overlying skin graft. He was discharged from the hospital on HD 91.

Ligation of the infrarenal IVC, as was necessary in this case, can be required in complex IVC injuries with large volume hemorrhage and hemodynamic instability. Once the infrarenal IVC is ligated, the ability to utilize central venous access is limited, particularly from the femoral veins. Typical VV-ECMO cannulation involves two large bore venous cannulas placed using either femoral-femoral or femoral-jugular configurations. A single dual lumen catheter, which can be placed in the internal jugular vein, can provide both inflow and outflow support for VV-ECMO. ECMO use in patients after trauma, including minor brain injury, is well described, however, there are no cases in the literature of patients requiring ECMO cannulation after the IVC has been ligated. Use of this technique may facilitate care of other patients with a similar severe injury pattern.
Introduction: Lumbar hernias may be congenital or acquired. The majority of acquired lumbar hernias occur spontaneously. Acute traumatic lumbar hernia is an uncommon form of acquired lumbar hernia that most frequently occurs secondary to blunt abdominal trauma, usually in restrained passengers in motor vehicle collisions. Management strategies vary widely and both timing and method of closure remain controversial.

We present a case of colonic transection through a large lumbar hernia secondary to blunt abdominal trauma.

A 77-year-old female presented to the emergency department via EMS immediately following a motor vehicle collision where she was the restrained backseat passenger. She was hemodynamically stable on arrival and her only complaint was abdominal pain. Physical exam was significant for abdominal tenderness, abdominal seatbelt sign, and tenderness over the thoracic spine. A computed tomography (CT) scan of her abdomen and pelvis demonstrated multiple acute traumatic injuries including a left diaphragmatic rupture with herniation of a portion of the gastric fundus into the left hemithorax and bilateral acute traumatic lumbar hernias with descending colon transection at the level of the large left lumbar hernia. The CT scan also showed active hemorrhage of the sigmoid mesentery with moderate sized hemoperitoneum and small scattered foci of pneumoperitoneum. Shortly after the CT scan was obtained, the patient became hemodynamically unstable so she was taken to the emergently to the operating room for a laparotomy. The patient underwent an exploratory laparotomy with resection of the transected sigmoid colon, left in discontinuity, and repair of the 5 x 3 cm diaphragmatic defect. A few hours after the initial operation, she was noted to have an increasing lactate and pressor requirement and so was taken back to the operating room for re-exploration. The only significant findings on re-operation were signs of devascularization and early necrosis in her retroperitoneum. She continued to deteriorate clinically and progressed to multi-system organ failure. Family ultimately decided to withdraw care.

This case demonstrates a rare acquired lumbar hernia with associated colonic transection after blunt abdominal trauma. Although in this patient an arrival CT scan showed a colonic dissection, mesenteric bleeding, and scattered foci of pneumoperitoneum, suspicion should be raised for an associated intestinal injury when patients present with acquired lumbar hernias after traumatic injury.
Introduction: Borderline ovarian neoplasm refers to a group of ovarian tumors that do not display overt malignant features but that can occasionally have intraperitoneal spread. Ovarian neoplasms are commonly discovered incidentally on imaging studies performed for other reasons. We present a case of a patient with an undiagnosed pelvic mass who presented with tumor rupture and hemorrhagic shock following a ground level fall.

Case Presentation: A 71 year old female with congestive heart failure, hypertension, and chronic kidney disease presented following a ground level fall. Patient had a reported Glasgow Coma Score of 15 but quickly deteriorated and was intubated. She was noted to have a distended, firm abdomen and hypotensive requiring inotropic agents. Initial hemoglobin was measured at 4.8 g/dL. FAST exam was performed and negative for free intraabdominal fluid. CT imaging was obtained which revealed large volume intraabdominal fluid and large pelvic mass. Patient was taken to the operating room emergently for exploration. A large pelvic mass was encountered in the abdominal cavity with a significant amount of clotted blood and mucin. An area of perforation was noted along the wall of the tumor with small amount of venous bleeding. The area was packed with lap sponges and the patient was transferred to ICU for ongoing resuscitation. Following ICU transfer, the patient had cardiac arrest with ROSC after a round of CPR. Afterwards, it was noted that there was increased output from the abdominal wound vac with continued hemodynamic instability. Patient then underwent re-exploration at the bedside and excision of the mass. The patient was severely coagulopathic requiring ongoing resuscitation and after a conversation with the family, she was made comfort care. Final pathology revealed a mucinous borderline ovarian tumor with squamous differentiation and intraepithelial carcinoma measuring 27.4 cm.

Conclusion: While cystic ovarian neoplasms are not overly rare and often an incidental diagnosis, this case report demonstrates an unusual presentation following blunt abdominal trauma. This case emphasizes the need to keep a broad differential for free intraperitoneal fluid following blunt abdominal trauma.
Introduction: To teach high school students in a rural community the STOPTHEBLEED course by developing "Student Leaders" through the Future Business Leaders of America (FBLA)

Methods: FBLA is the largest career student business organization in the world teaching high school students about community service. North Dakota has one of the highest death rates from motor vehicle crashes in the nation in part because it is so rural. Two members of the FBLA in a community of 997 people became aware of the STOPTHEBLEED program and decided that it should be taught to all members of their high school. They set up a program strategy which included meetings with the principle, trauma surgeon, EMS staff and teachers. They prepared permission papers sent to all parents, prepared evaluation forms for the program and collected and analysed the data.

Results: A total of 115 students (graded 9 - 12) attend the rural high school. 97 students were given permission by their parents to attend the class. 8 staff members also attended for a total of 105 attendees. All 105 completed the evaluation forms. 80% would attend future events. Only 18% of the respondents had heard of the program prior to the day it was given at the school.

Conclusion: High school students were very receptive to the STOPTHEBLEED program. Because of the success, the 2 FBLA students are now organizing the course to be presented at the neighboring rural communities working with other FBLA students. They are also submitting a business plan to obtain a grant so the kits may be given at subsequent program.

The development of "student leaders" for STOPTHEBLEED is an effective way to further educate citizens about the importance of this program.
Introduction: A hepatic arterioportal fistula (APF) is an abnormal communication between the hepatic artery and the portal vein. APFs are more commonly an acquired condition from blunt hepatic trauma or an iatrogenic procedural injury. While smaller fistulae may be asymptomatic, larger APFs may present with a combination of abdominal pain, hemobilia, gastrointestinal bleeding, portal hypertension, and/or right-sided heart failure. The preferred management of an APF is selective embolization via an endovascular approach. This report describes a patient who developed an APF requiring endovascular embolization two days after undergoing hepatorrhaphy with suture repair of the portal vein after sustaining a penetrating stab wound to the abdomen.
P 36. IMPACT OF THE MECHANISM OF TRAUMATIC DONOR DEATH ON ABDOMINAL ORGAN RECIPIENT OUTCOMES

Presenter: Abigail Arcement BA | University of Mississippi Medical Center
Arcement A, Carter KT, Kutcher ME, O’Brien R, Koller F, Copeland H

Introduction: With the ever increasing demands of the transplant waiting list, a need exists for expansion of the deceased donor pool. Many studies have compared outcomes following organ donation after cardiac vs brain death, but few have focused on varying donor mechanisms of death. Despite this, donor mechanism of death appears to play a role in determining acceptance or rejection of donor kidneys, livers, and pancreata. The purpose of this study is to determine if donor mechanism of death plays a role in survival after abdominal transplant.

Methods: The United Network for Organ Sharing (UNOS) database was retrospectively reviewed from 1/2007-03/2018 for donor livers, pancreas, and kidneys. After excluding multiorgan transplant recipients and extremes of age (donor < 15 years(y), recipient < 18y), 56,835, 2,312 and 72,044 patients receiving liver, pancreas, and kidney transplants, respectively, were identified. Recipient survival by donor death mechanism over the included ten-year follow-up period was evaluated via random survival forests, a flexible nonparametric tree-ensemble method for analysis of survival data.

Results: For liver transplants, the median, 25th, and 75th percentiles for age were 44y (28y, 55y) for donors and 57y (50y, 62y) for recipients; 41% of donors were female as were 32% of recipients. For pancreas transplants the median, 25th, and 75th percentiles for age were 23y (19y, 30y) for donors and 43y (36y, 50y) for recipients; 31% of donors were female as were 49% of recipients. For kidney transplants, the median, 25th, and 75th percentiles for age were 37y (26y, 47y) for donors and 52y (42y, 61y) for recipients; 38% of donors were female as were 40% of recipients.

For liver transplant, rejection of donor organ was highest for cardiovascular-related deaths (12%) and lowest in the few electrical deaths (0%); the pancreas was rejected most from donors who died related to stroke (37%) and fewest from the handful of electrical deaths (17%); and kidneys were rejected most from those who died of cardiovascular causes (13%) and least from the handful of electrical deaths (0%). Donor mechanism of death did not significantly predict organ acceptance or rejection for donor livers, pancreases, or kidneys, nor was it predictive of recipient survival (Figure 1).

Conclusion: Donor mechanism of death does not affect recipient survival following liver, pancreas, or kidney transplant, and should not generally factor into decisions about organ acceptance.
Figure 1. Survival curves for donor mechanism of death for liver (A), pancreas (B), and kidney (C) transplants.
Introduction: To evaluate the use of paravertebral analgesia in the elderly population with traumatic rib fractures compared to the use of IV/PO narcotics and epidural analgesia.

Methods: This is a retrospective study of 304 patients seen at Ascension Genesys Hospital Trauma Center (Level II) between 2015-2017 with rib fractures. Patients admitted with multiple rib fractures upon admission to the trauma unit were offered paravertebral analgesia in the management of their pain. 78 patients were included in this group. 206 patients remained on narcotics (Combination IV/PO) only and 20 patients received EPI.

Paravertebral analgesia (PVA) pump using bupivacaine (0.5%) was calculated by the pharmacy department. The pump remained inserted for one to two weeks, with reinstallation of bupivacaine as needed.

Pain was measured as self-reported based on a numerical rating scale (0-10) and the averages were calculated for each patient over their admission. These included pre-insertion pain score, the average pain score post insertion, and final pre-discharge pain score. The change in pain was analyzed by two-way ANOVA.

Results:
- 304 patients with rib fractures
- 206 patients received narcotics in the form of IV and/or PO
- 78 patients received the PVA inserted at bedside
- 20 patients received EPI analgesia
- No statistical difference between age, sex, ISS score, GCS score, ICU stay, length of stay, number of rib fractures, associated injuries or co-morbid conditions between the three groups

Conclusion: Paravertebral analgesia using bupivacaine containing release pumps is an effective and safe alternative method to managing elderly patients with rib fractures and can potentially reduce the use of narcotic pain medications.
Introduction: A 61-year old male with a 6 month history of dysphagia was diagnosed with T3N0M0 esophageal cancer and underwent neoadjuvant chemoradiation. He underwent robotic-assisted Ivor Lewis esophagectomy with feeding jejunostomy tube placement. On postoperative day 13 he developed vomiting and hypoxia. Bronchoscopy revealed a fistula between the left mainstem bronchus and gastric conduit. He was placed on venous-venous ECMO that day. On postoperative day 14, he underwent right thoracotomy, takedown of bronchoesophageal fistula, completion esophagectomy, and gastrostomy tube placement. He was managed on vv-ECMO for 15 days. He was eventually discharged and underwent colonic interposition reconstruction 7 months later. Incidence of post-esophagectomy trachea-bronchial-esophageal fistula in reported literature ranges from 0.26-3.15%. There have been several reports of using venovenous ECMO to stabilize a patient before operative repair of an airway injury, as well as continued postoperative ECMO with limited PEEP. To our knowledge, there have been no guidelines published regarding how to supportively manage these repairs perioperatively using ECMO and mechanical ventilation. This patient was managed with low PEEP to allow healing of the repair.
Introduction: Aberrant right subclavian artery (ARSA), usually originating from the descending aorta distal to the left subclavian and presenting in 0.5-2% of the general population, can affect perioperative planning for thoracic endovascular aortic repair (TEVAR).

Methods: A 59-year-old woman presented with a chronic type B aortic dissection. CT showed a 7cm fusiform enlargement of the descending aorta beginning at the origin of the left subclavian artery, with the dissection beginning just distal to the origin of the ARSA and the aneurysm involving the ostium. TEVAR approach would require a landing zone proximal to the take off of the left subclavian and ARSA. A three-staged approach requiring bypass of both subclavians was thought to be the safest option.

Results: Stage 1: Left subclavian bypass. A left carotid to left subclavian artery bypass was performed with an 8 mm GORE PROПATEN graft through a left carotid neck incision and a supraclavicular incision. The proximal subclavian artery was ligated in order to prevent retrograde flow to the aneurysm.

Stage 2: Right subclavian bypass. Three days later a right carotid to ARSA bypass was performed in a similar fashion as described above.

Stage 3: TEVAR. One week after her first operation a TEVAR was performed. Arterial access was gained through femoral artery cut down. An aortic stent was placed with a landing zone proximal to the left subclavian take off. Intra-operative fluoroscopy and post-operative CT scan showed stent in good position.

Post-operative course: Patient was transitioned to an inpatient rehab facility shortly after her final operation and discharged home a few weeks later.

Conclusion: Due to the infrequency of ARSA in patients with aortic aneurysm, limited data is available regarding the ideal surgical approach. While revascularization of the subclavian artery remains controversial in routine TEVAR repair with normal anatomy, little is known about the risks and long-term consequences of stenting over an ARSA. With an endovascular method having been proven to reduce perioperative mortality and length of hospital stay, it is important to ascertain what the best TEVAR approach would be in these patients.

ARSA is a rare anatomic anomaly that affects perioperative planning for TEVAR. There is a paucity of evidence in the medical literature regarding endovascular repair in these patients. In this case report, we present a successful three-stage endovascular repair of a thoracic aortic aneurysm involving bilateral subclavian bypass in a patient with ARSA.
**Introduction**: Intrapericardial diaphragmatic hernias are exceedingly rare. Most cases are attributed to blunt trauma of the chest or abdomen; iatrogenic causes, such as after a pericardial window, are even more infrequent.

In this case report we present a 61-year-old male who presented with an intrapericardial hernia following a previous operation with creation of a pericardial window.

**Results**: A 61-year-old man was admitted to the General Surgery service for a large right lower lobe squamous cell carcinoma with invasion into the pulmonary vein. He had previously undergone a left pneumonectomy for squamous cell carcinoma which was complicated by a benign pericardial effusion, requiring a pericardial window. This subsequently resulted in a diaphragmatic hernia with herniation of omentum and colon into the pericardial cavity through the previously created pericardial window. The patient was then taken to the operating room for a diaphragmatic hernia repair with mesh reconstruction. The patient had an uneventful postoperative course and was discharged home the following day.

The patient returned for follow up 2 weeks post-operatively in clinic and had no apparent issues at that time.

**Conclusion**: Intrapericardial diaphragmatic hernias are the rarest type of adult diaphragmatic hernias. While indirect blunt trauma is indicated in most cases, an artificially created defect can also allow for an opportunity of abdominal content herniation into the pericardium. Since sequelae of this variant can be life threatening, correction of the hernia should be performed promptly.
Introduction: Bronchobiliary fistulas are associated with high morbidity and mortality. Multiple management strategies have been described in the literature; however, the optimal course has not been well defined. A 31-year-old Hispanic male presented after he sustained a gunshot to the thoracoabdomen. He underwent immediate surgical exploration which revealed injury to the posterior dome of the liver between segments 7 and 8, as well as lateral to the gallbladder fossa, between segments 5 and 6. Additionally, he sustained injury to the right hemi-diaphragm and right colon at the hepatic flexure. He underwent primary repair of diaphragmatic injury, right hemicolectomy with primary anastomosis, small bowel resection, and repair of right liver laceration. His post-operative course was complicated by evisceration, which required multiple returns to the operating room for abdominal washout, temporary closure and wound vac placement. Approximately 28 days after his initial operation, he developed low grade fevers, persistent cough and biliiptysis. CT scan demonstrated a right pleural effusion, a right subphrenic fluid collection and possible communication with the right biliary system (Figure 1A). During IR drain placement, he was noted to have a communication between the two fluid collections. He underwent ERCP, which demonstrated a bronchobiliary fistula. Biliary stent placement temporarily relieved his biliiptysis. Despite upsizing of the stent, he continued to have a persistent productive cough with large volume biliiptysis. He was transferred for definitive surgical intervention.

A latissimus sparing right posterolateral thoracotomy was performed. Immediately upon entrance into the thoracic cavity, he was noted to have a thick rind encasing the right lower and middle lobes. Decortication was performed and the lower lobe was found to be densely adherent to the diaphragm. The fistulous tract was identified, an elliptical incision was made on the diaphragm, and the fistula was followed to segment 7 of the liver. With a probe, the tract was found to connect to the right common hepatic duct. A complete fistulectomy was performed, which included the portions of involved liver and diaphragm. A drain was placed in the liver defect and multiple additional perihepatic drains were secured. A wedge resection of the right lower lobe was also performed. The entire specimen was removed en bloc. The diaphragmatic defect measured approximately 5 cm in diameter and was reconstructed with a latissimus dorsi flap. Post-operatively, the patient’s symptoms resolved immediately and he remained asymptomatic at his 2 month follow up appointment.
Figure 1 A: Atelectatic right lower lobe communicating with subphrenic fluid collection and right main hepatic duct. B: Hemothorax. Fistula extending through the diaphragm into the right lower lobe of the lung. Black star: lung; black arrow: suture in the diaphragm from original repair. C: Intra-operative photo of diaphragmatic repair with latissimus dorsi flap.
**P 42. VANISHING LUNG SYNDROME REQUIRING BILATERAL SURGICAL INTERVENTION IN A PATIENT WITH HEAVY MARIJUANA USE**

Presenter: James L West MD | Brookwood Baptist Health System
West JL, Flores R, Sultan PK

**Introduction:** Giant bullous emphysema, also known as vanishing lung syndrome (VLS), is a rare condition that is defined as giant bullae that occupy at least one-third of the hemithorax and is present in one or both upper lobes. Marijuana has been implicated as a potential cause of VLS in several case reports. Here we review a case of VLS in a patient with heavy marijuana use and review the limited literature available about surgical options and indications for surgery.

**Methods:** A 27-year-old male with no known medical history presented with shortness of breath. Patient’s tobacco smoking history was negligible but he was a heavy marijuana user. CT scan showed left sided pneumothorax and extensive bilateral giant bullous emphysema. A left video-assisted thoracic surgery (VATS) bullectomy was performed. Chest tubes were removed and patient was discharged a few days after his surgery without supplemental oxygen. Patient presented again with shortness of breath 3 weeks later. Repeat CT scan showed a right-sided pneumothorax. A right upper lobectomy was performed via an open thoracotomy.

**Results:** On post op day 5 from his second operation patient was discharged without supplemental oxygen. Patient was seen in clinic several weeks later and was oxygenating well on room air without any shortness of breath.

**Conclusion:** VATS bullectomy and upper lobectomy via open thoracotomy have both been described as effective treatment of VLS. Several case reports have implicated heavy marijuana use in patients with VLS without other risk factors such as tobacco use. Marijuana inhalation has been shown to have a larger puff volume, greater inhalation depth and a four time longer breath-holding time than tobacco. Studies have shown a dose dependent relationship between marijuana smoking and decline in FEV1. The exact mechanism of VLS is hard to determine due to the rarity of the disease. More research is needed to establish a link between VLS and marijuana use.
P 43. SUCCESSFUL CLOSURE OF A CHRONIC GASTRIC FISTULA CAVITY USING ENDOLUMINAL VACUUM THERAPY
Presenter: Dakota King MD | University of Mississippi Medical Center
King DC, Shaw TB, Moremen JR

Introduction: Vacuum-assisted closure (VAC), a well-established treatment method for superficial infected wounds, is based upon negative pressure applied to the wound via a vacuum-sealed sponge. Endoluminal VAC (E-VAC) therapy is a novel method, and experience with its esophago-gastric applications is limited. Post-operative esophageal and gastric leaks and fistulas present highly morbid, challenging clinical scenarios that often lead to prolonged hospitalization and increased cost and complications. We present a case where E-VAC therapy resulted in closure of a chronic sleeve gastrectomy fistula after multiple failed attempts at surgical and endoscopic closure.

A 42-year-old female underwent laparoscopic vertical sleeve gastrectomy and subsequently developed a leak at the gastroesophageal junction (Angle of His). She then underwent fourteen procedures over the course of three months in attempts to close the fistula. Interventions included multiple endoscopic stents, endoscopic clips, endoscopic suturing, and open surgical revision. She was transferred to our institution for further care. Esophagram and computed tomography (CT) of the area demonstrated a contained 3 x 2 cm cavity from the staple line into the peritoneum.

At initial endoscopic assessment a wide-mouthed fistula was seen with purulent material and multiple foreign bodies (clips, staples, and suture) contained within. Nasogastric tube was passed and gray foam VAC sponge secured to the tip with suture. The sponge was then placed endoscopically into the cavity with fluoroscopic guidance. She underwent a total of five E-VAC changes over thirteen days. After complete visual resolution, a barium esophagram demonstrated closure of the fistula and cavity. She was subsequently started on a liquid diet and weaned from total parenteral nutrition.

In conclusion, E-VAC therapy is a novel technique that has shown promising results at our institution. E-VAC therapy should be considered when managing esophageal or gastric leaks, especially those that have failed other interventions.

Figure 1. Comparison of EGD images before (left) and after (right) E-VAC therapy showing complete resolution of the fistula
P 44. THREE DIMENSIONAL PRINTING USED TO PLAN COMPLEX STERNAL RECONSTRUCTION
Presenter: Patrick Greiffenstein MD | Louisiana State University Health Science Center
Greiffenstein P, Rusnak S, Tumminello M, Green E, Moremen J, Maristany M, Schachner ER

Introduction: Multi-modal approaches for planning complex skeletal reconstruction have been used for decades, including the use of 3-Dimensional (3D) printing for preoperative implant customization. Herein we present the case of a young man with two prior failed attempts at anterior plate osteosynthesis sternal reconstruction following sterno-manubrial fracture and painful nonunion resulting from repeated hardware failure. The patient underwent a third successful reconstructive operation which utilized 3D printing in order to preoperatively contour the surgical implants.

Methods: Preoperative imaging was obtained utilizing 256 slice CT scan (Siemens, Inc.) at 1mm cuts and 3-dimensional digital reconstruction of the bony sternum. Next, scientific visualization software (Avizo, ThermoFisher Scientific) was used to segment an accurate surface model of the sternum, with particular attention to inclusion of the previous screw holes, and printed with the 3D printer. Prior to surgery, a titanium sternal fixation system (DePuy Synthes, Inc.) was used to manually contour the plates onto the 3D model ensuring that the location of the screw holes did not align with the location of the new screws to be implanted in order to avoid a weak attachment. Two longitudinal plates were thus prepared and the implants were then sterilized. On the day of surgery, the sternum was accessed through a midline incision and the sternomanubrial nonunion was debrided to bleeding bone. Cellular bone matrix (Vivigen, DePuy Synthes) was used to supplement healing at the nonunion site. Reduction and fixation was performed using the pre-contoured plates and following the screw pattern as guided by the 3D model in order to avoid existing screw holes.

Results: The patient had an uneventful overnight recovery and was discharged postoperative day one. At 3 months, the patient reported complete resolution of symptoms and return to full activity. Follow-up imaging revealed preserved natural sternal contour, intact hardware, and adequate osteosynthesis.

Conclusion: This case represents the unique challenge of skeletal reconstruction following failed hardware implantation, and one that could not have successfully overcome without the utilization of advanced imaging and modelling technology as well as the combined expertise of several disciplines.
P 45. PEDICLED OMENTUM FLAP AS A SALVAGE METHOD FOR AN INFECTED LEFT VENTRICULAR ASSIST DEVICE
Presenter: Atbin Doroodchi MD | Medical College of Georgia at Augusta University
Doroodchi A, Alsaim H, Favors L, Collars J, Ritter E

Introduction: Left ventricular assist device placement serves as a bridge to heart transplant therapy for patients suffering from heart failure. When these devices become infected, eradication of the infection can be a challenge. Source control along with antibiotic therapy can eradicate the infection; however, it can lead to large soft tissue defect. Herein we present a case where the left ventricular assist device was able to be salvaged with a pedicled omentum flap, where it led to proper salvage of the device.
**P 46. FULL THICKNESS SKIN GRAFTS PROCURED FROM THE LOWER ABDOMEN: IS BIGGER BETTER?**
Presenter: Evan Foulke MD | University of Tennessee Medical Center, Knoxville
Foulke E, Clegg D, Peters D, Johnson M, Lewis J

**Introduction:** Wide local excision (WLE) for skin and soft tissue malignancy is a commonly performed operation. The resulting wounds may be difficult to close primarily, necessitating skin graft. Typically, large defects are reconstructed with split-thickness skin grafts (STSG) or more complex rotational procedures. Donor sites from STSG are painful and often troublesome. Full-thickness skin grafts (FTSG) however are classically limited by surface area and the need to close the donor site. Most FTSG are procured from infraclavicular, posterior auricular, or medial arm skin. Our objective is to present a large series describing the use of lower abdominal skin to allow greater wound surface area coverage.

**Methods:** In this case series we present a retrospective cohort of patients who underwent FTSG at our institution after WLE from 2010 to 2019, which included 314 patients. In the studied group, 148 (47%) of the patients had their skin graft harvested from the lower abdomen, while 166 (53%) patients had their graft harvested from another location. We used this cohort to compare overall wound size and rates of complication between the two groups.

**Results:** The average size of the wound defects repaired with the lower abdomen FTSG was 31.26 cm², while the average size of the wound defects repaired with FTSG from other harvest sites was 17.05 cm². The overall rate of all surgical complications of FTSG harvested from the lower abdomen was 16% (n=24), which included 7 graft failures (4.7%). This was compared to the failure of 6 (3.6%) grafts from other locations. The most common complication in both cohorts was the development of a post-operative seroma at the donor site. Other common complications included local infection, eschar, and graft failure. There was no statistically significant difference (p=0.35) in the rates of overall surgical complications between the two groups when compared.

**Conclusion:** The lower abdominal skin may be a suitable coverage source for larger defects when a full thickness skin graft is deemed necessary. Complications and outcomes are similar to other FTSG sources. We propose this method as a safe and straight-forward alternative for repairing large defects with cosmetically pleasing outcomes.
Introduction: A 58-year-old man presented to the emergency department with complaints of worsening right knee pain and swelling after sustaining a trauma three days prior. He had significant pain with range of motion and elevated inflammatory markers. Computed tomography (CT) of the right lower extremity showed nonspecific inflammatory changes of the subcutaneous tissues, a moderately sized suprapatellar joint effusion, and inflammatory changes within the vastus medialis muscle. Aspiration of the right knee was performed with return of purulent output. Patient was empirically started on broad spectrum antibiotics. Culture from the synovial aspirate grew Group A strep (GAS).

The patient was taken by the orthopedic surgery team to the operating room the following morning where an open right knee arthrotomy was performed with irrigation and debridement of the knee. The purulence was noted to track from the knee, proximally along the lateral thigh. A second lateral thigh incision was made in an attempt for complete debridement. Despite this surgical intervention the patient continued to worsen over the next 12 hours. During this time, the patient's skin became mottled and ischemic. The general surgery service was asked to assist in radical debridement of an evolving necrotizing fasciitis of the patient’s right leg. During the radical debridement, the subcutaneous tissue was nonviable, fascia was necrotic, and purulence was noted within and throughout the vastus lateralis and vastus medialis muscles (Figure 1 A-D). Despite aggressive debridement and intensive care unit care, the patient developed multi-system organ failure and expired within 72 hours of initial presentation.

To the best of our knowledge, necrotizing fasciitis as a sequela of septic arthritis in otherwise healthy individuals has only been previously reported once in the literature. The clinical diagnosis requires an incredibly high index of suspicion, particularly in the setting of an aspiration confirmed septic joint. Exam findings are erythema, swelling, induration, and pain, although skin changes of necrotizing fasciitis may not be present early. Additionally, clinicians should not be reassured by nonspecific findings on imaging. This case highlights the importance of early diagnosis, intervention and involvement of a multidisciplinary team with experience performing the necessary radical soft tissue debridement, as well as those equipped with the critical care capabilities to execute aggressive resuscitation, nutritional supplementation, and antibiotic therapies.
Introduction: Background: Historically the treatment of fistula was either non-operative controlling the leakage with ostomy bags, diet restriction and parenteral nutrition, or open surgical treatments. Leakage from bowel perforation was treated with drainage or surgery also. In recent years, endoscopy has gained favor in a multitude of domains due to the reduced morbidity and mortality associated with endoscopic versus open technique, and the high failure rate of fistula healing spontaneously. To a limited extent, over the scope clips have been employed to close fistulae and leaks for some years; though the role of the Padlock Clip™ system had not been widely elucidated. Porcine models demonstrate the Padlock Clip™ is a safe and effective way to address fistulae and perforations, but had heretofore not been used in human patients for these indications. Summary: We report on a series of 4 consecutive cases by a single surgeon between May and June 2019. In these cases we utilized the Padlock Clip™ to repair 2 colonic leaks, and 2 gastrocutaneous fistulae. Conclusion:

Conclusion: We report success with the Padlock Clip™ in gastrointestinal leak and fistula repair of all four patients with no significant untoward events. We recommend the use of the Padlock Clip™ as a safe and effective alternative to an open approach to address such anatomical defects due to the improved known healing time and infection rates associated with endoscopic approaches and in the setting of successful repair.
Introduction: Gastrointestinal bezoars refer to collections of incompletely digested material within the alimentary tract and are typically classified by their contents. Phytobezoars refer to fibrous non-digestible mater from fruits and vegetables. Trichobezoars consist of indigestes hair. Lactobezoars are formed of milk and milk products. Pharmacobezoars are the results of copious intake of medication. Clinical presentations in patients with phytobezoars depend on the type, location within the gastrointestinal tract and predisposing factors.

Case 1: 67 year old male presented with left sided abdominal pain for two days associated with emesis. Imaging showed a bezoar in the duodenum and previously undiagnosed malrotation of the small intestine. EGD confirmed a phytogenic bezoar and patient was treated with digestive enzymes and diet coke. Repeat imaging showed decreasing bezoar size with complete resolution hospital day ten.

Case 2: 68 year old male presented with emesis for one week after he had stopped taking his HIV medications and increased his methadone dose. Imaging was concerning for a malignant obstruction. A phytobezoar in the distal duodenum causing an obstruction was seen on EGD. Patient was started on diet coke and cellulose TID. Final pathology resulted as non-Hodgkin’s B cell of duodenum. Patient was lost to follow up.

Case 3: 43 year old female with epigastric abdominal pain associated with bilious emesis and fifteen pound weight loss. Imaging showed a gastric bezoar, a closed loop obstruction and a lytic lesion in right 8th rib and S1. EGD showed malignant diffuse non-Hodgkin lymphoma in mid jejunum. Patient underwent one cycle of chemotherapy and was re-admitted to the hospital in septic shock secondary to severe Clostridium difficile infection. Imaging was negative for obstruction but showed possible peritoneal carcinomatosis. Patient had MOSF and expired that hospital admission.

Clinical Significance/Implications: Gastrointestinal bezoars are clinically significant as they can lead to serious medical complications such as small bowel obstruction, bowel ischemia or perforation. The treatment options for bezoar include chemical dissolution with Coca Cola, endoscopic fragmentation and removal and surgery via enterotomy or a milking technique. More interestingly, treatment of bezoars can sometimes lead to the uncovering of underlying pathology as demonstrated above. The need for continued patient workup in an attempt to ensure that there is no underlying pathology once the bezoar is treated is underscored by this case report.
P 51. NECROTIZING SOFT TISSUE INFECTION AFTER INTRAVENOUS DRUG INJECTION: A MULTIDISCIPLINARY APPROACH TO SURGICAL MANAGEMENT AT A COMMUNITY HOSPITAL
Presenter: Karolin E Ginting MD | The Jewish Hospital Cincinnati
Ginting KE, Caparelli ML, Kundu N

Introduction: Necrotizing soft tissue infection (NSTI) is a clinical diagnosis that carries a high rate of morbidity and mortality. High suspicion for NSTI with early surgical debridement remains the gold standard of care. Diagnosis may be challenging due to non-specific clinical features (e.g., soft tissue edema and erythema), especially in intravenous drug users (IVDU) who may be misdiagnosed with non-purulent cellulitis. Furthermore, NSTI can be complicated by deep vein thrombosis (DVT) especially in IVDU due to involvement of vasculature. Here, we describe a case of upper extremity NSTI in IVDU complicated with ipsilateral DVT. We highlight the importance of rapid recognition of NSTI with early surgical consultation and wide debridement. We also demonstrate that complex NSTI can be managed safely with optimal outcomes in a community hospital utilizing a multi-disciplinary approach.

Case presentation: A 23-year-old male presented with 3 days of left upper extremity pain after injecting cocaine mixed with Kool-Aid® into the antecubital fossa. He was admitted to the medical service and treated for cellulitis. Computed tomography (CT) scan was obtained on hospital day 3 for worsening erythema and showed subcutaneous gas. General surgery was consulted and the patient underwent emergent debridement of the left upper extremity (43 x 26 cm, figure 1). Plastic surgery was consulted and he underwent serial debridement every 1-2 days (x5) and application of instillation wound vacuum. Antibiotics covered Klebsiella pneumoniae and Prevotella denticola obtained from surgical tissue cultures. He was also found to have left brachial vein thrombosis and was placed on a heparin drip. The patient underwent complex wound closure of the distal forearm and chest wall with advancement flap, application of Integra® bilaminate matrix, and split-thickness skin graft on subsequent OR visit. He was discharged to an acute care facility on hospital day 18. Wound evaluation in the office 10 days later showed healing incisions and >95% graft take.

Conclusion: Diagnosis of NSTI in IVDU can be challenging due to similar clinical presentation of non-purulent cellulitis, therefore one must maintain a high index of clinical suspicion. The cornerstone of management remains early surgical debridement, which can be limb saving as seen in this case. Involving plastic surgery and infectious disease after initial diagnosis and debridement aided in early eradication of infection and limb sparing reconstruction. This case highlights the importance of a multidisciplinary approach to NSTI and that NSTI can be managed safely in a community hospital setting.
P 52. VIRTUAL CROSSMATCH AND COLD ISCHEMIC TIME IN DECEASED DONOR KIDNEY TRANSPLANTATION

Presenter: Kasey Wyatt BS | Tampa General Hospital
Wyatt K, Watson R, Buggs J, Rogers E, Kumar A

**Introduction:** Prolonged cold ischemic time (CIT) in deceased donor kidney transplantation has been associated with adverse graft outcomes. Virtual crossmatch is a technique that facilitates reliable prediction of crossmatch results based on the profile of HLA antibodies of the recipient and the donor in reduced time compared with a physical crossmatch. Our center implemented the use of virtual crossmatch in February 2019. The objective of this study was to determine a difference in cold ischemic time since the implementation of virtual crossmatch in recipients of deceased donor kidney transplantation.

**Methods:** We conducted a retrospective cohort study of consecutive adult recipients of deceased donor kidney transplants. SPSS version 25 was utilized to conduct the analysis.

**Results:** After the exclusion of 59 recipients age less than 18-years and or cold ischemic time ≥ 20 hours, our study compared outcomes of 81 physical crossmatches from February – June 2018 against 68 virtual crossmatches from February -June 2019. There were no statistical differences between groups based on donor age (p=0.09), donor type (p=0.38), kidney donor profile index (p=0.43), or delayed graft function (p=0.20). Recipients with virtual crossmatches were older (58 vs. 51 years) p=.0002 and had a higher estimated post-transplant survival score (59% vs. 46%) p=0.01. The cold ischemic time was significantly lower for the virtual crossmatch group (p=0.04).

**Conclusion:** Our study demonstrated significantly shorter cold ischemic time with virtual crossmatch in deceased donor kidney transplant recipients. Our study is limited with a small sample size but the trend of increased graft survival with higher estimated post transplant survival scores and older recipients is encouraging as the donor pool expands with marginal kidneys and national sharing. Larger sample sizes and follow-up periods are indicated.
Figure 1. Cold Ischemic Time by Month and Crossmatch Type

![Bar chart showing cold ischemic time by month and crossmatch type with p=0.04](chart.png)
Introduction: Encountering an unknown cecal mass while evaluating a patient for acute appendicitis is a challenge for surgeons. It can be particularly difficult to ensure proper management of these mystery masses when there are no additional clues to the etiology of the mass. Management typically consists of ileocecectomy verse right hemicolectomy depending on suspicion for cancerous etiology of the mass. Differential diagnosis includes adenocarcinoma, carcinoid tumor, granulomatous inflammatory disease, infectious etiology, mucocele, lymphoma, and diverticulitis. Often radiographic findings can assist in decision making and post-operative management is dictated by final pathology.

Summary: A 54-year-old male with a past medical history significant only for gout presented to the emergency department with two days of worsening abdominal pain localized to the right lower quadrant, fever, chills, and anorexia. On presentation, he was tachycardic with an elevated white blood cell count of 15.5 and C-reactive protein (CRP) of 215. A computed tomography (CT) scan was obtained due to concern for acute appendicitis. A large, calcified cecal mass measuring 3.1 x 3.3 cm and perforated appendicitis with no drainable fluid collection was discovered on imaging. Notably, he had undergone routine screening colonoscopy within the past few years, which was reportedly normal. Radiology reported the mass was suspicious for calcified carcinoid, granulomatous disease, or other calcified mass. Colorectal surgery was consulted both before surgery and intra-operatively, and the decision was made to proceed with exploratory laparotomy, right hemicolectomy and ileocolic anastomosis. The specimen was sent to pathology, which showed a 4.2 cm subserosal fibrotic/calcified nodule in the terminal ileum. This nodule showed no evidence of malignancy; however, the tissue was infarcted, and no viable tissue was present in the specimen for pathological workup. He had an unremarkable post-operative course with plans for follow up colonoscopy in 3-6 months.

Conclusion: Finding a cecal mass in a patient with acute appendicitis complicates surgical decision making. The decision to proceed with ileocecectomy verses right hemicolectomy is supported by clinical and radiographic evidence suggesting the etiology of the mass. Further post-operative treatment is dependent on final pathologic diagnosis. Decision making becomes more complicated when this information is not readily available. In general, most etiologies are benign and ileocecectomy is sufficient for surgical treatment. We present a complicated case of a patient who presented with a new, large cecal mass underwent right hemicolectomy that resulted in inconclusive final pathology.
Introduction: Clinical characteristics in morbid obesity vary by race, sex, and health insurance status. Knowledge of whether or not patterns of clinical variation by insurance status differ between women and men among SLEEVE patients is unknown. The objective of this study is to identify patterns of pre-operative clinical characteristic variation by health insurance status in women compared with men undergoing SLEEVE.

Methods: Pre-operative data from 8,393 SLEEVE patients was analyzed retrospectively within each sex cohort in four groups: Medicaid (330 women, 77 men), Medicare (126 women, 75 men), Private Insurance (4,424 women, 1551 men), and Self-Pay (1366 women, 444 men). Weight, BMI, age, and prevalence of 31 obesity comorbidities were studied. Statistics: General Linear Models that included baseline, modified for binomial distribution of dichotomous variables.

Results: Female weight, age, BMI, race, hernia, panniculitis, alcohol/substance/tobacco abuse, angina, asthma, back pain, cholelithiasis, mental health diagnosis, CHF, DVT/PE, fibromyalgia, impaired functional status, GERD, diabetes, gout, hypertension, ischemic heart disease, dyslipidemia, liver disease, leg edema, musculoskeletal pain, obesity hypoventilation, obstructive sleep apnea, psychological impairment, pulmonary hypertension, stress incontinence, and unemployment (n=33) varied by health insurance. Men did not vary by insurance status in angina, GERD, psychological impairment, or substance/tobacco abuse, but varied in 28 others. Depression, peripheral vascular disease, and pseudotumor cerebri did not vary by insurance. Medicare women and Medicaid men were heaviest overall. African American women and men subscribed most to Medicaid and least to Self-Pay. In both sexes and races, Medicare was highest and Self-Pay was lowest in CHF, DVT/PE, fibromyalgia, diabetes, hypertension, ischemic heart disease, dyslipidemia, leg edema, musculoskeletal pain, obesity hypoventilation, obstructive sleep apnea, pulmonary hypertension, cholelithiasis, and stress urinary incontinence. Alcohol intake was highest for both sexes in those with Self-Pay. Female Medicare patients had the highest incidences of angina, GERD, gout, psychological impairment; these did not vary in men. Depression, peripheral vascular disease, pseudotumor cerebri did not vary in men or women.

Conclusion: In morbid obesity both women and men vary clinically by health insurance. Overall, Medicare obese patients have the highest risk of cardiopulmonary, endocrine, and abdominal problems. Substance/tobacco abuse was highest Medicaid women, as was Medicare angina, GERD, and psychological impairment, but they did not vary by insurance among men. These variations by insurance and sex can add to clinical judgement in managing patients with obesity.
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P 55. ATYPICAL PRESENTATION OF ABDOMINAL PAIN IN A MIDDLE AGED FEMALE: LARGE RECURRENT RETROPERITONEAL CYSTIC LYMPHANGIOMA  
Presenter: Kristen M Hardy BS | West Virginia University, Charleston  
Hardy KM, Richmond BK

Introduction: We present the case of a recurring large symptomatic cystic lymphangioma in the retroperitoneum at nine years post-total excision in a 44-year-old female.

Case Presentation: Originally, a 35-year-old female presented with a 3-month history of right upper quadrant pain, early satiety, abdominal fullness, and change in bowel habits. An abdominal CT scan revealed a large well-defined low-density mass with minimal thin enhancing septations occupying the retropancreatic region and the right retroperitoneum. An exploratory laparotomy was executed and the lesion was carefully dissected from the inferior vena cava, the right kidney, the right gonadal vein, and the duodenum. The mass was excised and pathological evaluation confirmed the diagnosis of a benign cystic lymphangioma. Nine years later, in 2016, the patient presented with abdominal pain and acute pancreatitis. An abdominal CT revealed interval progression of residual infiltrating coalescent lymphadenopathy in the upper abdomen involving the retroperitoneum and peritoneum. This mass surrounded the IVC, abdominal aorta, renal vessels, porta hepatitis, celiac axis, and proximal superior mesenteric artery. The mass measured 10.2 x 11.2 x 12.3 cm, and extended into Morison’s pouch in the right pericolic gutter. The following year, it exhibited a growing aspect involving the mesenteric fat adjacent to the ascending colon that measured 7.7 x 5.6 cm. Since its recurrence, the mass has continued to increase in size, but has remained smaller than it had on original presentation. Intervention is planned for the future.

Discussion: Cystic lymphangioma is a rare, benign malformation of the lymphatic vessels that is often seen in the pediatric population. Lymphangiomas most commonly occur in the neck and the axilla, and masses occurring in the retroperitoneum are especially rare. Total resection is the treatment of choice in these patients. Retrospective studies that have examined the effectiveness of surgery as the definitive treatment for cystic lymphangiomas in adults have ceased follow up at an average of 38.8 months post excision; therefore, the outcome of this treatment is relatively unknown beyond that time frame. There are only two other reported cases of recurrent retroperitoneal cystic lymphangioma in the literature, one at 13 years and one at 11 years post excision.

Conclusion: Our case further demonstrates that surgical excision may not always be sufficient to prevent recurrence, and patients may benefit from screening ultrasounds in the years following resection. These screenings should also to continue for longer than anticipated, as recurrence may present years after total resection.
**P 56. SEX DISPARITIES IN THE PRESENTATION AND MANAGEMENT OF GALLBLADDER DISEASE**

Presenter: Levi Daugherty DO | West Virginia University  
Bailey KS, Daugherty L, Hobbs G, Borgstrom DC

**Introduction**: Although gallbladder disease is more common in females, we have noticed a trend towards more complicated cases in male patients.

**Methods**: We reviewed all cholecystectomies captured by the National Surgical Quality Improvement Program (NSQIP) database for the year 2016. We identified 38,736 records. Records were re-viewed for age, sex, procedure performed, operative time, post-operative diagnosis. Descriptive and inferential statistical analyses were conducted.

**Results**: Male patients are more likely to undergo cholecystectomy for a diagnosis of cholecystitis, gallstone pancreatitis or cholangitis compared to females who are more likely to carry a diagnosis of biliary dyskinesia. The average operative time increases for both sexes as the patients become older. The average operative time is higher for males compared to females in all age groups and the variance becomes greater as the patients become older. Age, sex, post-operative diagnosis, ASA class, and functional status were all independently significant in predicting operative time. There was no difference in need for cholangiogram between the sexes. Female patients were more likely to have their cholecystectomy performed laparoscopically and they were more likely to have their surgery performed as an outpatient.

**Conclusion**: In our study, females presented with uncomplicated gallbladder disease while males presented with complicated gallbladder disease. This suggests that male patients present at a later stage of disease.
Introduction: Storage and disposal (S&D) of unused opioid therapy (UOT) remains poorly understood in the postoperative patient population. Noncompliance with guidelines for UOT S&D may contribute to opioid misuse. Patient education may mitigate opioid misuse behavior. Our aim was to create and implement a patient education program via an educational video on the topics of opioid usage and S&D in the acute surgical setting with minimal provider involvement.

Methods: With institutional review board approval, a prospective cohort study recruited 24 emergency surgery patients over four months. Patients were excluded if they reported taking an opioid on admission. Subjects were surveyed before and after receiving standardized opioid education in the form of an educational video. A follow up survey assessed S&D of prescribed opioids one month after discharge.

Results: Before education, 38% (n=9) identified proper UOT disposal and 63% (n=15) identified safe handling of opioids. After education, 75% (n=18) identified proper disposal and safe handling of opioids. Eighteen patients received opioid prescriptions; three were lost to follow up. Follow up (n=15) revealed 67% safely stored opioids; 67% retained UOT. Few subjects (30%; n=3) reported proper disposal of UOT. The average number of prescribed pills was 19.8 and 73% used other pain medications. The average morphine milligram equivalents prescribed was 26.43.

Conclusion: Surgical patients remain unaware of safe S&D practices. An educational video increased awareness of, but not compliance with, safe S&D of UOT. Nearly two thirds of patients did not use their opioid prescription, suggesting that both opioid mishandling and over-prescription contribute to opioid misuse. The use of non-opioid analgesics was widely employed and remains an effective method for decreasing opioid use in postoperative patients.
Intussusception is common in the pediatric population, however it is a rare finding in adults. Colonic lipomas are benign tumors of the colon, but they are very uncommon, and can lead to intussusception in adults. We present a case of a colonic lipoma causing an intussusception that was surgically resected.

A 37 year-old-female presented to the ED with intermittent abdominal pain for one month that acutely worsened in the last several days. The pain was diffuse, accompanied by nausea, vomiting, and bloody bowel movements. She was hemodynamically normal and non-toxic appearing. On exam, she had diffuse abdominal tenderness, especially in the right upper and epigastric region. CT demonstrated transverse colonic intussusception containing mesentery and surrounding vessels, with an intraluminal lesion acting as the lead point. On operative exploration, we found a large mass leading to a colo-colonic intussusception in the proximal transverse colon. A right hemicolectomy was performed, followed by a hand-sewn end-to-side ileocolic anastomosis. The rest of the abdomen was unremarkable. She had an uneventful recovery and was discharged home. Pathology demonstrated large bowel and a pedunculated submucosal lipoma with ulcerations. No malignancy or dysplasia was identified. Intussusception happens when a proximal segment of bowel telescopes into a distal segment. It is rare and accounts for less than 1% of bowel obstruction in adults. It involves a lesion serving as a lead point that can change the peristaltic pattern and initiate the invagination leading to intussusception. Lipomas occur throughout the gastrointestinal tract with the highest incidence in the colon. They are mostly found in the right colon and are submucosal in nature. The peak incidence is during the 5th and 6th decades of life, more commonly in women.

Diagnosis can be challenging, as symptoms are nonspecific, and take on a subacute course. Patients can present with intermittent pain, nausea, vomiting, and lower gastrointestinal bleeding. CT is the most sensitive test with reported accuracy ranging from 58% to 100%. The “target” sign and “sausage-shaped” soft tissue mass with a layering effect are classical radiological findings. Treatment almost always involves surgery, ranging from local excision, to partial colectomy. Most authors recommend surgery as treatment noting that resection is necessary, as there is the possibility of underlying malignancy.

Lipomas of the colon are uncommon; however they have the potential to cause intussusception. They should be considered in the differential diagnosis in adults who present with obstruction and signs of intussusception on imaging.
Introduction: Heterotopic ossification is more commonly described in atypical healing of surgical wounds. Intraperitoneal and mesenteric ossification is rare. We aim to describe a unique case of an ileostomy reversal and ventral hernia repair in a patient with extensive intraabdominal heterotopic ossification involving the abdominal fascia, peritoneum, and small bowel mesentery.

Methods: The patient is a 62 year old gentleman with a history of a laparoscopic appendectomy for appendicitis complicated by post-operative small bowel obstruction causing abdominal compartment syndrome necessitating an exploratory laparotomy, lysis of adhesions, diverting loop ileostomy with placement of a temporary abdominal closure device. He underwent several washouts with incremental fascial closures until post-operative day 22 from his original laparotomy, when skin flaps were raised to cover the remaining defect. The patient had a prolonged post-operative ICU course due to acute respiratory failure due to pneumonia, bacteremia, hyperglycemia, and delirium. He was eventually transferred to the intermediate care unit, and then spent two weeks in rehab prior to going home. Ten months later he returned for an ileostomy reversal with a ventral hernia repair. Pre-operative evaluation revealed diffuse dystrophic calcifications throughout the anterior peritoneum and mesentery.

Results: A Lebsche knife and mallot were utilized to open the abdomen and various techniques were used to free the ossifications from surrounding tissue including the base of the mesentery. In particular, monopolar electrocautery on tissue over the most exposed portion of heterotopic bone with gentle traction and subsequent excavation of bone fragments proved to be the most successful method. A successful ileostomy reversal was performed with a component separation and ventral hernia repair with retro-rectus mesh. The patient had a short post-operative course in the intensive care unit for close monitoring and was discharged home on post-operative day 20 after return of bowel function and home-health.

Conclusion: We present a challenging case of ileostomy reversal and ventral hernia repair in the setting of extensive intraabdominal heterotopic ossification. The operation required novel methods for intraabdominal entry and delicate removal of calcifications near danger zones.
P 60. DOES AMNION-DERIVED MATRIX PREVENT POST-OPERATIVE ABDOMINAL ADHESIONS?
Presenter: Hannah Nemec MD | Navicent Health, Mercer University School of Medicine
Nemec H, Atalah H, Kling M, Nichols L, Powers B, Ashley D

Introduction: Adhesions are bands of tissue that form post operatively after intraabdominal surgery both for traumatic and general surgery operations. Adhesions cause significant problems including pain, chronic nausea, and bowel obstructions. Because of the significant morbidity of adhesive disease, extensive research has been conducted with the goal of reducing or preventing adhesion formation. Amnion-derived matrix (ADM) is a complex tissue matrix derived from human amnion membrane from the placenta which is used in other areas of surgery to help generate healthy growth of tissue and promote healing. It appears that there is less scar tissue formation when this material is used. Our hypothesis was that ADM applied during surgery would decrease abdominal adhesion formation in rats undergoing exploratory laparotomy.

Methods: Twenty-four Sprague-Dawley rats (300 grams) were divided into four groups. Group 1 was the control group (CG) which had cecal abrasion 20x with a surgical rasp to generate the adhesion model. Groups 2, 3, and 4 were the treatment groups (TG) and had cecal abrasion plus application of aerosolized ADM at a concentration of 6.25, 12.5, and 25 mg/cc respectively. After 30 days, the rats were euthanized and examined while blinded to their group. Macroscopic and microscopic assessment was performed, and the number of adhesions was assessed as well as inflammation scores from low to high.

Results: Inflammation was noted to be higher in the CG with 33% having moderate inflammation compared to 11% in the TGs. The number of adhesions was also noted to be higher in the CG with an average of 1 adhesion per rat compared to 0.44 adhesions in TGs. There were no difference in adhesions or inflammation between the different concentration treatment groups. These results though observationally different did not reach statistical significance. There were no complications associated with the application of the ADM in any of the rats.

Conclusion: Adhesions remains a serious surgical complication and is associated with significant morbidity in postoperative patients. We tested various concentrations of an aerosolized amnion-derived matrix (ADM) after intraabdominal surgery on rats. We noted an observational improvement in the rate of adhesion formation and inflammation between the control and treatment groups. We also showed that ADM is safe in aerosolized forms at 6.25-25mg/cc for intraabdominal application. Additional studies will have to be performed to determine whether this product is helpful in decreasing the rate of adhesion formation on a larger scale.
**P 61. SPONTANEOUS INTRAPERITONEAL HEMORRHAGE FROM RUPTURE OF SHORT GASTRIC ARTERIES**

Presenter: Hayley Everett MD | University of Tennessee Medical Center, Chattanooga

*Everett HE, Barker DE, Greer SF, Brooks DE*

**Introduction:** Partial thickness mural laceration and perforation are well-known gastrosophageal complications from forceful or prolonged emesis. Another rare complication is spontaneous intraperitoneal hemorrhage (SIPH) from avulsion of the short gastric arteries, with less than 15 reported cases world-wide. This entity afflicts young males with no predisposing vascular lesion, such as aneurysm or arteriosclerosis.

**Methods:** This is a case report of a 28-year-old man who presented with left upper quadrant pain immediately following an episode of emesis. He had consumed a large quantity of alcohol the day prior. He was hemodynamically stable on initial presentation and underwent a contrasted CT scan. This showed a large volume hemoperitoneum with active arterial extravasation in the left upper quadrant near the location of the short gastric arteries. He became hemodynamically unstable and received two units of packed red blood cells and two units of fresh frozen plasma prior to transfer to our care. Upon arrival, he was taken urgently to the operating room for exploratory laparotomy.

**Results:** Intraoperatively, bleeding was noted from multiple short gastric vessels, which were suture ligated. 1700cc of shed blood was collected and auto-transfused to the patient. He recovered without complication and was discharged on postoperative day 4. CT angiography of the abdomen and pelvis obtained five week post-operatively demonstrated no visceral vascular abnormalities.

**Conclusion:** Short gastric artery rupture should be considered in the differential diagnosis of an acute abdomen following emesis or forceful retching. CT imaging with intravenous contrast should be considered if the patient is stable. Management with laparotomy and ligation of bleeding vessels is recommend. All previously described patients have made uncomplicated recoveries. As the causality of this event remains speculative, we recommend patients undergo subsequent radiologic evaluation to rule out the presence of visceral aneurysms that could predispose to repeat episodes of SIPH.

Figure 1: CT Scan of the abdomen showing hemoperitoneum with contrast extravasation in the left upper quadrant (arrows).
Introduction: Mesenteric cysts account for 1 in 100,000 adult admissions. Symptoms range over a broad spectrum and include abdominal pain, distention, mass and obstruction. Diagnosis of this often requires an imaging study.

Results: Herein is reported the case of an 81 year-old female patient that presented to the emergency room with a several month history of progressive, lingering abdominal and back pain, that experienced an acute exacerbation. Physical exam was consistent with right lower quadrant abdominal, flank, and back pain. No mass could be appreciated on exam. A CT scan showed a large fluid filled cystic structure that was adjacent to the ileocecal junction. A diagnostic laparoscopy with excision of the cystic structure was performed with oophorectomy and salpingectomy as these structures were adhered to the structure, no bowel resection was required. An uneventful postoperative course occurred. Pathologic analysis was consistent with a benign mesenteric cyst with an atrophic ovary and fallopian tube.

Conclusion: Mesenteric cysts can present in a variety of locations, sizes and with varied symptoms. Diagnostic laparoscopy is an excellent tool to evaluate these structures and laparoscopic techniques can provide a means for complete resection. In patients that are surgical candidates it is suggested that these be excised as there have been some reports that these structures may harbor malignancy. Complete excision of a suspected mesenteric cysts are advised, this may require a bowel resection, and in this case the cyst can be associated with tubo-ovarian structures by local extension. Minimally invasive techniques are excellent tools for both diagnosis and excision of these structures.
Introduction: Bowel obstruction has many causes. Non mechanical causes require further evaluation to identify the cause prior to any intervention in order to prevent unnecessary morbidity and mortality. Colonic pseudo-obstruction is an uncommon cause of dilation. Pathophysiology is not well understood, but one theory include suppression of the parasympathetic system or activation of the sympathetic system resulting in an imbalance of the autonomic nervous system of the colon. This condition is primarily seen in elderly patients, but may be seen in trauma, infections, cardiac diseases, after abdominal or pelvic surgery, or neurologic disorders, such as Parkinson’s, Alzheimer’s, multiple sclerosis and spinal cord injuries. This paper discusses a novel presentation of colonic pseudo-obstruction.

The patient is a 37 year old gentleman with a past medical history of hypertension, sleep apnea and developmental delay presented to the emergency department had several episodes of abdominal pain and distention for over a year. Imaging showed colonic distention from the transverse colon to the sigmoid colon with a maximal dilation of 16.8 cm without an obvious point of obstruction. He underwent decompression, but had subsequent recurrence. He was treated with neostigmine without complete resolution, thus required surgical intervention. He underwent an extended left hemicolectomy with an end colostomy. He did well and has been scheduled for reversal of his colostomy.

This case represents a novel presentation of chronic colonic pseudo-obstruction. Complications of this condition include a risk of ischemia and perforation. The risk of these complications increase when the condition is present for greater than six days or with a diameter of ten centimeters or more. When this condition becomes chronic, patients often have a deterioration in quality of life. This is due to both the condition itself, and the repetitive invasive procedures. Treatment includes supportive care, decompression, cholinergic medications, such as neostigmine, and surgery if these measures fail.

In conclusion, colonic pseudo-obstruction is a condition associated with bowel obstruction and no apparent cause. It is primarily seen in the elderly population, as well as critical ill and some post-operative patients. Chronic pseudo-obstruction is primarily seen in post-operative patients or those with neurologic medical conditions. This patient did not present as the typical patient with colonic pseudo-obstruction, thus representing a unique presentation for this condition.
**P 65. DIVERTICULOSIS OF THE APPENDIX: A CASE REPORT AND REVIEW OF THE LITERATURE**

Presenter: Keitaro Nakamoto MD | Marshall University  
Nakamoto K, Bown PC, Denning DA

**Introduction:** Diverticulosis of the appendix is a relative uncommon entity, infrequently encountered in practice. According to retrospective studies, they are present in the range of 0.004% to approximately 2% of all appendectomy specimens. They are often passed unnoticed and their clinical significance is often overlooked, especially because they are often difficult to diagnose pre-operatively. However, studies have shown that patients with diverticulosis of the appendix are ten-times more likely to harbor appendiceal neoplasms compared to those who do not have them. They have also shown to confer a higher risk of perforation with inflammation. Hence, it is generally recommended to perform an appendectomy on patients found to have diverticulosis of the appendix incidentally during surgery for other reasons.

We present a case of a 42 year old female patient who was undergoing an elective laparoscopic gynecologic procedure (salpingectomy) and was found incidentally to have diverticulosis of the appendix. General surgery was consulted intra-operatively and performed a laparoscopic appendectomy.

Knowledge of the clinical implications of diverticulosis of the appendix is important for the general surgeon to provide a basis for proceeding with an appendectomy when the disease is found incidentally during other surgical procedures.
Introduction: Choledochal cysts are usually congenital findings involving the biliary tree and known to have increased risks of malignancy or infection. The location and type of the dilations are based upon the Todani classification [1]. Though, there are reports that indicate that a sixth, unofficial, type exists that describe a cystic structure along the cystic duct.

An 83 year-old female with a history of vertigo presented to the ED with worsening dizziness and nausea with abdominal pain. CT of the head was unremarkable and ultrasound of the gallbladder showed edema with cholelithiasis. CT of the abdomen revealed similar findings to the ultrasound but with mild ductal dilation. An MRCP was obtained showing cholelithiasis without choledocholithiasis. She was presumed to have cholecystitis, started on IV antibiotics, and underwent laparoscopic cholecystectomy.

Upon entry into the abdomen, inspection of the abdomen and surgical area commenced. With retraction of the liver, it was noted that the gallbladder had abnormal features with a separate mass located adjacent to the normal gallbladder. The cystic mass looked to be communicating with the cystic duct, separate from the gallbladder. The cystic duct was identified and dissected out revealing the critical view of safety. Enough length of the cystic duct was present proximal to the cystic mass that clips were able to be placed safely allowing for removal of the gallbladder in the usual fashion. The specimen was sent to pathology which revealed no malignancy.

A choledochal cyst along the cystic duct is rare and literature searches only reveal case reports. Serradel et al were the first to have documentation of this phenomena and did not fit into any criteria present [2]. Loke et al was the first to suggest this as a “type VI” choledochal cyst [3]. Due to the elevated risk of malignancy associated with choledochal cysts, each case concluded with cholecystectomy. Laparoscopic procedures have been advised against in some case reports but one report describes the use of minimally invasive techniques if dissection and reconstruction can be approached safely [3,4].

In conclusion, this case revealed the varied anatomy that currently is not classified. Acute care and general surgeons should be aware of the possible variances in anatomy or pathology that may be present to allow for appropriate pre-operative planning.
P 67. DUODENUM INVERSUM: THE MISSED DIAGNOSIS
Presenter: Kyle Curtis MD | University of Mississippi Medical Center
Curtis KL, Grenn EE, Anderson CD, Earl TM, Helling TS

Introduction: Duodenum inversum is a rare congenital disorder in which the third portion of the duodenum courses superiorly, then posterior to the stomach and superior the pancreas prior to crossing the midline. This disorder was first described in 1940 and since that time only a limited number of cases have been published. Duodenum inversum is theorized to be a result of persistent dorsal mesentery and a mobile duodenum. Patients are typically asymptomatic throughout childhood until their mid-forties. Symptoms of duodenum inversum include vague epigastric pain, intractable nausea and vomiting, and occasional recurrent pancreatitis. Here, we report a case of duodenum inversum in a young male initially diagnosed with biliary dyskinesia.

CASE DESCRIPTION: Our patient is a 27-year-old male who reported a lifelong history of intractable nausea and emesis. He had undergone extensive work-up and surgical procedures including tonsillectomy, adenoidectomy, and laparoscopic cholecystectomy. Despite these therapies he continued to have intractable nausea and emesis which was then attributed to chemotherapy he received after incidental findings of an astrocytoma. He was re-evaluated by Gastroenterology and an upper GI contrast study was obtained. Finding were consistent with duodenum inversum and he was referred to surgery clinic. We elected to proceed with an exploratory celiotomy with intentions to perform a gastrojejunostomy. Intraoperatively the duodenum was tortuous and appeared to traverse posteriorly back toward the stomach. A gastrojejunostomy was created bypassing the area of narrowing and partial obstruction. He had an uneventful post-operative course during which he tolerated diet without issues. He was seen at follow-up and continues to do well with complete resolution of symptoms.

CONCLUSION: Duodenum inversum is a rare disorder that typically presents with vague symptoms most often in adulthood. These characteristics can make the diagnosis of duodenum inversum relatively difficult. We argue that duodenum inversum should be in the differential for all adults with intractable nausea and vomiting. Gastrojejunostomy should be considered as surgical management for these patients.
Introduction: De Garengeot hernia was first reported in 1731 by Rene De Garengeot who described the presence of the veriform appendix in an incarcerated femoral hernia sac. Pre-operative diagnosis of De Garengeot hernia is challenging and most of cases are diagnosed retrospectively during the surgery. Incidence of this hernia is rare (less than 1% of surgically treated hernias), and it is even rarer to find an acutely inflamed or perforated appendicitis within the hernia sac (roughly 0.08–0.13%). We are present a case of an 87 year-old female with De Garengeot hernia who underwent an open repair with mesh.
Introduction: Venous thromboembolism (VTE), including deep vein thrombosis (DVT) and pulmonary embolism (PE), are preventable causes of morbidity and mortality. This is especially true for emergency general surgery (EGS) patients who are at increased risk of a VTE given their acuity of illness and decreased mobility. EGS patients comprise 7% of all hospital admissions in the United States. The reported rate of VTE in hospitalized EGS patients is approximately 2.5%. Of those who developed a VTE, >69% required hospital readmission, making VTE the second most common cause, after infection, for readmission in EGS patients which taxes an already overcrowded healthcare system. The objective of this study was to examine rates of VTE in EGS patients to determine if BMI, including those < 18.5, is an independent risk factor for VTE.

Methods: The ACS National Surgery Quality Improvement Database (NSQIP) was queried from January 2015 to December 2016. Search criteria included patients ≥18 undergoing EGS. Patients were stratified by BMI in the following categories: underweight (50) . Analysis for primary outcome was preformed using a chi squared test with Bonferroni adjustment for post-hoc tests.

Results: 83,272 patients met the inclusion criteria: age ≥18 and undergoing an EGS procedure. Of those, 1,358 patients developed VTE (903 with DVT only, 335 with PE only and 120 with both DVT & PE). Patient with BMI < 18.5 were 1.4 times more likely to be diagnosed with a VTE compared to patients of normal BMI (p=0.018). Morbidly obese patients were 1.7 times more likely to be diagnosed with a PE compared to patients of normal BMI (p=0.004). Increased BMI was associated with co-diagnosis of PE & DVT (p=0.027). VTE mortality rate was not related to BMI classification. Patients with a VTE had a 3.2 times increased mortality rate (p<0.001) and were also less likely to be discharged home (p<0.001).

Conclusion: Our study found that underweight patients have a statistically significant increased risk of VTE following EGS compared to normal weight patients. We also found that obesity is associated with increased risk for VTE which is consistent with what has been demonstrated in the literature involving elective bariatric surgery population. Given these findings, we recommend increased vigilance in ensuring adequate VTE prophylaxis in the EGS population, especially including those who are underweight with consideration for pre-op chemoprophylaxis dosing in the emergency department at the time of initial evaluation.
ABDOMINAL PREGNANCY, AN UNUSUAL CAUSE OF ISCHEMIC SMALL BOWEL OBSTRUCTION
Presenter: Emily Grenn MD | University of Mississippi Medical Center
Grenn EE, Shenoy V, Anderson CD, Earl TM, Ridgeway MR, Orr WS

Introduction: Abdominal pregnancy is a rare form of ectopic pregnancy where the fetus grows outside of the uterus but not within the fallopian tube, ovary or broad ligament. Abdominal pregnancies represent only about 1% of ectopic pregnancies. These pregnancies carry a very high morbidity and mortality for both the mother and the fetus. Several cases have been reported in which the pregnancy has been carried to term, but the majority of cases result in fetal demise. Most women present with abdominal pain and amenorrhea. Laparotomy remains the treatment of choice for abdominal pregnancy.

Case Description: We present a 42-year-old female whose presenting chief complaint was acute onset abdominal pain. Computed tomography (CT) was obtained which showed a bowel obstruction due to an abdominal pregnancy that measured around twenty-one weeks gestation. Upon admission, beta human chorionic gonadotropin (β-hCG) was normal and urine pregnancy test was negative. She ultimately underwent a laparotomy during which necrotic bowel with gross perforation and hemoperitoneum was encountered. A calcified fetus was found in the right upper quadrant with limbs fused around a portion of the small bowel mesentery with resulting necrosis. The fetus and placenta were removed and a small bowel resection with primary anastomosis was performed. Unfortunately, the patient had a post-operative course that was complicated by sepsis that ultimately concluded with death.

Discussion/Conclusion: Abdominal pregnancies can be divided into two groups: those occurring prior to twenty weeks' gestation and those occurring thereafter. Clinical diagnosis can be difficult. Imaging modalities such as ultrasound are useful in the early stages, but yield disappointing results later on. Computed tomography and magnetic resonance imaging can be utilized in advanced abdominal pregnancies for both diagnosis and surgical planning. These rare pregnancies typically occur in women who have previously undergone tubal ligation. Often the placenta is left behind in order to avoid life threatening bleeding and β-hCG is trended. Our case is unusual in that our patient had no prior gynecological procedures and at the time of presentation, β-hCG was normal. A literature review revealed only one other patient that presented with symptoms similar to that of a bowel obstruction and upon laparotomy, the placenta was noted to be adhered to the small bowel and no resection was necessary. In our case, it was the limbs of the fetus that fused around the mesentery of the small bowel causing necrosis, perforation and sepsis leading to shock and ultimately her death.
P 71. USE OF CUTIS GRAFT AS BIOLOGIC PROSTHESIS IN COMPLICATED ABDOMINAL CLOSURES: A CASE REPORT
Presenter: Clairissa D Mulloy MS | Louisiana State University Health Science Center
Mulloy C, Paige J, Hodgdon I, Cook M

Introduction: We present a case of a 61 yo M with hx of GSW to the abdomen in 2016 now with large (30x40 cm) defect with loss of domain s/p multiple failed attempts at closure. This case illustrates the role of the cutis graft in providing successful abdominal wall closure of a 61 year old male with a multiply recurrent complex ventral hernia in which numerous interventions failed.

Methods: The cutis graft method itself consists of harvesting full thickness skin grafts, and preparing them on the back table by removing excess tissue from the dermis, de-epithelializing them, meshing each graft in a 1 to 1.5 ratio, and soaking the grafts in hydrogen peroxide solution. To reapproximate the defect, we used the cutis graft as an underlay implant. This graft remained exposed to the atmosphere in the wound, which was packed with moist gauze.

Results: After multiple failed attempts, full incorporation of the cutis graft with resolution of the hernia defect occurred within 3 months.

Conclusion: These results point to a viable option for difficult cases where interventions have failed and synthetic products are not an option. This method is notable in that there is no need to close fascia or skin; a bridge is sufficient. Other meshes have viability in high-risk wounds, but require NPWT or skin closure. We simply packed the defect and allowed healing by secondary intention over the graft. Synthetic graft would never be left open to the atmosphere due its high risk of becoming infected; biologic mesh would dry out. If infection were to occur, the cutis graft can remain in place. As native tissue, this graft is resistant to inflammation or infection. Even when indicated, biologic meshes are expensive and may fail, as seen here. Multiple negative outcome predictors are present in this case, such as poor tissue quality, malnutrition, and poor blood flow, yet the cutis graft did well. Donor site morbidity is low, and tissue is abundant and low cost.
Introduction: Peritoneal dialysis (PD) is frequently associated with the development and/or incarceration of abdominal hernias, which can lead to significant morbidity. This retrospective study compares concomitant laparoscopic/robotic abdominal hernia repairs and PD catheter insertion with the laparoscopic placement of PD catheters alone, from 2011 through 2018 at Albany Medical Center. It has been suggested that concomitant abdominal hernia repairs and PD catheter placement is safe, without increased complications compared to the traditional staging of the procedures. Concomitant abdominal wall hernia and laparoscopic peritoneal dialysis catheter placement could be beneficial over separated procedures because peritoneal dialysis may be initiated sooner with the patient undergoing fewer operations.

Methods: Retrospective cohort analysis was conducted on 21 laparoscopic/robotic concomitant procedures (HPD), versus 154 laparoscopic PD catheter procedures (PDA) at AMC from 2011-2018. The PD catheter procedures were conducted laparoscopically by two transplant surgeons. The hernia repairs were either laparoscopic or robotic, included mesh, and were performed by one robotic surgeon. Primary outcomes include rates of PD catheter dysfunction, dialysate leaks, infection, hernia recurrence/development, catheter removal, and catheter revision within 36 months from the index operation. Demographic and clinic variables currently being analyzed include age, gender, ASA class, BMI, DM, HTN, CVD, COPD, time on dialysis, number of prior intra-abdominal surgeries, and 30-day mortality.

Results: The initial results suggest that rates of peritonitis and PD catheter dysfunction may be significantly higher with concomitant procedures than PD catheter insertion alone; 57.1%/52.4% versus 19.7%/17.7%, respectively.

Conclusion: Hernia repair at the time of peritoneal dialysis catheter placement is associated with higher complication rates, and these data challenge the growing acceptance that concomitant procedures are safe and preferable to staged procedures.
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</table>

Figure 1. Rates of morbidities associated with concomitant procedures (HPD) and with PD catheter insertion alone (PDA). *Fisher’s exact test.
**P 73. EVIDENCE-BASED PRESCRIBING PROTOCOL SIGNIFICANTLY REDUCES OPIOID USE AFTER VENTRAL HERNIA REPAIR**

Presenter: Diana Peterman MD | Greenville Health System

**Introduction:** Increased recognition of the dangers of opioid analgesia has led to significant focus on strategies for reducing use through multimodal analgesia, enhanced recovery protocols and standardized guidelines for prescribing. Our institution implemented a standard protocol for prescribing analgesics at discharge after ventral hernia repair (VHR). We hypothesize that this strategy significantly reduces opioid use.

**Methods:** Standardized protocol for discharge prescribing was implemented in March of 2018. Patients were prescribed ibuprofen, acetaminophen, and opioid dose based on milligram morphine equivalent (MME) use the 24hrs prior to discharge. We retrospectively reviewed prescriptions of opioid for two 6-month periods, July-December 2017 (PRE) and July-December 2018 (POST) for comparison using EPIC report and the South Carolina Prescription Monitoring Program. Analysis performed included Mann-Kendall linear trend test and Student’s t-test for continuous variables.

**Results:** VHR was performed in 105 patients in the PRE and 75 patients in the POST group. Total MME prescribed decreased significantly from mean 322.7+261.3 / median 225(IQR 150, 400) MME to 141.6+150.4 / median 100 (50, 184) MME (p<0.001). This represents a 57% reduction in mean opioid MME prescriptions at the time of discharge. Acetaminophen prescribing increased from 10% to 65%, and ibuprofen from 7.6% to 61.3%. Refills were prescribed in 21 patients (20%) during the PRE period, which decreased to 10.7% during the POST group (p=0.141).

**Conclusion:** A multimodal approach to postoperative pain management decreases the need for opioids. The additional implementation of an evidence-based prescribing protocol results in significant reduction of opioid use following ventral hernia repair.
P 74. THE USE OF AUTOLOGOUS FENESTRATED CUTIS GRAFTS IN COMPLICATED HERNIAS
Presenter: Alexis Scheuermann MD | Louisiana State University Health Science Center
Sheuermann AR, Rajo MA, Marr AB, Stuke LE, Lau FH, Cook MW, Hodgdon IA, Greiffenstein PP

Introduction: Hernia repairs are among the most common procedures worldwide and carry significant risks including infection requiring implant removal and recurrence of herniation. As a result, numerous products, including synthetic, biologic and hybrid implants, have been introduced in order to minimize postoperative risks. These products can be costly, which contributes to the overall cost of care, and makes them prohibitive to use in resource-poor settings. There is limited data to demonstrate benefit of one product over another. The use of autologous fenestrated cutis graft (AFCG) as hernia mesh substitute has been studied in various countries over the past century with favorable results. Here, we present our experience with nine consecutive cases and the use of AFCG in high-acuity abdominal wall hernias, with complicating factors inhibiting the use of synthetic mesh implants.

Methods: A retrospective review of data was performed on an internally maintained, prospectively collected database to identify patients who underwent urgent or emergent hernia repair, their demographic characteristics, and their outcomes.

Results: Nine patients were treated in a safety net hospital with complicated abdominal wall hernias. Two patients had strangulated groin hernias with bowel compromise not requiring resection. Three patients had strangulated ventral hernias. Of these, two required bowel resection, a third required resection of necrosed omentum. Two patients had incarceration with obstruction in the setting of perioperative anticoagulation therapy. One patient suffered from an open traumatic flank hernia with contamination. One patient had advanced liver disease with a chronically incarcerated umbilical hernia, who manifested necrosis of skin and ascites leak. Average BMI was 31.9. We identified three complications. One patient had postoperative anastomosis failure with feculent peritonitis, one patient had postoperative wound infection, and one patient had a postoperative hematoma in the setting of therapeutic anticoagulation therapy. At reoperation, the implanted grafts were noted to be viable, the hernia repairs intact, and no grafts had to be removed. Five patients have been followed-up greater than six months from date of operation (mean 10.3 months, range 6-15 months) without evidence of recurrence or other wound complications.

Conclusion: In patients with complex clinical pictures and acute hernia presentations where synthetic mesh is contraindicated in the setting of contamination or bowel compromise, AFCG appears to be a safe option for repair, with low rates of postoperative hernia-related morbidity and low recurrence rates at six months. AFCG carries minimal cost compared to available biologic mesh alternatives. Further investigation is needed to determine long-term safety and efficacy.
P 75. PROPHYLACTIC PLACEMENT OF HYBRID PTFE BIOMATERIAL MESH AT THE TIME OF OSTOMY REVERSAL FOR THE PREVENTION OF OSTOMY SITE HERNIATION- A RETROSPECTIVE STUDY
Presenter: Eric Mallico MD | Novant Health Rowan Medical Center
Smith J, Mallico E

Introduction: A common sequela to stomal closure is incisional herniation, often requiring additional surgical intervention. This exposes the patient to further risk from surgical complication and creates an additional financial burden on the patient and healthcare system. We propose prophylactic placement of a hybrid PTFE mesh at the time of ostomy reversal as an effort to prevent incisional hernias at the stoma site. There is significant debate over the safety of mesh placement during ostomy reversal due to the contaminated nature of the procedure leading to potential subsequent risk of mesh infection with additional complications.
Our primary objective was to evaluate for abdominal wall herniation at the former ostomy site. Our secondary objective was to identify complications related to the mesh following placement, specifically incidence of infection.

Methods: A retrospective study of laparoscopic placement of intraperitoneal hybrid PTFE mesh over primarily closed fascial defect during ostomy reversal was conducted on 6 patients undergoing colostomy or ileostomy reversal. In all cases, following copious irrigation, the abdominal wall defect from the ostomy was closed in a layered fashion of the anterior and posterior fascia using PDS suture followed by laparoscopic placement with IPOM technique of 12 cm circular hybrid PTFE mesh with absorbable tack fixation. A negative pressure wound VAC was placed within the wound for subcutaneous tissue closure.

Results: Of the 6 patients who had mesh placed at the time of their ostomy reversal, none of the patients developed a hernia during the follow up period. Follow up ranges from 13-31 months. None of the patients developed complications related to mesh infection or the need for explant of mesh. One patient developed a peri-anastomotic abscess which was managed conservatively with IR abscess drainage. Patient follow up for reassessment is ongoing.

Conclusion: To our knowledge, prophylactic utilization of hybrid PTFE permanent mesh placement combined with primary layered closure at the time of stoma reversal is rare due to the concern of complications. Though we have a small sample size, early outcomes of this relatively novel technique are promising in reduction of incisional hernia following ostomy reversal without infectious complications relating to the mesh.
Introduction: Due to its rarity in the literature with only a few dozen articles published in the past five years, there is significant variation in surgical technique utilized to address this rare event; however, most case reports favor an open approach. Here we present a case of an 84-year-old woman who was found to have a De Garengeot’s hernia treated with a unique hybrid open and laparoscopic repair, utilizing the hernia defect as a port site. A hybrid approach has the benefits of decreasing length of stay and reducing overall post-operative pain. Regardless of surgical technique, appendectomy and hemiorrhaphy are the primary operative elements. Relevant literature related to surgical techniques, diagnosis, and imaging of De Garengeot’s hernia is presented.
Introduction: Umbilical hernia repair is one of the most commonly performed hernia operations. The reported recurrence rate in the literature ranges from 10-30%, and techniques for repair range from primary and mesh repairs, open, laparoscopic, or robotic techniques. Our aim was to describe an open, laparoscopic-assisted (OLA) technique and its outcome.

Methods: A prospective, institutional database at a tertiary hernia center was queried for patients undergoing umbilical hernia repair from 2008-2019. All patients who were included underwent an open dissection of the hernia sac, placement of two lateral 5mm laparoscopic ports, insertion of mesh, closure of the fascial defect, and intraperitoneal onlay mesh (IPOM) fixation with permanent laparoscopic tacks to the anterior abdominal wall.

Results: A total of 186 patients were identified who underwent an OLA repair. Patient characteristics are as follows: average age 52.8±12.5 years, male gender 79.6%, BMI 31.4±8.0 kg/m2, average hernia defect size 2.8±4.8 cm2. Average number of prior operations were 3.0±1.1, and average prior hernia operations in this group was 1.4±0.7, with 41 (22.0%) patients who had a previous failed hernia repair. Comorbidities included: hypertension 43.2%, diabetes 9.7%, and smoking history 27.0%. Sixty-nine (37.1%) patients had another procedure performed at the time of the umbilical hernia repair, the most common was laparoscopic transabdominal inguinal hernia repair (58%). Mean operative time was 87.3±51.2 minutes for all patients, and 63.9±31.9 minutes for patients only undergoing an OLA repair, estimated blood loss was 18.2±24.2 mL, and average mesh size was 57.9±69.3 cm2. There were no recurrences (0%), with average follow up of 16.5±17.7 months. In terms of post-operative wound complications, we noted: 5 (2.7%) wound erythema, 2 (1.1%) hematomas, 5 (2.7%) seromas, with only one seroma requiring drainage. There were no bowel injuries and no mesh infections. Eight (4.3%) patients required oral antibiotics. Only one person was readmitted within 30-days for drainage of a seroma. One patient developed a small bowel obstruction with interloop adhesions, not related to the mesh or repair, and required a laparoscopic lysis of adhesions. Another patient developed chronic pain 1 year after surgery and required laparoscopic removal of tacks used. There were no mesh related complications, mesh removals, or reoperations related to the hernia repair.

Conclusion: With moderate follow-up, an open, laparoscopic-assisted umbilical hernia repair with mesh appears to be a durable repair with favorable results, including those patients with recurrent hernias.
P 78. ACTINOMYCES INFECTION MIMICKING ESOPHAGEAL CANCER: A CASE REPORT AND REVIEW OF THE LITERATURE

Presenter: Jessica Biller DO | Duke LifePoint Conemaugh Memorial Medical Center
Biller JJ, Zagorski SM

Introduction: Actinomyces is an anaerobic, gram positive bacillus often found in the gastrointestinal and genitourinary flora. They are slow growing, low virulence organism that take months to manifest as infections and are commonly mistaken for malignancy or other more common infections such as tuberculosis. Actinomyces appear as sulfur granules with club-shaped ends and should be differentiated from Nocardia by AFB stain. They most commonly cause infections in immunocompromised patients and are rarely the source of esophageal infections. These infections typically occur after insult to the esophageal mucosa and can present as fistulas, abscesses, strictures, or draining sinus tracts. Radiologic findings include esophageal wall thickening on CT and mucosal irregularity such as ulceration on double contrast esophagram. Gold standard means for diagnosis is culture but histology can also assist in achieving the diagnosis. The treatment recommendations are 4-6 weeks of IV penicillin followed by long term oral penicillin for 6-12 months.

One report in the literature discusses a diabetic, middle-aged female who presented with dysphagia and weight loss. She had no prior esophageal injury and was found to have a firm submucosal mass with superficial ulceration and partial luminal obstruction on EGD. She was diagnosed with a T3N0 esophageal tumor after FNA showing inflammatory debris indicative of neoplasm. She underwent Ivor Lewis esophagogastrectomy with pathology unable to produce evidence of neoplastic cells. After different cultures and staining the patient was diagnosed with an actinomycetoma.

Our patient was an elderly male with multiple comorbidities including history of colon cancer and on anticoagulation for AVR and atrial fibrillation who initially presented with acute blood loss anemia and complaints of epigastric pain. He underwent EGD and colonoscopy which were normal except a small cecal polyp and gastritis. He then continued to have acute blood loss anemia and complaints of epigastric pain so endoscopy was repeated a few months later. On repeat endoscopy he had a small ascending colon polyp and malignant appearing ulcerative mass at the GE junction. He was at that time diagnosed with esophageal cancer however, on pathology report, the biopsy of the mass showed mucosa with chronic inflammation and bacterial colonies of actinomycetes with necrotic material. Unfortunately, the patient died a few days later from an unrelated cause and was unable to undergo further workup.
P 79. ANTIBIOTIC EXPOSURE IN COMPLICATED APPENDICITIS: A COMPARISON TO CURRENT GUIDELINES

Presenter: Laura Decesare MD | Rush University Medical Center

Introduction: In 2017, the Study to Optimize Peritoneal Infection Therapy (STOP-IT) trial demonstrated that the administration of a short-duration (4 days) of antibiotics after adequate source control of complicated intra-abdominal infections was equivalent to longer duration therapy. However, patients continue to receive antibiotic therapy for longer than the recommended duration. This study sought to evaluate our institution’s practice patterns and adherence to current antibiotic guidelines.

Methods: Hospital admission data from 2010 to 2018 for complicated intra-abdominal infections from one academic and one community hospital were examined. Other etiologies of intra-abdominal infections, pediatric cases and cancer operations were excluded. Pre STOP-IT and post STOP-IT cases were compared using one-tailed t test, and comparison between management was done using ANOVA.

Results: From 2010 to 2018, 2,295 admissions for complicated intra-abdominal infections were observed, 59 of which were identified as complicated appendicitis in adults without cancer. Of this cohort, 37 admissions occurred prior to and 22 occurred after the 2017 STOP-IT guideline publication. Overall, total antibiotic exposure was highly variable (1 to 37 days). Total mean antibiotic exposure was 14 days (SD 6.2), post-source control was 11 days (SD 5.6) and post-discharge was 8.8 days (SD 5.6). Compared to the academic hospital, the community hospital demonstrated longer duration of antibiotic exposure (Community: mean 17 days, SD 13; Academic: mean 13 days, SD 6.1 p=0.09). Post-source control and discharge duration of antibiotic exposure was significantly lower with an acute care attending of record (post-source control: 8.4 days vs 11.9 days p=0.02; post-discharge: 6.7 days vs 9.1 days p=0.07) Surgical management (SM) demonstrated the shortest duration of post-source control antibiotic exposure when compared to percutaneous drainage (PD) or no intervention (SM mean 10, SD 5.2; PD mean 16 SD 4.9; NI mean 15 SD 6.3; p<0.05) and upon discharge (SM mean 5.6, SD 4.7; PD mean 9.6 days, SD 4.1; NI mean 10 days, SD 6.0; p<0.05). After the release of STOP-IT guidelines, the mean post-source control duration decreased from 12.6 days (SD 5.3) to 9.0 days (SD 5.1) (p=0.01) and the mean discharge antibiotic duration decreased from mean 9.4 days (SD 5.6) to 6.6 days (SD 4.8) (p=0.03).

Conclusion: Overall, antibiotic duration exceeded STOP-IT guidelines and was highly variable. Surgeons who managed infections operatively, academic surgeons, and acute care specialists utilized a shorter total duration of antibiotic exposure.
Introduction: Intestinal obstruction is a common condition in adults that most often occurs secondary to intra-abdominal adhesions, incarcerated hernias, obstructive malignancy and intestinal volvulus. Abdominal Cocoon Syndrome, also known as sclerosing encapsulating peritonitis (SEP), is a rare cause of intestinal obstruction. It is characterized by either the partial or complete encasement of the small intestine by a fibrocollagenous membrane. While the exact etiology of this disease is not fully elucidated, previous abdominal surgery, history of peritonitis, intraperitoneal chemotherapy, peritoneal dialysis, ventriculoperitoneal shunt history and even the use of chlorhexidine for peritoneal lavage have all been cited as likely risk factors. We herein report 3 original cases of abdominal cocoon syndrome treated with operative intervention.
P 81. EVALUATING USE OF VITAMIN PATCHES IN BARIATRIC SURGERY PATIENTS
Presenter: Meredith Freeman BS | Tulane University School of Medicine
Freeman MN, Foroushani SM, Osinubi TA, Bartholomew DV, Baker JW, Levy SM

Introduction: Adherence to oral micronutrient supplementation regimens can be extensive and challenging for bariatric surgery patients. Post-operative regimens may require multiple supplements spaced throughout the day to ensure proper absorption of calcium and iron. We hypothesized that bariatric surgery patients are utilizing vitamin patches as an alternative source of micronutrient supplementation. The purpose of this study is to determine the frequency of use of patch vitamins in bariatric surgery patients.

Methods: Post-operative bariatric surgery patients living in the United States were invited to participate in an anonymous survey describing individual vitamin use. The survey was posted in online social media bariatric support groups.

Results: Preliminary data show that, of the 480 patients included in this study, 17 (3.5%) stated that they utilized vitamin patches as part of their regimen. Among those patients, 58.9% said they would recommend using vitamin patches. 162 (33.8%) respondents said that they had heard of vitamin patches prior to the survey. Additionally, 135 (29.2%) of patients said they might and 239 (51.6%) said they would definitely be interested in using patch vitamins.

Conclusion: This survey indicates low utilization rates for vitamin patches among bariatric surgery patients. However, this survey also indicates that patients are interested in using patches. Further research is necessary to understand the efficacy of transdermal vitamins, particularly in bariatric patients who may have altered pharmacokinetics and/or transdermal absorption barriers.
Introduction: Traumatic thoracic aortic injuries (TAIs) carry a substantial mortality. Our study aim was to compare repair type: Thoracic Endovascular Aortic Repair (TEVAR) vs. open and insurance status with outcomes from a national sample using the National Trauma Data Bank Research Data Set (NTDB-RDS).

Methods: The NTDB-RDS was reviewed for TAI repair method, (TEVAR vs. open) and insurance status. Categories were insured (Medicaid, Medicare, private insurance) and self-pay. Each group was further divided by Injury Severity Score (ISS) of < 25 and ≥25 to adjust for injury burden. Demographic characteristics and outcome measures were compared. Chi-square, t-test, and ANOVA were used with significance defined as p<0.05.

Results: Within the NTDB-RDS, a review of nearly 1 million patients led to 241 that underwent repair for TAI and had insurance status and repair type documented. 7.5% (18/241) had Medicare, 24.5% (59/241) Medicaid, 56.8% (137/241) Private, and 11.2% (27/241) self-pay. There were no significant differences in repair type based on insurance status. For open repair with an ISS ≥25, mortality was significantly higher in the self-pay group compared to insured (55.5% vs 21.9%, p=0.03). Self-pay also had a significantly higher mortality compared to private insurance, (55.5% vs. 19.1%, p=0.02).

Conclusion: For open repair in patients with thoracic aortic injury and high injury burden, self-pay was associated with a significantly increase mortality rate compared to insured patients. Further work should focus on possible etiologies for uninsured patients having a worse outcome.
Introduction: The American Board of Surgery In-training Examination (ABSITE) is an important marker of medical knowledge. It is unclear what factors predict or improve these scores. We evaluated demographics, United States Medical Licensing Examination (USMLE) step 1 and 2 scores, and surgical rotations to determine if there were any correlation with the ABSITE.

Methods: This was a multi-center retrospective study over a 6 years period investigating the correlation and association of demographics, USMLE scores, and types of surgical rotations on the ABSITE percentile score of interns. Demographics included age, gender, race/ethnicity, US vs International/foreign medical graduate. Analysis was performed with ANOVA, correlation was evaluated with 95% Confidence Interval (CI), and significance was defined as p<0.05.

Results: Complete records were obtained on 89 interns from 6 different general surgery programs over 6 years and revealed significant correlation between USMLE 1 and 2 with the ABSITE. USMLE 2 correlation was strongest (r=0.44, 95% CI= (0.25-0.60), p<0.05). There was a significant improvement in ABSITE performance (mean score improvement of 17.3 percentile, p=0.01) of interns who had an ICU rotation prior to examination. Other surgical rotations were not associated with an ABSITE improvement. Demographic factors such as age, gender, race/ethnicity, or medical graduate background status were not associated with ABSITE scores.

Conclusion: USMLE Step 2 scores significantly correlate with intern ABSITE performance. An ICU rotation prior to taking the ABSITE was associated with a significant improvement in their percentile scores. Demographic factors were not correlated with ABSITE performance.
Introduction: Morgagni hernia is a rare condition with a right sided diaphragmatic defect anterior to the liver. Intraabdominal contents including the colon may herniated into the chest. Bleeding right colon cancer is best approached by oncologic right hemicolecctiony with laparoscopy now being the preferred approach.

Methods: We report a patient in whom the ascending colon harboring a bleeding cancer was lodged within the chest through a Morgagni hernia. Management of the patient is described in detail and a review of the literature was done.

Results: A 70 year old obese male presented with fatigue and shortness of breath and CT-scan showed a large Morgagni type hernia with the entire right hemicolon trapped in the chest. Due to anemia and a positive guaiac he underwent a colonoscopy showing a large mass in the right colon. Biopsies confirmed presence of an adenocarcinoma. He was placed supine in; laparoscopy was done with one 10-12mm and two 5mm ports. The Hernia contents were reduced and the entire hernia sack was mobilized out of the mediastinum and resected. The defect was closed with transfascial sutures, a Phasix MESH was placed and extraperitonealized using the remnant of the hernia sack. The colon was mobilized, the vascular pedicle was stapled and through a 4cm periumbilical incision the colon was resected with an extracorporeal ileocolic anastomosis. Pathology revealed pT3N1M0 moderately differentiated adenocarcinoma. The patient had no postoperative complications, chemotherapy was started but he died 5 months later from a cardiac event. Only three similar cases have thus far been reported - all from Europe (Germany, Bosnia Herzegovina, Spain) and none was published in English. All were elderly male patients, only one had laparoscopic surgery. Outcome was good if the condition was detected early, in case of emergent surgery, prognosis is less favorable.

Conclusion: We present the first case of a Colon Cancer in a Morgagni hernia in the US. Repair of the hernia and right hemicolecctiony can be safely done using a minimally invasive approach.
Introduction: Feeding tubes are generally well-tolerated. However, late tube migration is a complication unrelated to the method of placement. Intestinal obstruction resulting from tube migration is a pesky complication that might occur at any point during care. Mundi et al estimated that 189,036 pediatric and 248,846 adult feeding tubes are placed annually. As this case demonstrates, trans-gastric tube migration and intestinal obstruction are indeed predictable and occasionally preventable complications of feeding tubes. This complication might be averted by slight modifications in technique or choice of gastrostomy tube. A 70 year old man presented developed dysphagia and mild weight loss post resection of a squamous cell parotid tumor. The percutaneous gastrostomy tube placement was uneventful and patient was discharged home. He presented three months later for evaluation of the feeding tube after two days of nausea vomiting and intolerance to feeding. His vital signs were stable and his presentation was otherwise unremarkable. An abdominal scout image showed the feeding tube balloon on the right side of the spine suggestive of distal migration into the small bowel. The tube was injected with contrast to verify its location, the balloon was deflated and the tube was slowly retracted into the stomach. A guide wire was passed via the tube and the old tube was exchanged for an 18 F balloon gastrostomy tube. Final injection of contrast confirmed adequate location. Care giver was advised of the findings and the steps to monitor for tube migration. Upon reflection, a more proximal placement of the feeding tube or the deployment of a low profile (button) g-tube might have prevented this premature visit.
P 88. ROBOTIC-ASSISTED PARTIAL GASTRECTOMY OF A GASTRIC SCHWANNOMA
Presenter: Jillian K Scott MD, RD, CNSC | University of Tennessee Medical Center, Chattanooga
Scott JK, Dowden JE

Introduction: Schwannomas are benign, often asymptomatic, slow-growing mesenchymal tumors that are mainly located in the deep muscular layer of the stomach. Only 0.2% of gastric cancers are schwannomas. They are difficult to differentiate preoperatively from other submucosal tumors of the stomach with a differential including gastrointestinal stromal tumors (GISTs), leiomyomas, and leiomyosarcomas.

Summary: A 35 year old white male patient with past medical history significant for hepatitis C, hypertension, type 2 diabetes mellitus, and gastroparesis presented to his primary care physician for symptoms of fatigue, unintended weight loss, nausea, vomiting, and decreased ability to tolerate solid foods. CT scan and EGD confirmed a mass of the greater curvature of the stomach. Endoscopic ultrasound with fine needle aspiration of the mass favored a neurofibroma. Robotic-assisted partial gastrectomy was performed. Pathologic examination revealed a 4.6 x 3.2 x 2.8 cm well-circumscribed nodule of spindle cells that stained diffusely positive for S-100, consistent a gastric schwannoma. The patient recovered without incident and has experienced less gastroparesis symptoms.

Conclusion: Gastric schwannomas are rare benign neoplasms of the stomach that are difficult to diagnose preoperatively, but should be included in the differential diagnosis of a gastric mass and are amenable to robotic-assisted resection.
P 89. MONOMORPHIC EPITHELIOTROPIC INTESTINAL T-CELL LYMPHOMA (MEITL) WITHIN A MECKEL’S DIVERTICULUM
Presenter: Lindsey Fontaine | Atlanta Medical Center
Fontaine LM, Rodgers DL, McGhee JA, Patel VG

Introduction: The most common congenital anomaly of the gastrointestinal tract is a Meckel’s diverticulum resulting from incomplete obliteration of the vitelline duct leading to the formation of a true diverticulum of the small intestine. Neoplasms developing within a Meckel’s diverticulum are rarely reported in English literature. When discovered and reported, the neoplasms are commonly carcinoids, gastrointestinal stromal tumors, and adenocarcinomas. We herein report the only case of a monomorphic epitheliotropic intestinal T-cell lymphoma (MEITL) arising from a Meckel’s diverticulum.

A 75-year-old male presented to the emergency department with complaints of acute abdominal pain in the right lower quadrant and lower back pain. Physical examination revealed non-toxic looking patient with stable vitals. Abdominal exam revealed right lower quadrant and periumbilical tenderness without peritonism. Computed tomography (CT) scan of the abdomen and pelvis with contrast revealed a thick-walled inflammatory structure in the right lower quadrant of the abdomen with small adjacent air bubbles suggesting microperforation of possible Meckel’s diverticulum. Repeat CT scan with delayed images revealed intralesional enteric contrast was no longer present, suggesting contrast emptying from Meckel’s diverticulum.

Diagnostic laparoscopy confirmed a Meckel’s diverticulum with microperforation and trace amounts of purulent fluid in the peritoneal cavity. Infiammed Meckel’s diverticulum with adjacent small abscess was bluntly dissected from the pelvis, and a segmental small bowel resection removing approximately 12 cm of distal small bowel was performed with primary anastomosis. Histology revealed infiltrates arising from the perforated Meckel’s diverticulum composed predominantly of monomorphous appearing lymphoid cells of medium size with scant cytoplasm and nuclear hyperchromasia. Immunoperoxidase studies were performed and the neoplastic cells were positive for CD3, CD4, CD7, CD56, BCL2, and TIA-1. Granzyme B and CD8 showed 1 to 2+ positivity. BCL-1, BCL-6, CD10, CD20, CD23, CD30, and CD79a were negative. CD45 RO showed 10% positivity. CD5 showed 20% positivity. MYC-IHC showed 20% weak nuclear staining. These findings supported the diagnosis of MEITL.

Patient postoperatively had an uneventful course and was discharged. At follow up patient had made excellent recovery, remained asymptomatic, and referred to medical oncology. He was subsequently referred to a tertiary center for consideration of experimental trial chemotherapy treatment in view of patient’s age and functional status.

We present this rare T-cell lymphoma involving Meckel’s diverticulum not previously reported in English literature. There is limited literature on appropriate medical management. The prognosis appears poor with small intestinal T-cell lymphomas with a 1-year overall survival rate of 36% reported in literature.
Introduction: Treatment for diverticulitis has trended towards non-operative management. It is unclear whether transplant patients should be treated in the same manner or offered more aggressive surgical management. In this study, we compared pre and post-transplant diverticulitis patients. Our goal was to compare complications, morbidity, and mortality between transplant patients who were medically managed and those who were treated surgically for their acute diverticulitis, and determine whether early surgical intervention is warranted.

Methods: A retrospective review was performed of patients with ICD codes matching transplantation and diverticulitis/diverticulosis between Jan 1, 1990 to September 1, 2018 at a single academic institution.

Results: 608 patients were found to have diverticulosis or diverticulitis, pre- or post-transplant. 61 patients had post-transplant diverticulitis. Post-transplant patients with diverticulitis versus post-transplant patients without diverticulitis had a significant difference in gender (female 46% vs 32%, P=.033), Charlson Index (Average: 4.6 +/- 2.1 vs. 5.2 +/- 2.2, p=0.031) and no significant median overall survival; although post-transplant patients with diverticulitis did have a higher median overall survival which approached significance (289 +/- 39 vs. 213 +/- 17, p=0.058). When comparing patients who underwent surgery versus those who were medically managed, there was no significant difference in recurrence (15% vs. 37%, p=0.189), morbidity (62% vs. 58%, p=1.0), mortality (4% vs. 8%, p=0.508) or median overall survival (Not reached at 300 months vs. 163 +/- 37 months, p=0.896). Pre-transplant diverticulitis was not a predictor of post-transplant diverticulitis. Patients who underwent pre-transplant colectomy had the same median overall survival after transplant as patients who were medically managed for pre-transplant diverticulitis (median overall survival not reached vs. 168 +/- 30, p=0.653).

Conclusion: There does not need to be a low threshold for early, operative intervention in transplant patients with acute diverticulitis. Consequently, prophylactic colectomy before transplant is not necessary.
Table 4. Post-Transplant Diverticulitis: No Surgical Intervention vs. Surgical Intervention

<table>
<thead>
<tr>
<th>Variable</th>
<th>No Surgical Treatment (n=48)</th>
<th>Surgical Treatment (n=13)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>58 +/- 9</td>
<td>54 +/- 12</td>
<td>0.254</td>
</tr>
<tr>
<td>Gender (Male)</td>
<td>26 (54)</td>
<td>7 (54)</td>
<td>1.0</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>36 (78)</td>
<td>8 (61)</td>
<td>0.335</td>
</tr>
<tr>
<td>Black</td>
<td>9 (20)</td>
<td>5 (39)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>1 (2)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Charlson Index (Average)</td>
<td>4.8 +/- 2.1</td>
<td>3.7 +/- 1.5</td>
<td>0.044</td>
</tr>
<tr>
<td>ASA Classification (Average)</td>
<td>3.1 +/- 0.7</td>
<td>2.9 +/- 0.8</td>
<td>0.462</td>
</tr>
<tr>
<td>HTN</td>
<td>39 (81)</td>
<td>12 (92)</td>
<td>0.674</td>
</tr>
<tr>
<td>Diabetes</td>
<td>17 (35)</td>
<td>2 (15)</td>
<td>0.311</td>
</tr>
<tr>
<td>Prior Cardiac Event</td>
<td>9 (19)</td>
<td>0 (0)</td>
<td>0.184</td>
</tr>
<tr>
<td>CHF</td>
<td>20 (42)</td>
<td>0 (0)</td>
<td>0.006</td>
</tr>
<tr>
<td>CAD</td>
<td>14 (29)</td>
<td>2 (15)</td>
<td>0.484</td>
</tr>
<tr>
<td>CKD</td>
<td>30 (63)</td>
<td>11 (85)</td>
<td>0.189</td>
</tr>
<tr>
<td>COPD</td>
<td>6 (13)</td>
<td>2 (15)</td>
<td>1.0</td>
</tr>
<tr>
<td>Current Smoker</td>
<td>1 (2)</td>
<td>0 (0)</td>
<td>1.0</td>
</tr>
<tr>
<td>Alcohol Abuse</td>
<td>3 (6)</td>
<td>0 (0)</td>
<td>1.0</td>
</tr>
<tr>
<td>History of Diverticulitis</td>
<td>5 (10)</td>
<td>0 (0)</td>
<td>0.575</td>
</tr>
<tr>
<td>Transplanted Organ</td>
<td></td>
<td></td>
<td>0.105</td>
</tr>
<tr>
<td>Kidney</td>
<td>19 (40)</td>
<td>11 (85)</td>
<td></td>
</tr>
<tr>
<td>Heart</td>
<td>15 (31)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Lung</td>
<td>6 (13)</td>
<td>2 (15)</td>
<td></td>
</tr>
<tr>
<td>Liver</td>
<td>5 (10)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Kidney/Pancreas</td>
<td>1 (2)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Kidney/Heart</td>
<td>1 (2)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Liver/Kidney</td>
<td>1 (2)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Overall Patient Complications</td>
<td>28 (58)</td>
<td>8 (62)</td>
<td>1.0</td>
</tr>
<tr>
<td>Complications for All Episodes</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Presenting/In Hospital</td>
<td>14 (29)</td>
<td>7 (54)</td>
<td>0.113</td>
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<tr>
<td>30 Day</td>
<td>5 (10)</td>
<td>2 (15)</td>
<td>0.634</td>
</tr>
<tr>
<td>Long Term</td>
<td>19 (39)</td>
<td>3 (23)</td>
<td>0.342</td>
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<tr>
<td>Overall Diverticulitis Recurrence</td>
<td>18 (37)</td>
<td>2 (15)</td>
<td>0.189</td>
</tr>
<tr>
<td>1 recurrence</td>
<td>11 (61)</td>
<td>2 (100)</td>
<td>0.409</td>
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<tr>
<td>2 recurrences</td>
<td>4 (22)</td>
<td>0 (0)</td>
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</tr>
<tr>
<td>3 recurrences</td>
<td>3 (17)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Death</td>
<td>18 (38)</td>
<td>4 (31)</td>
<td>0.753</td>
</tr>
<tr>
<td>Mortality</td>
<td>2 (4)</td>
<td>1 (8)</td>
<td>0.508</td>
</tr>
<tr>
<td>Median OS from Diverticulitis (Mos)</td>
<td>163 +/- 37</td>
<td>Not reached at 300 months</td>
<td>0.896</td>
</tr>
<tr>
<td>Median OS from Transplant (Mos)</td>
<td>276 +/- 31</td>
<td>314 +/- 0</td>
<td>0.874</td>
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Introduction: The non-ablative radiofrequency treatment to lower esophageal sphincter (Stretta) has been shown to be beneficial for a subset of patients with symptomatic recurrence of gastroesophageal reflux disease (GERD) after Nissen fundoplication. This endoluminal procedure is less complex than revisional antireflux surgery. To our knowledge, this is the first report of Stretta after transoral incisionless fundoplication (TIF).

This patient is a 17-year-old female who had GERD symptoms for 9 years. She presented with heartburn, regurgitation and epigastric discomfort. She reported no symptoms of dysphagia, change in voice or globus sensation. She was using omeprazole daily for 7 years. This was increased to twice daily for two years with gradual progression of her symptoms. Esophagogastroduodenoscopy (EGD) showed 2 cm sliding hiatal hernia and Hill’s Deformity Grade II. Wireless pH study showed DeMeester score of 25. Her scores on omeprazole for GERD Health Related Quality of Life (GERD-HRQL), Reflux Symptoms Index (RSI) and GERD symptoms Score (GERSS) questionnaires were 14, 13 and 34.

Patient underwent TIF using Esophyx HD Device. The procedure was uneventful and produced a 270 degree wrap. Her symptoms resolved, and she discontinued proton pump inhibitor (PPI) one week postoperatively. She continued to do well for 6 months, however, she had episodes of repeated violent vomiting followed by recurrence of regurgitation, nausea, bloating and dysphagia.

Diagnostic workup included gastric emptying scan which was normal. EGD showed no hiatal hernia and partial disruption of the TIF valve. DeMeester score was 36.3. Esophageal manometry with impedance showed intact peristalsis and normal relaxation of lower esophageal sphincter. Patient underwent Stretta which was uneventful. The previous TIF did not increase the complexity of the procedure. There were no immediate or postoperative complications. Patient reported gradual improvement of her symptoms and complete resolution 2 months postoperatively. She discontinued PPI. She completed GERD questionnaires at 17 months post Stretta which showed satisfaction of GERD control, and her scores of GERD HRQL, RSI and GERSS were all zeros.

This case presentation demonstrates the real scenario of disruption of fundoplication after violent vomiting. It highlights the safety of Stretta following TIF. This combination is safe and effective in controlling GERD. It avoids the complexity of revisional antireflux surgery and provides strategic advantages especially in young patients. Prospective studies with longer follow up are required to validate this concept.
Introduction: Biliopancreatic diversion (BPD) with or without duodenal switch (DS) is the most effective procedure for achieving weight loss and resolution of comorbidities among other bariatric operations. Despite these known benefits, its adoption has been infrequent. The two main reasons are the technical challenges of the operation and the need for long term follow up. Currently, the popularity of robotic assisted surgery is growing. The robotic BPD operation maybe able to offer a safe and readily adoptable technique. The data available regarding outcomes of robotic assisted BDP are limited. The objective of the present study is to assess the short-term outcomes of robotic BDP and BDP/DS at a single U.S. institution.

Methods: We conducted a retrospective review of the MBSAQIP database of our patients who underwent robotic BPD or BDP/DS from January of 2015 through June of 2019. The outcomes included 30 day mortality and incidence of superficial incisional infection, anastomotic leak, re-operations, re-admission, development of venous thromboembolism (VTE), and pneumonia.

Results: 124 patients with average age of 43 (20-72) underwent robotic BPD or BDP/DS. The mean preoperative BMI was 51.24 kg/m2. There was one mortality within 30 days. Only one patient had a superficial incisional infection. The anastomotic leak rate was 2.4% (3/124), bowel obstruction needing operative intervention was seen in 1.6% (2/124). Nine patients (7.2%) were readmitted within the first 30 days. The incidence of VTE was 4% (5/124). Finally, two patients diagnosed post-operative pneumonia.

Conclusion: This study shows that in short term of robotic assisted BDP/DS has an acceptable safety profile. Long-term follow up is needed to study the impact of the operation on weight loss and resolution of comorbidities.
P 93. THE ROLE OF TRANSORAL INCISIONLESS FUNDOPLICATION AFTER FAILED STRETTA
Presenter: Medhat Fanous MD | Aspirus Health System
Fanous MY, Jaehne AK, Williams S, Simbob J

Introduction: One of the main advantages of non-ablative treatment of lower esophageal sphincter (Stretta) is the fact that it does not burn bridges to subsequent laparoscopic antireflux surgery. To our knowledge, this is the first report of endoluminal antireflux surgery after Stretta. The aim of this case presentation is to highlight the safety and efficacy of Transoral Incisionless Fundoplication (TIF) after Stretta.

This patient is a 59-year-old female with BMI of 31.3 who had past medical history of type 2 diabetes, fibromyalgia, sleep apnea, asthma, recurrent aspiration pneumonia and psoriatic arthritis. Her medications included insulin, Norco, Humira and intermittent courses of steroids for psoriatic flare ups.

She had symptoms of gastroesophageal reflux disease (GERD) for 25 years. She presented with heartburn, nausea, dysphagia, bloating, regurgitation and globus sensation. She used Esomeprazole 40 mg twice daily for 6 years with gradual worsening of symptoms. Diagnostic workup included Barium esophagram showed small hiatal hernia and demonstrated large volume of reflux. Esophagastroduodenoscopy (EGD) showed 2 cm hiatal hernia. Wireless pH study showed DeMeester score of 41. Gastric emptying scan was normal. Esophageal manometry showed normal peristalsis and normal relaxation of the lower esophageal sphincter (LES). Her scores on Esomeprazole for GERD Health-Related Quality of Life (GERD-HRQL), Reflux Symptoms Index (RSI) and GERD Symptoms Score (GERSS) questionnaires were 44, 39 and 32.

We discussed laparoscopic and endoluminal antireflux procedures. Patient was interested in the latter option. Given her comorbidities, medications and their effect on healing, we offered the Stretta procedure instead of TIF. The procedure was uneventful. She improved and was using Esomeprazole as needed for 6 months. Her symptoms returned to baseline around 9 months postoperatively.

There were no obvious contraindications to performing TIF and patient was advised about the postoperative dietary requirement for 8 weeks. She underwent TIF using the Esophyx device. A 270 degree wrap was created. The previous Stretta procedure did not increase the complexity of TIF and no modification of the procedure was required. There were no immediate or postoperative complications. Patient discontinued Esomeprazole 2 weeks postoperatively. Follow up at 19 months revealed a satisfied patient off Esomeprazole. Her GERD-HRQL, RSI and GERSS were 0, 7 and 3.

This case presentation shows that TIF following the Stretta procedure is safe and effective. Prospective studies with longer follow up are required to validate this concept.
Introduction: Necrotizing soft tissue infection (NSTI) of the breast is a rare and serious condition documented in several case studies in the surgical literature. Many cases are related to recent procedures or underlying breast malignancy, but very few are caused by primary infections. We present a case of primary unilateral NSTI of the breast in a young female patient who presented in septic shock and underwent emergent surgical intervention with serial debridement and delayed closure.

Results: The patient rapidly recovered following rapid surgical intervention and had an excellent outcome.

Conclusion: With this case we showed that radiologic workup is unnecessary in diagnosis of primary NSTI of the breast, and that patient outcomes can be satisfactory with clinical diagnosis and early debridement.
P 95. PERFORATED CARCINOID TUMOR OF THE APPENDIX: NEED FOR GUIDELINES FOR MANAGEMENT WITH RESPECT TO PROGNOSTIC FACTORS
Presenter: Charles McCann MD | Inspira Health Network
McCann C, Schwartz J, Perry L, Cheng E

Introduction: The incidence of primary cancers of the appendix is low, with a rate of 1.2 per 100,000 per year in the United States. Carcinoid tumors, one of the most common malignant lesions involving the appendix, are typically found incidentally during routine appendectomies. While up to 20% of acute appendicitis cases present with perforation, the incidence of perforation among patients with undiagnosed carcinoid tumors of the appendix is unknown. In addition, there is no consensus on the management of carcinoid tumors in the perforated appendix or its impact on prognosis.

Case: A 42-year-old female presented to the emergency room with a 5-day history of right lower quadrant abdominal pain. She displayed signs and symptoms of septic shock, and findings on CT abdomen/pelvis were concerning for perforated appendicitis. She was taken to the operating room emergently, where she was found to have a gangrenous appendix with perforation at the base resulting in generalized purulent peritonitis. Her final pathology demonstrated the presence of a well-differentiated grade 1 neuroendocrine tumor at the tip of the appendix without evidence for lymphovascular invasion. The tumor, measuring 1.1 cm in size, extended into the subserosa (ENETS T3). The resection margin was negative for tumor involvement. Given the depth of tumor invasion and the relatively young age of the patient, the decision was made to perform an interval completion right hemicolectomy for lymph node sampling. The final pathology showed no evidence for residual disease or high-grade dysplasia in the cecum, and no evidence of metastatic disease in 33 lymph nodes. The patient has recovered well and remains disease-free at 7 months postoperatively.

Discussion: Current guidelines for appendiceal carcinoids recommend right hemicolecotomy for tumors demonstrating invasion at the base of the appendix, tumor size >2 cm, incompletely resected tumors, presence of lymphovascular invasion, intermediate or high-grade tumors with mixed histology (ie: goblet cell).

To the best of our knowledge, there is a scarcity of data on incidental carcinoid tumors found in the perforated appendix. Only a few cases have been reported in the available literature, and it remains unclear whether appendiceal perforation represents an independent negative prognostic factor for patient survival. Additional data from cohort studies is needed to determine the true incidence, prognosis, and optimal management of newly diagnosed carcinoid tumors in the perforated appendix. Furthermore, clear consensus guidelines are needed to identify the subgroup of patients who would benefit from interval or primary right hemicolecotomy.
Introduction: Atypical spindle cell lipomatous neoplasm, also known as well-differentiated spindle cell liposarcoma, represents a newly discovered entity of adipocytic tumors. Recent research has shown this tumor variant to be more related to spindle cell lipoma, rather than the originally hypothesized atypical lipomatous tumor spectrum. Here we present a case of a 58yo man with a history of CLL with an enlarging mass on the posterior L shoulder, initially hypothesized to be a benign lipoma. However, MRI showed a large, multiseptated, heterogeneous mass concerning for soft tissue sarcoma. After resection, pathologic analysis showed cells closely resembling spindle cell lipoma, with additional cellular and fascicular zones containing lipoblasts and mitotic figures. Molecular analysis showed no MDM2 amplification. This lack of amplification indicates this tumor is distinctly different from an atypical lipomatous tumor, which characteristically displays MDM2 amplification (1). However, tumor expression of RB1 was normal. The majority of atypical spindle cell lipomatous neoplasms are associated with RB1 deletions (1,2). We conclude that we have a unique example of an atypical spindle cell lipomatous tumor.
Introduction: Multidisciplinary approach to complex soft tissue sarcomas is of an essence to achieve optimal oncological outcomes while limiting the morbidity related to tissue loss and ensuring satisfactory cosmetic outcomes. Achieving such outcomes frequently requires both temporary means of wound closure awaiting final pathology margin report and comfort with utilization of flap coverage. The team effort of Surgical oncologists and plastic surgeons is an example of such approach. We present a case series of extensive truncal soft tissue tumors that required complex pedicled flap closure and progressive stepwise tissue coverage.

Case 1: 58-year-old male with a past medical history of chronic lymphocytic leukemia presented with left shoulder mass of six years duration (1A). The mass is associated with multiple other subcutaneous masses over his trunk. It measured 13 by 12 by 4 cm. An MRI showed heterogeneous consistency concerning for sarcoma. Biopsy was consistent with spindle cell lymphoma. The mass was resected in bloc. Temporary closure was utilized with meshed bi-layer wound matrix covered with negative pressure devise pending pathology results. Negative pressure devise was utilized with serial changes until post operative day 15 at which the devise and the mesh were removed and the patient was started on local wound care with wet to dry dressing changes (1B). Given positive margins a repeat excision was needed. This was followed with immediate coverage with pedicelled latissimus dorsi flap with split thickness skin coverage (1C).

Case 2: 29-year-old male with no significant medical history presented with rapidly enlarging left shoulder mass associated with pain and weakness in his left upper extremity. On exam the mass is exophytic without ulceration (2A). Biopsy showed Dermatofibrosarcoma protruberans. Neoadjuvant radiation therapy was started yet Tumor showed progressive increase in size. Radical resection was performed showing invasion of the tumor to the level of the acromioclavicular joint. The defect measured about 24 cm in largest diameter and was temporarily closed with negative pressure therapy devise. Multiple changes for the negative pressure devise dressing was done post operatively (2B). The pathology report was significant for positive deep margins so the patient underwent further resection to include partial scapula, acromioclavicular joint and deltoid muscle resection. Intraoperatively the wound was reconstructed with latissimus pedicled flap. This was followed by an elective split thickness skin graft for coverage. Patient was followed closely for 1 year after his initial surgery (2C).
P 98. MALIGNANT SOMATIC TRANSFORMATION OF A TERATOMA FIFTEEN YEARS AFTER COMPLETION THERAPY FOR A GERM CELL TUMOR
Presenter: Emily Grenn MD | University of Mississippi Medical Center
Grenn EE, Young TH, Henegan JC, Anderson CD, Earl TM, Orr WS

Introduction: Although male germ cell tumors (GCTs) comprise only about 2% of human malignancies, they are the most common cancers in males ages 20-40. These tumors can be divided into seminomas and non-seminomas, the latter occur in men in their late teens and early thirties. Testicular GCTs are more sensitive to systemic chemotherapy than most adult solid tumors, thus they are commonly treated with cisplatin-based chemotherapy following orchiectomy with or without retroperitoneal lymph node dissection (RPLND). Malignant somatic transformation of a teratoma is rare but has been found to occur in patients following completion of chemotherapy for testicular GCTs. Here we present a case of malignant somatic transformation of a retroperitoneal teratoma in an adult patient, fifteen years following completion therapy for mixed GCT non-seminomatous tumor of the left testicle.

Case description: Our patient is a 52-year-old male with a prior history of Stage IIIB mixed germ cell tumor of the left testicle described as non-seminomatous with predominant embryonal carcinoma, yolk sac tumor and choriocarcinoma components. He underwent a left orchiectomy as well as three cycles of bleomycin, etoposide, and platinum chemotherapy (BEP). He presented fifteen years later with complaints of one month of gradually worsening abdominal distension. Computed tomography showed a large complex mass consisting of numerous solid and cystic components measuring 30x19x38 cm. A fine-needle aspiration was obtained and concerning for mucinous adenocarcinoma suspicious of appendiceal origin. He underwent exploration with the intentions of undergoing tumor debulking and administration of hyperthermic intraperitoneal chemotherapy (HIPEC). However, HIPEC was aborted due to intraoperative findings of a grossly normal appendix. The final pathology of the mass was consistent with adenocarcinoma, staining positive for CK20 and CDX2 and negative for CK7 which was consistent with a gastrointestinal phenotype, however the mass was also positive for isochromosome 12p indicating a representation of somatic transformation of the prior germ cell tumor of the testis. As the patient had previously completed adjuvant therapy for his testicular cancer, and no gastrointestinal primary was found, no clear indications for further treatment were determined.

Discussion: The National Comprehensive Cancer Network guidelines for non-seminomatous GCTs stage IIIB with intermediate risk recommend BEP followed by surveillance vs. RPLND. Our patient underwent surveillance. While this condition is rare, there is debate on whether aggressive initial surgical approaches such as performing RPLND in all patients with advanced stages of GCTs is the best option for preventing malignant somatic transformation.
P 99. NEUROENDOCRINE TUMORS OF THE BREAST: A CASE SERIES
Presenter: Fairouz L Chibane MD | Medical College of Georgia at Augusta University
Chibane F, McCluskey B, Mattox S, Kolhe R, Vinyard A

Introduction: Primary neuroendocrine Tumors (NETs) of the breast are an uncommon and underrecognized subtype of breast cancer, believed to account for < 1% to 5% of all breast carcinomas. The 2012 World Health Organization definition stratifies them into three categories: well-differentiated (WD-NET) and poorly differentiated neuroendocrine tumors (PD-NET) and invasive breast carcinoma with neuroendocrine features (IBC-NED). Histologically, breast NETs share morphologic features with other primary breast lesions, however, breast NETs are differentiated from other carcinomas by using the following specific neuroendocrine markers: synaptophysin or chromogranin A. The main differential diagnosis is a metastatic neuroendocrine tumor and this has key diagnostic and therapeutic implications. We present three cases of women diagnosed with breast NETs at our facility. The first case is a 66 year old female that was diagnosed with incidentally found IBC-NED during a colon adenocarcinoma evaluation. The second case is an 85 year old female diagnosed with WD-NET while admitted for STEMI. The third case is a 62 year old female with a personal history of metastatic invasive ductal carcinoma of the breast status post treatment and was recently diagnosed with IBC-NED during workup of new breast mass. We discuss the importance of staining for neuroendocrine markers in breast cancer to ensure necessary further work up including CTs, octreotide scans and colonoscopies to assess for underlying gastrointestinal disease. Clinical suspicion must remain high as breast NETs may be underdiagnosed.
Introduction: Neurofibromatosis type I (NF1) is an autosomal dominant genetic disorder associated with characteristic skin findings, as well as a fourfold increase in risk of malignancy. NF1 patient malignancies commonly include the central and peripheral nervous system, but these patients are also at high risk of developing gastrointestinal (GI) tumors. While most often these GI tumors are benign upper GI neurofibromas; clinicians should have a high suspicion for malignant tumors, degeneration into a malignant peripheral nerve sheath tumor or less common associated malignancies such as well-differentiated neuroendocrine tumor (formerly carcinoid tumor), when patients present with multiple GI tumors.

Methods: Our patient underwent a Whipple for symptomatic neurofibromas associated with NF1 and was unexpectedly discovered to have a metastatic duodenal well-differentiated neuroendocrine tumor. The patient is a 66-year-old man with NF1 who presented with hematemesis and was found to have large gastric neurofibromas and an ampullary neurofibroma based on endoscopy and radiological imaging. Another ostensive neurofibroma was noted distally. A pancreatoduodenectomy was performed.

Results: Pathological examination identified the neurofibromas but the tumor measuring 1.4cm and arising from the minor duodenal papilla was, in fact, a synchronous well-differentiated neuroendocrine tumor metastatic to regional lymph nodes, consistent with pT2 pN1, Stage IIIB cancer.

Conclusion: NF1 patients with multiple GI tumors are at an increased risk for malignancy. Therefore, a high index of suspicion for malignancy in any patient with NF1 presenting with gastrointestinal symptoms has implications for a surgeon, warranting not only a further diagnostic investigation, but also an appropriate surgical intervention and sampling for nodal spread. Because of the possibility of a simultaneous cancer, it is crucial to assess all suspicious tumors even if the masses appear endoscopically benign.
Introduction: Infiltrating ductal carcinoma (IDC) of the breast represents 70 to 80 percent of all invasive breast lesions. Metastatic breast cancer often presents at these sites in associated frequency: bone, liver, lungs, and the brain. It is exceedingly rare for metastatic IDC to manifest as peritoneal carcinomatosis resulting in gastric outlet obstruction (GOO).

Methods: We report a case of atypical metastatic IDC who presented with GOO secondary to peritoneal carcinomatosis. Patient was treated with surgical management with eventual progression to medical therapy.

Results: This patient is a 52-year-old female with history gastroesophageal reflux disease, peptic ulcer disease, and recent diagnosis of infiltrating ductal carcinoma of the left breast (ER+/PR+, Her2/neu-). Patient was referred to our tertiary center status post laparoscopic cholecystectomy due to persistent nausea, episodes of emesis, and dyspepsia. CT imaging appeared to confirm localized IDC in the left breast without any evidence of metastatic disease. Further imaging confirmed high-grade obstruction and gastroenterology was consulted for esophagogastroduodenoscopy (EGD) with ultrasound and endoscopic retrograde cholangiopancreatography (ERCP). ERCP did not demonstrate any significant findings contributing to gastric outlet obstruction; however, endoscopic ultrasound showed wall thickening within the second portion of the duodenum without any evidence of masses present.

The patient underwent exploratory laparotomy for unresolving gastric outlet obstruction of unknown etiology. Surgery demonstrated extensive lymphadenopathy present in the gastrocolic ligament, gastrohepatic ligament and the greater omentum. Gastric and duodenal implants were also noted. Intra-abdominal washing was performed with aspirate being sent to cytology and biopsies were obtained at all areas of concern. A formal gastro-jejunostomy was performed with a feeding gastro-jejunostomy tube to palliate the patient’s symptoms and provide supplemental nutritional support. Cytology of intra-abdominal fluid revealed adenocarcinoma compatible with patient’s history of breast carcinoma. Intra-abdominal tissue biopsies also were consistent with metastatic IDC (ER+/PR+, Her2/neu-). Findings are compatible with isolated peritoneal carcinomatosis contributing to gastric outlet obstruction in the setting of IDC.

Conclusion: This case report demonstrates the efficacy of surgical treatment of a GOO resulting from peritoneal carcinomatosis in the setting of metastatic IDC. Despite its rarity in presentation, metastatic IDC must remain in the differential diagnosis in the setting of localized IDC without evidence of other metastases and GOO of unknown etiology.
Introduction: The ATM gene is involved in DNA repair of double stranded breaks. ATM gene mutation results in alteration of regulating tumor suppressor protein p53, BRCA1, checkpoint kinase2 and others. Mutations in ATM are associated with increased risk for autosomal dominant breast, pancreatic, and prostate cancers.

Case: We present the case of a 23 y.o. woman G2P2 with no significant past medical or surgical history who presented to her primary physician for evaluation of a right breast mass. Her family history was significant for a maternal half-brother who died at age 4 of leukemia and a maternal aunt diagnosed with breast cancer in her 40’s. Initial exam revealed a 3cm x3cm mass in the outer quadrant of the right breast. Subsequent imaging included bilateral breast ultrasound with needle biopsy consistent with invasive ductal carcinoma with metastasis to the axillary lymph nodes. She was found to have pathogenic deletions of exons 10-13 in ATM gene. Definitive treatment consisted of right modified radical mastectomy with axillary lymph node dissection and prophylactic left mastectomy. Final pathology revealed invasive ductal carcinoma with DCIS present and metastasis to the lymph nodes. Final stage was mpT2pN2a. Post-operative course was complicated by mild chest wall cellulitis. The patient was planned for adjuvant chemotherapy and radiation therapy.

Discussion: Germline mutations of ATM cause Ataxia-telangiectasia. It is estimated that 1% of the general population and 3% of the Caucasian population in the U.S. are heterozygote carriers for an ATM variant. 15% of patients with ATM gene mutation will die of cancers, with non-Hodgkin lymphoma, leukemia and gastric cancer being the leading causes. ATM gene heterozygotes are at increased risk for breast cancer and the gene is considered a moderate penetrance gene for breast cancer. A number of studies have shown a statistically significant increase in breast cancer in ATM heterozygous individuals. Other studies involving ATM heterozygote carriers have shown increased relative risk of breast cancer in younger women of 2.9 and 6.4 in women over 64. 6.6% of breast cancers in the United States occur in women who are ATM heterozygotes.

CONCLUSION: In this case our patient was found to have a ATM gene mutation and developed metastatic invasive ductal carcinoma at a young age. Current guidelines recommend early screening with positive family cancer history. In this case the patient presented with clinically evident disease at an age prior to recommended screening.
Introduction: Pancreatic tumors overwhelmingly arise from intrinsic cells within the pancreas. Rarely seen are metastases from malignant neoplasms of other organs. Renal cell carcinoma metastases to the pancreas are the most common entity encountered. There are case reports of delayed presentation of renal cell carcinoma metastases to the pancreas, however the majority of these are within the first decade after definitive management of the primary lesion.

Methods: We submit a case report of a delayed presentation of metastatic renal cell carcinoma to the tail of the pancreas 25 years after primary intervention that was treated with pancreatic resection.

Results: The patient is a 65 year old male with a history of right nephrectomy for renal cell carcinoma in 1994 who presented to an outside emergency room with abdominal pain. CT scan revealed a 7.5 x 5.0 cm mass in the tail of the pancreas. Patient was referred to gastroenterology and underwent EUS with biopsy. Biopsy revealed atypical cells suspicious for renal cell carcinoma. Patient then underwent a distal pancreatectomy and splenectomy with pathology confirming the presence of metastatic renal cell carcinoma with grossly negative margins and negative lymph nodes. Patient recovered from surgery without complication and was discharged home. Patient was seen back in clinic with no complications and was scheduled for routine yearly follow up with axial imaging.

Conclusion: This case report demonstrates an example of a metastatic renal cell carcinoma to the pancreas presenting 25 years after primary surgical intervention. This case demonstrates the need for a thorough and detailed history when evaluating pancreatic masses. Differential diagnoses for pancreatic masses in patients with any remote history of renal cell carcinoma must include metastatic disease.
**Introduction:** Ectopic pancreas is defined as abnormally located pancreatic tissue without anatomical, vascular, or neural connection to the pancreas. In rare cases, ectopic pancreatic tissue is discovered in gallbladder. Less than 40 cases of ectopic pancreas in the gallbladder have been reported worldwide. Here we present a 24-year-old female whom underwent an elective robotic cholecystectomy due to symptomatic cholelithiasis and biliary colic, where microscopic analysis of the gallbladder revealed chronic cholecystitis along with focal ectopic pancreatic tissue. We report this case to highlight this rare, incidental finding which can be an underlying etiology for symptomatic cholelithiasis and cholecystitis.
P 106. PRESACRAL MASS WITH ISOLATED COLON ADENOCARCINOMA
Presenter: Carmen Lee MD | Navicent Health, Mercer University School of Medicine
Lee CE, Honaker MD

Introduction: Presacral tumors are a rare type of lesion with an incidence of approximately 1.4 to 6.3 cases a year. The most common of these masses are congenital (55-65%). Other types of presacral masses are categorized as neurogenic (10–12%), osseous (5–11%), inflammatory (5%) and miscellaneous (12–16%). This case report describes the diagnosis and treatment of a 47 year-old female who presented with a presacral mass that was found to be isolated adenocarcinoma of colon origin. Despite pathology of colon adenocarcinoma, the presacral mass was not found to be in continuity with the colon in any area. The patient underwent surgical resection with a Kraske procedure and was subsequently treated with chemotherapy. This report will detail the patient’s presentation and initial work-up, as well as surgical intervention and oncologic management.
**Introduction:** Interactions of race with BMI, weight-related medical problems, and outcomes among SLEEVE women have not been investigated. Objective: to identify variations by race in clinical characteristics and SLEEVE outcomes of morbidly obese women.

**Methods:** Pre- and post-operative data from 6,665 female patients in the BOLD database was analyzed in four groups: African-American (n=810), Caucasian (n=4,929), Hispanic (n=582), and Other (Pacific Islander, Native American, or >1 race listed in BOLD; n=344). Statistics: Linear and categorical models with treatment and baseline included.

**Results:** Caucasian/African-American/Hispanic/Other age (46+-11/42+-11/40+-11/43+-11, p<0.05) and health insurance (highest: Medicaid – Hispanic 17%; Medicare – Other 4.4%; Private – African-American 81%; Self-Pay–Caucasian 25%, p<0.0001) varied by race. Pre-operative Caucasian/African-American/Hispanic/Other BMI (46+-9/48+-9/46+-9/48+-10, p<0.05) race variation resolved 12 months (33+-8/37+-8/31+-8/34+-10; only African-American versus Caucasian p<0.05). At pre-operative baseline, 23 parameters varied significantly by race: African-Americans had highest CHF, hypertension, tobacco use, and unemployment (p <.05, n=4), and lowest in none; Caucasians were highest in cholelithiasis, GERD, alcohol use, mental health diagnosis, depression, psychological impairment, obstructive sleep apnea, pulmonary hypertension, dyslipidemia, fibromyalgia, irregular menses, and stress urinary incontinence (p<0.05, n=12), and lowest in none; Hispanics experienced highest liver disease, and lowest hypertension and leg edema (p<0.001); Other presented with highest leg edema, somatic pain, and lowest panniculitis, depression, liver disease, irregular menses, tobacco use, and unemployment (p<0.05, n=6). Substance abuse was < 1% in all groups. At 12 months only depression (Caucasian highest), asthma (African-American highest), somatic pain (Other highest), and pseudotumor cerebri (Hispanic highest) varied by race. Variation of co-morbidities by race in both sexes resolved at 24 months.

**Conclusion:** Among women with obesity undergoing SLEEVE, pre-operatively BMI and the prevalence of 21 of the 33 weight-related medical conditions investigated varied by race. This advance clinical knowledge can facilitate the pre-operative evaluation of SLEEVE patients through raising index of suspicion for co-morbid conditions that vary by race. By 12 months after SLEEVE, however, BMI variation by race resolved, and only four co-morbidities varied by race. These results confirm the efficacy of SLEEVE in resolving weight-related medical problems for women of all races. The clinical information reported here provides additional insight into the benefits of SLEEVE and offers clinicians an increased awareness of the co-morbidities that vary by race.
<table>
<thead>
<tr>
<th>Condition</th>
<th>Pre-operative (Highest % Incidence)</th>
<th>12 Months Post-op (Highest % Prevalence)</th>
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<tr>
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<tr>
<td>Somatic Pain</td>
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</table>
**Introduction:** Circumferential black appearing esophageal mucosa is found in a rare condition called acute esophageal necrosis or necrotizing esophagitis, with the typical presentation involving the distal aspect of the esophagus. The prevalence is estimated to be between 0.001 to 0.2 percent, and while the etiology is unclear, it is hypothesized that an initial ischemic or low-flow event, such as gastric volvulus, paraesophageal hernia, hyperglycemia/diabetic ketoacidosis, infection, etc., predisposes the esophageal mucosa to more severe injury by gastroesophageal reflux. Here, we present a case of acute esophageal necrosis in a 75-year-old female with a history of hypertension and insulin-dependent diabetes mellitus presenting with epigastric pain and nausea for one day. On presentation she was afebrile, tachycardic, and hypertensive with tenderness in the epigastrium but no peritoneal signs, and her labs were significant for leukocytosis, lactic acidosis, and hyperglycemia. Computed tomography (CT) of her abdomen revealed thickening of distal esophageal wall, and esophagogastroduodenoscopy (EGD) showed black esophageal mucosa in the distal esophagus. She was started on intravenous fluids, proton pump inhibitor, and empiric antibiotics. Her hospital course was complicated by non-ST segment elevation myocardial infarction requiring heparin infusion. However, subsequently, her leukocytosis, lactic acidosis, troponins, and hyperglycemia resolved, and she was able to tolerate a soft diet. While the mortality rates from acute esophageal necrosis range from 13 to 35 percent, it is typically due to underlying disease rather than complications of esophageal necrosis. Therefore, treatment of the underlying illness, in addition to supportive treatment with intravenous fluid hydration and gastric acid suppression, is the primary management for acute esophageal necrosis and typically results in resolution of initial endoscopic findings.
**Introduction:** We describe here the diagnosis of metastatic colonic adenocarcinoma in a 79-year-old female confounded by comorbidities, a distracting Krukenberg tumor and an emergent cecal perforation.

**Clinical Course:** RA is a 79-year-old female with dementia, atrial fibrillation, cerebral vascular accident, constipation and chronic anemia who presented from a nursing home with fevers of undetermined source and vague abdominal pain. Patient presented in sepsis: febrile, tachycardic, with labs significant for leukocytosis: 28,000, Hgb: 6.8 and lactate: 2.4. Computer Tomography revealed pneumoperitoneum, an adnexal mass, a partially obstructing lesion in ascending colon and lung nodules. Further review revealed that Gynecology (GYN) was aware of the adnexal mass which had been noted on imaging 2 months prior after repair of left femur fracture. The patient was noted to be progressively altered with signs of peritonitis and was taken emergently to the operating room for damage control laparotomy. First impression of intraoperative GYN team was that of a primary ovarian malignancy for which a delayed and non-urgent staging would have been undertaken after stabilization.

However, during manipulation of the necrotic adnexal mass resulted in tearing of the mass forcing an en-bloc excision. The cecal perforation was noted to be just proximal to an area of thickened mucosa and strictures, and had partially walled itself off. Carcinomatosis was noted to the anterior peritoneal lining, as well as desmoplastic changes of the mesentery. Patient subsequently underwent a right hemicolecctiony with primary anastomosis. Midline wound was closed primarily and patient was immediately brought to the surgical intensive care unit for instability secondary to atrial fibrillation. Resultant pathology report revealed a low grade adenocarcinoma primary colonic mass and left adnexal mass confirmed as necrotic metastatic colonic adenocarcinoma. Given patient's prognosis, baseline dementia, and limited functional level, the patient's family decided on hospice care following adequate stabilization from the instigating bowel perforation.

**Conclusion:** This case demonstrates a metastatic colon cancer masquerading as a primary ovarian tumor in a patient with cecal perforation without obstructive findings. The consequences of missing the primary signs of colon cancer such as anemia, fatigue and constipation can be catastrophic. This may be compounded by comorbidities like dementia and lax vigilance of institutionalized elderly where initial complaints may go unnoticed or unvoiced. The rare complication of cecal perforation in metastatic colon cancer is likely a result of inadequate screening with presumed constitutional signs from an ovarian pathology.
**Introduction:** Ventriculoperitoneal (VP) shunt placement is one of the most commonly performed surgical interventions for hydrocephalus. Shunt complications are common in pediatric patients; in fact, nearly one-third of shunts require revision within the first post-operative year. Shunt failure is usually attributed to infection, proximal obstruction, or fracture. Less common are intraabdominal complications including small bowel obstruction and volvulus.

**Methods:** We present a pediatric patient with VP shunt who presented to the Emergency Department (ED) with abdominal pain and vomiting and was found to have a small bowel obstruction and volvulus through a loop of the intraabdominal VP shunt catheter.

**Results:** The patient is an 11-year-old male with history significant for extreme prematurity, intraventricular hemorrhage, post-hemorrhagic hydrocephalus, cerebral palsy, VP shunt placement, and previous exploratory laparotomy with lysis of adhesions one month prior to presentation. He presented to the ED with severe abdominal pain, retching, and constipation. Computed tomography imaging obtained on arrival to the ED demonstrated a high-grade small bowel obstruction. The patient underwent urgent exploratory laparotomy, during which twisted loops of small bowel were found within a coil of the VP shunt catheter. The volvulus was reduced, and Neurosurgery was consulted intraoperatively to externalize the shunt. Given repeat abdominal surgery for complications of the VP shunt, the decision was made to convert the patient from a VP to a ventriculoatrial shunt prior to the patient’s discharge.

**Conclusion:** This case report adds to the limited pediatric surgical literature on intraabdominal complications of VP shunts. In patients with a VP shunt who present to the ED with symptoms of nausea and vomiting, it is important to consider intraabdominal pathology in the differential for shunt malfunction. To date, there are no reported standards for intraabdominal catheter length in pediatric VP shunts. Excess catheter is often left in the intraabdominal cavity to limit need for shunt revision as the child grows. Consideration should be given to excess catheter length to prevent intraabdominal complications.
**P 112. LAPAROSCOPIC INGUINAL HERNIA REPAIR IN A 941-GRAM EXTREMELY LOW BIRTH WEIGHT INFANT**

Presenter: James Walls MD | University of South Alabama Medical Center
Alemayehu H, Walls JO, Hardy WJ

**Introduction:** Inguinal herniae in the premature neonate population are common. Timing of repair remains controversial with some advocating for repair prior to discharge from the neonatal intensive care unit in order to avoid risk of incarceration after discharge and prior to elective repair. Others advocate for delayed elective repair once the neonates have achieved 50 weeks post-conception age or greater and have no need for further oxygen support in order to minimize anesthesia risks and need for overnight hospital admission, as well as the technical advantages of a larger baby. The advent of pediatric laparoscopic hernia repair has arguably minimized the technical advantage of a larger baby. However, there remains a paucity of published literature describing laparoscopic inguinal hernia repair in the extremely low birth weight infant population, particularly in the setting of incarcerated inguinal herniae.

**Case Report:** We present the case of a Caucasian Male, third of triplets, born at an estimated gestational age of 26 weeks and 0 days via caesarian section with a birth weight of 773 grams. On day of life 34, at approximately 30 weeks post-conception age and 941g, his previously identified left inguinal hernia was noted to be incarcerated. Bedside reduction was performed after placement of orogastric tube and administration of morphine. He was taken to the operating theater the following day for a Laparoscopic Percutaneous Extraperitoneal Closure of the left inguinal hernia. A right sided patent processes vaginalis was also noted, and this was closed similarly. The patient tolerated the procedure well without complications. The patient is now 2.2 kg and remains in the neonatal intensive care unit currently, feeding and growing, with no hernia recurrence.

**Conclusions:** Laparoscopic percutaneous extraperitoneal closure of inguinal herniae can successfully be performed in the extremely low birth weight infant population, even in the setting of incarceration of the hernia.
Introduction: Intestinal failure (IF) is a devastating condition that has a significant impact on the lives of pediatric patients and their families. The number of patients living with this condition is growing due to several advances in care, and an aspect that has not been sufficiently explored is the increased radiation-related exposure that children with IF are faced with. Healthcare providers and parents are increasingly sensitive to the ALARA (as low as reasonably achievable) concept and the Image Gently® campaign. Diagnosis and treatment of the disease processes that cause intestinal failure, as well as the management of the chronic sequelae of intestinal failure, often require that these patients be subjected to an overwhelming number of medical imaging studies early in life. This burden of disease as pertains to pediatric IF patients has not been previously described.

Methods: Patients enrolled in the Brenner Children’s Hospital BRIDGE (Bowel Rehabilitation for Improved Digestion, Growth, and Elimination) program registry (IRB00039486) were included in the review. The registry was reviewed to tabulate the number and categorize the type of imaging studies performed on patients from birth to the present (September 2016). Imaging studies (including procedures utilizing fluoroscopy, such as gastrojejunostomy tube changes) that expose patients to ionizing radiation were included.

Results: Ten patients in a pediatric intestinal failure multi-disciplinary clinic were included. The average number of studies performed exposing patients to ionizing radiation was 61.4 (range 27 to 103). Recognizing the degree of exposure varies widely based on the type of study performed, exposures were further examined, taking into account the amount of radiation exposure per study.

Conclusion: While survival and outcomes of intestinal failure patients continue to improve, it is important to consider the impact of radiation-related exposure to which this population is particularly vulnerable. Improved awareness of this burden of disease may help providers weigh the risks and benefits of imaging and facilitate improved communication with concerned parents. Long term follow-up will be necessary to determine whether or not this translates to increased risks or complications in this already vulnerable patient population.
Introduction: The inclusion of the appendix within an inguinal hernia sac is exceedingly rare, an estimated < 1% of inguinal hernias. Even less commonly is it coupled with acute appendicitis (< 0.1%). In 1735, French surgeon Dr. Claudius Amyand first operated and described such an occurrence in an 11-year old boy associated with an ingested pin. Here, we describe the presentation and management of a pediatric patient with acute appendicitis, Amyand’s hernia, and a retained metallic foreign body in the vermiform appendix. Our 10-year old boy presented with three days of worsening lower abdominal discomfort and a painful, swollen right groin. On computed tomography performed at the referring hospital, a 2.4 cm needle-shaped radiodensity was seen within the acutely inflamed appendix, which was in the right inguinal canal. We performed a laparoscopic attempt at reduction and dissected the proximal appendix away from the indirect hernia sac, taking care to preserve the vas deferens and testicular vessels. Intraoperatively, we were unable to completely reduce the appendix from the inguinal canal, even with the combination of backwards traction using laparoscopic graspers and external forward pressure from the groin. We therefore ligated the appendiceal base and mesentery from the cecum laparoscopically and performed an open inguinal exploration. After elevating the cord and hernia sac, we separated the distal appendix from within the hernia sac and found a hemming needle extruding from its lumen. The specimens were removed, and the testis and its blood supply were found to be intact. We copiously irrigated and then closed the inguinal canal in a purse-string manner to approximate a high ligation. The patient tolerated the procedure well and was discharged home on post-operative day two, with follow-up planned for right inguinal hernia repair. He denies knowingly ingesting the hemming needle. Amyand’s hernia with acute appendicitis and a retained metal foreign body has been described only thrice before in the literature, including Dr. Amyand’s original presentation. Our case was without traditional associated symptoms of appendicitis. A high index of suspicion and quality imaging assisted with accurate diagnosis and treatment. Management detailed in this report includes standard appendectomy and tissue herniorrhaphy with delayed formal inguinal hernia repair reserved after the inflammation has subsided.
A. Sagittal CT with extra-abdominal linear metallic foreign body.
B. Metallic foreign body with inflamed soft tissue in right inguinal canal.
C. Laparoscopic view of incarcerated Amyand's hernia.
D. Metallic foreign body extruding from inflamed inguinal appendix on right, with normal testis on left.
Insurance Status in Rectal Cancer is Associated with Age at Diagnosis and May Be Associated with Overall Survival

Presenter: Lindsey C Bridges DO | Medical Center of Central Georgia- Navicent Health
Bridges LC, Honaker MD, Collier JJ, Smith BE

Introduction: There are approximately 44,180 new cases of rectal cancer diagnosed annually. While surgical resection remains the standard of care for definitive treatment, neoadjuvant chemoradiation therapy (NCRT) has significantly reduced recurrence rates postoperatively. NCRT is indicated for T3/T4 tumors and relative indications include patients with T1/T2 lesions with clinically positive nodes. While this remains the standard of care all patients may not receive equal treatment for their rectal cancer depending on various healthcare disparities. We aimed to discover how insurance status affected rectal cancer patients’ time of diagnosis to treatment, age of diagnosis and overall vitality.

Methods: A single center retrospective chart and cancer registry review was performed for all patients diagnosed with rectal cancer of any stage between 2011-2018. A total of 94 rectal cancer patients were included in analysis. Age, race, sex, insurance status, vitality, and grade were assessed. Time in days of diagnosis to time of first treatment NCRT were measured. Continuous variables were reported as means and standard deviations or medians and interquartile ranges and were analyzed with the unpaired t-test or Mann-Whitney U test. Categorical variables were reported as frequencies and percentages and were analyzed with the Fisher’s exact test. Statistical significance was determined with a p<0.05. All analyses were conducted using SAS version 9.4 (SAS Institute, Cary, NC).

Results: Total race breakdown was as follows: white (61%), African American (30%), other (3%). There was no statistically significant difference in diagnosis time to first treatment in the uninsured versus insured groups (p=0.9). There was a statistically significant difference in age of diagnosis with insured mean age of 60.9 and uninsured at 52.4 years old (p=0.0080). There was a statistically significant difference in vital status with 66.7% of patients uninsured currently deceased while only 31.7% of insured patients being deceased (p=0.018).

Conclusion: While insurance status did not affect timing to treatment it did appear to affect survival. Uninsured patients had higher mortality rates as well as younger age of diagnosis. Uninsured patients on average were 8 years younger at the time of diagnosis compared to insured patients.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Overall N=94</th>
<th>Insured N=79</th>
<th>Uninsured N=15</th>
<th>p-value*</th>
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<td><strong>Days to Start Treatment</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Median (IQR)</td>
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<td>42.0 (31.0, 71.0)</td>
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<td><strong>Age at Diagnosis</strong></td>
<td></td>
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<tr>
<td>Mean (SD)</td>
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<td>60.9 (+ 13.6)</td>
<td>52.4 (+ 9.8)</td>
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<td><strong>Sex, n (%)</strong></td>
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<tr>
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<td>43 (54.4)</td>
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<td>36 (45.6)</td>
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<td><strong>Vital Status, n (%)</strong></td>
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<td>54 (68.4)</td>
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<td>Dead</td>
<td>35 (37.2)</td>
<td>25 (31.7)</td>
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<td><strong>Diagnosis Year, n (%)</strong></td>
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<td><strong>Grade Differentiation, n (%)</strong></td>
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<td>73 (84.9)</td>
<td>61 (83.6)</td>
<td>12 (92.3)</td>
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<td>9 (12.3)</td>
<td>1 (7.8)</td>
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<td><strong>Number of Regional Nodes Examined</strong></td>
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<tr>
<td>Median (IQR)</td>
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<tr>
<td>13.0 (9.0, 18.0)</td>
<td>13.5 (9.0, 18.5)</td>
<td>2.0 (9.0, 16.0)</td>
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<td><strong>Number of Regional Nodes Positive</strong></td>
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*Derived from Fisher's exact test for categorical variables and unpaired t-test or Mann-Whitney U test for continuous variables

Note: 8 missing grade differentiation; 39 missing regional nodes information
Percentages may not add to 100% due to rounding
Introduction: Gall bladder duplication is a rare congenital anomaly that can be identified clinically during the work-up for gall bladder-related symptoms. This anatomic variation can make surgery more complex, yet, there are very few published reports of these variants causing symptoms in pediatric patients. We report a case of a 17-year-old female with history of Arnold-Chiari malformation type I, presenting with right upper quadrant pain. Outside computed tomography reported a trilobed gall bladder, necessitating referral to a tertiary center. Magnetic resonance cholangiopancreatography demonstrated a duplicated gall bladder, and endoscopic resonance cholangiopancreatography (ERCP) showed a rare anatomic variant of duplicated gall bladder with an accessory right hepatic duct branching off the cystic duct. Due to complex anatomy both indocyanine green and intra-operative cholangiogram (IOC) were utilized, and the patient was successfully treated with laparoscopic cholecystectomy. Only ERCP and IOC were able to clearly identify the aberrant right hepatic duct. Final pathology confirmed acute and chronic cholecystitis without dysplasia or cholelithiasis. The few published reports of gall bladder duplication have often coincided with other developmental anomalies; however, this is the only reported case of a child with a duplicated gall bladder and Chiari malformation, making an association unlikely. This case highlights a rare anomaly of an aberrant right hepatic duct in the setting of gall bladder duplication in a pediatric patient. Due to the low sensitivity of ultrasound and computed tomography imaging modalities for diagnosis of this variant, gall bladder duplication is often mistaken for other biliary pathology, which can lead to intra-operative complications including biliary injury. We would recommend both ERCP prior to and IOC during a laparoscopic surgical approach as they were the only imaging modalities to correctly identify the patient’s anatomy, likely due to the small caliber of pediatric biliary structures.
Introduction: A rare, but life-threatening complication of radiofrequency ablation (RFA) for atrial fibrillation (AF) is esophageal injury with associated atrioesophageal fistula. AF ablation involves creation of circumferential lesions around the pulmonary vein ostia or antra. The most serious and often fatal complication after ablation is an atrioesophageal fistula (AEF). Patients typically present with symptoms for esophageal perforation or fistula on average of 19.3 days after the procedure with a mortality reported between 67-100%. The early recognition of symptoms is imperative as patients can develop endocarditis with septic emboli which can lead to fatal neurological complications within hours of onset. Even with an early diagnosis, the prognosis of patients who survive and receive surgical intervention is variable. Traditional studies suggest that early aggressive surgical intervention may result in lower morbidity and mortality.

An 81-year-old female with a history of AF, hypertension, vascular dementia status post RFA two weeks prior presented with a one-day history of severe acute chest pain associated with fevers and chills. Due to the concern for sepsis on admission secondary to AEF, thoracic computed tomography (CT) with intravenous contrast was completed which demonstrated punctate foci of gas between the left atrium and esophagus. Esophagram confirmed esophageal injury showing extraluminal anterior contrast extravasation. After extensive discussion with the patient and family, the risks and benefits of operative intervention were explained in addition with the high morbidity and mortality of the procedure and the family ultimately decided upon non-operative management. The patient was treated conservatively with supportive care with a combination of nil per os, broad spectrum intravenous antibiotics and repeat imaging. Subsequently, an esophagram two weeks after presentation showed resolution of the esophageal injury and the patient was discharged to a sub-acute rehab facility in stable condition. An outpatient esophagram one month after the initial hospital presentation confirmed the stability of the esophageal injury with only a small mucosal defect present without contrast extravasation.

Current literature suggests aggressive surgical intervention is necessary for managing esophageal injuries and AEFs. This report however, presents a case where conservative management without the significant morbidity of surgery resulted in patient survival. Most of the literature reported on esophageal injury and AEFs after ablation are observational studies. Therefore, more investigation needs to be done to determine whether primary surgical intervention is the ideal treatment of choice or whether other modalities can pose as viable treatment options.
Introduction: An 11 year old male with a history of right inguinal hernia repair at age 2 was seen in our Pediatric Surgery clinic for evaluation of a right inguinal mass. The mass had been present for about a month, was not painful, and the patient had no symptoms of bowel obstruction or lymphoma. On physical exam the mass did not change in size with Valsalva, was not reducible, tender, mobile, pulsatile, nor fluctuant. Ultrasound showed a 4.2 x 3.6 x 4.2 cm mass with internal and peripheral vascularity, cystic areas, and multiple enlarged lymph nodes with hyperemia. MRI showed a complex mass with fluid levels and septations with enhancement, suggestive of either an organizing hematoma, sarcoma with internal hemorrhage and necrosis, or venolymphatic malformation. The patient was scheduled for surgery, but cancelled and was lost to follow up. He presented to our emergency room one year later with enlargement of the mass for one week and bleeding that began that evening. It had doubled in size and had developed an area of ulceration with bleeding. An MRI showed the mass had increased in size to 5.4 x 6.1 x 8.3 cm, with the same fluid levels, septal enhancement, and heterogeneously enhancing solid components. The patient underwent excisional biopsy; frozen section showed lymphovascular fibrotic tissue with no evidence of malignancy. The rest of the mass was excised in piecemeal fashion. Final pathology demonstrated organized hematoma and no evidence of malignancy. The patient was doing well at two week follow up.

Venolymphatic (lymphovascular) malformations are collections of thin walled, low pressure vessels, supported by connective tissue. They are present from birth but present later in adolescence. Unlike hemangiomas which present early and regress over time, lymphovascular malformations do not regress. Lymphovascular malformations have dysplastic vessels which do not show endothelial proliferation, their walls progressively thin and start to bleed. They commonly present with swelling and pain and may develop spontaneous hemorrhage, hemorrhage after minor trauma, or lymphorrhea. Venous malformations are best evaluated with MRI with contrast, which can distinguish high-flow (arteriovenous) versus low-flow (venous, lymphatic) malformations and delineate tissue planes. Complete resection may be difficult depending on proximity to nearby structures. Sclerotherapy, cryotherapy, and radiotherapy have been attempted, no treatment modality has been shown to be superior. Recurrence is more common with lesions with involvement of the fascia or bone, in these cases sclerotherapy followed by debulking is recommended.
Introduction: Ruptured visceral artery aneurysms can be lethal and quick identification with immediate intervention is recommended. The most common visceral aneurysms are aortic, iliac, and splenic arteries. Gastric artery aneurysms account for four percent of all visceral artery aneurysms.

Methods: A 93-year-old female with history of atrial fibrillation on Eliquis and multiple falls was being evaluated for recent back fractures in clinic. She began to experience severe, sharp, sudden abdominal pain with systolic blood pressures in the 70’s. She was immediately brought to the emergency department for further workup.

She was given a bolus of normal saline with improvement in blood pressure and obtained a CT abdomen/pelvis with IV contrast. This showed a large hematoma in the mid-abdomen, hemoperitoneum, and blush sign of active arterial blood in the left upper quadrant. An emergent surgical consultation was obtained as she became peritoneal. She was booked for an emergent exploratory laparotomy and her Eliquis was reversed.

Results: Upon entry into the abdomen, a large amount of hemoperitoneum was evacuated and the abdomen was packed. Due to a large amount of arterial blood in the left upper quadrant, the spleen was mobilized, hilar control obtained, and a splenectomy performed. However, there was still arterial blood pooling in the lesser sac, so this was explored. Inspection of the posterior stomach showed a ruptured 2.5-centimeter aneurysm with active back bleeding from the proximal base of the sac. The aneurysm sac was located on the posterior stomach at the lesser curvature determining it to be the right gastric artery. Distal control was obtained with a vascular staple load. The stomach maintained perfusion even after the aneurysm sac was oversewn, and a left gastric artery was palpable. A post pyloric feeding tube was placed and the abdomen was closed. She was extubated and transferred to the intensive care unit. Retrospective review of the CT scan in coronal planes demonstrated a possibility of a right gastric artery aneurysm as indicated in Figure 1. Post operatively, she required one unit of packed red cell transfusion in the ICU. After resuscitation, she progressed well on the floor.

Conclusion: Due to free rupture in this case, it was evident she required operative intervention. She presented similarly to a splenic artery aneurysm rupture given her instability in the office and relative normalization prior to becoming frankly peritoneal. A broad differential is always necessary in these cases and careful exploration of the lesser sac is advised intraoperatively.
Introduction: Pulmonary venous aneurysms are rare findings. Usually found incidentally and associated with a pulmonary nodule or a mediastinal mass; however they can also present with dyspnea, hemoptysis or even cerebral thromboembolism. The management of pulmonary venous aneurysms usually involves surgical resection of the aneurysm and surrounding parenchyma or percutaneous embolization through the chest wall. In this case report, we discuss a novel approach to treating a pulmonary venous aneurysm through a patent foramen ovale. An 83-year-old female with a history of hypertension, hyperlipidemia, abdominal aortic aneurysm who underwent endovascular repair, seizures, coronary artery disease, chronic obstructive pulmonary disease requiring oxygen with activity, and multiple myeloma with uncontrolled hypercalcemia, who was known to have a cavitary lesion of the right upper lobe, presented with hemoptysis and was found to have an aneurysm of the right upper lobe. She underwent arterial embolization of the branch feeding the aneurysm. Follow-up CT showed persistence of the aneurysm, and she continued to have hemoptysis. She then underwent percutaneous transatrial coil embolization of the venous aneurysm through a patent foramen ovale, which resulted in resolution of her hemoptysis. To our knowledge this is the first report to describe use of a patent foramen ovale to treat a pulmonary venous aneurysm. This novel approach allowed us to avoid surgical intervention and lung resection, in order to treat the patient's hemoptysis.
**P 121. STERNOCLAVICULAR JOINT INFECTIONS: OPERATIVE MANAGEMENT AND LONG-TERM FUNCTIONAL OUTCOMES**

Presenter: Jaclyn Isabella MD | University of Oklahoma Health Sciences Center
Isabella J, Johannesen S, Deb S, Reimersman JM

**Introduction:** The sternoclavicular joint (SCJ) is unique in that it provides the only point of articulation of the upper extremity with the trunk. Infection of the SCJ is rare and often associated with significant morbidity and mortality. Complications include sepsis, empyema, mediastinitis, and functional impairment of the affected extremity. In addition to antibiotic therapy, the optimal surgical approach is not defined. Our study aim was to illustrate that resection of the SCJ and chest wall debridement, followed by pectoralis muscle flap closure is an effective method to control sepsis and provides good functional outcome for the affected limb.

**Methods:** This retrospective case series included all patients who underwent surgical intervention for SCJ infection between Nov 2014 and July 2019. 14 patients, with a median age of 57, ranging from 41 to 80 years, were identified. Demographic and clinical information was collected, and long-term functional outcomes were compared.

**Results:** We identified 12 males and 2 females that met inclusion criteria. All patients presented with sepsis associated with clinical findings of SCJ infection, confirmed by CT scan of the thorax. Five patients (39%) were diabetic, 3 (23%) were on hemodialysis, and one had a history of intravenous access in the vicinity of the SCJ. In 4 patients additional sites of infection were found, including septic arthritis of multiple joints, psoas and pelvic abscesses. In all 14 patients operative intervention consisted of resection of the involved SCJ, with chest wall and mediastinal debridement, followed by delayed ipsilateral pectoralis major translocation for wound closure. Staphylococcus aureus was the most common pathogen. The median time between presentation and final operation was 8 days ranging from 4 to 23 days. On average patients underwent a total of 3 operations. There were no deaths. Major complications included bleeding under the flap in two patients (15%). Sepsis resolved in all 14 patients with continued antibiotics. Follow up was complete in 9 patients (64%). At short term follow up (30 days) 5 patients (39%) had a full return of range of motion, and 4 patients (30%) regained function at longer follow-up.

**Conclusion:** Sternoclavicular joint infections are challenging to diagnose and there is a lack of clear consensus as to the best surgical intervention. Based on our experience, we recommend resection of the infected SCJ, wide debridement and delayed ipsilateral pectoralis muscle closure. This approach provides control of sepsis with low morbidity and mortality, without any long-term functional limitations to the affected arm.
Introduction: Primary lung carcinomas that are common in adults, but are rare in the pediatric population, carry a worse prognosis. Specifically, small cell lung carcinoma (SCLC) is exceedingly rare in children. SCLC is a high-grade, indolent tumor usually with metastasis at the time of presentation. There is both limited medical literature and data in regards to treatment models for SCLC in the pediatric population. In this case report, we discuss a 13-year-old boy who initially presented with dry cough, dyspnea and back pain for four weeks. Chest x-ray demonstrated complete opacification of the left hemi-thorax with mediastinal shift to the right. Follow up computed tomography (CT) of the chest, abdomen, and pelvis demonstrated the left thorax to be nearly completely opacified by a heterogeneous, contrast enhancing necrotic mass that extended across the mediastinum. Pediatric and Thoracic Surgery were consulted for bronchoscopy and port placement. Thoracic surgery performed flexible bronchoscopy with fine needle aspiration, brushing, biopsy, and washing. Intraoperative FNA and brushing showed a neuroendocrine tumor. Official pathology confirmed SCLC. Palliative chemotherapy and radiation were discussed with the patient and his family. However, current studies have only shown this treatment to extend progression free survival by 3 to 4 months. The patient and his family ultimately chose to go home with symptomatic care without chemotherapy or radiation. The objective of this case report is to discuss the presentation of advanced SCLC in a 13-year-old boy and review the current literature regarding similar reports and possible treatment therapies.
Introduction: A 31-year-old immigrant from South Asia presented to an outside Emergency Department reporting 3 weeks of cough, fevers, sweats, and right leg pain. The patient denied any history of ill contacts, intravenous drug use, or prior valvular heart disease. Blood cultures grew gram-positive rods later speciated as Cardiobacterium valvarum. He re-presented 2 weeks later with unbearable, pulsatile bilateral lower leg pain and edema. Repeat ultrasound demonstrated a 2.8 x 2.3 x 3.4 cm aneurysm involving the right posterior tibial (PT) artery and 2.8 x 2.7 x 3.6 cm aneurysm of the left peroneal artery. Computed tomography angiogram was obtained confirming bilateral mycotic aneurysms with intact three-vessel run off to both feet. A subsequent echocardiogram demonstrated endocarditis involving his bicuspid aortic valve with perforation and aortic regurgitation. He was transferred to our tertiary care center for urgent aortic valve replacement.

Methods: Three days following aortic valve replacement, the patient was taken to the operating room to address the lower extremity aneurysms. Bilateral medial leg incisions were made to expose the respective aneurysms with subsequent complete resection and ligation of the aneurysmal vessels. Serum titers were negative for acute Brucella, tuberculosis, C. Burnetti (Q Fever), Bartonella quintana, Bartonella henselae, C. pstrachomatis, C. psittaci, C. pneumoniae, B. pertussis, and influenza. Distal pulses other than the right PT were intact at the conclusion of the case with no concerns for ischemia. He was discharged on parenteral antibiotics, warfarin, and low-dose aspirin. At 3 week follow up, his incisions were healing well with no post-operative concerns nor evidence of additional lesions. Intra-operative cultures were negative.

Results: Review of the literature revealed several case reports of infrapopliteal tibial aneurysms (Table). The majority of aneurysms were associated with bacterial endocarditis with no reports of Cardiobacterium as the associated causative pathogen. Intraoperative cultures were frequently negative. Average age of presentation was 49 (range 15-69) with 17 of 18 cases reported in men. Bilateral tibial aneurysms were reported in 4 cases. Treatment options described included open ligation with or without reconstruction as well as coil embolization and thrombin injection.

Conclusion: We present a rare case of bilateral tibial mycotic aneurysms associated with Cardiobacterium endocarditis with review of the literature. No prior reports of Cardiobacterium-induced peripheral aneurysms were found. Aggressive surgical management is warranted in cases of rapidly degenerating mycotic aneurysms to avoid distal embolization, rupture, and potential limb loss.
<table>
<thead>
<tr>
<th>Study</th>
<th>Etiology</th>
<th>Blood Culture</th>
<th>Intraoperative culture</th>
<th>Aneurysm Location(s) and Size (cm)</th>
<th>Repair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver et al. (2019)</td>
<td>Fungal endocarditis</td>
<td>Candida parapsilosis</td>
<td>Negative</td>
<td>R Peroneal 2.7x2.2x2.2</td>
<td>Ligation</td>
</tr>
<tr>
<td>Ferrero et al. (2011)</td>
<td>BE</td>
<td>Streptococcus mitis</td>
<td>Not reported</td>
<td>R Peroneal 1.4x1.9</td>
<td>Coil embolization</td>
</tr>
<tr>
<td>Albayrak et al. (2007)</td>
<td>BE</td>
<td>Staphylococcus aureus</td>
<td>Negative</td>
<td>R Peroneal 6.0x5.0</td>
<td>Ligation</td>
</tr>
<tr>
<td>Gandhi et al. (2005)</td>
<td>BE</td>
<td>Acinetobacter</td>
<td>Negative</td>
<td>L Peroneal 1.5x2.0</td>
<td>Ligation</td>
</tr>
<tr>
<td>Elford et al. (2002)</td>
<td>SEPTICEMIA secondary to osteomyelitis</td>
<td>Not reported</td>
<td>Not reported</td>
<td>R Peroneal 7.5</td>
<td>Thrombin injection</td>
</tr>
<tr>
<td>McKee and Ballard (1999)</td>
<td>BE</td>
<td>Brucella canis</td>
<td>Negative</td>
<td>R Peroneal and PT R 2.5x2.6, L 3.2x3.5</td>
<td>Resection of L PT with interposition vein graft repair, R PT and peroneal were thrombosed</td>
</tr>
<tr>
<td>Jiang et al. (2018)</td>
<td>BE</td>
<td>Negative</td>
<td>Negative</td>
<td>L PT 3.3x3.0</td>
<td>Patient opted for hospice</td>
</tr>
<tr>
<td>Patel et al. (2008)</td>
<td>BE</td>
<td>Negative</td>
<td>Not reported</td>
<td>R PT 8.0</td>
<td>Resection with interposition vein graft repair</td>
</tr>
<tr>
<td>Kawahara and Iwashashi (2011)</td>
<td>BE</td>
<td>Streptococcus pneumonia</td>
<td>Not reported</td>
<td>BL TP trunk</td>
<td>Staged resection with interposition vein graft bilaterally</td>
</tr>
<tr>
<td>Kriady and Hatem (2006)</td>
<td>BE</td>
<td>Enteroococcus fecalis</td>
<td>Negative</td>
<td>R TP trunk 5.0x6.0</td>
<td>Ligation</td>
</tr>
<tr>
<td>Khansis et al. (2006)</td>
<td>BE</td>
<td>Lactobacillus casei</td>
<td>Lactobacillus casei</td>
<td>R TP trunk 2.0</td>
<td>Ligation</td>
</tr>
<tr>
<td>Akers et al. (1992)</td>
<td>BE</td>
<td>Streptococcus viridans</td>
<td>Negative</td>
<td>TP trunk 6.0</td>
<td>Resection with interposition vein graft repair</td>
</tr>
<tr>
<td>Murashita (1997)</td>
<td>BE</td>
<td>Streptococcus viridans</td>
<td>Negative</td>
<td>BL TP trunk, L 5.5 and R 4.0</td>
<td>Ligation</td>
</tr>
<tr>
<td>Sugimoto and Kimori (2012)</td>
<td>BE</td>
<td>Streptococcus oralis</td>
<td>Not reported</td>
<td>R TP trunk</td>
<td>Ligation</td>
</tr>
<tr>
<td>Leen Jr (2007)</td>
<td>BE</td>
<td>Not reported</td>
<td>Coagulase negative</td>
<td>R AT 6.0</td>
<td>Resection with interposition vein graft repair</td>
</tr>
<tr>
<td>Payne (1988)</td>
<td>BE</td>
<td>Negative</td>
<td>Not reported</td>
<td>R AT 3.0x3.0x3.0</td>
<td>Ligation</td>
</tr>
<tr>
<td>Mayall (1991)</td>
<td>BE</td>
<td>Streptococcus</td>
<td>Streptococcus</td>
<td>L AT</td>
<td>Ligation</td>
</tr>
</tbody>
</table>

BE: Bacterial Endocarditis, AT: Anterior Tibial, PT: Posterior Tibial, TP: Tibioperoneal, L: Left, R: Right, BL: Bilateral
Introduction: Esophageal lung is a rare type of bronchopulmonary foregut malformation where an anomalous main bronchus arises from the esophagus rather than the trachea. This differentiates from an esophageal bronchus where a lobar bronchus arises from the esophagus. Fewer than 20 of these anomalies have been reported in the literature.

A female infant was born at 35 weeks gestational age and found to have multiple congenital abnormalities including cleft palate, long gap esophageal atresia, tracheoesophageal fistula (TEF), and imperforate anus. She initially underwent thoracoscopic ligation of TEF with colostomy and mucus fistula creation. Continued right lung atelectasis prompted further investigation. Bronchoscopy found no right mainstem bronchus, and subsequent CT scan was consistent with possible esophageal bronchus. Esophagoscopy through the gastrostomy discovered a fistulous connection between the distal esophagus and anomalous right bronchus.

She underwent right thoracotomy and a hypoplastic lung was identified with the anomalous bronchus connecting to the distal atretic esophagus. Pneumonectomy was performed and the chest was closed. She subsequently underwent vaginosomy for hydrometrocolpos. Her proximal esophagus was eventually diverted with a cervical esophagostomy to prevent aspiration from excessive saliva with plans for future repair. She was eventually extubated to nasal cannula. She was discharged from the hospital on day of life 110 but was recently readmitted with aspiration pneumonia. Robinul decreased excess secretions and she was discharged home on 0.5 liters of oxygen via nasal cannula.

Esophageal lung is a very rare congenital abnormality with few reported cases. Surgical treatment with pneumonectomy is often required as the lung fails to develop normally. Pediatric surgeons should be familiar with this entity as part of the spectrum of congenital bronchopulmonary malformations.
Figure 1:
Radiographic and operative images. A: Chest X-ray after TEF ligation; B: CT scan of the chest showing bronchus (green arrow) connection with esophagus (yellow arrow); C: Esophagoscopy identifying bronchus connection to right lung (green arrow); D: Intraoperative photo of hypoplastic right lung (yellow arrow) with bronchus connected to esophagus (green arrow).
Introduction: Our patient is a 14 month old male born at 30 weeks gestation with a history of a myelomeningocele who presented with a large left flank deformity felt to be an abdominal wall hernia. Patient’s mother reported it seemed to be limiting his mobility. CT scan revealed a large left abdominal wall hernia containing small and large bowel, as well as the myelomeningocele. He underwent open hernia repair. The defect was repaired via an oblique incision. On inspection, this appeared to be an abdominal wall eventration rather than a true hernia defect. The overlying musculature was imbricated and secured with plegeted Ethibond horizontal mattress sutures. Gorexx mesh was placed to reinforce the repair. The overlying tissues were closed. Patient was discharged on postoperative day 2. He was seen in the office for 1 month follow up and was doing well. Congenital flank eventrations may be associated with large myelomeningoceles, though the incidence is not well described. Lumbar hernias are often repaired primarily with or without mesh reinforcement. This patient did not have a true hernia when examined intraoperatively. A similar repair has been described for iatrogenic hernia after in utero myelomeningocele repair. To our knowledge, this is the first described repair of a flank eventration in the setting of myelomeningocele.
P 126. INFANT THORACIC CYSTIC LESIONS, NOT ALWAYS A STRAIGHT SHOT! INTERESTING CASE  
Presenter: Krystal Ortiz MD | University of Puerto Rico  
Zequeira J, Ortiz K

**Introduction**: Primary lung tumors in children are very rare. Most of these are malignant in nature. Regardless of the underlying histology, most patients present with respiratory symptoms requiring prompt multidisciplinary management, that involves surgery, adjuvant therapy and supportive treatment.

**Methods**: This is the case of a 9-month-old male who presents to the emergency department of a periphery hospital with labored breathing and vomiting. Chest x-ray suggests a potentially undiagnosed left diaphragmatic hernia causing pulmonary compromise. The patient deteriorates in ER, is transferred to the PICU, intubated and consulted to the surgical team. He is then taken to the OR where a diagnostic and potentially therapeutic thoracoscopy was performed revealing no evidence of a diaphragmatic hernia. CXRs then show diffuse cystic structures throughout the entire left hemithorax and mediastinum. A chest CT scan is performed and confirms the presence of a large multicystic mass at the left upper lobe causing right sided mediastinal shifting and complete collapse of the right lung which also had a small unilocular cystic lesion. The patient then undergoes a left apical trisegmentectomy. Pathologic analysis a pleuropulmonary blastoma (PPB) and since there have been reports of bilateral PPBs he was taken 2 months later to the OR for right upper lobectomy as it harbored an additional cystic lesion. A type I cystic PPB was again confirmed by pathology. The patient was discharged home five days after procedure and further genetic testing confirmed DICER1 mutation. The patient is alive and disease-free 1 year post surgery without receiving adjuvant therapy.

**Results**: PPB is a very rare pulmonary tumor that usually affects children under the age of four. It originates from mesenchymal cells and it is classified, based on morphology, into three different types: Type I-cystic, Type II- mix of cystic and solid, Type III- solid. It has been associated with a familial genetic mutation (DICER1) in up 30% of the cases. Type II and III lesions convey a worse prognosis and require adjuvant therapy. Clinical presentation depends on the type of tumor. Treatment is usually directed towards surgical resection, adjuvant chemotherapy and supportive care.

**Conclusion**: Infancy PBB is a rare condition to come across. Bilateral infant PPB is an even stranger disease. There should always be a high index of suspicion for bilateral disease in patients with PPB and a contralateral cyst, regardless of its size or appearance.
UNINTENTIONAL ABDOMINAL ENDOMETRIAL SEEDING DURING GYNECOLOGIC SURGERY - A CASE AND RETROSPECTIVE REVIEW OF RECURRENT CATAMENIAL PNEUMOTHORAX

Presenter: Marcus F Yarbrough MD | Howard University Hospital and College of Medicine
Yarbrough M, Knowlin L, Davis V, Azziz S

Introduction: To evaluate the frequencies, etiology, clinical characteristics, and outcomes of recurrent catamenial and endometriosis-related pneumothoraces occurring in women with no underlying lung disease.

Methods: Case report with retrospective literature review.

Results: One month after several failed attempts to resolve the pneumothorax with the less invasive management using tube thoracostomies and pigtail catheters, thoracic exploration was pursued with the goal of definitive treatment. A right sided min-thoracotomy, wedge resections, diaphragm plication, tube thoracostomy, and intercostal nerve block were performed. Intraoperative findings were as follows: one pulmonary bleb in right upper lobe, one bleb in the right lower lobe, and right diaphragmatic erosions indicative of catamenial endometriosis. Pathology did not stain for endometrial tissue. Review of the literature In a review of 229 cases of catamenial pneumothorax in the literature, adequate information was given for 195 patients (85.2%). One hundred fifty-four (79%) were treated surgically, with detailed findings reported for 140 (91%). Thoracic endometriosis was diagnosed in 73 patients (52.1%), and 54 (38.8%) showed diaphragmatic lesions. Pleurodesis, with or without diaphragmatic repair or wedge resection, was performed in 81.7% of the cases.

Conclusion: The unique presentation of a catamenial pneumothorax post abdominal myomectomy warrants the suspicion for possible seeding of endometrial tissue through opportunistic pelvic-abdominal communications created during the procedure. This case raises the potential value in conservative monitoring of women with endometriosis in the months following invasive gynecologic surgeries. We strongly suspect that this occurred as a result of access to the abdominal cavity created by a prior abdominal gynecologic surgery (during which endometriosis was noted). Dislodged endometrial tissue has previously been proposed to follow the natural flow of peritoneal fluid. Bi-weekly outpatient visits with focused lung examinations for the first two months, followed by monthly visits for the subsequent 4 months of the post-operative period could be one low cost solution to avoiding a high cost complication. The right lung is involved in the great majority of cases (95%) in a recurrent manner [1, 2]. Exact etiology remains unknown and many hypotheses have been raised including: (1) spontaneous rupture of blebs; (2) prostaglandin-induced bronchiolar constriction resulting in alveolar rupture; (3) sloughing of endometrial implants involving visceral pleura with subsequent pulmonary air-leak; and (4) passage of air from the genital tract through congenital or acquired (as in the case of diaphragmatic endometriosis) defects of the diaphragm.
P 128. SINGLE STAGE HYBRID REPAIR OF VISCERAL PATCH ANEURYSM FOLLOWING PREVIOUS OPEN THORACOABDOMINAL ANEURYSM REPAIR
Presenter: Layne Gardella MD | University of Tennessee Medical Center, Nashville
Gardella LP, Longwolf KJ, Dattilo JB

Introduction: During open thoracoabdominal aneurysm (TAA) repair visceral reimplantation is typically accomplished with a single visceral patch encompassing three visceral vessels and the use of left renal artery bypass. While the use of a Carrell single visceral patch is well established, evidence suggests there is increased risk associated with visceral patch aneurysmal degeneration. Treatment of a visceral patch aneurysm can be a challenging surgical problem.

CASE: A 72-year-old male with a history of Type III TAA repair twelve years prior and a more remote history of open infrarenal aortoiliac aneurysm repair with a bifurcated Dacron graft. Additionally, he has known bilateral femoral and popliteal aneurysms. His TAA was repaired with a single visceral patch encompassing all 4 visceral vessels. While he underwent routine surveillance with annual CTA demonstrating continued aneurysmal growth, the patient was recalcitrant to operation. When the aneurysm reached over 7cm, he acquiesced to repair. He was deemed a sub-optimal candidate for a traditional open re-do TAA repair given his chronic obstructive pulmonary disease secondary to his longstanding smoking history, coronary artery disease, and congestive heart failure with decreased ejection fraction.

Repair was accomplished with a single stage total abdominal visceral debranching and placement of a thoracic endograft. Though a midline incision the former distal Dacron graft was exposed in standard inframesocolic fashion. The visceral vessels were exposed in preparation for debranching. Inflow for debranching was created using an 8mm Dacron graft arising from the right iliac graft limb. A series of 6mm Dacron grafts were then sewn to the inflow graft and to each visceral vessel, in an end-end fashion, and debranching was performed. The graft was placed retro-colic and retro-gastric and the distal aspect of the 8mm inflow graft terminated with an end-end anastomosis to the celiac artery. A radiopaque marker was placed at the Dacron graft bifurcation to demonstrate the distal landing zone for the endograft. We utilized the right iliac limb for access. A 36 x 200 mm thoracic endograft was deployed proximal to the prior TAA repair and extended distally abutting the Dacron bifurcation. Final arteriography revealed excellent flow to all visceral vessels and no residual aneurysm. The post-operative course was uncomplicated, and patient was discharged home on post-operative day eight.

CONCLUSION: A single stage hybrid approach to visceral debranching and aneurysm exclusion for the treatment of visceral patch aneurysm after previous open thoracoabdominal aneurysm repair is safe and effective.
Introduction: Venous thromboembolism (VTE) is a potential life-threatening disease with over 1 million new cases each year in the United States. VTE encompasses both deep vein thrombosis (DVT) and pulmonary embolism. May-Thurner syndrome (MTS) is a physiologic form of VTE often characterized by compression of the left common iliac vein by the right common iliac artery, increasing the risk of extensive DVT of the left lower extremity which require medical and surgical management. Phlegmasia cerulea dolens (PCD) is an uncommon but potentially life-threatening complication of acute DVT characterized by significant swelling of the extremities with pain and cyanosis which may lead to arterial ischemia and eventually gangrene. We present here a patient with PCD and findings of MTS and subsequent development of compartment syndrome requiring both endovascular and surgical interventions.

Methods: 50 year old woman with no past medical history who presented with 24 hour of left lower extremity pain and swelling as well as dyspnea. Her left leg was diffusely ecchymotic and edematous with decrease in sensation. A CTA chest was concerning for multiple segmental pulmonary embolism with a lower extremity duplex that demonstrated a common femoral DVT. She was started on a Heparin drip and taken for a venogram which revealed MTS syndrome. She then underwent a mechanical chemical thrombolysis and balloon angioplasty and stenting of the left common iliac vein in addition to placement of an inferior vena cava filter. Her post-operative course was complicated by compartment syndrome 24 hours after surgery which required emergent four-compartment fasciotomy.

Results: MTS syndrome should be considered in all patients presenting with a left lower extremity DVT especially in patients who may have fewer risk factors for VTE. Venography is the standard for definitive diagnosis which allows direct visualization of the stenotic lesion and potential for intervention with angioplasty and stent placement. MTS treatments also include managing the acute DVT as well as preventing subsequent complications of a post-phlebitis limb leading to compartment syndrome. In patients with concurrent DVT, an IVC filter should initially be placed followed by catheter-directed thrombolysis. Anticoagulation should be continued for 3-6 months depending on the patient's risk factors and continuing antiplatelet therapy to maintain stent patency.

Conclusion: Compartment syndrome in the setting of Phlegmasia Cerulea Dolens and May-Thurner syndrome can be a rare condition. Timely restoration of the venous circulation is important to save limbs in addition to aggressive management of associated compartment syndrome.
POPLITEAL ARTERY ENTRAPMENT SYNDROME MASQUERADING AS INGROWN TOENAIL IN A 14 YEAR OLD FOOTBALL PLAYER
Presenter: Magendran Danapal MD | Carolinas Medical Center
Danapal M, Yammine H

Introduction: Popliteal artery entrapment syndrome (PAES) is a congenital condition resulting from anomalous position of the popliteal artery in relation to the medial head of gastrocnemius. This leads to entrapment of the popliteal artery causing compression with gastrocnemius contractions, leading to microtrauma and fibrosis. Ultimately patients can develop thromboembolism or aneurysm formation and present with symptoms of claudication, acute or chronic limb threatening ischemia.

Case Report: A 14 year old healthy male, who played football competitively presented to the emergency room with a 2 week history of gangrene involving the medial aspect of his right great toe. This was treated by his podiatrist as an ingrown toe nail. Examination revealed a palpable right femoral but non palpable dorsalis pedis (DP) and posterior tibial (PT) pulses. Motor examination was intact but he had decreased sensation on the plantar aspect of the foot. A computed tomography (CT) angiogram of the aorta with run off demonstrated a short segment popliteal artery occlusion caused by compression from the adjacent gastrocnemius muscle with a non-occlusive thrombus in the below knee popliteal artery. The AT was occluded and the PT was the only run off to the foot. He was started on a heparin drip. A magnetic resonance imaging (MRI) scan was obtained confirming the diagnosis of a Type II PAES.

Patient was taken to surgery 2 days later for a myotomy of the medial head of gastrocnemius (Figure 1). He was positioned prone and the popliteal fossa exposed using a lazy S shaped incision. Intraoperative assessment demonstrated popliteal artery entrapment by a tight gastrocnemius band. This was divided, in addition to arteriolysis from surrounding fibrotic tissue. At this point, there was a return of palpable pulse in the below knee popliteal artery. He also had a palpable pulse in the PT. Postoperatively, he was kept on therapeutic anticoagulation. He underwent aggressive physical therapy and was converted to rivaroxaban at discharge.

Discussion: PAES should be suspected in a young patient presenting with signs of limb ischemia. There are 4 main variants with an additional 2 more described. The diagnosis can be obtained using duplex ultrasound or angiogram with maneuvers. MRI provides excellent anatomical image at rest. Treatment is surgical and involves myotomy of the medial gastrocnemius head with or without a bypass. This case illustrates the importance of awareness of this condition, making the correct diagnosis and preventing limb loss.
Medial head of gastrocnemius retracted – aberrant location between popliteal artery and vein

Cranial

Posterior approach to the popliteal artery

Caudal
Introduction: We report a rare case of an intra- and extra-cranial nasal venous malformation (VM) and bilateral internal jugular vein stenosis (BIJVS) in a 5-month-old-girl. Because of the BIJVS, the nasal VM served as primary venous outflow system for the central nervous system and therefore could not be managed with ablation. At six years of age, spontaneous recanalization of the bilateral internal jugular veins was documented on CT angiogram possibly expanding treatment options. To better understand and manage this unusual sequence of events, we performed a systematic literature review to identify similar cases and treatment.

Methods: A systematic literature review was conducted to identify the incidence of spontaneous recanalization of the jugular venous system. Six databases were utilized (PubMed, Google Scholar, Medline, Scopus, Cochrane, and CINAHL Complete) with the search terms “internal jugular vein stenosis” and “spontaneous recanalization and jugular vein,” and 101 citations were obtained for the literature review. These articles were manually reviewed to remove duplicates, cases where recanalization was achieved through interventional methods, and irrelevant articles.

Results: The level-of-evidence from the literature review was relatively low. The only two articles included in the literature review were case reports of spontaneous recanalization of thrombotic events, and only one included the internal jugular vein (IJV). The resulting low-evidence of our systematic literature search demonstrated the rarity of these unusual sequence of events. These articles recommend treatment, such as low-molecular weight heparin or endovascular balloons, in symptomatic pediatric patients with venous thrombosis; favorable outcomes were achieved regardless of treatment strategies.

Discussion: Spontaneous recanalization of our pediatric patient’s IJVS allows for multiple new treatment options of her nasal VM. However, before any treatment of the nasal VM is performed, adequate blood flow through the IJVs must be assured. Without complete recanalization and sufficient blood flow through the IJVs, ablation of the nasal VM may leave the central nervous system with decreased venous outflow leading to increased intracranial pressure. After determination of the flow sufficiency through the IJV, surgical excision of the nasal VM may be possible. If flow through the IJV is not sufficient, balloon angioplasty, patch angioplasty, or possible reconstruction of the IJVs may be necessary to allow for treatment of the nasal VM. If these surgical interventions prove to be too high-risk for the patient, conservative therapy may be the best option.
**Introduction:** External cervical radiation therapy causes tissue damage and subsequent injury to structures in the neck. There is damage to the endothelium, elastic lamina, and smooth muscle of the carotid artery that can lead to accelerated atherosclerosis, and also weakens the artery predisposing to blowout of the artery. Carotid artery blowout is typically seen in patients receiving radiation therapy in combination with surgery for the treatment of cervical malignancies. However, carotid artery blowout secondary to radiation alone is a rare entity with potential catastrophic consequences.

A 53 year old male with a history of hepatitis C, prostate cancer, and T1N2b squamous cell carcinoma presented to the emergency department with sudden onset of right-sided neck swelling and dysphagia after an episode of coughing earlier that morning. He completed chemoradiation for treatment of his malignancy fourteen months prior to his presentation. He suffered mild dizziness and changes in vision which spontaneously improved. Physical examination demonstrated a right neck mass with slight tracheal deviation. CT angiogram of the neck showed extravasation from a large right sided pseudoaneurysm at the carotid bifurcation. He was taken emergently to the operating room for endovascular repair. Angiography showed a pseudoaneurysm originating in the common carotid artery just proximal to its bifurcation. The internal and external carotid arteries were widely patent. A 8 mm x 10 cm Viabahn self-expanding covered stent was successfully deployed from the common carotid extending into the internal carotid artery excluding the pseudoaneurysm and external carotid artery. The patient was neurologically intact at the completion of the case and remained intact throughout his hospital stay. The neck mass resolved and CT angiogram on POD 2 showed a patent stent with resolution of the pseudoaneurysm. He was discharged on POD 3.

Endovascular stent placement is a viable treatment option for carotid artery blowout. Additional follow up is needed to further assess the durability of the repair.
Figure A: CTA at presentation; Figure B: Angiogram prior to stent deployment; Figure C: CTA POD2; Figure D Angiogram after stent deployment
P 133. HIP DISARTICULATION: A RETROSPECTIVE REVIEW OF A SINGLE SURGEON'S OUTCOMES OVER A 15-YEAR PERIOD
Presenter: Richard Tanner MD | University of Tennessee Medical Center, Chattanooga
Tanner RM, Watlington JR, Holcombe JM, Bhattacharya SD, Fisher DF

Introduction: Hip disarticulation (HD) is associated with known significant morbidity and mortality. It is an uncommon operation accounting for 0.5% of all leg amputations. Indications for HD include ischemia due to atherosclerosis, infection, trauma, and malignancy. Thirty-day mortality rates have been reported to be 21-44%, although there are few modern studies reviewing outcomes of these patients. Overall complication rates as high as 85% have been published with wound infections being most common (44-63%). Our study uniquely describes a single surgeon's experience and reports 30-day, 6-month, and 1-year mortality rates for HD over a 15-year period.

Methods: We undertook a comprehensive review of medical records for patients undergoing HD by a single surgeon from 2003-2017. We collected demographic information, past medical and surgical histories, and postoperative complications. We searched multiple publically-available death databases to obtain 30-day, 6-month, and 1-year mortality rates. Descriptive statistics and chi-square analyses were used to investigate correlations among the variables collected.

Results: Forty-eight HDs were performed on 46 patients. The indications for surgery were infection (n=26), ischemia (n=15), tumor (n=4), and trauma (n=3). Patient ages ranged from 27 to 82 years. The overall mortality rates were 16.7% at 30 days, 29.2% at 6 months, and 31.3% at 1 year (Table 1). Patients undergoing HD from ischemia were found to suffer increased mortality rates at 6 months (p=0.043) but not at 30 days (p=0.215) or 1 year (p=0.117). History of peripheral vascular disease (p=0.004) and prior revascularizations (p=0.030) were also associated with increased mortality. Other risk factors such as smoking, diabetes, paraplegia, and prior amputations were not associated with increased mortality in this cohort. Postoperative complications occurred in 75% of patients with wound infections (56.3%) being most common. Other complications included pneumonia (10.4%), stroke (2.1%), and acute renal failure (2.1%).

Conclusion: The HD mortality rates in our study were 16.7% at 30 days, 29.2% at 6 months, and 31.3% at 1 year. Patients with prior ischemia had the highest mortality rates. This cohort demonstrated a 30-day mortality rate that was lower than those currently found in the literature. The exact reasons are unclear but likely can be attributed to single surgeon experience, early aggressive amputation, and improved postoperative care over the last 20 years. Postoperative complications occurred frequently with wound infections remaining most common.
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<th>Surgical Indication</th>
<th>30-day</th>
<th>6-month</th>
<th>2-year</th>
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<tr>
<td>Infection (n=26)</td>
<td>11.5%  (3)</td>
<td>19.2%  (5)</td>
<td>23.1%  (6)</td>
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<td>Ischemia (n=15)</td>
<td>26.7%  (4)</td>
<td>46.7%  (7)</td>
<td>46.7%  (7)</td>
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<td>Tumor (n=4)</td>
<td>0%     (0)</td>
<td>25%    (1)</td>
<td>25%    (1)</td>
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<tr>
<td>Trauma (n=3)</td>
<td>33.3%  (1)</td>
<td>33.3%  (1)</td>
<td>33.3%  (1)</td>
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<tr>
<td>Overall (n=48)</td>
<td>16.7%  (8)</td>
<td>29.2%  (14)</td>
<td>31.2%  (15)</td>
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ADULT TRAUMA ALERT PATIENT PRESENTING WITH PARAPLEGIA SECONDARY TO AN AORTIC THROMBUS
Presenter: Ruth Cho DO | Duke LifePoint Conemaugh Memorial Medical Center
Cho RN, Sleet MC, Morrissey SL, Gray JL

Introduction: Acute aortic occlusion is a rare event and prompt diagnosis and management is vital to a patient’s outcome. Early diagnosis can be difficult, especially when a patient initially presents for a trauma evaluation. Even with timely surgical management, mortality rates can range from 20% to 50%. The etiology of aortic occlusion can vary, but cases resulting from blunt abdominal trauma have been documented. Robinson et al reported 72% acute aortic occlusion due to in situ thrombosis while 28% of the cases were embolic in nature. A variety of surgical procedures are utilized for management of acute aortic occlusion, but the in-hospital morbidity and mortality has not changed significantly.

A 70 year old male presented as a trauma alert after a ground level fall. On arrival, the patient complained of an acute onset of motor and sensory loss in his lower extremities. Pt was a poor historian and could not recall if the symptoms presented before or after his fall. His medical history was significant for cardiac stent placement and diabetes mellitus. Vital signs were stable and the neurologic exam revealed loss of motor and sensation in the L2 dermatome, areflexia, and loss of anal sphincter tone. His lower extremities were cool to touch and no palpable pulses were appreciated.

CT scans were performed, which did not identify any acute traumatic injuries. However, there was an acute juxtarenal to bilateral femoral aorto-iliofemoral occlusion. The diagnoses of spinal cord ischemia and bilateral lower extremity acute limb ischemia were established. There was no radiographic evidence of aortic aneurysm or dissection. Heparin infusion was initiated and the patient was taken emergently to the operating room for bilateral aorto-ilio-femoral thrombectomy, right femoral endarterectomy, bilateral aorto-iliac kissing stent placement, and bilateral four compartment calf fasciotomies. An exploratory laparotomy was also performed, which confirmed viable bowel. Post operatively, the patient did not have palpable distal pulses or doppler signals. The patient was transferred to the ICU in critical condition and a temporary hemodialysis catheter was placed for continuous renal replacement therapy. The patient, however, suffered cardiac arrest with resulting metabolic acidosis and anoxic brain injury. Cardiopulmonary resuscitation was performed, but the family wished to withdraw care and the patient expired.

Aortic occlusion is rare, especially in the trauma population. Patients presenting with lower extremity neurologic deficits from a suspected traumatic injury should be evaluated for acute aortic occlusion to allow for prompt treatment.
Introduction: Spontaneous arterial rupture (SAR) can be a devastating event for patients and a challenging clinical dilemma for treating surgeons. While SAR is well-described in coronary and aneurysmal pathology, noninfectious congenitally-related occurrences are rare.

Neurofibromatosis 1 (NF1) is a neurocutaneous disorder affecting as many as one in 3000 individuals. A mutation in the NF1 gene results in abnormal cell differentiation and proliferation, leading to a variety of associated manifestations, including cutaneous growths, skeletal abnormalities, intellectual disability, and vascular anomalies. The vascular abnormalities associated with NF1—aneurysms, stenoses, and arteriovenous malformations—can have serious and occasionally lethal consequences. SARs have been reported in NF1 patients. Because of the rarity and broad spectrum of clinical presentations, no single treatment modality has been uniformly applicable to the NF1 patients presenting with SAR.

We describe a case of an otherwise healthy, previously undiagnosed NF1 patient who developed airway compromise and neck hematoma following a coughing spell. After emergent intubation and airway control, she was transported to our institution for evaluation and treatment. An occipital artery pseudoaneurysm near the skull base with associated contrast extravasation was noted on computed tomography angiography. Urgent intervention consisting of endovascular embolization provided hemostasis. Subsequent hematoma drainage was performed, and the patient had an uneventful recovery. A large, flesh-colored plaque on her chest was consistent with a neurofibroma. The suspected diagnosis was confirmed with biopsy. This case report and literature review illustrates the various diagnoses to be considered when investigating SAR and lends further insight into a durable means of treatment for these patients.
Introduction: Schwannomas are a benign nerve sheath tumor which may arise from any cranial or peripheral nerve. They are uncommonly found arising from the cervical sympathetic chain and require pre-operative imaging as well as histologic diagnosis for pre-operative planning. We describe a rare case of cervical sympathetic chain schwannoma presenting as an incidentally found 5 cm mass posterior to the carotid bifurcation at the time of elective carotid endarterectomy for symptomatic carotid stenosis in an 80 year old male. Differential diagnosis in this setting includes carotid body tumor, vagal schwannoma, lymphoma, and lymph node metastasis. Diagnosis in this case was confirmed with intraoperative frozen pathology. Treatment of choice for cervical sympathetic chain schwannoma is complete surgical excision. Postoperative risks include Horner’s syndrome, although this may also occur with increase in tumor size. Simultaneous excision of a cervical sympathetic chain schwannoma at the time of carotid endarterectomy has not previously been described, however, may be safely performed as demonstrated in this case report.
Introduction: Chondroblastic osteosarcoma (COS) is a subtype of osteosarcoma, comprising 11 to 50% of osteosarcomas. The age at which it presents varies by age, with a peak incidence of about twenty years old. Differentiating COS from other subtypes of osteosarcoma is especially important, as gene expression, subsequent chemotherapy response, and prognosis differ. Hypercoagulability is commonly seen in the setting of malignancy and can adversely affect patient outcomes. The purpose of this case report is to demonstrate the efficacy of the Hawk One 1 LS device in performing a biopsy of SVC thrombus versus tumor thrombus seen in a patient with known COS and heavy thrombus burden.

Methods: We report a case in a 21 year old African-American male with known COS presenting with metastatic osteosarcoma of the right humerus and multiple thrombi in the SVC, IVC, RA, RPA, and LPA. Patient underwent right upper extremity forequarter amputation, and decision was later made to biopsy concerning SVC thrombus. The HawkOne 1 LS peripheral directional atherectomy system was used to obtain a biopsy of the SVC thrombus in the setting of COS.

Results: This patient is a 21-year-old African-American male with a past medical history of metastatic COS s/p resection and right upper extremity forequarter amputation complicated by multiple tumor thrombi, including pulmonary emboli and superior vena cava thrombus. Patient reported non-compliance with Lovenox he had previously been prescribed and was subsequently found to have worsening thrombus burden. Vascular surgery was consulted for SVC mass concerning for either venous thrombus or tumor thrombus. Decision was made to obtain a biopsy of the SVC mass endovascularly using a device called the HawkOne 1 LS, previously only used for atherectomy. Intravascular access was gained via the right femoral vein. The HawkOne 1 LS was inserted to biopsy the SVC mass. Pathology report showed tumor thrombus, consistent with patient history of COS. Patient tolerated the procedure well and was admitted to Pediatric Hematology/Oncology to begin scheduled chemotherapy.

Conclusion: This case demonstrates the efficacy of combined surgical and medical approach to COS and highlights the novel technique of using the HawkOne 1 LS for uses extending beyond standard atherectomy and its use as an intravenous biopsy device. This device was successful in obtaining adequate tissue sample for pathological identification of the specimen.
INTRODUCTION: Paget-Schroetter Syndrome (PSS) is a rare subset of venous thoracic outlet syndrome with an incidence of 1 to 2 per 100,000 individuals per year. It is usually seen in younger, physically active individuals and described as effort thrombosis due to repetitive motion, as seen in baseball, softball, swimming, and other sports. This syndrome is also seen in manual laborers who undergo repetitive motion. The purpose of this case report is to help better identify patients with PSS for expedited medical and surgical management.

METHODS: We report a case of PSS in a 14-year-old competitive athlete who presented with right upper extremity pain and swelling and was found to have acute, occlusive deep venous thrombosis (DVT) in multiple veins that had acutely spread. Patient was treated with a combination of medical and surgical management.

RESULTS: This patient is a 14-year-old Caucasian male with no past medical history who presented to the pediatric emergency department with right upper extremity pain and swelling. Of note, the patient is an active baseball pitcher, football player, and weightlifter. Venous duplex of his right upper extremity revealed acute, occlusive deep venous thrombosis extending throughout the right subclavian, axillary, proximal brachial, and basilic veins. The patient was admitted to the pediatric ICU for close monitoring while a Heparin infusion was started and Vascular Surgery was consulted. The patient underwent thrombolysis of the right axillary and subclavian veins using Angiojet and tPA, mechanical aspiration of thrombus in the right axillary artery and right subclavian vein, and cannulation of the main pulmonary artery. After maximization of medical and surgical management, the patient was discharged and worked up for Venous Thoracic Outlet Syndrome on an outpatient basis. At follow-up clinic appointment, a CTA chest showed intravenous thrombus extending from the right subclavian vein to right cephalic vein and right basilic vein down to the mid arm. The patient then underwent right first rib resection and subclavian venolysis. He tolerated the procedure well and was discharged on Eliquis.

CONCLUSION: This case report demonstrates the efficacy of treatment with a combined surgical and medical approach to PSS. Although this syndrome is rare in the general population, PSS must especially be considered in younger athletes and/or manual laborers to prevent possible life-threatening complications like recurrent thrombosis, pulmonary embolus, or need for vein grafting, as well as return to previous level of activity.
Introduction: Superficial temporal artery aneurysm (STAA) remains an uncommon lesion in the general population with only a little over 400 cases reported in the literature. When we consider the number of cases in the pediatric population, it becomes an even rarer occurrence. We discuss a case of a 14 year old male pediatric patient that suffered a trauma to the right temporal region, which is the most common risk factor for developing a superficial temporal artery aneurysm. Upon initial evaluation, physical examination was pertinent for a 1.2 cm circular pulsatile lesion, soft, non-tender, depressible, with no signs of inflammation or infection. Duplex sonogram revealed a bulging in the right temporal artery. The patient was treated with surgical intervention which is considered the gold standard. The patient recovered uneventfully. The rarity of pediatric STAA cases makes tailored recommendations difficult. With reports of excellent outcomes in the pediatric population after STAA excision following adult work up and surgical approach, we conclude that STAA excision is a viable management strategy that should be offered if STAA diagnosis is encountered. Review of literature was performed, resulting in either low incidence or low report for the condition at hand.
**Introduction**: Paralysis secondary to spinal cord ischemia following Endovascular repair of infrarenal abdominal aortic aneurysm is extremely rare complication, the reported incidence in the literature is 0.21%.

**Case report**: Our patient is an 85-year old female patient who presented to the emergency department with abdominal pain radiating to the back. Abdominal examination showed mild epigastric tenderness. Laboratory work up was within the normal limits. Computed Tomography Angiography of the abdomen and pelvis which showed impending rupture of 5.8 cm infrarenal abdominal aortic aneurysm (AAA). The anatomic configuration of the AAA fulfilled the requirements for endovascular abdominal aortic aneurysm repair (EVAR).

The patient underwent endovascular repair of her abdominal aortic aneurysm under general anesthesia. An infrarenal endovascular bifurcated graft with main body graft measuring 28 x 14 x 16 mm, along with right iliac limb extension graft measuring 14 x 14 mm were deployed, that was followed by angioplasty of proximal end, the gate, at the bifurcation and distally in the iliac artery in the standard fashion. A completion angiogram revealed excellent seal with no leak. The patient was admitted post operatively to the intensive care unit for observation. On post-operative day one she was complaining from lower limb weakness which she did not have prior to the surgery. Her neurological exam revealed bilateral lower limb paralysis with intact sensation. Her femoral pulses were present. Magnetic resonance imaging showed evidence of infarction of the distal spinal cord. The patient was discharged on post-operative day five to neurological rehabilitation facility.

**Discussion**: The etiology of spinal cord ischemia following endovascular repair of infrarenal abdominal aortic aneurysm is not fully understood. Multiple factors has been described for the development of this rare complication in the endovascular setting those include; atheromatous embolization, or interruption of the great radicular artery (artery of Adamkiewicz) or the collateral circulation from the internal iliac and lumbar arteries. Multiple treatment methods has been suggested to manage this condition including the use of cerebrospinal fluid drainage, steroids, hypothermia, and spinal cord perfusion pressure augmentation.

**Conclusion**: Neurological deficit after infrarenal aortic aneurysm repair is an extremely rare complication unlike thoracic aortic aneurysm. It results from alteration of the blood supply to the distal spinal cord by different not fully understood mechanisms. There is generally a lack of data to support the optimal way to manage this condition for these subset of patients. Patients undergoing EVAR should be consented for this potential complication.
Introduction: Refractory seizure activity represents a difficult problem for both patients and practitioners. Implantation of vagal nerve stimulator has been posited as an effective treatment for this disease. These devices are inserted by surgically placing leads into the carotid sheath along the vagus nerve as it traverses the neck. We aimed to evaluate a single vascular surgeon’s experience placing vagal nerve stimulators.

Methods: We examined all patients treated with placement of vagal nerve stimulator by a single surgeon at our institution from October 2016 to October 2018. Data was collected including demographics, medical and surgical history, intraoperative values including operative time and blood loss, and complications. Categorical data was evaluated using Fisher’s exact test, linear variables were evaluated using student’s t-test.

Results: 34 patients underwent placement of a vagal nerve stimulator with lead placements by this surgeon during this period. Patients undergoing battery exchange only were not included. Patients were 51.4% (18) male and 94.1% (32) white. Average age that the time of surgery was 44 years (range 26 – 68). 29.4% had a previous vagal nerve stimulator placed on the ipsilateral side. Average blood loss during surgery was 31 cc (range 20 – 50 mL) and average operative time was 75 minutes (range 45 – 107 min). There were no intraoperative complications in any patients. Post-operative complications were identified in 14.7% (5) of patients, all of which were transient dysphagia or changes in voice quality which did not require intervention. There was no significant difference between patients with previous operation and those without for developing post-operative complications (p=0.138). Average blood loss was higher in patients who had undergone previous stimulator placement than those who had not 39 mL vs 28 mL (p=0.0223) and operative time was longer at 96 minutes vs 65 minutes (p= < 0.0001).

Conclusion: Vagal nerve stimulators are a relatively novel device for the treatment of refractory seizure disorders. Given anatomical location of placement, vascular surgeons may be called upon to place these devices. In our single surgeon series we found that placement was safe, with minimal complications. Intraoperatively this case appears to be more difficult (with higher blood loss and longer operative time) in patients who have had previous device placement, but this does not appear to lead to a higher incidence of complications. This procedure may offer an opportunity for a young vascular surgeon looking to build practice within a community.
P 143. ENDOLUMINAL STENTING OF A RUPTURED HEPATIC ARTERY ANEURYSM IN A PEDIATRIC PATIENT
Presenter: Andrew D Kropilak MD | University of Mississippi Medical Center
Kropilak AD, Garrido D

Introduction: Polyarteritis Nodosa (PAN) is a vasculitis that characteristically affects medium-sized arteries. The pathology of PAN is segmental, transmural inflammation of muscular arteries. The cellular infiltrate can lead to disruption of the structural integrity of the arterial wall and result in aneurysmal dilation. It can affect virtually any organ arterial bed. Typical clinical manifestations are systemic. It rarely affects children. Uncommonly, PAN presents with aneurysm and rupture of the hepatic artery.

CASE PRESENTATION: This is a 6-year-old African American male with a medical history of severe systemic polyarteritis nodosa, non-compliant with the prescribed immunomodulating therapy, with multiple aneurysms of his mesenteric vessels as well as his coronary and intracranial cerebral circulation. The patient initially presented with complaints of fever, lethargy, abdominal pain, and decreased appetite for a week. During workup, a computed tomographic angiography was performed revealing a large common hepatic artery with surrounding contained hematoma compressing the superior mesenteric veins. The patient was taken for visceral arteriogram to further delineate the anatomy of the hepatic arterial bed. The celiac artery was cannulated, and the hepatic artery was selected. This demonstrated the large aneurysm with multiple smaller aneurysms past the main lesion and throughout the intrahepatic arterial bed. The decision to exclude the aneurysm was made based on lack of suitable open interventions. This was determined at the time of the angiogram. After crossing the aneurysm, a 6F sheath was advanced over the working wire. A 5mm x 39mm balloon expandable covered stent was advanced and deployed across followed by a second 5mm x 39mm balloon expandable stent significantly overlapping the first one. Successful exclusion of the aneurysm was demonstrated by the completion arteriogram. The patient recovered without complications and was discharged on an adjusted immunosuppressive therapeutic regime.

DISCUSSION: This case report demonstrates the unusual use of endovascular intervention for the management of visceral aneurysms of a pediatric patient with vasculitis.
Introduction: Femoral to popliteal bypass is a common vascular surgical procedure, and the vast majority are performed utilizing a medial approach to the popliteal artery. There have been occasional reports in the literature of successful revascularization via the lateral approach, most comprehensively by Dr Veith and colleagues in 1987. However, there has been a scarcity of further discussion of the topic, and the approach remains a rarely used technique. We feel that highlighting its feasibility would provide surgeons with a valuable alternative route for lower extremity revascularization in cases of anatomic variability, infected surgical fields, or other extenuating circumstance.

We present the case of a 56 year-old male who 26 years prior had suffered a significant crush injury to the lower extremity when a two-ton paper roll fell on his medial thigh, resulting in complex pelvic and long-bone fractures, as well as significant soft tissue injury. The superficial femoral artery was known to be occluded with distal reconstitution, the symptoms of which had progressed to intermittent rest pain. Given the significant soft tissue destruction suffered from his prior trauma, the medial approach to the popliteal was prohibitive, and he instead underwent revascularization via a lateral approach.

The common femoral artery was accessed through a longitudinal groin incision. A longitudinal skin incision was then made in the lateral thigh, between the iliotibial band and the long head of the biceps femoris. The fascia of the iliotibial band was divided longitudinally, and the underlying space entered with division of the intramuscular septum. The popliteal artery was encountered and found to be suitable for anastomosis. A 6mm ringed PTFE graft was tunneled between the incisions, and subsequently anastomosed proximally and distally in an end-to-side fashion. Multiphasic signals were attained and incisions were closed, taking care to reapproximate the fascia of the iliotibial band. Following an uncomplicated course, the patient was discharged on post-operative day 3. Follow-up one month later revealed complete resolution of rest pain.

There are a number of reasons why medial access to the popliteal artery may be inadvisable or impossible. In our patient, a traumatic injury to the medial leg was not only a contributing factor to his lower claudication and rest pain, but also posed a challenging approach to revascularization. The lateral approach to the popliteal artery is a useful alternative when medial or subsartorial tunnels are precluded by anatomic factors, or with concerns for infected field or irradiated planes.
Introduction: The purpose of this study was to review a series of three patients with primary peripheral arterial infections (PPAI). Primary arterial infections are rare but can have devastating complications. We describe the management of three patients with limb threatening PPAIs.

Methods: This is a retrospective review of the clinical presentation, operative management, and short term outcomes in three patients with PPAIs.

Results: All 3 patients (ages 63, 39, 61) are diabetic men who presented with sepsis, soft tissue abscess and skin necrosis. An arterial pseudoaneurysm was found deep to the area of compromised skin. They all developed ipsilateral deep venous thromboses (DVTs). The first patient presented with a right common femoral artery (CFA) pseudoaneurysm complicated by a soft tissue abscess. This was managed with right groin incision and drainage, right CFA debridement, patch angioplasty with contralateral great saphenous vein (GSV), and sartorius myoplasty. The second patient presented with a right superficial femoral artery (SFA) septic thromboembolism resulting in critical limb ischemia. This was managed with right SFA debridement and right CFA to suprageniculate popliteal artery bypass with ipsilateral reversed GSV. The third patient presented with a mycotic popliteal artery aneurysm. This was managed with ligation of the aneurysm, left SFA to infrageniculate popliteal artery bypass with contralateral GSV, and fasciotomy. All patients required serial wound debridements.

Conclusion: Patients with PPAIs can present with local findings of extensive surrounding tissue damage, necrotic skin changes, significant edema, and venous thromboembolism. Systemic findings include severe sepsis and multiorgan dysfunction. Optimal management includes use of an arterial bypass tunneled away from the infection (usually subcutaneous), and serial wound debridement. For preservation of venous outflow, use of a contralateral venous conduit may be necessary due to the frequency of ipsilateral DVTs. We achieved limb salvage in all 3 patients after operative intervention. For optimal chance of limb salvage, a multidisciplinary approach with revascularization, long term antibiotic therapy, and aggressive wound care is required.
Introduction: We hypothesize that preoperative lack of blood pressure control leads to increased hospital length of stay following CEA in comparison to other perioperative complications requiring increased hospital stay.

Methods: We reviewed all the carotid endarterectomy cases at our facility from 2016 to 2019 that required longer than 2 days of hospital stay. Peri-operative hypertension was classified as a BP greater than 140/80. We also reviewed patients for other comorbid conditions namely chronic kidney disease, diabetes, history of tobacco use and dyslipidemia.

Results: Of patients requiring greater than two hospital days were found to have: Peri-operative hypertension in 90.9% of patients. Of these patients: 71% required continuous IV infusion in the ICU. 3.9% of patients had a stroke/TIA, 2.6% of patients had myocardial infarction, respiratory failure present in 9.1% of patients, return to the operating room was identified in 5.2%. hematoma identified in 6.5% of patients , Uncontrolled headache in 23.4% of patients.

Conclusion: Uncontrolled peri-operative blood pressure seems to be a predictor of increased hospital length of stay as well as increased morbidity and mortality. Further analysis is warranted namely comparison of all patients in our database undergoing carotid endarterctomy to further delineate peri-operative hypertension and its association with morbidity and mortality.
Introduction: The acute abdomen is as engrained into surgical practice as its differential diagnosis is variable. A 60-year-old white male presented with the acute onset of abdominal pain and a pre-syncopal event 24 hours prior to initial evaluation of his peritonitis. CT scanning showed extensive free fluid whose density was consistent with hemoperitoneum. Follow-up CT angiography of the mesenteric vessels revealed multiple visceral artery aneurysms including a 7 mm splenic artery fusiform aneurysm, which was the likely source of bleeding, a 9 mm saccular aneurysm at the splenic artery bifurcation, a 12 mm saccular aneurysm of the proximal hepatic artery, an 11 mm saccular aneurysm of mid-superior mesenteric artery, and a 12 mm partially thrombosed aneurysm of the proximal left external iliac artery. There was no active extravasation from any of the aneurysms. Over the next several months, the patient underwent a multimodal approach to treatment the different aneurysms.

Initially, this patient was taken for endovascular embolization of the splenic artery which was felt to be the source of his hemoperitoneum. During the same hospitalization, he underwent an open superior mesenteric artery aneurysm repair with saphenous vein patch performed due to the saccular nature and extensive branching of the aneurysm(image 1). The patient had his common hepatic artery aneurysm repaired electively utilizing an endovascular stent graft. The patient has recovered well. His iliac artery aneurysm is being followed. Pathology specimens submitted from the open surgical case showed chronic dissection with no evidence of medial necrosis or smooth muscle mediolysis.

Visceral artery aneurysms (VAA’s) are relatively rare but can have significant mortality if undiagnosed. Reported incidence of any VAA is 0.1 to 2 percent of the population(1), but with higher usage of CT imaging, the diagnostic frequency is increasing(2). Diagnosing VAA’s is important due to their 30-40% potential incidence of rupture, which has an associated 25-50% rate of mortality(2). Splenic artery aneurysms are the most common VAA’s, and about one-third of affected people will have other associated visceral artery and renal artery aneurysms(3). Patients with multiple visceral aneurysms should be evaluated for potential collagen vascular disorders and/or medium vessel vasculitis such as polyarteritis nodosa or segmental arterial mediolysis. Treatment is varied depending on etiology and size. VAA’s can be repaired utilizing an open surgical or endovascular approach. This case report represents a successful integration of the different modalities to treat VAA’s.
Introduction: The operating microscope is an essential adjunct for the successful creation of arteriovenous anastomoses in the pediatric population [1]. Burns related to operating microscope use are rare but likely underreported in the literature [2]. Surgeons should be aware of this possible complication and be cognizant of techniques recommended to limit the possibility of skin injury. In this case report we describe a pediatric arteriovenous fistula case using the operating microscope resulting in a full thickness burn that required a skin graft.

Methods: Case report.

Results: A 15 year old Hispanic male with IgA nephropathy developed renal failure and required definitive dialysis access. A distal radio-cephalic arteriovenous fistula was created using the operating microscope. A full thickness burn was noted post operatively and required a skin graft. The graft healed and the fistula matured which continues to be functional over one year post operatively.

Conclusion: Thermal injury is a well-known complication resulting from the use of intense illumination with modern surgical microscopes. Vascular surgeons infrequently require the degree of magnification provided by operating microscopes; however, pediatric fistula creation is an exception. Literature review of avoiding microscope burn recommendations included: using the lowest light intensity possible; using the longest focal length possible; minimizing the amount of time microscope light is used; irrigating the surgical site often and covering exposed skin when able; and avoiding or minimizing vasoconstrictive medications [3]. Surgeons who use operative microscopes should be aware of the potential risk of iatrogenic injury and be well versed in techniques to minimize the risk of injury to improve patient outcomes.
Introduction: Both the left renal vein and 3rd portion of the duodenum occupy the angle created between the superior mesenteric artery (SMA) and the abdominal aorta. Both structures are subject to compression when this angle is too acute. When the duodenum is significantly compressed, the constellation of symptoms is called SMA Syndrome. Significant left renal vein compression leads to a constellation of symptoms called Nutcracker syndrome. Both clinical entities, when encountered individually, are rare. Few case studies have been reported where both entities are present concurrently.

A 49 year old female was hospitalized for intractable nausea and vomiting. Upon further review of the patient’s history, she had a 2 year history of abdominal pain, nausea, vomiting, and left flank pain. She also lost approximately 50 lbs during this time period. An extensive oncologic and GI work-up yielded no clear etiology. Physical examination was notable for left flank tenderness. Urinalysis revealed microscopic hematuria. CT of the abdomen and pelvis revealed dilation of the duodenum, an aortomesenteric angle of 14 degrees, and compression of the left renal vein at the aortomesenteric angle. These radiologic findings and constellation of symptoms were consistent with both superior mesenteric artery and nutcracker syndromes.

Left renal vein transposition was performed through a transperitoneal approach. A midline incision was performed. The bowel was eviscerated. The peritoneum was incised. The left renal vein was isolated and transposed 5cm distally on the IVC via an end-to-side anastomosis. The Ligament of Treitz was also divided.

The patient’s postoperative course was uneventful. Her obstructive symptoms resolved and she was able to tolerate a regular diet. She was discharged 6 days after the operation without complications. On follow-up, her left flank pain was markedly improved and she was still tolerating a regular diet.

Individually, both SMA syndrome and Nutcracker syndrome are rare. Both entities being present concurrently has been described seldomly despite their common anatomical defect. We describe a case where the patient presented with both clinical entities as suggested by their inability to tolerate a diet, chronic weight loss, chronic flank pain, and CT imaging showing dilation of both the left renal vein and duodenum proximal to the aortomesenteric angle. Our choice of management consisted of left renal vein transposition and division of the Ligament of Treitz. Renal stenting and Duodenojejunostomy are other treatment options for Nutcracker Syndrome and SMA syndrome, respectively.
Introduction: The treatment for Stanford type B dissections have evolved to include delayed endograft repair for uncomplicated dissections with improved morbidity and mortality rates. The subset of patients who undergo endograft repair can develop aneurysmal degeneration of the false lumen. These patients can be treated with either endograft extension, embolization or open thoracoabdominal aneurysm (TAA) repair.

Results: A 38-year-old morbidly obese male initially presented with an acute Stanford type A aortic dissection with a 5.3cm ascending aortic aneurysm and severely dilated aortic root measuring 7.6cm. He underwent a Bentall procedure. Post-operative course was only complicated by atrial fibrillation. A CTA performed prior to discharge demonstrated no evidence of distal aortic dissection.

Three months later the patient represented with sudden onset of tearing back and abdominal pain. CTA demonstrated an acute Stanford type B dissection without evidence of visceral branch compromise. He was treated medically and returned approximately 4 weeks later for elective endograft placement. Endograft was placed up against the distal origin of the left subclavian artery due to proximal location of the dissection. His post-operative course was uneventful, and he was followed with serial imaging as an outpatient.

Approximately two and a half years later he presented to the emergency department with similar mid-thoracic back pain. CTA demonstrated type Ia and Ib endoleaks with an increase in aneurysmal dilation of the thoracic aorta from 5.7cm to 7.4cm. Anatomically, he had an acute aortic arch and a diminutive distance between his carotid artery and subclavian artery origins. Given this patient’s anatomic challenges and his youth it was not felt that a durable repair could be achieved endovascularly. Thus, the patient was taken to the operating room for an open thoracoabdominal aneurysm repair. At the time of repair, it was discovered that the endograft had eroded through the superior portion of the aortic arch adjacent to the left subclavian artery. The endograft was excised and the aorta was repaired with a bypass of the left subclavian artery. His post-operative course was complicated by vocal cord paralysis and a minor surgical site infection.

Conclusion: This case demonstrates the complexity of aortic dissection treatment and aneurysmal degeneration of the false lumen that can occur following endovascular repair. Thoracic endograft failure has recently been investigated and has been discovered to occur in upwards of 12% of repairs. This emphasizes the necessity for lifelong surveillance and demonstrates the need for continued investigation into treatment algorithms for thoracic endograft failure.
Introduction: Arterial dissection is a well-recognized pathology often seen in Vascular Surgery offices and Emergency Departments alike, however visceral arterial dissection is an extremely rare, small subset of this entity. With that, an isolated celiac artery dissection as presented within this report is an exceptionally unique pathology that has scarcely been reported and due to this, management guidelines are undefined. Given the viscera supplied by the celiac artery, many intraabdominal structures are at risk for ischemia when damage to the celiac artery occurs, witnessed by this report. Due to the exclusivity of this pathology, we are compelled to report the case of a 71-year-old male who presented with complaints of abdominal pain, and was found to have an acute celiac artery dissection, which resulted in severe ischemic duodenitis, as well as likely acute pancreatitis, and possibly influenced acute cholecystitis.
Introduction: Adenoid cystic carcinoma (ACC) of the breast is a rare tumor that accounts for less than 1% of breast cancers and carries a favorable prognosis with an approximate 10-year survival of 90%. Despite their frequent triple negative status, these tumors are often indolent tumors that rarely metastasize or require chemotherapy.

Case Report: A 53 yo F underwent segmental mastectomy in 2009 for a painful tumor of the left breast; final pathology demonstrated a 2 cm intermediate grade, ER/PR/HER-2 triple negative adenocystic carcinoma. The patient subsequently underwent a left mastectomy for recurrent ACC in 2014 as well as left chest wall excision for positive margins. In 2015, she underwent CT-guided lung ablation for incidentally found metastasis to the right lung. Patient continues surveillance and has now developed new left axillary adenopathy in need of further ongoing management.

Discussion: ACC of the breast is defined pathologically by proliferating glands seen in salivary gland tumors. In contrast to typical salivary gland tumors and other triple negative receptor breast cancers, these tumors are usually indolent and rarely metastasize to lymph nodes or distantly. The optimal surgical management is controversial and chemo is rarely employed. This case illustrates the indolent nature of these tumors even with distant metastases.

Conclusions: ACC of the breast is a rare tumor that a carries a favorable prognosis. Given its rarity and indolent nature, the optimal surgical treatment and management of metastatic disease is uncertain.
Introduction: Galactocele is a benign cyst of the breast that contains milk or a milky fluid. It is often related to pregnancy and lactation but has been recognized as a rare complication of breast augmentation with an unclear etiology. Given that breast augmentation is one of the most commonly performed aesthetic operations, physicians must consider galactocele in the differential diagnosis for a rapidly enlarging breast in the setting of previous breast surgery. In the reported case, a 34 year old woman with a remote history of pregnancy developed bilateral galactoceles after undergoing an augmentation mammoplasty and mastopexy via periareolar incisions. Incision and drainage provided complete resolution of her collections. Unlike existing reported cases of post-augmentation galactocele, the patient did not have recent history of pregnancy, lactation, oral contraceptive use, or hyperprolactinemia. This case highlights new evidence that periareolar incision can precipitate post-augmentation galactocele in the absence of previously reported risks.
Introduction: The use of isosulfan blue dye for sentinel lymph node mapping in breast cancer is considered routine (1). An array of adverse side effects from this dye have been described in the literature (2-3). Here we describe an atypical isolated dermatologic reaction. A 79 year old female with history of hypothyroidism, GERD, hypercholesterolemia, iron deficiency anemia who was found to have infiltrating ductal carcinoma after a core biopsy of right posterior breast calcifications identified on mammogram. Her surgical history included previous benign right breast biopsy, hiatal hernia repair, and gastrostomy tube placement. Family history included a brother with colon cancer and a sister with breast cancer. The patient presented for a right breast lumpectomy and sentinel lymph node biopsy. She underwent nuclear lymphoscintigraphy with injection of 520 microcuries of technetium 99m sulfur colloid along the upper outer aspect of the right areola of the right breast. Images showed propagation of radiotracer in the right axillary region. She also needle localization under stereotactic guidance along the posterior right breast calcifications by the radiology department. She was then taken to the operating room where she underwent general anesthesia without issue. The right breast periareolar area was sterilely injected with 5ml of Isosulfan blue solution (Lymphazurin 1%) and the breast massaged for several minutes. During the case, blue stained lymphatic channels were identified along with a blue stained radioactive lymph node, which was removed and the right breast lumpectomy was performed without issue. There were no apparent complications noted during the case. The patient was extubated and brought to the PACU area. In PACU the patient was noted to have a blue-gray skin hue across her face, arms, chest, and legs without typical allergic dermatitis rash or itching. She did not experience any desaturations or other signs of anaphylaxis. She was discharged home without any further complications. This patient had an atypical reaction with skin changes that resolved in a few days. It is important to recognize the potential adverse effects of isosulfan blue dye. Reported incidence of anaphylactic reactions to isosulfan blue ranges from 0.07-2.7% (4). Patients and care-providers should be aware of this possible reaction as prompt treatment can improve outcome. This patient presented in this case experienced a novel reaction with generalized skin discoloration not in line with an allergic dermatitis. Methylene blue can be used as an alternative however it has been associated with skin and nipple necrosis (5).
**P 155. CUTANEOUS SQUAMOUS CELL CARCINOMA OF THE NIPPLE PRESENTING AS PAGET'S DISEASE**

Presenter: Monica Rebielak DO | Geisinger Medical Center  
Rebielak ME, Wolf MR, Oxenberg JC

**Introduction:** Squamous cell carcinoma (SCC) is a common cutaneous malignancy however, SCC of the breast is a rare finding accounting for less than 0.1% of invasive breast cancers. Even more elusive is the diagnosis of primary invasive SCC of the nipple. Of those few patients, certain factors were associated with the diagnosis such as previous radiation, ultraviolet (UV) light exposure, and human papilloma virus. We present a case involving a 61-year-old female who was referred to the breast clinic for left nipple bloody discharge and skin changes. Paget's disease of the nipple was suspected prompting an incisional nipple biopsy. Final pathology revealed moderately differentiated invasive SCC arising from in-situ carcinoma. The patient subsequently underwent wide excision of the left nipple with partial areola excision. This case emphasizes the importance of recognizing cutaneous manifestations of SCC involving the nipple.

**Method:** The following case report describes a middle-aged female ultimately diagnosed with primary invasive SCC of the nipple presenting as a scaly, ulceration nipple lesion.

**Results:** A 61-year-old Caucasian female with a past medical history of asthma, hypertension, and osteoarthritis who presented to the breast clinic for evaluation of skin changes to the left nipple associated with an episode of spontaneous bloody discharge 5 months prior. Since that time, she noticed a persistent scabbed appearance to the left nipple despite use of topical ointments. Diagnostic mammogram with tomosynthesis as well as ultrasound were performed prior to her appointment. Imaging demonstrated BI-RADS Category 3 findings that were unchanged over a two-year period. On clinical exam patient had tenderness, scaling, and ulceration noted to the left nipple. Paget’s disease was suspected and a left nipple wedge biopsy was performed. Pathology revealed moderately differentiated invasive SCC arising from in situ carcinoma, extending to peripheral and deep edges. The patient underwent wide excision of the nipple which included a portion of areola. The lesion measured 1.4 x 1.6 x 2.5 cm with final surgical pathology of invasive moderately differentiated SCC as well as SCC in situ. All margins were clear of invasive and noninvasive carcinoma.

**Conclusion:** Primary SCC of the skin is a relatively common malignancy; however primary invasive SCC of the nipple has rarely been reported. This case demonstrates an unusual diagnosis in a patient with no identifiable risk factors for SCC. It highlights the importance of including other etiologies of nipple lesions presenting as Paget's disease.
Introduction: The objective of this study is to describe and analyze the previously unreported clinical condition of a cutaneous melanoma presenting concurrently with an appendiceal carcinoid tumor.

Methods: This is a case report done retrospectively on a patient at the University of Tennessee Medical Center Knoxville. A literature review was performed on patients previously diagnosed with a both melanoma and carcinoid.

Results: We report a patient presenting with a melanoma, who, while undergoing a staging work-up was incidentally found to have an appendiceal mass, discovered after appendectomy to be carcinoid. The melanoma was treated with a wide local excision, sentinel lymph node biopsy, and immunotherapy. The patient underwent a laparoscopic appendectomy as treatment for his appendiceal carcinoid.

Conclusion: To our knowledge, this is the first case report documenting the co-occurrence of melanoma and appendiceal carcinoid. There exist only a few case reports of melanoma occurring with carcinoid, all of which were pulmonary carcinoid. Similarities between melanoma and carcinoid, both structurally and functionally, have been described which hint at a common embryologic origin, and a possible reason for their co-occurrence.
Introduction: Acral Lentiginous melanoma (ALM) is the most common subtype of melanoma in people with skin of color. In East Tennessee, however, the population is largely Caucasian. We present a retrospective cohort of regional patients diagnosed with AM treated at our cancer center.

Methods: We retrospectively queried our cancer center and pathology database, with IRB approval, for patients with ALM. We used frequency and percentage statistics to generate measures of prevalence in the population. We compared demographics of the patient population including gender, history of prior malignancies, and immune status. Pathological characteristics as well as surgical management were compared. We also assessed the need for sentinel lymph node biopsy (SLN), skin grafting, and adjuvant therapies.

Results: Thirty-three patients with ALM were identified from 2010-2018, all of which were Caucasian. There was a male majority (57.6%), with an average age of 65.7 (range 16-88). Lesions were generally advanced with six (18%) lesions presenting in situ. Average Breslow thickness was 2.42mm (range 0.31-8.6mm). Nine lesions (27%) were ulcerated. All patients underwent a negative margin resection. Sentinel lymph node biopsy was performed in twenty-two patients (66.7%) with seven (21%) having a positive SLN. Twenty resections (61%) required grafting. There were a total of eight (24%) recurrences and overall recurrence free survival was 30 months. Of the 33 patients, seven (21%) received systemic therapy.

Conclusion: The South-Central Appalachian population demonstrates similar outcomes from ALM compared to those reported in the literature. Our population demographic reflects the general population distribution; however, this study may reflect bias given our single institution study.
P 158. GENE EXPRESSION PROFILE AND CLINICAL DECISION MAKING IN THE TREATMENT OF MELANOMA
Presenter: Anthony Scott MD | Medical Center of Central Georgia- Navicent Health
Scott AM, Dale PS, Conforti AM, Gibbs JN

Introduction: The practice of utilizing gene expression profile (GEP) for the evaluation and treatment of cutaneous melanomas has been found to predict the risk of sentinel node metastasis and recurrence. Information obtained from this assay has been used to determine clinical decision making including serving as an indication for sentinel lymph node biopsy and also for intensity of screening measures. Herein we present our early experience in utilizing GEP in intermediate melanomas and its effect on clinical management.

Methods: A retrospective review was conducted of all patients who had undergone treatment for melanoma in our practice whose tumors had been subjected to gene expression profiling. Additional factors assessed included patient characteristics, attributes of the original tumor biopsied, findings on final pathology, procedures conducted, follow-up schedule. GEP stratified patients into four groups; groups 1A and 1B are considered low risk of metastasis or recurrence, while 2A and 2B are considered high risk.

Results: Over the study period GEP was conducted on 26 cutaneous melanoma patients. Testing and treatment data are available for 23 of these patients. All patients underwent wide local excision of the tumor. Eleven patients were found to be low risk (nine as 1A, two as 1B), twelve were found to be low risk (four as 2A, eight as 2B). Decision making was altered such that sentinel lymph node biopsy was omitted in 2 cases in which the patients were found to be low risk with age >65-years. Seventeen patients underwent sentinel lymph node biopsy returning one high risk patient with a positive sentinel node. In eight cases sentinel lymph nodes were obtained despite low risk classification, but in which higher clinical suspicion was present. Follow-up routines for patients also varied based on GEP results with patients stratified as low and high risk undergoing clinical, laboratory, and PET/CT surveillance at different frequencies.

Conclusion: In the cases reviewed all patients underwent GEP of their original tumor biopsies which was factored into the clinical decision making process. Sentinel lymph node biopsy was omitted in two low risk cases who were >65-years. In eight cases of node negative disease in genetically high risk patients, surveillance measures were augmented with PET/CT. Utilization of GEP is ongoing at our institution.
P 159. NECROTIC CHEST WALL MASS: ATYPICAL PRESENTATION OF GIANT BASAL CELL CARCINOMA
Presenter: Ashley Newman MD | Rutgers University
Newman A, Ventarola D, To J

Introduction: Giant basal cell carcinomas (GBCC’s) are rare occurrences despite the high incidence of BCC in the general population. GBCC’s are defined as those over 5cm in diameter, and account for less than 1% of all BCC. These lesions are most often reported in men approximately 70 years of age, have an indolent time course (10-20 years on average) and are located on the back, face, and upper extremities. Few patients with this GBCC have been reported in the literature, and diagnosis and treatment is developed on a case-by-case basis. We report a case of GBCC of the anterior chest wall initially diagnosed as triple negative breast cancer.

The patient is a 73-year-old male who initially presented for evaluation after an episode of bleeding from a large ulcerated lesion of his right anterior chest wall. The lesion had been present for approximately 10 years and gradually enlarging. On the day of presentation to the hospital the patient noted bloody drainage from this lesion prompting him to seek medical attention. Physical exam revealed an ulcerative lesion, approximately 20x20 cm on right anterior chest wall with exposed intercostal muscles, ribs, lung and sternum (Figure 1). CT confirmed a right chest wall subcutaneous defect with emphysema along the right axilla, sternal fracture with 5mm displacement, and possible osteomyelitis. During his admission he underwent two incisional biopsies of this lesion, initially being diagnosed with triple negative breast cancer. Given the indolent course of this lesion, there was concern from both medical and surgical oncology that this was a misdiagnosis and the biopsy was repeated. The pathology results from the second biopsy were consistent with basal cell carcinoma. He was not considered a surgical candidate for resection or reconstruction at this time given his overall poor nutritional status, bacteremia, and osteomyelitis of his sternum. The patient was eventually discharged with a PICC line for continued outpatient antibiotics for osteomyelitis of his sternum and plans to follow up with medical oncology for further management.

Giant basal cell carcinomas are rarely encountered malignancies which often present challenges in diagnosis and treatment. Diagnosis and treatment planning for this patient were delayed, requiring multiple biopsies and evaluation by several different oncologic specialists. Due to the low rate of regional and distant disease in GBCC, treatment is often primarily focused on excision and reconstruction, or in cases of unresectable disease like the presented case, on supportive care.
Introduction: Lymphatic malformations are benign, congenital, vascular lesions that most commonly occur in the neck and axilla. Abdominal lymphatic malformations are rare and reportedly account for around 5% of all lymphatic malformations, making a pancreatic subtype rather unusual. Categories of vascular malformations include capillary malformations, venous malformations, lymphatic malformations, arterial malformations, arteriovenous malformations or combined complex types. The majority of pancreatic vascular malformations are arteriovenous, and all other subtypes are uncommon. We report a case of a successfully treated pancreatic capillary lymphatic malformation.

Case Description: Our patient is a 28 year old female who presented with lower abdominal pain and bloating. Computed tomography (CT) was obtained which showed a large multiloculated complex fluid collection in the left abdomen arising adjacent to the stomach and descending into the lesser sac. The mass measured 12.3 x 12.4 x 21 cm. Given the size of the cyst, the patient was taken for resection. Intraoperative findings were significant for a large, cystic mass arising from the pancreas without vascular involvement but adherent to the colonic mesentery and splenic hilum. A distal pancreatectomy with splenectomy, colon resection with primary re-anastomosis was performed. Final pathology revealed a benign pancreatic tissue with cystically dilated lymphatic spaces associated with inflammation, fibrosis, and thick-walled blood vessels compatible with an intra-abdominal lymphatic malformation. The patient has been seen in follow up clinic and has recovered well.

Discussion: This case illustrates an infrequent cause of abdominal pain and demonstrates a potential surgical treatment strategy for large abdominal lymphatic malformations. Although very rare, lymphatic malformations of the pancreas should be considered as a differential diagnosis for a pancreatic cyst. Surgical removal should also be considered in patients with symptomatic abdominal lymphatic malformations.
**P 161. NON-TUNNELING TECHNIQUE FOR CHEMOPORT INSERTION ASSOCIATED WITH SHORTER OPERATIVE TIME**

Presenter: Hossam Alslaim MBBS | Medical College of Georgia at Augusta University

Alslaim H, O’Brien D, Kruse E

**Introduction:** Placement of subcutaneous ports for administration is a commonly performed procedure. Significant variation exists in the introduction and tunneling preferences. A lot of advocates for using the internal jugular cite ultrasound guidance and the theoretical decrease in the risk of pneumothorax. Proponents for the subclavian vein approach quotes better cosmetic outcomes and smoother angle. Regardless of the method, most people opt to tunnel their lines to ensure security and eliminate the risk of ascending infection and line associated blood stream infections. There is a lack of literature to support the benefit of tunneling for port placement. We postulated that tunneling ports is associated with increased intraoperative time without any reduction in complications. To illustrate the procedure, we recorded an intraoperative video illustrating the essential steps of the procedure.

**Methods:** Chart review of two surgical oncologists for chemoport placement over 12 months period. Outcomes were intraoperative surgical time and cost.

**Results:** 64 patients underwent placement of subclavian vein chemoport without tunneling and 100 underwent conventional tunneled port placement. Mean OR time was 30.7 minutes vs 39.7 minutes (95% confidence interval [CI] for difference in mean is 3.9 to 14.0, p< 0.05). Mean Total cost was 450$ vs 507$ (95% CI 25$ to 88$).

**Conclusion:** Placement of subclavian vein chemoperitoneal without tunneling is associated with shorter operative time as opposed to tunneling approach. Safe placement requires knowledge with the trajectory of the subclavian vein. The essential steps to ensure efficacious placement and cost effectiveness includes adequate preoperative preparation on the back table, utilizing scissors to create the chemoport pocket as opposed to electrosurgery and limiting changes in C arm position during the procedure.
Introduction: Gastrointestinal stromal tumors (GIST) are a common tumor presenting in the gastrointestinal tract with the majority emanating from the stomach. Some GIST exhibit increased mitotic rate and present with synchronous metastatic disease at time of diagnosis. Imatinib is a tyrosine kinase inhibitor that is the first line medical therapy in treatment of disease unamenable to upfront surgical resection. Neoadjuvant treatment of GIST has been described in the literature, but with multiple examples of late failure of prolonged treatment and no discrete guideline for longevity of treatment.

Methods: We submit a case report of combined partial gastrectomy, splenectomy, and microwave liver ablation after prolonged treatment of metastatic GIST with Imatinib for 3 years after initial presentation with unresectable disease.

Results: The patient is a 59 year old female that presented with weight loss and dysphagia to her primary care physician. She underwent EGD demonstrating a large submucosal lesion in the cardia near the GE junction in May 2015. She then underwent CT scan demonstrating a 9.3 cm mass in the cardia with several liver lesions located in the left and right lobes. She then underwent IR biopsy that was consistent with metastatic GIST. She was started on neoadjuvant Imatinib. Radiographically, she had significant improvement in the size of her primary tumor and complete response in all but one liver metastasis. At three years since initiation of neoadjuvant therapy, patient was found to have a slight increase in the size of the liver lesion and surgical intervention was planned. Patient underwent partial gastrectomy, splenectomy, and microwave ablation of liver tumor in segment 8 in March 2019. Patient tolerated the procedure well and was discharged home without complication. Patient has subsequently been followed in clinic with axial imaging for 6 months with no evidence of recurrent disease. Patient was scheduled to continue Imatinib for one year after surgical intervention.

Conclusion: Neoadjuvant therapy with Imatinib for surgically unresectable GIST tumors is described in the literature, however there are few recommendations for prolonged duration of treatment. We demonstrate the effectiveness of prolonged treatment with Imatinib, up to three years, followed by multivisceral resection for metastatic GIST tumor. We propose that the use of neoadjuvant Imatinib to convert unresectable disease to resectable disease is an effective technique that may be used for multiple years in order to achieve desired response. We also propose that a multivisceral surgical resection is appropriate for GIST with regression of disease after neoadjuvant therapy.
Introduction: A 69-year-old male presented with extensive pneumoperitoneum, pneumoretroperitoneum, and pneumoscrotum two days after a transanal excision of a rectal polyp.

Summary: Our patient underwent a transanal excision of an endoscopically unresectable rectal polyp. Initially he was discharged home the same day after the operation. However, he presented on postoperative day two after developing fevers at home. He was hemodynamically stable with a benign physical exam and normal laboratory values. Computed tomography scan demonstrated intense pneumoperitoneum, air in the retroperitoneum, mesentery, mesenteric fat, subcutaneous tissue, and scrotum. He was taken for a rectal examination under anesthesia that demonstrated an intact suture line without any infectious cause of the radiographic findings. Given his reassuring exam and hemodynamic stability, a non-operative approach was used for his management. He discharged home and recovered without sequela.

Conclusion: Transanal excision is a low risk procedure used for the management of rectal pathology. Following a transanal excision, our patient developed a rare postoperative complication of pneumoperitoneum, pneumoretroperitoneum, and pneumoscrotum that was successfully managed non-operatively. While modern technology and advanced imaging modalities can play a major role in patient care, this case reiterates the importance of treating the patient rather than imaging findings.
Introduction: Lipomas of the gastrointestinal tract are benign, non-epithelial, fatty tumors that are most frequently found in the right side of the colon. Approximately 90% originate from the submucosa and may be sessile or pedunculated. While smaller lesions tend to be asymptomatic, lipomas larger than 4 cm in size become symptomatic in 75% of patients, most commonly with vague abdominal pain, nausea, bleeding, and constipation. Frequently, large symptomatic lipomas are removed surgically with segmental resection of the involved colon. This case report describes the management of a patient with an extremely large pedunculated colonic lipoma using endoscopic submucosal dissection (ESD) and snare polypectomy.

Case Presentation: A 67-year old male who presented to his primary care physician with constipation refractory medical treatment. Colonoscopy revealed a 6 cm, hard, ulcerated, necrotic, and semi-pedunculated polypoid lesion at the hepatic flexure. A cold forcep biopsy was performed and pathology demonstrated several fragments of a tubular adenoma without high grade dysplasia, hyperplastic mucosa with ulceration, and detached fragments of necrotic debris. Computed tomography of the abdomen/pelvis demonstrated a 4.2 cm fatty tumor at the hepatic flexure suggestive of a lipoma. The patient was referred to surgery and subsequently underwent a colonoscopy with ESD of the mass. The large mass was identified in the transverse colon and Eleview was injected in the submucosa to lift the mass away from the underlying muscularis propria. A duo knife and hook knife were used to unroof parts of the mass to ease removal. A large snare was then utilized to remove the mass piecemeal. There were no significant complications. On histopathology, the mass measured 7.0 x 4.0 x 3.0 cm and demonstrated ulcerated colonic mucosa with underlying mature adipose tissue, consistent with a lipoma and fat necrosis. Postoperatively, the patient’s constipation resolved.

Discussion: This case illustrates that patients with large, symptomatic lipomas may avoid the morbidity associated with a colectomy and ESD is a feasible method for removal.
Introduction: The minimally-invasive surgical approach to colorectal disease is constantly evolving. The introduction of robotic surgery in this setting has improved visualization and dexterity with instruments in comparison to laparoscopic techniques. Single-incision robotic surgery further reduces abdominal wall trauma with fewer incisions while preserving visualization with triangulation of the instruments. While the safety and benefits of robotic surgery have been evaluated in the literature, little exists to demonstrate the non-inferiority of single-incision compared to multi-incision robotic surgery in colorectal procedures.

Methods: We performed a 1:1 case-matched comparison between two groups of patients who underwent robotic-assisted colorectal surgery at a single institution. There were 70 patients who underwent single-incision robotic-assisted colorectal surgery who were case-matched based on age, BMI, pathology, and procedure with 70 patients who underwent multi-incision robotic-assisted surgery. A retrospective chart review was then conducted to assess for post-operative complications among the groups.

Results: The patients in this study had an average age of 59 years (ranging from 25 to 82) and an average BMI of 28.3 kg/m² (ranging from 16.4 to 52). The procedures reviewed included single-incision and multi-incision robotic ileocecectomy, right hemicolectomy, left hemicolectomy, and low-anterior resection. The conversion rates from single-incision or multi-incision to laparoscopic or open surgery was not significantly different between the groups (p=0.515). The operative time was significantly shorter in patients who underwent single-incision robotic surgery (p=0.041). The estimated blood loss was not significantly different between the two groups (p=0.646). The length of stay was significantly shorter in the single-incision group (p=0.048). The rates of post-operative surgical site occurrences (including wound infection, hematoma, seroma, abscess, and fistula), leaks, re-interventions, and re-admissions were not significantly different between the groups.

Conclusion: Multi-incision and single-incision robotic-assisted colorectal surgery are equally safe and efficacious. The short-term post-operative complication rates between the groups were not significantly different and they were comparable to nationally-reported outcomes. Single-incision robotic-assisted surgery had significantly shorter operative times and length of stay when compared to traditional multi-incision robotic-assisted surgery.
Introduction: The use robotic-assisted techniques in colorectal surgery has dramatically increased over the last several years. While diverticulitis is among the most common indications for resection, comparative data on the management of both uncomplicated and complicated diverticulitis using robotics is lacking. The purpose of this study is examine the outcomes of patients who underwent robotic-assisted resection of both uncomplicated and complicated diverticulitis.

Methods: A prospectively maintained database of robotic-assisted colorectal surgery performed by a single surgeon was retrospectively reviewed to identify consecutive patients who underwent robotic-assisted surgery for uncomplicated or complicated diverticulitis from October 2009 – November 2018. Demographic data, preoperative and intraoperative parameters, and postoperative outcomes were assessed.

Results: Robotic-assisted resection for uncomplicated and complicated diverticulitis was performed in 75 and 38 patients, respectively, from 2009-2018. Comparison of the two groups revealed significant differences in operative times (220 vs. 302 min, p = 6.1772E-07), conversion to open (2 patients [5.3%] vs. 5 patients [13.2%], p = 0.04), ostomies (0 patients [0.0%] vs 3 patients [7.9%], p= 0.04) and mean estimated blood loss (174 cc vs. 335 cc, p = 0.0003). Low rates of postoperative complications were observed, with no significant differences between uncomplicated and complicated cohorts noted for conversion to laparoscopy (3 vs 1 patient), surgical site infection (11 vs 4 patients), leak (2 vs 0 patients), intraabdominal abscess (2 vs 4 patients), UTI (2 vs 1 patients), pneumonia (0 vs 1 patient), C. diff (1 vs 0 patients), 30-day unplanned readmission (2 vs 3 patients), or recurrence (0 patients). All patients with ostomies underwent reversal. In those undergoing resection with fistulae, there was a 100% fistula healing rate at a mean follow-up of 270 days. One uncomplicated and 3 complicated cases underwent pre operative ureteral stenting.

Conclusion: While patients with complicated diverticulitis required longer operative time, had an increased estimated blood loss, and more often required conversion and an ostomy, overall rates of post-operative complications were low in both groups. Robotic-assisted surgery shows promise for use in both uncomplicated and complicated diverticulitis.
P 168. MIGRATION OF A FOREIGN BODY THROUGH THE SMALL BOWEL INTO MESENTERIC TISSUE
Presenter: Aimee Sundeen MD | University of Mississippi Medical Center
Sundeen AD, Petro AB

Introduction: Acutely ingested foreign bodies are a common reason for presentation to the emergency room and subsequent consult to general surgery with intestinal perforation. However, this is a case presentation of an ingested foreign body that migrated through the intestinal wall into the small bowel mesentery causing chronic abdominal pain for several months. A 62 year old female was referred for surgical evaluation after a work up for abdominal pain revealed a mass within the mesentery of the small bowel on CT scan.

Methods: The patient was evaluated in clinic and scheduled for surgery after a course of antibiotics for exploration and removal of mass. Initial differential included desmoid tumor, carcinoid, and inflammatory process. Patient was taken to the operating room and diagnostic laparoscopy was performed. There were no obvious masses or peritoneal implants observed though the mesentery was quite inflamed, so the operation was converted to open. A lower midline incision was made and the small bowel delivered through the wound in order to inspect the mesentery. A 4.5cm mass was present in the jejunal mesentery with adjacent 1.8cm piece of thin wire embedded in the mesenteric tissue. This wire was removed and sent for pathology. The mass was well circumscribed and appeared to be an old hematoma. This was dissected free without any issue and sent for pathology where frozen section suggested this was a chronic inflamed hematoma.

Results: The patient tolerated the procedure well and spent two uneventful days in the hospital. Final pathology returned with the findings consistent with chronic inflamed hematoma adjacent to a small wire. There was no malignancy seen with two negative lymph nodes.

Conclusion: The small wire found in the mesentery is similar to the bristle off a wire brush used to clean grills and the patient did endorse eating regular meals cooked on a grill. This is an example of a delayed presentation of ingested foreign object that had migrated through the small bowel and lodged in the mesentery causing a hematoma. The subsequent inflammation of the hematoma was likely responsible for the patient’s chronic abdominal discomfort. So while acute presentation of ingested foreign objects will always be the more common presentation, the migration of small linear objects through the bowel can also be a cause of chronic abdominal pain.
Introduction: Necrotizing soft tissue infection is a rapidly progressive infection of fascia and subcutaneous tissue which can be potentially fatal. The port site necrotizing soft tissue infection of abdominal wall after laparoscopic surgery is a rare etiology associated with a high mortality rate. Here we present a 49 year old female who initially underwent laparoscopic vertical sleeve gastrectomy converted to Roux-en-Y gastric bypass with hiatal hernia repair secondary to persistent weight gain and reflux. Within twenty four hours post operatively, she developed tachycardia, and enlarging skin discoloration around her laparoscopic port sites in the left upper quadrant of the abdomen. She was sent for CT scan which showed a leak at her jejunojejunal anastamosis extending to her left abdominal wall and flank area, which resulted in necrotizing soft tissue infection. After resection and revision of jejunojejunostomy, serial abdominal wall soft tissue debridements and appropriate antibiotic therapy, patient recovered from the interventions and was discharged home.

Our case highlights the rare but potentially fatal complication of abdominal wall necrotizing fasciitis after laparoscopic surgery due to an anastomotic leak which was properly managed with source control as well as appropriate antibiotic therapy.
Introduction: Small bowel obstructions secondary to foreign body perforation present a rare and interesting pathology. Here, we describe the case of small bowel obstruction caused by intestinal perforation by a toothpick, and review diagnosis and management.

Results: A 65 year-old man with no surgical history presented to the emergency department with 5 days of abdominal pain, bloating, and partial obstipation. He had been discharged from an ED earlier this week with similar complaints. His last colonoscopy was in 2017. On exam, his vitals were within appropriate and normal ranges. His abdomen was soft, nontender, moderately distended, tympanic to percussion, and nonperitonitic. Laboratory studies, including chemistry and hematology studies, were within appropriate and within normal limits. A CT scan of the abdomen demonstrated a partial small bowel obstruction in the right lower quadrant. He was taken to the operating room for diagnostic laparoscopy, where adherent inflamed loops of bowel in the right lower quadrant were encountered. Exploration of these loops demonstrated an intraabdominal toothpick foreign body. The toothpick was removed, the bowel was examined for an enterotomy source (none found), and the area was copiously irrigated. He had a rapid and uneventful recovery, and did not recall swallowing a toothpick.

Conclusion: Intra-abdominal foreign bodies can present in a number of atypical ways, including small bowel obstruction in an otherwise unlikely patient with few risk factors for small bowel obstruction. Clinical suspicion and acumen for atypical presentations of common pathologies remain a cornerstone of surgical practice.
Introduction: Endometriosis is a common finding in women of childbearing age. It is the ectopic growth of endometrial tissue outside of the uterus. However, bowel involvement of endometriosis is uncommon. Cecal endometriosis presenting with right lower quadrant pain is difficult to diagnose and often mimic that of acute appendicitis. We present a patient with signs and symptoms of acute appendicitis, found to have cecal endometriosis on laparoscopy.

A 47 year-old-female with presented to the ED with several day history of initial periumbilical pain that localized to the right lower quadrant. On exam, she was hemodynamically normal and nontoxic appearing. She had rebound tenderness in the right lower quadrant. Her WBC was 9100/uL. CT demonstrated a right ovarian cyst and some stranding but the appendix was not clearly visualized. Her history and exam was concerning for acute appendicitis and we proceeded to the OR for diagnostic laparoscopy and appendectomy. On laparoscopy, her appendix was normal. However, small endometrial implants were visualized near the base of the cecum and along the right lower abdominal wall. Her uterus and ovaries appeared grossly normal. A laparoscopic appendectomy was performed. On pathology, the appendix demonstrated mild inflammation, and no malignancy was identified.

Appendicitis is a common surgical condition of the abdomen, with appendectomy being one of the most commonly performed operations. Endometriosis is a common and benign gynecologic pathology. The true prevalence is difficult to quantify, as women with the disease are often asymptomatic, and imaging modalities have low sensitivities for diagnosis. The most common sites of endometriosis are the reproductive organs, but it can affect the gastrointestinal system from the small intestine to the anus. The rectosigmoid is most commonly involved, followed by the recto-vaginal septum, small bowel, cecum, and appendix.

The differential diagnosis of intestinal endometriosis includes other inflammatory causes of pain, such as appendicitis, IBD, diverticulitis, etc. It is important to emphasize that no study or finding is specific or pathognomonic for endometriosis. A definitive diagnosis is often made on visualization or pathology. The classic peritoneal implants appear as "powder-burn" lesions with variable degrees of pigmentation - generally from the deposition of hemosiderin. Treatment for endometriosis are currently based on the severity and type of symptoms. Preventing endometriosis is not yet possible; thus, treatment goals are for symptom relief. Cecal endometriosis is an unusual cause of right lower quadrant pain. A preoperative diagnosis is difficult but should be considered in the differential diagnosis.
Introduction: Robotic assisted hernia repair surgery has recently been a popular topic of discussion in the field of minimally invasive surgery due to the advantages it has demonstrated over elective laparoscopic hernia repair including shorter recovery time and less postoperative pain. Recent literature has suggested that many patients receiving elective surgery are overprescribed opioid medication. With the ongoing opioid epidemic, it is important to optimize levels of postoperative narcotics and explore the opportunity robotic surgery may provide in non-opioid postoperative pain management. Our study intends to obtain postoperative pain scores and opioid use in robotic assisted surgeries, compare with current literature values for laparoscopic surgeries, and help identify candidates for non-opioid postoperative pain management.

Methods: Twenty-one patients selected by consecutive sample underwent Robotic Assisted Inguinal Hernia Repair (RAIHR), Robotic Assisted Ventral Hernia Repair (RAVHR), or Robotic Assisted Cholecystectomy (RAC). There were 13 males and 8 females, mean age of 49 years. Self-assessment questionnaires were administered at 1 and 6 weeks postoperatively. Pain score (0 to 10) at 2 and 7 days postoperatively and number of days using opioid medication were compared with current literature values. Total number of opioid pills reported postoperatively were converted to oral morphine equivalents (OME) for comparison.

Results: The mean pain score for postoperative day 7 was 2.3, 5.0, and 3.8, respectively. Mean pain scores at 7 days postoperative in RAIHR group were nearly half of pain scores in laparoscopic hernia repair from a 2018 study (Figure 1). Number of days that opioids were used in the first postoperative week for the RAIHR, RAVHR, and RAC groups were 1.9, 5.0, and 3.5 days, respectively. The mean total number of OME for the RAIHR, RAVHR, and RAC groups was 20.3, 32.6, and 36.5, respectively. The OME in the RAVHR group was almost two-thirds less than total OME one study reported in laparoscopic ventral hernia repair, 32.6 vs 90.2 OME (Figure 2).

Conclusion: These results show lower pain scores in robotic surgeries compared to laparoscopic, in particular for inguinal hernia repair. Fewer total OME in robotic surgeries was also demonstrated when compared to laparoscopic total OME for ventral hernia repair. These results also provide a baseline for follow-up study currently underway comparing postoperative pain scores in patients receiving non-opioid management. Limitations include small sample size and the need for intraoperative time data and peripheral nerve block data to account for other variables contributing to postoperative pain levels.
**Introduction:** Cecal volvulus (CV) is a rare cause of bowel obstruction. It usually occurs in women >50 years of age. Although there are several case series of CV in pediatric patients, it occurs even less frequently in adult patients <30 years old. Here we describe a case of CV in a young woman and we review the literature of other case reports of CV in similarly aged patients.

**Methods:** This is a retrospective review of the clinical presentation, operative management, and short term outcome in a 23 year old woman with CV. To identify common clinical features of CV in patients <30 years of age, we performed a literature search using PubMed and Scopus.

**Results:** Our patient is a 23 year old healthy woman who presented with acute onset right lower quadrant abdominal pain. On exam, her vital signs were normal, but she displayed diffuse involuntary guarding consistent with peritonitis. Biochemical analysis demonstrated a leukocytosis of 13.4 K/uL. Abdominal computed tomography revealed a markedly dilated cecum to 13 cm. Upon laparotomy, a CV was encountered, but no necrosis or perforation. A right colectomy was performed, followed by ileocolostomy. The procedure and recovery were uneventful; she was discharged home on postoperative day 3. In our literature review, we found only two cases of CV in adults <30 years old. One was a 21 year old Japanese woman with Ehlers-Danlos Syndrome (EDS) managed with single incision laparoscopic appendectomy and cecopexy. The second was a 23 year old Turkish woman managed with right colectomy.

**Conclusion:** CV is a rare condition and clinicians must have a high index of suspicion in young women who present with right lower quadrant tenderness. To our knowledge, this is the only case report in the western hemisphere of CV in an adult patient less than 30 years old. There do not appear to be common features among these patients in our review. However, the presence of a connective tissue disorder such as EDS may result in a hypermobile cecum and increase the risk of volvulus. We recommend definitive management with right colectomy.
Introduction: Endometriosis is endometrial tissue located outside of the uterus. Endometriosis is rarely found in the appendix and can present very similar to acute appendicitis. It is often indistinguishable from acute appendicitis on physical exam and imaging. The diagnosis is typically made after an appendectomy on pathology and should be considered in women of childbearing age.

Case Summary: A 45-year-old female presented with right sided abdominal pain and CT revealed a possible cecal or appendiceal lesion. Colonoscopy revealed a submucosal non-obstructing cecal mass. In the operating room, the appendix was completely adherent to the cecum and a laparoscopic ileocecectomy was performed. Pathology revealed endometriosis of the appendix and cecum.

Discussion: Endometriosis of the appendix is a rare condition reported in less than 1% of females that is typically diagnosed after an appendectomy is performed for suspected appendicitis or other pathology. This diagnosis is made based on the finding of endometrial glands and stroma in the appendix on pathology. This can present as possible acute appendicitis or appendiceal or peri-appendiceal mass on imaging or colonoscopy. When symptomatic, pain can align with the menstrual cycle and hemoperitoneum may be encountered intra-operatively. Treatment can be appendectomy, ileocecectomy, or right hemicolecctiony if malignancy is suspected. In the patient we described, malignancy was suspected therefore an ileocecectomy was performed with the intention of converting to a right hemicolecctiony if the frozen section pathology had revealed malignancy. This case illustrates the importance of having a broad differential when diagnosing patients with abdominal pain, especially in women of childbearing age. This should especially be considered in patients that are complaining of a more chronic nature of pain.

Conclusion: Appendiceal endometriosis should be considered in females of childbearing age with right sided abdominal pain or cecal/appendiceal mass on imaging.
Introduction: Pheochromocytoma is a rare neuroendocrine tumor of the chromaffin cells, primarily found in the adrenal gland though approximately 25% of these tumors can be located outside of the adrenals, and are often known as paraganglioma.\(^1\) There is a reported estimated incidence of pheochromocytoma at approximately 2-8 cases per one million people per year.\(^2\) Though not witnessed in the case presented within this report, the typical triad of presenting symptoms includes: headaches, palpitations, and hypertension.\(^1\) Additional symptoms that have been described are: pallor, nausea, abdominal pain, and panic attacks. Given that pheochromocytomas are typically associated with hypertension, the estimated incidence of pheochromocytomas in the hypertensive population is 0.2%.\(^2\) Biochemically silent pheochromocytomas have been proven to be even more unusual. With a reported incidence of pheochromocytomas at 0.0002% - 0.0008% in the general population, silent pheochromocytomas will make up 8% of those reported, with an incidence equivalent to 0.000016% - 0.000064% of the population.\(^2\) Recognition of the entity is often made via imaging, typically Computed Tomography (CT), and then confirmed with laboratory values, such as levels of metanephrines, normetanephrines, or catecholamines.\(^2\) In active pheochromocytomas, medical management can play a significant role in treatment.\(^3\) The aim of medical treatment is to reduce the potentially lethal abrupt changes in blood pressure that can occur with anesthesia and surgical manipulation, as well as the severe hypotension after surgical resection.\(^3\) However, regardless of activity, the only cure for pheochromocytoma patients remains surgical resection, via either open or laparoscopic approach.\(^3\) With the case presented herein, we describe a 24 year old male whose only presenting symptom was scrotal swelling secondary to a varicocele caused by compression from a later identified left adrenal incidentaloma. Pre-operative evaluation, imaging, and demographics were suspicious for pheochromocytoma, though supporting biochemical and historical evidence was not present. However despite being relatively asymptomatic and hemodynamically stable, after undergoing surgical resection, pathology was in fact confirmatory of a pheochromocytoma diagnosis. Thus, we present an analysis of silent pheochromocytomas, preoperative work up and diagnosis, medical management, surgical options, and review of other current literature.
Introduction: Carney complex is an exceedingly rare syndrome associated with abnormal pigmentation, myxomas of the skin and heart, and endocrine tumors. It is caused by a mutation in PRKAR1A. It has been reported in approximately 700 patients worldwide. Several case reports of these patients have reported adrenal cortical carcinoma in the patient population without a proven connection. Herein we report a case of a patient with Carney syndrome with a previously resected adrenal cortical carcinoma who presented with metastasis to the small bowel resulting in intussusception. The patient is a 44 year old female who presented to the emergency department with 1 month of non-specific abdominal pain that acutely worsened. She had a history of multiple excisions of skin nodules and a myxoma of the atrium. This pain was associated with persistent bilious emesis and she had no peritoneal signs. Her labs showed a lactic acidosis. CT imaging showed intussusception of the small bowel causing obstruction. The patient was taken to the operating room for a diagnostic laparoscopy. The intussusception was unable to be reduced and was resected en bloc. A primary anastomosis was performed. The pathology report showed a 5 cm metastatic adrenal cortical carcinoma. The patient’s postoperative course was uneventful and her diagnosis of Carney syndrome was confirmed in clinic via genetic testing. She is currently undergoing surveillance CTs with no signs of recurrence.

In conclusion, Carney complex is an exceedingly rare disease that may be related to the development of adrenal cortical carcinoma.
Introduction: A 16 yo woman presented as transfer from outside facility to a tertiary care pediatric hospital after a seizure with associated hx of headaches and abdominal pain. On arrival, she had two more seizures followed by respiratory and cardiac arrest. She required ACLS with return of circulation followed by intubation and pressors for initial resuscitation. She had profound pulmonary edema requiring oscillator ventilation. Initial ECHO showed a small atrial septal defect and biventricular dysfunction. Outside imaging included a non-contrast Abd/Pel CT with a 7cm x 4cm x 6cm right adrenal mass. Pediatric surgery was consulted for possible ECMO cannulation and evaluation of adrenal mass. Diuresis was pursued with improvement of oxygenation and avoidance of ECMO. However, the diuresis led to AKI requiring CRRT. Her ECHO showed improved function after weaning off pressors. Patient had plasma metanephrines sent for w/u of adrenal mass both while on pressors and after weaning from pressors. There was reluctance to start alpha-blockade without definitive diagnosis. Decision was made to pursue MRI for diagnosis. During attempted MRI, patient had another cardiac arrest. Finally, chemical studies were consistent with pheochromocytoma so blockade with aggressive volume resuscitation was initiated. MRI completed pre-operatively reinforced the diagnosis of pheochromocytoma with 2 liver lesions of unknown significance noted. Patient needed a combination of prazosin, phenoxybenzamine, esmolol drip, and nicardipine drip for BP control. She underwent successful laparoscopic right adrenalectomy 3 weeks after admission. She had an uncomplicated post-operative course and was discharged on POD#3. Pathology confirmed pheochromocytoma with evidence of necrosis, no PVI or PNI. Patient no longer needs any blood pressure control and headaches have improved. Dototate scan performed at follow-up without correlation to liver lesions.
Introduction: The use of indocyanine green (ICG) and near-infrared fluorescence has been used in multiple surgical applications including assessment of bowel perfusion, demonstration of the extrahepatic biliary tree, and identification of axillary sentinel lymph nodes. The use of ICG in thyroidectomy and parathyroidectomy is a novel technique that is currently being investigated. We present the use of intraoperative ICG and near-infrared fluorescence as an investigational technique to localize a solitary parathyroid adenoma.

Case Presentation: A 77-year-old male was referred by his endocrinologist for surgical evaluation of hypercalcemia and primary hyperparathyroidism. He was found to have an elevated serum calcium level of 10.8 mg/dL on routine lab work. Parathyroid hormone level was also elevated at 92 pg/mL. Sestamibi scan demonstrated increased activity adjacent to the right lower pole of the thyroid consistent with a parathyroid adenoma. The patient underwent exploration of the right inferior neck and a firm, tan mass was encountered. The patient was then given intravenous ICG at a dose of 7.5 mg. Intraoperative assessment of the right neck was performed using near-infrared fluorescence (SPY Intraoperative Perfusion Assessment System, distributed by LifeCell Corp.) which demonstrated intense fluorescence in the neck mass compared to the background enhancement of the thyroid gland which confirmed that the neck mass was indeed the parathyroid adenoma. Complete dissection of this mass was performed. Postoperative parathyroid hormone level was 29 pg/mL which was the appropriate drop of at least 50% of the preoperative parathyroid hormone level. Final pathology demonstrated a 590 mg parathyroid adenoma. The patient’s post-operative course was uneventful and without any acute complications.

Discussion: Localization of a parathyroid adenoma is usually guided by pre-operative imaging such as ultrasound, sestamibi scan, or 4D parathyroid neck CT scan. Even with high quality pre-operative imaging, intraoperative localization of a parathyroid adenoma can be challenging and is highly dependent on surgeon experience. Intraoperative techniques have been developed such as minimally invasive parathyroidectomy surgery which utilizes radioactive tracer to aid in intraoperative localization of parathyroids. The use of intraoperative ICG and near-infrared fluorescence is a novel technique that has been used in multiple surgical applications for both the assessment of tissue perfusion and to aid in defining surgical anatomy. We present this as our index case in the application of ICG and near-infrared fluorescence for intraoperative localization of a solitary parathyroid adenoma.
Figure 1. Intraoperative use of SPY Intraoperative Perfusion Assessment System

Figure 2. SPY Intraoperative Perfusion Assessment System, distributed by LifeCell Corp.

Figure 3. Intraoperative perfusion demonstrating hypervascular parathyroid adenoma with SPY fluorescence mode

Figure 4. Intraoperative perfusion demonstrating hypervascular parathyroid adenoma with color segmented fluorescence mode
**P 179. IMPACT OF THYROIDECTOMY AND MEDICAL TREATMENT ON CARDIAC MANIFESTATIONS IN GRAVES' DISEASE**

Presenter: Ahmed Elnahla MD | Tulane University School of Medicine
Elnahla Ah, Abdallah AT, Shalaby HO, Munshi RU, Akkera MO, Shalaby MA, Michael AB, Kandil EM

**Introduction:** Graves' disease (GD) is well known to have multiple adverse effects on the cardiovascular system. Treatment options are surgical, medical and radiiodine. Though all options are effective, neither is without side effects and there is no consensus as to which is the best treatment. We aimed to compare the cardiovascular outcomes with surgical treatment by means of a thyroidectomy versus medical treatment in patients with GD.

**Methods:** A retrospective study of all patients aged 18-85 who were diagnosed with GD and subsequently underwent either surgical or medical management at a single North American institution from 2008 to 2019, was done. 174 patients with GD were identified out of which 23 were excluded being without cardiac manifestations. 69 patients underwent thyroidectomy (surgical group), and 82 patients underwent medical treatment (medical group). Data related to cardiac comorbidities was collected from preoperative and postoperative clinic notes, hospital admissions, electrocardiograms, echocardiograms, and blood work and was compared between surgical and medical groups. Perioperative biochemical, cardiovascular, and postoperative outcomes were analyzed.

**Results:** Of a total of 151 patients with GD with cardiac manifestations, 69 (45.6%) patients underwent thyroidectomy and 82 (54.3%) patients underwent medical treatment. Manifestations were grouped into 3 categories Hypertension, Tachyarrhythmia and congestive heart failure. 44.7% of patients with hypertension resolved in surgical group vs 23.6% in medical group (P=0.054) Additionally 85.9% of patients in surgical group and 67.8% in medical group presenting with tachyarrhythmias including atrial fibrillation and tachycardia were improved (p=0.01). Congestive heart failure in both groups was improved in up to 60% of patients in surgical group and 40% in medical group (P=0.59). Overall all cardiac manifestations were improved in 69% of surgical group and 42.6% of medical group (P=0.0002) following achievement of euthyroid state.

**Conclusion:** Despite the presence of multiple options of treatment for GD, surgical treatment offers a significant improvement of the cardiac manifestations in GD patients including hypertension and tachyarrhythmias. When done by a high volume surgeon, the complication rate is minimal.
Introduction: Bariatric surgery, including laparoscopic Roux-en-y gastric bypass surgery, is the most effective means of achieving weight loss in individuals with obesity, and it also provides a durable treatment for many patients with concomitant type II diabetes mellitus. A new class of antidiabetic medications called sodium-glucose cotransporter 2 inhibitor drugs reduce hemoglobin A1c by 0.5% to 1% and have shown favorable effects on body weight, blood pressure, and lipid profile in type II diabetic patients. Antidiabetic medications, including sodium-glucose cotransporter 2 inhibitors, may cause life-threatening complications if not properly managed in the perioperative setting. One such complication is “euglycemic” diabetic ketoacidosis, due to the fact that this class of medications prevents reabsorption of glucose in the proximal tubule of the kidney and thus causes glycosuria and normal serum glucose levels. Classic diabetic ketoacidosis typically occurs in type I diabetics who fail to take exogenous insulin to meet metabolic demands. Without a glucose substrate, muscle cells function under anaerobic metabolism. We present rare case of euglycemic diabetic ketoacidosis in a type II diabetic associated with sodium-glucose cotransporter 2 inhibitor use after elective laparoscopic Roux-en-y gastric bypass surgery.
P 181. RARE PRESENTATION OF ANAPLASTIC THYROID CANCER WITH THYROTOXICOSIS
Presenter: Lily Fatula MD | Greenville Health System
Fatula LK, Snyder RA

Introduction: Anaplastic thyroid carcinoma (ATC) is a rare malignancy, accounting for only 1.5 to 5.0% of all primary thyroid cancer. ATC is the most advanced and aggressive form of thyroid cancer and typically presents with local symptoms caused by a rapidly enlarging neck mass. However, ATC is associated infrequently with increased thyroid function. Due to the lack of reported cases in the literature, we describe a case of the uncommon combination of ATC with hyperthyroidism to aid in prompt diagnosis and adequate treatment.

In this case presentation, we discuss a rare case of a 68-year-old female patient presenting with palpitations in the setting of an enlarging left neck mass with associated dysphagia and dyspnea. Clinical evaluation, including computed tomography (CT) and ultrasound with fine needle aspiration (FNA), diagnosed ATC with lymph node metastasis. Imaging demonstrated encasement of the left internal jugular vein and common carotid artery with extensive bilateral cervical lymphadenopathy involving levels two through five. Laboratory data revealed an elevated free T4 and low TSH level consistent with destructive thyrotoxicosis. The patient required hospitalization for atrial fibrillation, which was treated with methimazole and beta blockade. Ultimately, this patient was not a candidate for surgical management due to the presence of advanced metastatic disease. She was treated with palliative chemotherapy and radiation therapy and ultimately died of this disease.

In comparison to well-differentiated thyroid carcinoma, ATC is rare, especially when associated with thyrotoxicosis. Here we report a case of ATC presenting with thyrotoxicosis, a rare clinical scenario, which has not been previously well-reported in the literature. Although this patient presented with compressive symptoms classic for ATC, she also had concurrent symptomatic atrial fibrillation and laboratory data consistent with hyperthyroidism.

Although rare, clinicians should be aware of the potential presentation of thyrotoxicosis in the setting of ATC in order to diagnose and treat these symptoms promptly and appropriately. An early involvement of palliative care should also be emphasized to provide these patients with suitable comfort measures and emotional support.
P 182. VALUE OF SESTAMIBI SCAN IN PATIENTS UNDERGOING PARATHYROIDECTOMY ASSOCIATED WITH RENAL DISEASE
Presenter: Madeline Roorbach | Emory University

Introduction: Treatment of secondary (SHPT) and tertiary hyperparathyroidism (THPT) often requires a near-total parathyroidectomy (NTPTX). Both SHPT and THPT are associated with multiglandular hyperplasia and a higher rate of ectopic and supernumerary parathyroid glands. The role of preoperative localization is poorly characterized in this disease process. This study seeks to analyze the utility of obtaining preoperative localization with sestamibi (MIBI) imaging for SHPT & THPT.

Methods: A retrospective review of a prospective database of patients with SHPT or THPT who underwent a NTPTX at a university medical center between 1992 and 2018 was performed. Parathyroid gland localization was determined at the time of the operation and retrospectively correlated to MIBI scan results if available. Patients with primary hyperparathyroidism or parathyroid cancer were excluded. Data was analyzed with descriptive statistics and Fisher exact test.

Results: Among 252 included patients who underwent NTPTX, 129 received a pre-operative MIBI (51.19%). Of these, 59/129 (45.74%) correctly localized the laterality of the intraoperative pathology versus the 35.65% (46/129) of scans that were non-localizing. Non-localizing rates were equivalent in SHPT and THPT; 45.65% vs. 54.34%; p-value = 0.5524. The remaining 24 patients had imaging that localized but additional tumors on the contralateral side were identified at the time of surgery (18.60%). The localizing site was concordant with the largest tumor resected in 81.25% (52/64) of patients; this number includes 5 scans in which MIBI did not correctly lateralize as it missed another site of disease, but the largest tumor was still on the lateralized side. In 105/129 patients (81.4%) greater than one tumor was identified intraoperatively. An ectopic gland was identified by MIBI in 7 of 129 cases (5.43%).

Conclusion: The role of MIBI localization in SHPT and THPT remains controversial. It does allow for the identification of ectopic glands (5.43%) and the largest tumor correlates with the greatest hyperactivity found on MIBI.
P 183. AN IMPORTANT CASE OF MIMICRY: EXTRALUMINAL POSTPANCREATECTOMY HEMORRHAGE PRESENTING AS INTRALUMINAL BLEEDING
Presenter: Kristen T Carter MD | University of Mississippi Medical Center
Carter KT, Ross WD, Casals A, Shaw TB, Kuruba R, Carroll JD

Introduction: Despite advances in pancreatic surgery, postpancreatectomy hemorrhage (PPH) remains a life-threatening complication. Due to high mortality rates with PPH, prompt diagnosis and treatment is necessary. PPH is classified based on time (early vs late), severity, and location (intra- vs extraluminal), and treatment strategies vary based on these parameters.

We present a case of extraluminal PPH after pancreaticoduodenectomy that presented with signs of intraluminal bleeding, obfuscating the true diagnosis.

A 62-year-old African American male was found to have a 7.6 cm nonfunctioning neuroendocrine tumor in the head of his pancreas during a workup for diverticulitis. He underwent routine pancreaticoduodenectomy and post-operatively, developed a pancreatic leak and breakdown of his gastrojejunal (GJ) anastomosis (postoperative day [POD] 2 and 4, respectively) that were managed conservatively. On POD #12, he had large volume hematemesis. Computed tomography angiography (CTA) of his abdomen showed clot within the distended gastric remnant, but no active extravasation. As there was suspicion for an intraluminal bleed, he underwent urgent upper endoscopy (EGD). While there were several large clots in the posterior body of the stomach, there was no active bleeding/ulceration. The patient initially responded to blood products, however became more unstable and so was evaluated by interventional radiology (IR). IR identified active extravasation from the patient’s ligated gastroduodenal artery (GDA) that was successfully coiled. However, the patient continued to deteriorate and ultimately expired.

Although the patient’s PPH presented as an intraluminal bleed (hematemesis, massive clots on EGD), the patient had an extraluminal bleed from his GDA. Likely, the breakdown of his GJ anastomosis allowed blood from the GDA to enter his stomach and created the appearance of an intraluminal bleed.

This case illustrates that although PPH may manifest as intraluminal, extraluminal causes should remain in the differential. Prompt diagnosis of PPH provides better outcomes and allows for appropriate treatment.
Introduction: It is well known that burnout is a major issue among healthcare providers. Despite the current research, it remains prevalent in the healthcare environment. The objective of this study is to compare the well-being of physicians practicing in West Virginia.

Methods: An electronic survey was distributed to physicians and residents at 4 different regional hospitals in West Virginia. The survey examined demographics, perception of factors that contribute to personal burnout, general well-being questions about common feelings and attitudes, overall health, lifestyle, and severity of depression using the Patient Health Questionnaire (PHQ-9). We summarized the responses to the survey to evaluate overall consensus.

Results: There were a total of 101 respondents to the survey. We found 55.3% felt burnout more than 50% of the time. Open-ended feedback for the number one contributing factor to stress and/or burnout was being overwhelmed by the amount of patients and paperwork, work hours, administrative burdens, and lack of support. The majority of responses to an effective way to reduce stress and/or burnout was improve work hours, incorporate more free time, increase staff members, and better work distribution amongst staff (team work). The results also showed that 59 were not aware of available well-being tools provided for them to deal with stress and/or burnout. However, we are still in the process of collecting more data.

Conclusion: Burnout is a syndrome that includes emotional exhaustion and depersonalization. There have been many studies and initiatives developed to help combat this growing epidemic in the healthcare profession. Despite increased insight into the causes of burnout, there has been little progress in increasing physician well-being. There have been many studies linking physician burnout to worse patient care and safety. Many published studies analyze physician burnout uniformly across the United States, while others only examine their own facilities. Few, if any studies have compared rural environments, such as many of the physicians working in West Virginia, to see if there are varying levels of burnout and/or differing causes. If there are differences, perhaps techniques could be tailored toward geographic location with possibilities of overlap. Going forth, this study will attempt to highlight the differences in burnout rates and causes in order to define potential effective treatments.
Introduction: Appropriate clinical documentation is essential for coding and justification of medical necessity. Previous studies have demonstrated financial loss when documentation is inadequate. International Classification of Diseases (ICD) 10 coding changes went into effect in October 2017 requiring classification of small bowel obstruction by etiology, location, and degree. Medicaid began to deny reimbursement for patients with a diagnosis code of unspecified small bowel obstruction. This quality improvement project sought to evaluate how streamlined documentation could be used to reduce the number of patients with a diagnosis code of unspecified small bowel obstruction, a code not recognized by Medicaid for reimbursement.

Methods: A standardized dotphrase was created using the electronic medical record which included the Medicaid requirements for billing with drop down menus to specify etiology, location, and degree of small bowel obstruction. A dotphrase allows insertion of specific text by typing a short abbreviation. For this project, the abbreviation “.SBO” could be typed into the medical record to populate the specific information needed for billing. This dotphrase was shared with general surgery residents and physician assistants on the Emergency General Surgery (EGS) service. It was requested to be used in notes for patients admitted to the EGS service for small bowel obstruction. This was presented at a meeting of surgical residents and staff, and a monthly reminder email was sent to providers on the EGS service. Inappropriate documentation of a small bowel obstruction as unspecified was tracked for patients after the initiation of the dotphrase in April 2019. This was compared to the number of unspecified small bowel obstruction diagnoses tracked for the fiscal year 2018.

Results: For the fiscal 2018 year, 21 of 81 small bowel obstruction admissions (26%) were coded as unspecified small bowel obstruction. Estimated revenue loss for each denied claim averaged $50,000 per claim. After initiation of the dotphrase in April 2019, 4 of 46 small bowel obstruction admissions (9%) were coded as unspecified. There was a significant decrease in diagnoses of unspecified small bowel obstruction after initiation of the dotphrase (p=0.021).

Conclusion: The electronic medical record dotphrase function can be used to improve clinical documentation for billing purposes and has been associated with a decrease in the number of patients with inadequate documentation for billing.
THE EFFECT OF OXYGENATION ON SURGICAL SITE INFECTION OUTCOMES

Presenter: Zachary Bryant MD | Medical College of Georgia at Augusta University
Botet AM, Bryant, ZJ, Daigle HJ, Hayek O, Bolduc A, Hilton LR

Introduction: Surgical Site Infections (SSIs) cost between $3.5-$10 billion a year and can increase healthcare expenditures by prolonging recovery as well as increasing morbidity and mortality. Multiple factors affecting surgical site development have been identified and include prophylactic antibiotics (first dosage completed within 30 minutes before incision,) clean and sterile surgical site (chlorhexidine or betadine for surgical preparation,) normothermia (temperature above 36 degrees Celsius,) high fraction of inspired oxygen (FiO2 greater than 80%,,) underventilation (ETCO2 40-45 mmHg,) and controlled serum glucose (blood glucose between 140-180 mg/dL.) Of these six factors, this project focuses on correlation between development of SSI and maintenance of proper oxygenation.

Methods: A retrospective review of data from the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP®) was collected on all patients who developed a surgical site infection at a single institution from 2015 to 2018. We excluded patients under the age of 18 and any patients that had an active infection prior to surgery or gross contamination of the surgical area. We compared the rate of SSI development in patients whose intraoperative FiO2 was above 80% to those whose FiO2 was below this threshold.

Results: The mean age of the study cohort was 54.5 years old. SSI occurred in 60.7 % (17 of the 28) patients who had an intraoperative FiO2 of >80% vs 47.4% (148 of the 312) patients whose intraoperative FiO2 were under the threshold (P = .1980).

Conclusion: This study suggests that maintaining intraoperative FiO2 levels >80% does not impact SSI development in surgical patients.
Introduction: Postoperative clinical care pathways have become standard of care with clear demonstrated improvement in quality through standardization. Success of postoperative clinical care pathways is frequently measured by length of stay. While a valid measure, it is not patient-centered and understanding a patient’s readiness for discharge may be an important measure of program success. The aim of the current study is to characterize patient reported discharge confidence compared with standardized clinical discharge criteria. We hypothesize that patient-reported discharge readiness does not correlate well with objective measures of clinical readiness for discharge.

Methods: We performed an IRB-approved single institution, prospective, cohort study of postoperative patients at a large academic comprehensive cancer center. Patient-report readiness for discharge was determine by 3-part survey: NIH self-efficacy, a measure of capacity to manage function and control over meaningful events; Ambulatory Self-Confidence Questionnaire (ASCQ), a measure of ambulatory confidence, and short battery of readiness for discharge questions. Clinical readiness for discharge score was defined using established postoperative care pathway discharge criteria.

Results: 21 postoperative surgical patients (median age 64, 33% female) were included in this pilot study. The median LOS was 5 days (IQR 3-14). No postoperative deaths occurred. Readiness for discharge assessment was completed more than 24 hours before discharge (median 4 days, IQR 3-7). 29% (n=6) of patients reported ready for discharge and 38% (n=8) patients met clinical discharge criteria. Of the 6 who self-reported ready for discharge, 4 were deemed clinically ready. Of the 8 who were clinically ready, only 50% (n=4) self-reported ready for discharge. The median NIH self-efficacy score was 32 (IQR 27 to 36) out of 40 which is similar to the 50% population mean of 31. The median ASCQ was 8.4 (IQR 3.3 to 9.6) out of 10 indicating an overall high self-confidence regarding ambulation. Mean NIH survey score for patients who reported ready for discharge was 30 (SD 2.8), while those who self-reported not ready was 32 (SD 5.1). Mean ASCQ survey score for patients who reported ready for discharge was 7.9 (SD 2.8), while those who self-reported not ready was 6.1 (SD 3.5).

Conclusion: In this pilot study, patient-reported readiness for discharge does not appear to correlate well with objective clinical readiness for discharge. Validated tools, such as the NIH self-efficacy survey and ASCQ questionnaire, may provide additional insight as we focus on patient-report outcomes during implementation of postoperative recovery pathways.
P 189. ARE WE “CUTTING OFF OUR NOSE TO SPITE OUR FACE” WITH ANTIBIOTIC PRESCRIBING
Presenter: Catherine C Baucom MD, PhD | The Elliott Breast Center
Elliott RL, Baucom CC, Xian-Peng J

Introduction: There is now a push for clinicians and hospitals to implement antibiotic stewardship programs to decrease the overuse of antibiotics. Antibiotics revolutionized modern medicine with treatment of bacterial infections. Misuse of antibiotic prescribing can lead to deleterious side effects, antibiotic resistance, and damage to the powerhouse of all cells which is the mitochondria. Mitochondria are evolutionary bacteria that were endocytosed by eukaryotic host cells over a billion years ago. Therefore, unnecessary antibiotic use can lead to significant mitochondrial damage.

Methods: We tested mitochondrial toxicity of three commonly used antibiotics including doxycycline, ciprofloxacin, and azithromycin on human fibroblast and mammary epithelial MCF-12A cell lines by fluorescent and transmission electron microscopy. DNA damage and gene expression were evaluated by ELISA and polymerase chain reaction (qPCR). Ultrastructure studies revealed marked changes in the mitochondrial morphology of the antibiotic treated cells.

Results: Antibiotics suppressed the membrane potential gradient of both cell lines and increased mitochondrial reactive oxygen species (ROS). DNA oxidative damage was confirmed in both cell lines by an increase in 8-OHdG after 24 hours in antibiotic media. All 3 antibiotics upregulated the gene expression of many glycolytic enzymes, hypoxia inducible factor 1 alpha (HIF1α), and glucose transporters. Lactate production was increased in the culture media of both cell lines confirming aerobic glycolysis and the “Warburg Effect”.

Conclusion: The initial results on antibiotic induced mitochondrial damage led us to investigate the effects of antibiotics used universally in cell culture media to prevent bacterial contamination. We tested the effects of gentamicin in culture media on the MCF-12A and two breast cancer MCF-7 and MDA-MB-231 cell lines by real time PCR, lactate assay, DNA assay, and immunofluorescent microscopy. The results were similar to the above findings in the gentamicin contained culture media. These results suggest that the data obtained from experiments conducted in antibiotic containing media are skewed as cells have mitochondrial damage. The damaged mitochondria increase ROS leading to genomic instability and tumorigenesis in normal cells. Caution should be used when prescribing antibiotics, for while the intended purpose is to treat an infection, there may be a deleterious effect including promoting tumorigenesis.
P 190. OPIOID PRESCRIBING TRENDS IN THE ACUTE SURGICAL SETTING
Presenter: Cindy Hlavacek MD | Brookwood Baptist Health System
Hlavacek CM, Frey AM, Wood BS

Introduction: Opioid overdose is the leading cause of injury-related death in the United States. Majority of current narcotic research studies chronic pain and does not address the acute surgical setting. Alabama is consistently one of the highest opioid prescribing states in the country. Our project sought to evaluate our program’s prescribing trends compared to other non-affiliated surgeons and to actual patient need.

Methods: A survey was distributed to all Brookwood Baptist (BB) surgeons and residents, as well as to non-affiliated surgeons in an online forum, the National Robotic Surgery Collaboration (non-BB). The various narcotics prescribed were compared using Morphine Milligram Equivalent (MME) conversion. Prospective data was collected for 50 robotic inguinal hernia repairs performed by the same surgeon. All patients were discharged the same day and given 30 Norco/Percocet 7.5mg. On the first postop visit, patients reported how many pills they had required. Student t-tests were used to compare prescriber habits.

Results: There were 80 survey respondents, 32 BB and 48 non-BB. BB-affiliated surgeons prescribed significantly higher MME than non-BB surgeons; on average 55% more (158.1 vs. 102.2, p<0.001). BB residents and faculty did not exhibit differences in prescribing trends (p=0.62). The quantity of narcotics consumed at the first postop visit in the prospective study averaged ten 7.5mg Norco/Percocet or 76.1 MME.

Conclusion: Compared to current literature recommendations (75 MME), majority of surgeons, BB and non-BB, are prescribing too many narcotics after elective outpatient inguinal hernia repair. Our study shows that patient need is representative of this ideal 75 MME recommendation. With this information, surgeons have a unique opportunity to modify their prescribing trends and potentially help tackle the opioid epidemic by decreasing the possibility for postop opioid dependence and eliminating excess narcotics that may be distributed to unintended persons.
Introduction: The National Surgery Office (NSO) tracks the percentage of ambulatory surgery case cancellations as an indicator of OR efficiency for each of the over 140 Veterans Health Administration (VHA) hospitals. The optimal case cancellation rate defined by the NSO is less than or equal to 6% of ambulatory cases canceled within 48 hours of their scheduled time. As an approach to reducing the overall case cancellation rate at a large urban VHA medical center, local surgical leadership sought to pilot interventions within the ophthalmology department. The aim of this initiative was to reduce the percentage of ophthalmology cases cancellations from a baseline of 9.1% to less than 6% over 3 months.

Methods: The Model for Improvement was used to plan and execute team formation, problem analysis, and 3 rapid Plan-Do-Study-Act (PDSA) cycles for this initiative. The VHA Corporate Data Warehouse (CDW) was queried to determine baseline hospital performance and to create a Pareto chart identifying main reasons for ophthalmology case cancellations. Semi-structured interviews of key stakeholders informed the creation of a process map of the existing workflow and opportunities for improvement. Four change concepts were utilized across 3 rapid PDSA cycles. PDSA cycle 1 involved daily emails from the Chief of Surgery to the entire perioperative service line reinforcing positive performance behaviors and mandating evaluation of negative trends. PDSA cycle 2 involved creating a structured script and decision algorithm used during phone calls with patients 5 days before their scheduled cases. Calls covered topics of patient availability on date of surgery, travel logistics, and health issues that ultimately prompted earlier surgery cancellation if necessary. PDSA cycle 3 involved sharing free or discounted resources with patients experiencing transportation issues. A P chart was created to track weekly ophthalmology case cancellation rates.

Results: Ninety-five percent of ophthalmology cases were canceled for patient health status and patient-related issues—majority of which involved a lack of transportation. P chart showed common cause variation around a mean of 9.1% at baseline. After PDSA cycle 3, P chart demonstrated a new mean of 3.7% for at least 12 weeks thereafter.

Conclusion: This pilot demonstrated the effectiveness of using the Model for Improvement and the change concepts of feedback and auditing, standardization of care, optimization of workflow, and reduction of patient barriers to care in decreasing ophthalmology case cancellations from 9.1% to 3.7% over 3 months. Similar strategies will be applied in improvement initiatives involving other surgical subspecialties.
P 192. PHYSICIAN RECALL AT DIFFERENT POINTS OF THE CLINICAL ENCOUNTER AND ITS EFFECT ON ACCURACY

Presenter: Fabiola Aguilera MD | BronxCare Health System
Aguilera F, Weinstein T, Patel R, Farkas DT, Shah AK, Girishkumar HT

Introduction: Wrong site surgery is a never event, leading to unnecessary harm to the patient that could potentially be avoided. Prevention of these errors entails teamwork and strong culture of safety starting from the pre-operative period. One leading cause of wrong side surgery could be mistakes in the clinic notes from the initial examination. Our objective was to identify whether the timing of when these notes are written could affect their accuracy.

Methods: We prospectively analyzed patients seen in the vascular and breast clinics from April 1st 2019 to July 5th 2019. Patients were all seen with a resident physician and a medical student. During each clinic visit the student kept track of the correct laterality. The student later asked the physician which was the affected side. This was done either while the patient was still in the room, immediately after the patient left the room, or once the next patient was in the room. The physician responses for each visit were compared with the correct laterality recorded by the student.

Results: A total of 341 clinic visits were included. With the patient in the room, there were no errors in the 107 visits. In the group where the patients were out of the room, there was an error in 3 of 131 patients (2.3)%. In the group where the next patient was in the room, 1 case of 102 had an error. When combining the two groups where the patient had already left, there were errors in 4 of 233 visits (1.7%) vs 0 of 107 visits (0%).

Conclusion: Once the patient leaves the room, the physician is less likely to remember the correct the affected side. Notes written at this time are liable to contain inaccuracies that could potentially lead to wrong side surgery. It is therefore critical that clinic notes be documented while the patient is still in front of the healthcare provider.
Introduction: The Opioid Overdose Crisis has been well documented and it is recognized by the National Institute on Drug Abuse that this crisis claims over 130 mortalities daily. Many patients who abuse opiates began using them after a surgical procedure. This has placed surgeons in a unique role in which they must treat patient’s post-surgical pain while protecting their patients from the long-term effects of narcotics by using safe prescribing habits. The purpose of this study was to investigate whether a recently implemented opioid prescribing protocol affected Surgeons’ long-term prescribing habits.

Methods: Following a QI project approval, data was retrospectively reviewed from all elective robotic and laparoscopic cholecystectomies at a single institution with a General Surgery Residency program with 7 faculty Attending Surgeons. The initial data was reviewed from 1/1/2017 to 08/31/2018. Demographic information, number of prescriptions and refills were collected and evaluated through the electronic medical records and the North Carolina controlled substance database. A second set of data was retrospectively collected for this project after the protocol was implemented and included the first 15 elective ‘same day’ surgeries every quarter for three consecutive quarters from October 2018 to April 2019.

Results: There were 45 patients reviewed, 15 from October 2018, 15 from January 2019, and 15 from April 2019. Demographic data included an average age of 50 years old (range 17 to 84), 28 women (62%), and 6 patients with a current pain contract (13%). The operations included 30 Laparoscopic Cholecystectomies (67%), 8 Laparoscopic Inguinal Hernia Repairs (18%), 4 Open Inguinal Hernia Repairs (9%), 3 Robotic Inguinal Hernia Repairs (6%). Types of opioids prescribed included Hydrocodone-Acetaminophen 5mg-325mg (38%), Oxycodone-Acetaminophen 5mg-325mg (51%), Oxycodone 5mg (9%), and Tramadol 50mg (2%). There were 7 refills (16%) with 43% of these occurring in patients with existing pain medication contracts. There was an average of 29.5 opioids prescribed pre-protocol and an average of 19.6 during the protocol. The average number of opioids prescribed after protocol completion was 17.9 during the first quarter, 17.3 during the second quarter, and 16.1 during the third quarter.

Conclusion: The opioid prescribing protocol at our institution had a long term effect in opioid prescription reduction across a variety of elective ‘same day’ surgeries. Further study is required to evaluate the ideal number of opioids necessary when accounting for the type of surgery and patient specific factors.
Introduction: One of the most frequent traumas experienced in rural hospitals are burns. While some of the small, minor, or moderate burns can be treated and managed by a non-specialist settings, moderate or acute burns must be referred to a burn center for treatment. A recent study performed at our institution examined the discrepancies in burn size estimates between transferring institutions and the Burn Center in Huntington, WV. The study showed a significant difference in the burn size estimates given by outside facilities versus experienced burn center staff. The burn center staff use the Lund and Browder chart which is a more standardized tool in estimating total body burns. The difference between the two revealed overestimated burns and unnecessary transfers.

Methods: Emergency Department physicians must estimate the percent total body surface area (TBSA %) of burns to determine transfer. The use of Microsoft Dynamics 365 Remote Assist would provide a real time efficient, effective, and immediate evaluation with patient. This would not only allow for more appropriate patient disposition but would provide an additional interactive source of continuing education for providers in burn care assessment and possibly even decrease unnecessary transfers. Our study remotely connects Marshall University School of Medicine’s Department of Surgery with Emergency Department physicians from two neighboring rural hospitals to provide an interactive approach to burn care assessment. The Dynamics 365 Remote Assist will allow us to remotely assist two rural Emergency Departments using the HoloLens spatial-mapping abilities to assess the patients. In addition we will provide physicians with Continuing Medical Education (CME) sessions. We will travel to the rural hospitals to meet with them to go over equipment usage and various training needs associated. Pre and Post tests will be conducted at each rural site to gauge comfort physician level and knowledge in evaluating burns using the Lund and Browder chart and estimating TBSA.

Results: Data is currently being collected and analyzed.

Conclusion: This study will be providing insight into the use of telemedicine and its ability to potentially reduce possible errors in categorizing burn patients which often results in the patient’s unnecessary transportation and treatment costs. Telemedicine will make virtual communication possible between the referring physician and the burn center to assist with diagnosing and treating burn patients. By utilizing technology, our West Virginia Burn Center can be remotely involved in the process of burn assessment, primary diagnosis, triage and the ultimate decision whether to transfer a burn patient.
Introduction: The American College of Surgeons (ACS) publishes Resources for Optimal Care of the Injured Patient (“Orange Book”) to provide common requirements to verify Trauma Centers (TCs), throughout the United States (US). There are very few studies that assess the impact of geography on TC outcomes. Our study aimed to examine the impact of geographic location on injury adjusted all-cause mortality at ACS Level 1 and 2 TCs.

Methods: Review of the 2016 Research Data Set (RDS) provided by the National Trauma Data Bank. TCs were categorized by the RDS into geographic regions: Northeast, Midwest, South and West. TCs were subcategorized into either ACS Level 1 or 2; all others were excluded. Injury adjusted mortality was determined using observed/expected mortality (O/E) ratios, derived from TRISS methodology. Chi-squared and t-test analyses were used with significance defined as p-value < 0.05.

Results: Among Level 1 TCs, the West (O/E=0.62) and South (0.61) regions had significantly higher adjusted mortality rates than the Level 1s in the Midwest (0.52) and Northeast (0.52) (p<0.05). Among Level 2s, the West (O/E=0.61) and South (0.55) regions had significantly higher mortality than the Level 2s in the Midwest (0.40) and Northeast (0.35) (p<0.05).

Conclusion: In the US, injury-adjusted all-cause mortality rates are significantly higher in the South and West regions for ACS Level 1 and 2 TCs compared to the Midwest and Northeast. This geographic disparity necessitates a deeper evaluation of the cause and needed response.
P 196. STOP THE BLEED TRAINING OUTREACH INITIATIVES TARGETING HIGH SCHOOL STUDENTS IN SOUTH FLORIDA: IT TAKES A COMMUNITY TO SAVE A LIFE
Presenter: Brandon Diaz MD | Kendall Regional Medical Center
Elkbuli A, Dowd B, Hai S, McKenney M, Boneva D

Introduction: To save lives, the American College of Surgeons (ACS) has launched the Stop the Bleed national awareness campaign on hemorrhage control. One of the most vulnerable populations to mass shootings are high school students. This study aimed to determine if high school participants’ knowledge base, confidence, and willingness to help victims with bleeding differ, after a Stop the Bleed training course.

Methods: We initiated a Stop the Bleed campaign in our Trauma Center catchment area. The courses were offered to high school students and was conducted by Stop the Bleed ACS certified and registered instructors. Two anonymized surveys were distributed before and after participants completion of the training course. All identifiable personal information was removed. Statistical analyses on data was conducted with Chi Square with significance defined as p-value < 0.05.

Results: A total of 232 students were involved in the training. Pre and post-survey response rates were 100%. Study subjects were made up of high school students, none of whom had prior Stop the Bleed training. After training, responses to whether tourniquets are safe significantly increased from 77.8% to 98.7% (p<0.0001), responses to comfort to apply tourniquets significantly increased from 69.1% to 95.2% (p<0.0001), and responses to willingness to apply tourniquets significantly increased from 86.7% to 99.1% (p<0.0001).

Conclusion: Stop the Bleed training programs can significantly improve high school students’ knowledge of and comfort/willingness to use a tourniquet in an emergency. This can be lifesaving in the event of a mass shooting, which are often targeted at schools.
Introduction: Post traumatic, transdiaphragmatic intercostal herniation is a rare clinical entity. While both diaphragm and lung herniation are relatively common in the acute, and even chronic settings, the combination of these hernia types occurring concomitantly and remote from the time of injury is an unusual clinical finding. Given the lack of reported literature related to thoraco-abdominal herniation after trauma, guidelines and recommendations for repair strategies are fragmented and sparse.

We report the case of a large transdiaphragmatic intercostal hernia identified one year after a motor vehicle collision. We detail our operative approach which included laparoscopy, thoracotomy and the off-label use of chest wall reconstruction strategies. We also use this case as an opportunity to review the literature for complex, traumatic diaphragm and intercostal hernia anomalies, proper taxonomy, their incidences and occurrences, as well as their various repair strategies.
**Introduction:** Background: For patients in hemorrhagic shock, every second counts when aggressive blood transfusion is required. Few studies have addressed the influence of technical factors, such as the location of blood products, use of blood refrigerators in the trauma bay, and specific institution protocols for patients with massive hemorrhage. In order to investigate practice habits at trauma centers, the objective of this study was to evaluate the utilization of blood product refrigerators. The objective was to examine practice habits at trauma centers regarding the utilization of blood product refrigerators.

**Methods:** A 22-question anonymous survey was distributed to trauma surgeons who were active or senior members of the Eastern Association for the Surgery of Trauma (EAST) society. The survey was distributed three times over a 2-month period. Results were tabulated for each respondent.

**Results:** The survey response rate was 19.1% (n=333/1740). The majority of respondents were from Level I trauma centers (n=251/332, 75.6%) (n=256/330, 77.6%). Less than half of respondents reported that the blood bank was located in close proximity to the trauma bay (n=79/174, 45.4%). Most institutions had a blood product refrigerator in the trauma bay (n=212/331, 64.1%). PRBCs/FFP were the most common blood products (n=93/213, 43.6%) stored in the fridge. Only 3.8% of participants (n=8/213) reported trauma bay fridges had balanced blood resuscitation products available. Whole blood was available in 6.6% (n=14/213) of the fridges. Only 8.7% had no universal donor blood in the fridge (n=21/242).

**Conclusion:** Refrigerators in the trauma bay are being utilized at trauma centers to help improve access to blood products for patients in hemorrhagic shock. Our study found that the majority of trauma centers have these adjuncts but there was significant variability in the blood products stored. In addition, a very small number of respondents indicated the ability to perform a 1:1:1: resuscitation or have access to whole blood in the trauma bay. Future efforts should focus on standardizing these practices across trauma centers.
INTRODUCTION: Hemorrhage secondary to Placenta Accreta Spectrum (PAS) is a major cause of mortality and morbidity in the pregnant patient. Even when diagnosed in the antenatal setting, the complexity of this disease can lead to a difficult operation requiring the highest level of surgical attention. This case describes a patient with known PAS who was originally planned for caesarian section at 34 weeks, but at 32 weeks suffered a spontaneous rupture of her placenta into the abdomen causing massive hemoperitoneum. She underwent Damage Control Caesarian Section and Hysterectomy by a combined Obstetrics-Trauma team.

METHODS: A 42 year old G5P4003 patient with a history of four prior caesarian sections and a bilateral tubal ligation subsequently underwent in-vitro fertilization. Antenatal ultrasound suggested PAS. In accordance with guidelines, planned Caesarian-Hysterectomy was scheduled for 34 week gestation. At 32 weeks, the patient developed abrupt abdominal pain and syncope. 911 was called and she was brought to the nearest hospital, and then transferred to our center for emergency Caesarian section and hysterectomy.

RESULTS: The patient was brought directly to the operating room. Midline laparotomy was performed. Massive hemoperitoneum was present, secondary to rupture of the uterus with massive placenta hemorrhage. Classical Caesarian section was performed and a healthy infant was delivered. Supracervical hysterectomy was performed. Incidental cystotomy was repaired. The patient underwent massive transfusion and developed disseminated intravascular coagulopathy and pulmonary edema. The pelvis was packed with laparotomy pads and a skin-only closure was performed. She was brought back to the OR for packing removal and abdominal closure on Postoperative Day 2. Subsequent course was uneventful with ventilator weaning and extubation, and ultimate discharge home.

CONCLUSION: The incidence of PAS is increasing as a consequence of the increasing incidence of Caesarian section and invasive uterine procedures. Damage control hysterectomy is indicated in the event of exsanguinating Placenta Accreta Spectrum. The trauma team is intimately familiar with damage control techniques, pelvic and abdominal packing, hemorrhage control and transfusion medicine, and can play an integral role in the salvage of these complicated patients.
Introduction: Traumatic Abdominal Wall Hernia (TAWH), first described more than a century ago occurs in less than 1% of blunt trauma admissions. The seat belt has been associated with intraabdominal injuries, vertebral fractures and TAWH. It has been recently reported that the position of the abdominal seat belt sign has a predictive value for intraabdominal injury and that some unusually located seat belt marks may indicate an abnormal occupant seat belt relationship at the time of impact and correlate with significant injury.

An illustrative case is reported herein: A 22 years old female was the front seat passenger of a car that collided against a stone wall at approximately 40 miles per hour. Scene Glasgow coma scale score was 14 and Revised trauma score 12. She was transported via helicopter to a level one trauma center. She arrived confused, complaining of dyspnea and nausea. Initial vital signs were blood pressure 90/50, heart rate 96 and respiratory 18. Exposure showed severe seat belt marks across her lower abdominal quadrants and less apparent across her anterior chest. Her abdomen was diffusely tender. Supine chest film was negative for injuries. Extended focused abdominal sonography for trauma was positive in the left upper quadrant and pelvis. Point of care arterial blood gas showed lactic acidosis. She was immediately taken to the operating room. Celiotomy demonstrated full thickness transection of the abdominal wall excluding the skin extending from the right posterior axillary line to the left linea semilunaris just below the umbilicus and multiple intrabdominal injuries including: right diaphragmatic laceration, jejunal perforation, hepatic and splenic capsular tears and laceration of superior mesenteric vein branch with hemoperitoneum. She underwent repair of intraabdominal injuries and primary repair of TAWH. Postoperative pan scan showed cervical spine subluxations, midsternal body fracture and retrosternal hematoma. Cervical spine ligamentous injury was found on magnetic resonance and ensuing head and neck computed tomographic angiography revealed a left internal carotid artery dissection. It was later discovered that she was using the seat belt but riding with the seat reclined.

Conclusion: We describe a severe TAWH and a constellation of intra and extra abdominal injuries resulting from the seat belt. It supports two concepts: 1. an abnormally located seat belt sign upon presentation is more likely to be associated with intraabdominal injury and 2. the relationship between occupant and vehicle’s restraint system at the time of impact may explain the seat belt associated injuries.
Introduction: In the past two decades, there have been 3 case reports of Neisseria meningitidis pneumonia in the United States, none of which were in trauma patients. Risk factors for N. meningitidis includes splenic injury, immunocompromised state, diabetes, and housing in close quarters. We report a 41 year old male bicyclist that presented as level 1 trauma after being struck by an automobile. The vehicle was traveling approximately 50 miles per hour and dragged the patient several yards, before throwing him into a ditch. Upon arrival of first responders, the patient was noted to be a GCS of 7 and underwent rapid sequence intubation. The patient was hemodynamically stable in the trauma bay and a L sided chest tube was placed due to a hemothorax. CT scans demonstrated multiple intracranial hemorrhages, 9 left sided rib fractures, a grade 2 splenic laceration without extravasation, comminuted left scapula fracture, right acetabulum fracture, and fractures of transverse processes of L2-L4. Initial labs were unremarkable and toxicology screen was positive for amphetamines. The patient’s risk factors for N. meningitidis were unknown.

The patient was admitted to the trauma intensive care unit (ICU) and successfully extubated on hospital day 2 after a spontaneous breathing trial. However, the next day, the patient was noted to be persistently agitated and confused. This was thought to be due to alcohol withdrawals. Despite treatment with lorazepam, the patient required reintubation on hospital day 3.

Over the next several days the patient remained stable on the ventilator. On hospital day 7, the patient was febrile to 101.7 and his morning chest x-ray demonstrated a new left lung opacity. Bronchoalveolar lavage was performed from the left lower lobe and cultures were sent and empiric antibiotics were started. The patient continued to have persistent fevers and leukocytosis. On hospital day 9, the final results of the BAL demonstrated Neisseria meningitidis with >100,000 CFU/mL. The patient’s antibiotics were deescalated to Ceftriaxone. Blood cultures were negative. The patient was extubated hospital day 11 and discharged to rehab hospital day 26.

After culture results were obtained, employee health was alerted and all personnel that were in direct contact with the patient were contacted for prophylactic antibiotic treatment. This case highlights the need for early recognition of a bacteria that rarely causes ventilator associated pneumonia. While this patient’s risk factors for N. meningitidis were unknown, his splenic injury may have made him more susceptible to the disease.
Introduction: The focused abdominal sonography for trauma (FAST) exam is often used to determine the presence of intra-abdominal hemorrhage in unstable patients with significant pelvic fractures. The utility of the FAST exam in this setting remains unclear with varying data. However, recent literature reports a sensitivity rate of 96%. We hypothesized that the FAST exam may not be as reliable in detecting significant intra-abdominal hemorrhage in hemodynamically unstable patients with pelvic fractures.

Methods: The trauma database at our high volume, level one institution of all hemodynamically unstable patients who sustained pelvic fractures secondary to blunt trauma from January 1, 2016, to April 30, 2019, was reviewed. Hemodynamic instability was defined as heart rate (HR) greater than 140, systolic blood pressure (SBP) less than 100 mm Hg, or shock index (HR/SBP) greater than one. The reported FAST exam was then compared to intra-operative findings. An operation was considered to be “positive” if there was a source of surgically corrected bleeding.

Results: During the reviewed time period, 74 hemodynamically unstable patients with pelvic fractures had a documented FAST and underwent operative exploration. The average age was 37 and the average Injury Severity Score was 37.5. 27 patients had a positive FAST exam and positive intra-operative findings. 23 patients had a negative FAST exam and negative intra-operative findings. 22 patients had a negative FAST exam but positive intra-operative findings. Two patients had a positive FAST exam but negative intra-operative findings. The sensitivity and specificity were 55% and 92%, respectively. The positive predictive value was 93% and the negative predictive value was 51%.

Conclusion: Retrospective review of hemodynamically unstable patients with blunt pelvic fractures at our level one institution who underwent FAST exam revealed a sensitivity of only 55% for identifying intra-abdominal hemorrhage. If there is concern for intra-abdominal hemorrhage in these patients, further evaluation should be considered with diagnostic peritoneal lavage/aspiration, imaging, or operative exploration despite a negative FAST exam.
INTRODUCTION: The Beers Criteria for Potentially Inappropriate Medication (PIM) use is a list of medications, published by the American Geriatric Society, that should be used with caution in older adults (≥ 65 years old) due to multiple risks. A previous study found that 71.2% of all geriatric trauma patients at our Level 1 trauma center had been prescribed at least one PIM at the time of their trauma evaluation. The primary objective of this study was to develop and assess an educational system that could be distributed by trauma surgeons to primary care providers to increase awareness regarding the risks associated with PIMs.

METHODS: Printed educational materials (PEMs) detailing the risks associated with PIM use in the geriatric population were developed, along with survey instruments assessing providers’ commitment to change (CTC) after reviewing the materials. Questions gauged providers’ familiarity with the issues presented in the PEMs, what changes they anticipated making in their clinical practice, and their commitment to making these changes. A two-month follow-up survey assessed the actual implementation of the contemplated changes. The materials were distributed through email, via the REDCAP system, to credentialed primary care providers at our regional hospital system.

RESULTS: The initial PEMs and CTC survey were distributed to 475 providers. Overall, 44 (9.2%) completed the initial survey and 57 (12.0%) opened or partially completed it. Overall, providers responded that they were familiar with 72.1% of the PEM content on average, ranging from 96.6% for geriatric specific providers to 69.7% for non-geriatric providers. A follow-up survey was distributed to providers who opened or completed the initial survey, with 26 providers responding. Table 1 details the providers anticipated changes, level of commitment, and follow-through.

CONCLUSION: Our PEMs and CTC surveys demonstrated varying familiarity with the risks associated with PIM prescriptions in the geriatric population, with non-geriatricians being far less aware. While respondents communicated a commitment to change their practice, our efforts were hampered by overall low participation and response rates. Based on the level of commitment and follow-through demonstrated, this method of trauma outreach might be extremely effective if participation rates could be improved.
<table>
<thead>
<tr>
<th>Percent of Respondents (%)</th>
<th>Practice Change</th>
<th>Average Commitment Level (1-10)</th>
<th>Percentage of Providers Who Fully Followed Their Commitment (%)</th>
<th>Percentage of Providers Who Partially Followed Their Commitment (%)</th>
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<tr>
<td>33.8</td>
<td>Avoiding specific PIMs</td>
<td>8.4</td>
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<tr>
<td>22.5</td>
<td>Reviewing patient medication lists</td>
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<td>50</td>
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<tr>
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<td>n/a</td>
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<td>Be more thoughtful when prescribing</td>
<td>8.8</td>
<td>67</td>
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<tr>
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<td>Educate other PCP’s about PIMs</td>
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<td>50</td>
<td>50</td>
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<tr>
<td>1.4</td>
<td>Lower doses of PIMs</td>
<td>5</td>
<td>No f/u response</td>
<td>No f/u response</td>
</tr>
<tr>
<td>1.4</td>
<td>Review the Beers Criteria once per month</td>
<td>7</td>
<td>No f/u response</td>
<td>No f/u response</td>
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<tr>
<td>1.4</td>
<td>Have nurses aid in medication review</td>
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<td>No f/u response</td>
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<tr>
<td>1.4</td>
<td>Create a patient handout</td>
<td>7</td>
<td>No f/u response</td>
<td>No f/u response</td>
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</table>
**P 204. SOMETIMES YOU JUST NEED TO OPEN A WINDOW - WHEN A SIMPLE PNEUMOPERICARDIUM IS NOT SO SIMPLE**

Presenter: Camaleigh Jaber MD | John H Stroger, Jr. Hospital of Cook County
Jaber C, Schlanser V, Tatebe L, Koeck E, Bokhari F

**Introduction:** Pneumopericardium is a rare but often fatal condition of air trapping in the pericardial sac that is reported following thoracic trauma. A simple pneumopericardium seen on chest x-ray develops into a tension pneumopericardium in roughly 37% of cases with a reported mortality rate as high as 57% [1,2]. The initial management of pneumopericardium is not well defined and can lead to delay in treatment and high mortality.

**CASE DESCRIPTION:**

**CASE ONE:** An 18-year-old female presented following a high-speed motor vehicle collision. Patient arrived with a GCS of 15, tachycardic and complaining of shortness of breath. Patient had diminished breath sounds bilaterally and crepitus along her neck and chest. CT scans revealed a pneumopericardium, pneumomediastinum, as well as intrabdominal hemorrhage and upper extremity fractures. In the operating room and immediately following draping, patient became pulseless. A thoracotomy was performed, and upon entry into the pericardium, she regained her pulse.

**CASE TWO:** 20-year-old male presented following multiple gunshot wounds to his face and right shoulder. On arrival patients was hemodynamically normal other than tachycardia. CXR revealed a R sided pneumothorax in which a chest tube was placed. On CT scan patient was noted to have a small strip of air concerning for pneumopericardium and a right large hemothorax. The patient was taken to the operating room to explore the right chest and pericardium. After general anesthesia was induced, a right 5th intercostal space anterolateral thoracotomy was performed and extended through the sternum to the left side. Pneumopericardium was released through a right pericardial window and no blood was found. Right retained hemothorax was evacuated uneventfully and the chest was closed.

**DISCUSSION:** Currently there is no standard management of pneumopericardium. Due to the high mortality of a tension pneumopericardium, these clinical vignettes stress the importance of surgeons addressing pneumopericardium in a defensive and definitive manner. All patients with significant amount of air in the pericardial sac should be explored. Intubation is safe in patients with small amounts of pericardial air. With a large known pneumopericardium patients should undergo US or CT guided needle decompression prior to intubation. Hemodynamically unstable patients should have the cause of instability addressed first. The timing for definitive decompression (pre vs. post laparotomy/thoracotomy) and route of decompression (subxiphoid, pericardial-peritoneal, or via thoracotomy) should be addressed on a case by case basis and as per physician judgement.
**P 205. A NOVEL APPROACH TO A RARE CAUSE OF GASTRIC BLEED AND PERFORATION**

Presenter: Candace E Gonzalez MD | University of South Florida
Gonzalez CE, Davis DM

**Introduction:** The etiology of gastric perforations ranges widely from peptic ulcer disease, trauma, necrosis, corrosive ingestion, and iatrogenic. In the setting of post open cardiac surgery, gastrointestinal complications requiring surgical evaluation are exceedingly rare at less than 1%. Gastric perforations after inadvertent esophageal intubation (EI) are exceedingly rare, but when they occur are often unrecognized, and can present with unusual symptoms and pathology.

This is a case of a 71 year old female who underwent an aortic root and arch replacement for a Type A dissection. She had to be emergently re-intubated on the night of post operative day 2. This was a difficult intubation and the esophagus was inadvertently intubated and ventilated. A surgical consult was placed after she developed worsening shock, abdominal distention, and imaging demonstrated a large amount of pneumoperitoneum. She was taken to the operating room emergently. Intraoperatively there were no obvious signs of hollow viscus injury and no obvious etiology for the large volume pneumoperitoneum that was seen on preoperative imaging. An orogastric tube was placed with return of old blood, but was unable to evacuate most of the gastric contents and remained massively distended. We elected to make a gastrotomy to examine the stomach, at which point a large hematoma was evacuated. The lesser curve of the stomach had an actively bleeding gastric lesion. Upon examining the lesion, there was noted to be a tangential tear that tunneled submucosal and eventually exited at the lesser curve (likely caused by the bagie used for intubation). The lesion was oversewn through gastrotomy from inside the lumen resolving the bleed and perforation. The patient subsequently had an uneventful recovery from a surgical standpoint.

In our case, it is believed that the gastric perforation was likely caused during difficult intubation. Gastric perforations after esophageal intubation are exceedingly rare and in our case, there was no immediate, obvious injury intraoperatively to account for the pneumoperitoneum. Examination of the external anatomy did not demonstrate any injury, however after the surgical gastrotomy was made a tangential gastric perforation and bleeding were easily identified and these mandated repair. Gastric perforations and bleeds carry a high morbidity and mortality and must be managed in a timely manner. If the area of pathology is not readily apparent on external examination, surgical intra-luminal examination should be considered.
Introduction: This report describes a case of embolization of a missile from the iliac vein to the pulmonary artery. The importance of understanding ballistic trajectory, particularly when discordant radiographic evidence is present, is emphasized.

Methods: This is a case report and comprehensive literature review of a rare pathology

Results: A 22-year-old-male was brought to our Level 1 Trauma Center after sustaining a single GSW through the right elbow into the right flank along the mid-axillary line. He was in no respiratory distress; his GCS was 15 and he was hemodynamically normal. His only complaint was abdominal pain. Initial trauma bay radiographs demonstrated bullet fragments in the right pelvis and left thorax. Based on trajectory, he was taken immediately for exploratory laparotomy. He was found to have an ascending colon injury and a non-expanding zone 2 hematoma. A right hemicolectomy was performed. Due to the pre-operative CXR showing a projectile in the left chest, a detailed examination of the diaphragms was done but revealed no injury. Post-operatively a CT was performed and demonstrated a missile in the right lower quadrant and within the pulmonary artery. Initially, cardiology attempted endovascular retrieval of the bullet within the pulmonary artery but this was unsuccessful. Ultimately, it was successfully removed by cardiothoracic surgery via sternotomy utilizing cardiopulmonary bypass.

Conclusion: Missile embolization is a rare but well-described phenomenon. This scenario occurs when a bullet has lost enough kinetic energy that it only penetrates a single wall of a vessel, and comes to rest within the lumen. This more commonly occurs within thicker walled arterial vessels and bullets migrate distally causing limb-threatening ischemia or stroke. Conversely, bullets that enter the venous system embolize centrally causing cardiac valvular damage or pulmonary embolus. The feared complication of pulmonary artery embolization is erosion of the vasculature leading to fatal hemorrhage, which has been described in multiple studies. With advances in technology, endovascular retrieval has become a viable option. If unsuccessful, sternotomy and cardiopulmonary bypass for bullet removal can be performed.
Pulmonary Artery Ballistic Embolization: A Case Report and Literature Review
Benjamin Hazen MD, Christine Castater MD, Jonathan Nguyen DO, Brent Keeling MD, Michael McDaniel MD, Ravi Rajani MD, April Grant MD, Rondi Gelbard MD
Emory University SOM, Morehouse SOM, Atlanta, Georgia

Introduction
Missile embolization is a rare phenomenon, occurring when a bullet has lost enough kinetic energy that it only penetrates a single wall of a vessel, and comes to rest within the lumen. This more commonly occurs within thicker walled arterial vessels causing limb-threatening ischemia or stroke. Conversely, bullets that enter the venous system embolize centrally causing cardiac, vascular damage or FE. We describe here an interesting case of missile embolization after a gunshot wound to the abdomen.

Case Presentation
A 22yo male presented with a single GSW through the right elbow into the right flank. He was hemodynamically normal with GCS 15 complaining only of abdominal pain. Initial x-rays demonstrated bullet fragments in the right pelvis and left thorax. He was taken for emergent exploration and found to have a Grade 1 liver laceration, right subcostal hematoma, and devascularization of the right mesocolon, requiring hemihepatectomy. Both diaphragms were carefully inspected without injury. Post-operatively, he underwent CT which localized the intrathoracic bullet within the left pulmonary artery.

Bullet Retrieval
On POD1, endovascular retrieval was attempted in the OR without success. He was then prepped for sternotomy and open embololysis was performed while on cardiopulmonary bypass.

CT of new intrathoracic hematoma
On POD2 the patient developed a new intrathoracic hematoma requiring reoperation without an identifiable hemorrhage source.

Discussion
With advances of surgical technique and technology, endovascular retrieval of embolized bullets has become a viable option. If unsuccessful, sternotomy and cardiopulmonary bypass for bullet removal can be performed, as seen in this case. The feared complication of pulmonary artery embolization is erosion of the vascular wall leading to fatal hemorrhage, which was described in multiple studies and thus necessitates removal.
Introduction: The patient is a 47-year old female who presented as a trauma following a motorcycle collision. Upon arrival, the patient was a GCS 15, hemodynamically stable and noted to have multiple extremity deformities. After primary and secondary surveys, she underwent imaging by CT scan to evaluate for further injuries. The patient was found to have bilateral hemopneumothoraces, bilateral rib fractures, bilateral adrenal hemorrhages, bilateral acetabular fractures, and multiple pelvic fractures involving the sacral ala and pubic rami. Following CT scans, the patient became unstable. She was intubated, a left-sided chest tube and subclavian line were placed, and a pelvic binder was applied. The patient was also transfused eight PRBCs, eight FFP, one pack of PLTs, and given TXA. Despite the CT scan not showing any active extravasation, interventional radiology was consulted and took the patient for angiogram. Active extravasation was visualized from the right internal pudendal artery and right inferior gluteal artery, which were both embolized. The patient stabilized and was transferred to the ICU. Orthopedic surgery evaluated the patient and recommended surgical stabilization of the pelvis and multiple extremity fractures. After continued monitoring and resuscitation in the ICU and despite having a corrected TEG, the patient became hemodynamically unstable again. Orthopedic surgery then took the patient to the operating room for stabilization of the pelvis and multiple long bone extremity fractures. Following surgical fixation of the pelvis, the patient stabilized hemodynamically. The patient had a prolonged ICU stay with multiple operative procedures to definitively treat the numerous fractures. She did well after her procedures and was ultimately transferred out of the ICU and discharged on hospital day 27 without any major complications. The positive clinical outcome in this patient demonstrates the importance of timely multidisciplinary management of complex polytrauma patients, including the judicious use of interventional radiology techniques in conjunction with damage control orthopedics and surgical critical care management.
Introduction: This study aims to focus on the initial management and overall care of particular impalement injuries. Traumatic impalement are rarely encountered injuries, but can be potentially devastating injuries associated with significant morbidity and mortality. We report an interesting case in which a 45 year old male presented as a trauma code to our hospital after being impaled through the lower abdominal wall with a tree. The patient had been clearing a hunting property of pine trees when one of the trees entered the cab of the tractor he was operating. The forward motion of the equipment drove the tree trunk into his abdomen. The projectile was carefully stabilized and the patient was transported to our hospital. The foreign body was noted to enter the right side of the patient’s perineum and lower abdomen. The patient was taken emergently to the operating room for removal of the foreign body, abdominal washout, and application of Negative Pressure Wound Therapy.
Introduction: There are very few reports of penetrating injuries to the head and neck resulting in aspiration of and retained intrabronchial foreign bodies. We present a pediatric patient who sustained a gunshot injury to the face with subsequent aspiration of the bullet. This is the youngest reported case in the English language literature. Removal of the retained bullet was achieved with flexible bronchoscopy without complication. Additionally, we review the available literature on this rare injury pattern.
P 210. HOW TO REFEED BILE? A CASE REPORT OF REFEEDING BILIOPANCREATIC SECRETIONS IN A PATIENT WITH A PROXIMAL ENTEROCUTANEOUS FISTULA FOLLOWING PENETRATING DUODENAL TRAUMA

Presenter: Constantine Saclarides MD | John H Stroger, Jr. Hospital of Cook County
Saclarides C, Bryan F, Dennis A, Starr F, Bokhari F

Introduction: Proximal enterocutaneous fistulas (ECFs) present a nutritional challenge to surgeons, especially in patients with ECFs that result in large volume loss of biliopancreatic secretions. Nutritional support in these patients is essential to replace fluids, nutrients, electrolyte losses, and to reverse catabolism. Although refeeding biliopancreatic secretions via nasoenteral tubes is well described, refeeding biliopancreatic secretions in patients with complex proximal gastrointestinal anatomy is more challenging. Here we present a unique case of refeeding biliopancreatic secretions in a patient following duodenal trauma.

This is a retrospective review of the clinical presentation, operative management, and long term nutritional care of a 37y/o man with multiple abdominal gunshot wounds that resulted in a proximal ECF with high output.

Our patient is a 37 year old man with who sustained multiple gunshot wound to the abdomen requiring damage control laparotomy. During his nine subsequent exploratory laparotomies, he had a splenectomy, distal pancreatectomy, left nephrectomy, SMV ligation, total colectomy with end ileostomy and mucus fistula creation. He also had a duodenal bulb injury that was repaired primarily with subsequent pyloric exclusion and loop gastrojejunostomy. In his postoperative course he developed a large proximal ECF in his hepatobiliary limb as well as refractory marginal ulcers managed endoscopically. Nutritional management was challenging. Nasogastric tube feeds were not feasible because his tube feeds were diverted through his proximal ECF. Total parenteral nutrition was not feasible when considering long term recovery. We elected to place a feeding tube into the distal lumen of his ECF, and the terminal end of the feeding tube was guided distally past the gastrojejunostomy into his jejunum. Biliopancreatic secretions from the proximal lumen of his ECF were refed into the distally placed feeding tube. Although initially intolerant of biliopancreatic refeeding, he eventually tolerated full refeeding of his own secretions at a rate of 50ml per hour, along with 50cc per hour of a peptide-based nutritional formula. He was weaned from TPN and nutritionally optimized for discharge to long term rehabilitation.

High output proximal ECFs in patients with gastroduodenal trauma can be successfully managed with catheter-directed feeding into the distal lumen of ECFs with frequent refeeding of biliopancreatic secretions. For optimal chance of recovery, a multidisciplinary approach with aggressive enteral feeding, proactive wound care, and close collaboration with nutritional services is required.
Surgical Anatomy of Complex Proximal Enterocutaneous Fistula

Site of previous pyloric exclusion

Site of repaired duodenal gunshot wound

Hepatobiliary limb of gastrojejunostomy

Proximal lumen of enterocutaneous fistula

Distal lumen of enterocutaneous fistula

Feeding catheter inserted through distal lumen of enterocutaneous fistula and extending into distal jejunum
P 211. TRIAGE OF ISOLATED GUNSHOT WOUNDS TO THE EXTREMITIES IS IMPROVED WITH USE OF HEMODYNAMIC CRITERIA OVER ANATOMIC CRITERIA
Presenter: Craig A Sadler MD | Eastern Virginia Medical School
Sadler CA, Peddireddy S, Collins JN, Britt LD

Introduction: Over-triage of patients sustaining gunshot wounds is seemingly commonplace. Currently, an alert system assigning patients with injuries proximal to the elbow or knee with the highest trauma designation results in numerous high alert patients being discharged home from the trauma bay for inconsequential injuries; at the cost of mobilizing of significantly more staff and resources. This analysis sought to identify changes to trauma screening that may be enacted to potentially optimize resource deployment for trauma team activations.

Methods: Retrospective review of patients with gunshot wounds between 1/1/2016-12/31/2018 was conducted. Patients were excluded if they were younger than 18 or older than 89, and if they underwent workup by emergency department staff prior to trauma team consultation. Injuries were categorized as being to the head, chest, abdomen, extremities, or multiple zones. Disposition from the emergency department and hemodynamic measures were collected. A statistical profile of the alert screening system was calculated using current parameters as well as with hypothetical scenarios where anatomic criteria were changed or where hemodynamics were incorporated into screening.

Results: 806 alerted adult trauma patients met criteria; 642 “Alpha” alerts and 164 “Bravo” alerts. Trauma bay mortality was 8%, and overall mortality was 14%. Current anatomy-only screening system high sensitivity (91%) in identifying patients that will die in the trauma bay, require ICU admission or require immediate operative intervention; though with quite low specificity (30%) 229 Alpha alert patients had isolated extremity injuries; with 2 deaths in the trauma bay, 9 requiring ICU admission, 44 requiring immediate operative intervention, and 161 not requiring admission. Hypothetical analysis with isolated extremity injuries being given lower trauma designation without factoring hemodynamics decreased sensitivity (76%) but improved specificity (69%). Maintaining current anatomic boundaries and using hemodynamic criteria of heart rate 90, or shock index < 0.7 to downgrade patients to lower trauma designation resulted in worsened sensitivity (86%), but improved specificity (56%). Use of hemodynamic derangements alone to upgrade patients to higher trauma designation resulted in both improved sensitivity (94%) and specificity (60%).

Conclusion: While current triage paradigm using anatomic criteria to assign trauma designation is effective at identifying patients with more critical illness, it is hampered by poor specificity. Abandoning anatomic criteria in favor of hemodynamic criteria for patients with isolated extremity gunshot wounds shows improvement in both sensitivity and specificity of triage. Adoption of these criteria may help to mobilize trauma team resources more effectively.
P 212. REPAIR OF A GUN SHOT WOUND TO THE RETRO-HEPATIC VENA CAVA
Presenter: Daniel Han MD | University of Mississippi Medical Center
Han DS, Harrison B, Batson S, Iwuchukwu C, Koller, F

Introduction: Injuries of the retrohepatic inferior vena cava and the liver are uncommon but they have a mortality rate up to 71-78%. Although technical skills and patient management has improved overtime, the mortality associated with retrohepatic IVC injuries has not changed significantly. Treatment modalities include vascular repair by primary venorrhaphy and infrarenal cava ligation. We present a patient with retrohepatic vena cava injury from multiple gunshots wound which was repaired primarily.

Case Study: The patient is a 20 yr male with multiple gunshots to the left mid-axilla, back and extremities. A CT thorax, abdomen and pelvis was obtained which showed pneumoperitoneum, hemoperitoneum, and air around the IVC raising a concern for a potential injury. We performed an exploratory laparotomy and packing the four abdominal quadrants and identified a Grade V splenic injury, anterior gastric and left diaphragmatic injuries. We also identified a retrohepatic vena cava injury which was packed with lap sponges and found to be hemostatic. We consulted the transplant surgeons and the consensus was that packing was the appropriate initial intervention with a planned combined return to the operating room in 48 hours. During the follow-up procedure, a 4cm laceration in the retrohepatic vena cava was identified and repaired primarily. Post operatively patient had optimal recovery.

Conclusion: Penetrating injuries of the IVC are associated with high mortality rate of which supra and retro-hepatic lacerations have the worst prognosis. Proper management of these injuries requires expertise in vascular trauma and hepatobiliary surgery. Packing of the liver to achieve hemostasis and hemodynamic stability initially followed by primary venorrhaphy performed by a team of different surgical specialists resulted in a favorable patient outcome.
**P 213. BREAST HEMATOMA: AN UNDER-REPORTED AND UNDER-RECOGNIZED FEMALE SPECIFIC TRAUMATIC INJURY AND ITS CLINICAL SIGNIFICANCE**

Presenter: Danielle L Hashmi DO | Reading Hospital  
Hashmi DL, Ong A, Muller A, Itzoe M, Martin A, Foster S

**Introduction:** Female specific traumatic injury patterns have not been well researched and are potentially not well documented. Our aim was to examine the prevalence of breast hematomas (BH) after blunt chest trauma, and to evaluate if there were risk factors associated with BH requiring intervention.

**Methods:** A single center retrospective review of trauma registry patients from 2013-2018 was performed, identifying female patients ≥ 18 years sustaining blunt chest trauma using International Classification of Diseases 9th and 10th edition codes. BH was defined as the presence of a collection of blood within the breast parenchyma, and clinically significant breast hematoma (CSBH) as BH requiring blood transfusion, surgical, or interventional radiology intervention. Univariate analysis was performed comparing CSBH with BH in terms of demographics, injury severity, antithrombotic agent use and body mass index (BMI). A p value of < 0.05 was deemed significant.

**Results:** Of 871 female patients meeting criteria, 59 (7%) had BH. Of these, 10 (17%) had CSBH (transfusion only, n=3; angioembolization, n=4; operation, n=3). Compared to BH not requiring intervention, CSBH patients were older (mean age, 80 vs 69, p=0.006), but had similar rates of motor vehicle crashes (90% vs 78%), seatbelt use (70% vs 71%), antiplatelet (10% vs 12%) and anticoagulant (10% vs 6%) use. Median Injury Severity Scores, median Abbreviated Injury Scale scores for the Head, Thorax and Abdomen/pelvis regions, and median BMI (34 vs 34) were similar between the groups. In –hospital mortality was 0% in the entire cohort.

**Conclusion:** BH is not an infrequent injury after MVC and CSBH comprises a substantial proportion of BH. Under-recognition of this injury remains a significant concern as most standard recording tools and data sources do not delineate breast from other chest injury. We can conclude that BH and CSBH are important entities which deserve further research in higher powered studies. Future direction must include improved source reporting to better define the patient cohort in this female specific injury pattern.
P 214. MISSILES IN UNEXPECTED LOCATIONS
Presenter: David V Feliciano MD | University of Maryland School of Medicine
Feliciano DV, Rozycki GF

Introduction: While missiles from civilian handguns generally follow a straight course after entering the body, there is a subset of patients in whom internal migration of the missile to an unexpected part of the body occurs. While most reports describe patients with migrating missiles through the arterial or venous system, this report focuses on patients with nonvascular migrating missiles.

Methods: Concurrent data collection (demographics, clinical scenarios, review of imaging, management, outcome) of consecutive patients with nonvascular migrating missiles over 4 decades at Level I trauma centers known to the authors.

Results: From 1978-2018, eight male patients (mean age = 31 years) sustained a gunshot wound followed by a nonvascular internal migration of the missile. The eight patients were divided into four groups based on the mechanism of migration. These included swallowed missiles (#2), aspirated missiles (#2), coughed missiles into unusual locations (#2), and movement of missiles in the pericardial cavity aiding in the diagnosis of occult cardiac injuries (#2). Missed diagnoses of nonvascular migrating missiles occurred in four of the eight patients resulting in an unnecessary laparotomy in one, return to the operating room for another procedure in one, and delayed diagnosis of potentially fatal cardiac injuries in two. All patients survived.

Conclusion: When no exit wound after a gunshot wound is found, all missiles are not accounted for, a missile is blurred on an x-ray, or a missile is noted in an unexpected location, migration should be suspected. Nonvascular migrating missiles most commonly follow gunshot wounds to the mouth or mediastinum.
P 215. DOES THE DEGREE OF PLATELET ADENOSINE DIPHOSPHATE AND ARACHIDONIC ACID RECEPTOR INHIBITION CORRELATE WITH THE SEVERITY OF INJURY IN NON-BRAIN-INJURED TRAUMA PATIENTS?
Presenter: Grant Woodruff DO | University of Florida College of Medicine Jacksonville
Price D, Sodhi A, Kerwin AJ, Crandall M

Introduction: Platelet adenosine diphosphate (ADP) and arachidonic acid (AA) receptor inhibition have been described in patients with traumatic brain injury (TBI) even without antecedent antiplatelet or anticoagulation therapy. Our goal was to evaluate the percent inhibition of ADP (ADPri) and AA (AAri) receptors in non-TBI patients and correlate with the injury severity score (ISS) with the hypothesis being that increased inhibition will be seen with higher ISS.

Methods: We performed a retrospective review of non-TBI patients admitted to our level one trauma center who received TEG with platelet mapping from 1/1/2015-12/31/2017. All patients were 18 years of age and older and underwent TEG with platelet mapping prior to any transfusions. Exclusion criteria included diagnosis of TBI, current antiplatelet therapy, and history of renal failure. We gathered demographics, injury characteristics, and outcomes data for each patient in our data set. Univariate descriptive statistics and bivariate comparisons using Student’s t-test, analysis of variance (ANOVA), Pearson’s chi-2, and Fisher’s Exact Test where appropriate. Multivariable linear regression models were constructed to quantify any association between the degree of platelet ADP and AA receptor inhibition with severity of injury. We defined high ADP inhibition as >20% and high AA inhibition as >7%, based on previous research.

Results: A total of 117 patients were included in our analysis. Mean age was 53 ± 21 and the cohort was 71% male. Fifteen patients were taking direct oral anticoagulants and 6 were taking warfarin. This was a severely injured cohort, with mean ISS 19 ± 16. Mean ADPri was 64% ± 29% and AAri 42% ± 30. On bivariate analysis, we found no statistically significant differences with respect to injury severity measures or outcomes based on low versus high ADPri or AAri. When controlling for age and other demographics using multivariable linear regression, we found no statistically significant association of ISS or outcomes such as hospital length of stay with ADPri or AAri.

Conclusion: We found a high degree of ADPri and AAri in this cohort of severely injured patients without TBI. However, the degree of receptor inhibition did not appear to be associated with demographics, injury severity measures, or injury outcomes. Our patient results were so far from reported “normal” values, irrespective of injury severity and outcomes, that it is clear further research is needed to determine the significance and clinical implications of TEG-PM use in trauma care.
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Introduction: The management of the pediatric trauma patient is variable among trauma centers. In some institutions, the trauma surgeon maintains control of the patient throughout the hospital stay, while others transfer to a pediatric specialist after the initial evaluation and resuscitation period. We hypothesized that handoff to the pediatric surgeon would decrease length of stay by more efficient coordination with pediatric sub-specialists and ancillary staff.

Methods: A retrospective review from October 2014 to October 2018 was conducted at our rural Level 1 trauma center analyzing length of stay across all demographics and trauma triage levels before and after institution of a handoff protocol from adult specialized trauma surgeons to pediatric surgeons within a 24-hour window. Further analysis included emergency department (ED) disposition to include the effect of handoff on length of stay in the setting of higher post-ED acuity, i.e. disposition to monitored beds.

Results: 1,267 patient charts were analyzed and the mean length of stay was reduced by 0.38 days (t = 5.92, p < .0005) across all demographics, trauma triage levels, post-ED dispositions and mechanisms of injury after institution of our handoff protocol.

Conclusion: Handoff from adult specialized trauma surgeon to pediatric surgeon within a 24-hour window at a rural level one trauma center significantly improved length of stay by 0.38 days (t = 5.92, p < .0005) among pediatric trauma patients in all demographics, trauma triage activation levels, mechanisms of injury, and post-ED disposition acuity levels.
P 217. EFFECT OF FASTING STATUS ON RELATIVE RISK OF PULMONARY ASPIRATION IN ACUTE CARE SURGERY PATIENTS
Presenter: Eric Bradburn DO, MS | Penn Medicine Lancaster General Health
LaSala R, Vernon T, Morgan M, Bradburn E, Maish G

Introduction: To determine the relative risk of aspiration in patients who were fasted at the time of surgery according to guidelines versus those who experienced less than guidelines fasting as a result of the acuity of their condition.

Methods: We conducted a retrospective chart review of 100 patients who underwent appendectomy (n=76) or exploratory laparotomy (n=24) at a single institution in 2016-2017 and compared aspiration rates to the Pennsylvania Trauma Outcomes Study (PTOS) database 2003-17. Using the American Society of Anesthesiologists (ASA) Practice Guidelines for Pre-operative Fasting, patients were stratified into study and control groups according to whether they were fasted less than guidelines (unfasted: < 8 hours) or fasted according to guidelines (fasted: >8 hours). The duration of fasting was obtained from the anesthesia record and the presence of an aspiration event was determined based on a review of the discharge summary. Data was controlled for patients’ age, sex, body mass index (BMI), most recent hemoglobin A1c, presence of gastroesophageal reflux disease (GERD), and hiatal hernia.

Results: Of the 76 patients who underwent appendectomy, 66 were fasted and 10 were unfasted (15% unfasted) with a total of 0 aspiration events (p<0.001). Of the 24 patients who underwent exploratory laparotomy, 14 were fasted and 10 were unfasted (42% unfasted) with a total of 0 aspiration events (p<0.001). PTOS revealed for 16,815 emergency laparotomies performed within 2 hours of ED admission with a total of 168 (1%) aspiration events (p<0.001). The age, sex, BMI, hemoglobin A1c, presence of GERD, presence of hiatal hernia, and nature of the procedure did not affect the relative risk of aspiration due to the fact that there were no aspiration events in the population analyzed. This yields a relative risk of pulmonary aspiration of 1.0 (absolute risk of 0) in both the study and control groups.

Conclusion: Among patients who underwent appendectomy and/or exploratory laparotomy, there was no increase in the risk of pulmonary aspiration of gastric contents in the unfasted group. In an Acute Care Surgical population which fasting state was not determined or guideline based, there was no increase in the risk of pulmonary aspiration.
P 218. A REVIEW OF PRE-HOSPITAL INTUBATIONS BY EMS AFTER TRANSITION OF MEDICAL DIRECTORS
Presenter: Eric Forney MD | Medical Center of Central Georgia- Navicent Health
Christie DB, Stokes NA, Montgomery A, Lian B, Forney EF

Introduction: Endotracheal intubation (ETI) was initially used for induction of general anesthesia. This skill was extended to out-of-hospital rescuers for critically ill patients. ETI is a skill that must be developed and maintained. Given the difficulties in training and maintaining this skill, other devices have gained popularity to secure a patient airway that do not require direct laryngoscopy. An example of those devices include the Esophageal-Tracheal Combitube (ETC). This device is intended to be placed without direct laryngoscopy into the pharynx. Due to their ease of placement the use of these devices increased. A review of the ETI and ETC intubations of a Level 1 Trauma Center was performed to determine the effects of updated field sedation protocols, simulation teaching, robust Quality Assurance/Continuing Quality Improvement (QA/CQI) program and enhanced EMS medical director oversight.

Methods: This was a retrospective cohort study of pre-hospital airway interventions performed by EMS personnel. The data was obtained from an administrative database of all intubations from July 1, 2013 to December 5, 2017. The data set was selected to overview the transition of EMS medical directors that occurred in May 2016. After the transition, the field sedation protocols were reviewed and updated with pharmacologic agents to better assist in field intubation. Multiple teaching and simulation sessions were conduction to better familiarize EMS personal with the equipment available and proper use. The teaching sessions also allowed for simulation of field placement of ETC and ETI. Statistical analysis was then performed reviewing the intubations before and after the transition.

Results: The data set contained 996 unique patients that were intubated. 829 ETI were performed, 148 Combitube placements recorded, 8 nasotracheal intubations and 11 interventions were not specified. The nasotracheal intubation and unspecified interventions were excluded from the analysis. In comparing the type of intubation performed before and after the transition, ETI is more often used after the transition increasing from 83.1% to 88.4%. We observe a decrease in Combitube usage from 16.9% to 11.6%. Using a chi square test ETI vs ETC was evaluated. ETI are used more after the transition than before while the Combitube is used less often. \( X^2(1) = 4.76, p=0.029 \). After the transition successful ETI increased from 74.7% to 76.6%.

Conclusion: A review of the ETI and SGA intubations of a Level 1 Trauma Center showed that Combitube usage decrease and successful ETIs increased with updated field sedation protocols, simulation teaching, robust QA/CQI program and enhanced medical director oversight.
**P 219. COMPLEX RECONSTRUCTION OF INNOMINATE ARTERY INJURY AND STERNAL FLAIL**

Presenter: Erik Green MD | Louisiana State University Health Science Center
Green EA, Risher WH, O’Brien M, Tumminello M, Spieler BM, Greiffenstein P

**Introduction:** Severe crush injury of the thorax can result in major trauma to vital structures for which repair can pose unique challenges. We herein present the case of a young man who suffered a crush injury to the thorax resulting in multifocal injury to the innominate artery, right subclavian artery, bony sternum and parasternal costal cartilage as well as a dislocated sternoclavicular joint.

**Methods:** A midline sternotomy was performed and dissection of the innominate vessels as well as right subclavian artery was undertaken. The first rib was fractured and severely displaced resulting in an injury to the proximal subclavian artery, which was resected. The innominate artery as well was found to have a proximal thrombus resulting from dissection and intramural hematoma. These were resected and a PTFE graft was used to reconstruct the vessel while the right vertebral artery was reimplanted at a distal site on the graft. The right sternoclavicular dislocation was manually reduced and fixed using a suture technique. The midline sternotomy was reapproximated with wires and reconstruction of the severely displaced peristernal cartilage was undertaken with a combination of techniques including titanium anterior osteosynthesis plates (RibFix Blue, Zimmer Biomet) across the upper sternum and bioabsorbable plates (Biosorb, Acute Innovation Systems, Inc.) to fix the costal cartilage after reduction. The construct was reinforced with sternal fixation ties (ZipFix, DePuy Synthes) to prevent screw migration.

**Results:** The patient underwent an uneventful recovery and was discharged home on hospital day 9 having suffered no significant complications with pain well controlled and no evidence of instability. He continued to do well at one month follow-up with significant progress made towards resuming full activities.

**Conclusion:** Severe blunt trauma to the torso, such as that of a crush injury, can result in complex injuries to vascular, bony, visceral, and cartilaginous structures that compromise life, limb and the possibility of returning to normal function. Reconstruction requires coordination of a multi-disciplinary approach with the utilization of various techniques to achieve the optimal chance of success.
Introduction: A 47 year-old male arrived by ambulance with a self-inflicted screwdriver impalement of the anterior neck. On primary survey the patient’s airway was patent, however he had decreased vocal strength. Breath sounds were present and hemodynamics were normal. On inspection, a screwdriver was buried to the hilt just cranial to the sternal notch with an infero-oblique trajectory. Anteroposterior chest radiograph was concerning for violation of the superior mediastinum (figure 1). CT angiogram did not demonstrate injury to mediastinal structures, however significant artifact obscured the images.

By traditional teaching, this zone 1 penetrating neck injury with clear platysmal violation warrants CTA. In the setting a CTA indeterminant for mediastinal injury, in many settings open exploration via median sternotomy would be necessary.

Our institution’s Endovascular Trauma Service was consulted, after discussion about our ability to safely manage the patient without subjecting him to open exploration, the patient was taken to the hybrid operating room. He was intubated using video laryngoscopy, no evidence of airway trauma was noted. After positioning and prepping for possible sternotomy, venography via right antecubital vein demonstrated remote trajectory of the foreign body. Angiography showed the screwdriver resting on the aortic arch, with the tip of the screwdriver threaded between the innominate and left common carotid arteries. No contrast extravasation or luminal compression was appreciated on multiplanar views. The screwdriver was removed; no injury was evident on completion aortogram (Figure 5). Subsequent bronchoscopy and esophagastroduodenoscopy were negative. The patient was extubated, observed, and admitted to the psychiatry service.

This case represents a novel, multidisciplinary approach to management of a potentially lethal injury. The combined efforts of the readily accessible endovascular trauma service, trauma team and anesthesiology team allowed for a thorough, minimally invasive workup of this patient, sparing him a morbid open procedure.
**P 221. TRAUMATIC AORTIC RUPTURE: ARE FALLS WORSE THAN MOTOR VEHICLE CRASHES?**

Presenter: Faran Bokhari MD | University of Maryland School of Medicine
Bryan F, Bokhari F, Fu C, Toor R, Messer T, Kaminski M, Bokari F

**Introduction:** Traumatic rupture of the aorta (TRA) is rare and not well described in falls. The aim of this study was to establish the risks and outcomes of thoracic aortic rupture in falls versus motor vehicle accidents (MVAs).

**Methods:** The National Trauma Data Bank was queried for thoracic aortic injuries treated at all trauma centers from July 1, 2013 – June 30, 2015. A retrospective analysis was performed to define the effects of age, SBP, protective devices, gender, and ISS on TRA incidence and mortality.

**Results:** 106,227 MVA patients and 33,244 falls were analyzed. 2,655 (1.7%) MVAs and 160 (0.5%) of falls incurred thoracic aortic injuries. Patients with TRA from MVA or falls were not significantly different in age, sex, ISS, SBP, and incidence of TRA (Age (41.4 vs 43.9 years, P = 0.156), male (70% vs 76.9 % P =0.096), ISS (38.9 vs 37.4, P = 0.258), SBP (91.8 vs 86.6 P = 0.243), mortality (15.4 % vs 18.8 % p =0.257)). The rate of TRA with protective devices in MVA was 32 % vs 75% P  < 0.001. For falls with protective devices the rate of TRA was 11.3 % vs 14.4%. P < 0.305.

**Conclusion:** Thoracic aortic injury is a rare condition with high mortality. Although MVAs cause thoracic aortic injury at a rate 5 times that of falls, the high mortality rates are not significantly different. While protective devices are effective in protecting against TRA in MVAs, our study does not indicate a similar protective effect in falls.
**P 222. EARLY PULMONARY FUNGEMIA FROM INHALATION IN A BURN PATIENT**

Presenter: Francesca Bryan MD | University of Maryland School of Medicine
Bryan F, Tsai J, Jaber C, Messer T, Schlanser V, Poulakidas S, Bokhari F

**Introduction:** Burn treatment and outcomes depend on the location and severity of injury as well as the presence or absence of inhalation injury. We present a rare case of a patient who was a victim of a house fire who presented with extensive flame injury complicated by a pulmonary fungal infection. The patient is an unknown male who was brought in by paramedics with diffuse burns to the upper body with soot on his face and mouth. He was intubated on arrival and had vocal cord edema. Circumferential deep burns to his bilateral upper extremities, full-thickness burns on his chest and flank, back and partial thickness burns on his face were notable. He had a TBSA of 50%. During the course of sixteen days, the patient underwent three operations; two of which involved escharotomies and skin grafting. He presented acidotic upon arrival but showed rapid improvement from his initial pH of 6.9. Day 4 of his course remained uneventful and he continued to be on minimal vent settings. Day 5 the patient had bronchoscopy performed which showed extensive injury in the airways. Day 7 tangential excision did not reveal any deep infections. Day 10 of his course showed worsening consolidation of his right middle lung with a sputum culture positive for mold. He was started on Diflucan. Day 12 mold speciation came back positive for Aspergillosis and Amphotericin B was started. CXR showed bilateral fluffy infiltrates with worsening lobar opacifications. By day 16 the patient had a WBC of 80.4, but remained afebrile, with a plan to switch from amphotericin to voriconazole. An ABG of 7.12, PCO2 76.4, PO2: 59.6, HCO3 of 24, and a base excess of -5.2 were noted. The patient was in multiorgan failure, with worsening sepsis and respiratory failure due to fungemia. He failed to respond to all antimicrobials and antifungals. The family agreed at this time to make the patient DNR and he expired.

Our patient was notable for developing a pulmonary fungal infection within a very short time in the context of inhalation injury. We hypothesize that the patient received a pulmonary inoculum of fungus in the house fire. We suggest a high index of suspicion and diagnostic bronchoscopy looking for fungal infections in the lungs in house fires, even in the absence of disseminated fungemia.
Introduction: Hepatic artery pseudoaneurysm is an uncommon but serious complication of blunt liver trauma that is usually managed with transcatheter arterial embolization. However, anatomic variants, atherosclerotic disease, and previous intervention may make the aneurysms inaccessible to conventional routes. Direct percutaneous embolization can be a viable alternative. This approach was first described by Cope et al. in 1986 for the treatment of a common iliac artery pseudoaneurysm. Since that time, the procedure has been widely accepted for the treatment of visceral pseudoaneurysms. It may potentially avoid the adverse consequences of contrast media, irradiation, and arterial catheterization. We present a unique case describing the use of this approach emergently in managing a recurrent traumatic hepatic artery pseudoaneurysm.

Methods: A 21 year old man presented as an un-helmeted driver in an ATV accident. He was found to have a grade IV liver laceration, a grade V renal injury, and splenic laceration. Urgent angiography showed active extravasation from a segmental branch of the right hepatic artery, which was controlled with coil embolization. He was also noted to have a dilated and irregular right hepatic artery concerning for dissection. During his hospitalization he developed bile leak and hepatic abscess, which required laparoscopy, liver debridement, and endoscopic retrograde cholangiography with biliary stent. During his third week of admission, he became acutely unstable with hypotension and bleeding from an intra-abdominal drain. He was taken for emergent angiography which revealed a new hepatic pseudoaneurysm just distal to the previously placed coils. After failed attempts to access the pseudoaneurysm through the previously placed coils, control was obtained with direct percutaneous puncture and embolization under fluoroscopy.

Results: Bleeding stopped and he was ultimately discharged home.

Conclusion: Recurrent hepatic artery pseudoaneurysm at the site of a prior trans arterial hepatic embolization is an extremely rare occurrence and may have been related to the development of bile leak and hepatic abscess in this case. Percutaneous embolization of pseudoaneurysms by direct puncture has been described, although its use in trauma is infrequent. This case highlights an unconventional approach that was used to emergently control a recurrent hepatic artery pseudoaneurysm after failed attempts at repeat transcatheter arterial angioembolization.
Introduction: Baux index (age, total body surface area (TBSA) and inhalation injury) is highly predictable of outcomes in burn patients. Our study objective is to assess whether body mass index (BMI) can be added in the modified Baux index. We hypothesized that high BMI will not have an adverse effect on survival.

Methods: Burn registry at John H. Stroger, Jr. Hospital of Cook County were queried for patients admitted between 2013 to 2019. Inpatient mortality and morbidity were analyzed. Patients older than 12 years with a TBSA of 20% or greater burn were included in the study. Patients with missing values for age, BMI, TBSA, and inhalation injury were excluded.

Results: 56 patients met the inclusion criteria. Mean age of the study population was 48 years (SD 19) and 67.3% of patients were male. Mean BMI was 28 (SD 6.88) and the average TBSA was 32 (SD 13). 44.6% (25/56) of patients had inhalation injury. Average hospital length of stay (LOS) was 26 days (SD 24) and ICU LOS was 23 days (SD 19). 66.1% (38/56) of patients developed a complication and the mortality rate was 21.4% (12/56).

On bivariate analysis, non-survivors had higher TBSA (40% vs 30%, p=0.045), more inhalation injury (83.3%, 10/14 vs 34.1%, 15/47 p=0.003) and higher complication rate (91.7%, 11/14 vs 59.1%, 26/51, p=0.043). Survivors had higher BMI (29 vs 23, p=0.003) and increased LOS (30 vs 14, p=0.003).

Conclusion: Despite normal BMI, higher TBSA in the presence of inhalation injury is a lethal combination among burn patients. In our study, BMI was not found to be significant in predicting complications or mortality.
P 225. FIREARM INJURIES: DOES SEX AFFECT OUTCOME?
Presenter: Heather Peluso DO | Greenville Health System
Peluso H, Cull JD, Abougergi MS

Introduction: To study the relationship between sex and treatment outcomes of patients with firearm injuries hospitalized in the United States.

Methods: National Inpatient Sample 2016 was used. Inclusion criteria were a principal diagnosis of firearm injury. Exclusion criteria were age less than 16 years and elective admissions. The primary outcome was in-hospital mortality. Secondary outcomes were morbidity (traumatic shock, prolonged mechanical ventilation (PMV), acute respiratory distress syndrome (ARDS) and ventilator associated pneumonia (VAP)), and resource utilization (length of stay and total hospitalization charges and costs). Multivariate regression models were used to adjust for the following confounders: severity and mortality risk APDRG, age, race, median income in the patient’s zipcode, Charlson comorbidity score, hospital region, urban location, teaching status and bedsize.

Results: A total of 31,335 patients were included, 88% were male and 12% were female. The mean age was 32 years (95% confidence interval 31-33). Both sexes had similar in-hospital mortality rates (adjusted odds ratio (aOR): 1.01 (0.76-1.35), p=0.94). Both groups also had similar rates of traumatic shock (aOR: 1.13 (0.88-1.46), p=0.33), PMV (aOR:0.82 (0.57-1.18), p=0.29), ARDS (aOR:1.37 (0.55-3.38), p=0.50), and VAP (aOR:0.45 (0.10-1.92), p=0.28). Resource utilization was similar amongst males and females as demonstrated by length of stay (adjusted mean difference (aMD):-0.11 (-1.15-0.94), p=0.84), total hospitalization charges (aMD:-$3,377 (-$20,495-$13,740), p=0.70) and costs (aMD:-$2,472, (-$5,487-$542), p=0.11).

Conclusion: Sex did not affect in-hospital mortality, in-hospital morbidity or resource utilization among patients with firearm injuries.
Introduction: As the rate of obesity increases in the US, understanding the nuances of caring for obese patients becomes increasingly important. The South leads the nation in states with highest body mass index (BMI), with South Carolina ranking 41st for obesity. Meanwhile, the overall leading cause of death in the US for ages 1-44 is unintentional injury, representing the fourth most common cause of death in all age categories. While trauma death is not associated with obesity, the trend of ever-increasing BMI leads to a growing niche patient population: the obese trauma patient.

Previous studies have examined how obese trauma patients fare in comparison to their normal weight counterparts. Some studies show obese patients have increased morbidity and/or mortality while others show better outcomes due to a “cushion effect.” A phenomenon called the “obesity paradox” has also been reported, where critically ill patients with higher BMIs fare better.

This study examines trauma patient mortality and morbidity in regards to BMI at a southern tertiary care center after adjusting for possible confounding factors.

Methods: This retrospective study was conducted at Greenville Memorial Hospital in South Carolina, an adult Level 1 Trauma Center with a dedicated trauma ICU. Trauma patients assessed at GMH from 2/6/17 to 2/28/19 were identified using the National Trauma Registry of the American College of Surgeons. Patients younger than 18 years of age and burn victims were excluded. Patients were categorized by mechanism of injury. BMI was calculated and subcategorized according the CDC’s classifications.

Preliminary statistical analysis was conducted utilizing data on demographics, including age, gender, comorbidities, GCS, RTS, ISS, and AIS.

Results: 6383 trauma patients were included. 62.7% were male and average age was 52. Of these patients, 91.71% experienced blunt trauma and remaining were penetrating. Median GCS was 15, median RTS 12, and median ISS 9. The BMI categories were as follows: 3.21% underweight, 34.59% normal weight, 33.04% overweight, 15.87% stage 1 obesity, 6.24% stage 2 obesity, and 4.97% stage 3 obesity. When ICU admissions and ventilator status were examined, there were no statistical differences between BMI groups (p=.811, p=.601). However, with ventilator days, hospital length of stay, and ICU length of stay, higher BMI patients fared worse (p<.001). Despite this, mortality decreased in higher BMI patients (p<.001).

Conclusion: Patients with higher BMIs had longer ICU and hospital length of stays and required longer mechanical ventilation, but overall mortality decreased compared to underweight/normal patients.
P 227. CLINICAL CLEARANCE OF THE CERVICAL SPINE IN AWAKE AND ALERT INTOXICATED PATIENTS

Presenter: Jacqueline Brosius MD | Loyola University Medical Center

Introduction: Clinical clearance of the cervical spine (c-spine) is an accepted screening method for injury in awake and alert blunt trauma patients. It has been assumed that intoxicated patients cannot be reliably screened due to altered mental status. This review was performed to assess the efficacy of clinical examination of the cervical spine in awake and alert intoxicated blunt trauma patients.

Methods: A retrospective 16-month review was performed on all awake and alert (GCS: 14-15) adult blunt trauma patients who underwent complete c-spine clinical examination followed by computed tomography (CT) scan of the c-spine. Patients without complaints of neck pain, tenderness, pain on range of motion or peripheral neurologic deficits were considered to have a negative c-spine examination. Clinical examination findings were documented prior to CT scan. Blood alcohol (ETOH) levels were drawn with admission labs prior to CT scan. Patients with ETOH levels greater than 80 mg/dL were considered intoxicated.

Results: 788 patients were entered in the study. 187 (24%) patients were intoxicated (ETOH Range: 81-573 mg/dL). There were 15 (8.0%) c-spine injuries in the intoxicated patient group and 47 (7.9%) in the non-intoxicated group. Three (20%) injuries were missed by clinical examination in the intoxicated patients and 13 (27%) missed in the non-intoxicated patients (p= 0.55). One intoxicated patient with a missed injury by clinical examination underwent surgical intervention but had no neurologic complication. No other missed injuries by clinical examination required surgical intervention in either group.

Conclusion: Clinical clearance of the cervical spine may be sufficient in awake and alert intoxicated patients. These findings may have implications for improvement in resource utilization. Future prospective study is warranted.
Introduction: Of the causes of abdominal wall hernias, blunt trauma is a rare etiology. Blunt traumatic hernia may be described as herniation of abdominal contents through disrupted muscle and/or fascia without a skin defect. A 63 year old male presented to the emergency room after falling backwards onto a metal horse shoe stake. At initial presentation he complained of severe left flank pain and an obvious bulging of his left flank without significant skin defect. CT scan was performed and revealed a left lateral abdominal wall hernia containing intestinal contents and 9th and 10th left rib fractures. The patient was resuscitated and eventually taken to the operating room for repair of the hernia. An incision was made directly over the bulging tissue on the left side of the abdomen and the hernia defect was immediately entered. Intestinal contents were encountered and a diaphragmatic injury was also discovered. The left diaphragm had been avulsed off of the left chest wall and the abdominal contents had herniated through the 9th and 10th rib space. The defect in the diaphragm was repaired, the rib fractures were stabilized, and lastly the abdominal wall defect was repaired. The patient did well postoperatively and has not suffered any complications. This case showcases an uncommon cause of an abdominal wall hernia, which requires a high index of suspicion for proper diagnosis.
P 229. IMPROVING THE FACILITATION OF COMPUTED TOMOGRAPHY SCANNING IN POLYTRAUMA PATIENTS AT CABELL HUNTINGTON HOSPITAL WITH PROVIDER RE-EDUCATION
Presenter: Jessica V Hale DO | Marshall University

Introduction: Computed tomography (CT) is a vital component in the evaluation of trauma patients, facilitating early diagnosis of life-threatening injuries in polytrauma patients thus allowing for rapid therapeutic intervention in the trauma patient. Rapid whole body CT scanning has been shown to improve mortality rates and lead to a better outcome for trauma patients. Our objective was to ensure trauma patients arrived to the CT scanner in under 20 minutes.

Methods: The time to CT was documented as the duration from when the patient entered the trauma bay to when the patient arrived to CT. The intervention that was implemented for this paper was CT education, which involved CT goal time (under 20 minutes) and a formal EMS time out. This practice was employed starting July 2017. Additionally, digital countdown timers were placed on the trauma bay wall in 2018, to provide physicians and various supporting staff a constant visual cue of the goal CT time. Data was collected and analyzed from January of 2017 to August of 2018. This data was further refined with use of exclusion criteria as to not skew the results of this study. Exclusion criteria included procedures performed prior to CT (chest tube placement, blood transfusions, hemostatic control, CPR/intubation, decontamination, etc.), simultaneous trauma arrivals, trauma consultations that were upgraded to alerted traumas while patient was in the ED, and combative patients. To note, February 2018 was excluded from our data due to the hospital that the study was performed at was under trauma diversion during this time period. The average time to CT prior to intervention was compared to those after education with use of T test analysis.

Results: Initially 908 alerted traumas were gathered in this study. However after exclusion criteria, 633 were analyzed and found to have a t-value of 3.2133 and a p-value of 0.00255 (p<0.05; 95% confidence interval: 17.439-19.264) making the re-education intervention statistically significant on improving time to CT. However, we found that after adding timers to the trauma bay, yielded a time to CT was further reduced to a yearly averaging roughly 15.0 minutes, with a p-value of .14, indicating that this was not a statistically significant value.

Conclusion: Through implementation of provider re-education, there was a statistically significant improvement in the time which it took trauma patients to reach the CT scanner. In contrast, placing digital countdown timers in the trauma bay failed to provide any significant improvement in this time
P 230. FRUGALITY VERTEBRAL COMPRESSION FRACTURES IN POSTMENOPAUSAL WOMAN: THE ROLE OF A FRACTURE LIAISON SERVICE PROGRAM IN REDUCING HIGH REFRACTURE RATE

Presenter: Tarik J Wasfie MD | Ascension Genesys Hospital
Wasfie T, Jackson A, Brock CM, Galovska S, Smalley M, Grundman K, Thomason, K, McCullough J

Introduction: As the aging population increases in the United States so as the prevalence of osteoporosis. Program to reduce the high incidence of fragility refracture rate (more than 50%) in such patients, particularly post-menopausal women are a priority. A fracture liaison service (FLS) program might well be the answer.

Methods: Data of 256 post-menopausal women with vertebral compression fractures treated with vertebroplasty between 2012 and 2017 were divided into two groups. Group A were patient seen between 2012 and 2014 before the establishment on the FLS program at the follow up clinic, and group B were patients seen between 2015 and 2017 who were followed in the FLS program clinic. Data collected include demographics, refracture rate, fracture risk score (FRAX), DEXA scan, serum calcium and vitamin D levels and co-morbid conditions.

Results: There were 103 post-menopausal women patients with a mean age of 80 years (SD=10.86) in group A, while group B had 153 patients with the mean age of 76 years (SD=10.78). There were no significant differences between group A and group B regarding the FRAX risk. DEXA scan, mean serum calcium and vitamin D level, however there was a significant reduction rate in group B for vertebral compression fractures (21% vs 30.5% p=0.003) and for all other refractures (15.6% vs 28.6% p=0001), when compared to group A, over the two year period of follow up.

Conclusion: Fracture Liaison Service program, when implemented, will have a beneficial effect in reducing refracture rate in postmenopausal women with osteoporotic fragility fractures.
Introduction: Thromboelastography (TEG) and traditional coagulation studies such as international normalized ratio (INR) have both been used in the setting of trauma to guide correction of coagulopathy. The degree to which each of these modalities is utilized varies by institution. Quality evidence is lacking when comparing TEG versus traditional coagulation studies in the setting of the most critically injured trauma patient. This study sought to determine which test more effectively predicted need for blood product transfusions in this clinical setting.

Methods: The most severely injured adult trauma patients were analyzed in a retrospective fashion at a single center, Level I trauma center. These patients were identified by pre-hospital risk factors including hypotension, significant neurologic decline, intubation, or gunshot to the torso. 547 patients were reviewed and excluded if there was not both an INR and TEG drawn within thirty minutes of arrival. The remaining 278 patients were stratified by whether they received blood products in the first four hours after arrival. All patients were analyzed for an abnormal INR or TEG.

Results: Of the 278 patients meeting inclusion criteria, 33.8% received blood products within four hours of arrival. Average injury severity score in the blood products cohort was 31.4. TEG was found to have an overall higher sensitivity and negative predictive value than INR (52.1% versus 10.6% and 77.5% versus 68.7% respectively). Interestingly, abnormalities in all four major TEG (activated clotting time, alpha angle, maximum amplitude, and clot kinetics) resulted in an 89% mortality rate. An abnormal ACT was found to be least sensitive when predicting transfusion requirements.

Conclusion: When compared to INR, TEG proved to be significantly more sensitive in respect to need for requiring blood product transfusions. A normal INR should not be reassuring that a clinical coagulopathy does not exist in this population.
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<td>-</td>
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<table>
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<tr>
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<td>-</td>
<td>84</td>
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<table>
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Figure 2: Results TEG versus INR
P 233. TWO CHILDREN FROM ONE TOWN WITH DISSEMINATED ADENOVIRUS REQUIRING ECMO: A CASE SERIES
Presenter: Pallavi Juneja BA | Wake Forest University School of Medicine
Juneja P, Badger AT, Pranikoff T

**Introduction:** Disseminated adenovirus (DAV) is a rare cause of potentially devastating disease in children. We describe two cases from a single town that presented to our hospital complicated by severe acute respiratory distress syndrome (ARDS) that was managed with extracorporeal life support (ECLS).

**Methods:** We reviewed the medical records for each patient and conducted a literature review of DAV in children, including regional patterns of DAV and the role of neurologic monitoring in patients on extracorporeal membrane oxygenation (ECMO) support.

**Results:** Patient 1 was a 12-month-old male, previously healthy with the exception of treatment for otitis media three weeks prior to presentation. He presented with tachypnea which gradually progressed to severe hypoxic respiratory failure requiring intubation on Day 16 of his illness and venovenous ECLS was initiated on day 18. He developed acute changes on his neurologic exam after five days on ECLS, and a CT brain was obtained within four hours showing intracranial and intraventricular hemorrhage. Neurosurgical consultation was obtained, and an extra-ventricular drain was inserted for decompression. ECLS was discontinued nine hours later for hemorrhage, and he ultimately recovered and was discharged to a pediatric rehabilitation facility on hospital day 70. Patient 2 was a 2-year-old male who had a history of recurrent otitis media and soft tissue cellulitis infections with concern for an undiagnosed immunodeficiency disorder who also presented with respiratory distress. He decompensated more rapidly, requiring intubation for respiratory failure on Day 6 of illness and initiation of ECLS on day 7. He underwent three brain CT scans while on ECLS due to changes in neurologic exam. The first two were normal, but the third demonstrated hemorrhage. Neurosurgical consultation recommended no intervention. He died on hospital day 22.

**Conclusion:** This case series highlights the challenges of caring for a pediatric patient with DAV on venovenous ECMO. We share three observations: 1) high clinical suspicion aids in early diagnosis of DAV; 2) serotyping may add to the growing epidemiologic data for adenovirus; and 3) it is helpful to have a multidisciplinary team approach, with a focus on neurological monitoring, to care for these patients. DAV leading to multisystem organ failure has been reviewed in the literature but remains rare, particularly in patients without compromised immunity. ECMO is a high-risk treatment modality. The combination of rarity and risk presents a unique clinical circumstance.
**Introduction:** Cutaneous bronchogenic cysts are a rare clinical entity described most often in the pediatric literature. They are even less common in adults. [1,3] These lesions are typically found on the sternum, scapula, neck, or skin overlying the thoracic cavity, consistent with their origin from the embryologic tracheobronchial tree. [2] Their mechanism of origin, recurrence rate, malignant potential, association with intrathoracic bronchogenic cysts, and other clinical features are not completely described in the literature. Clinical treatment and follow up recommendations have also not been described.

**Methods:** We present the case of a 41-year-old female with a sternal mass that was found to be a cutaneous bronchogenic cyst.

**Results:** A 41-year-old female with no significant past medical or surgical history presents with a 1.5cm by 1.5cm mass overlying her sternum. She complains of multiple episodes of swelling and spontaneous resolution of this mass over a few years, and one instance where the mass required incision and drainage. She denies pain or drainage from the mass. She was taken to the operating room and the mass was excised. On pathologic examination, it was identified as a cutaneous bronchogenic cyst. She recovered well postoperatively.

**Conclusion:** Bronchogenic cysts are known intrathoracic developmental anomalies of the tracheobronchial tree. [2] Cutaneous bronchogenic cysts, on the other hand, are significantly less common and most often identified in children. It is unclear whether patients with cutaneous bronchogenic cysts are more likely to have intrathoracic cysts or what their recurrence rate is after excision. Based on our review, patients suspected to have cutaneous bronchogenic cyst should be allowed to decide whether to have it excised based on the severity of symptoms, size, and distress to the patient. Regular physical exam screening by a primary care provider is sufficient after excision.
**Introduction:** Paragangliomas are rare neuroendocrine tumors that arise from the sympathetic ganglia in the thorax, retroperitoneum, or pelvis. There is a reported increased incidence of these neoplasms in cyanotic congenital heart disease patients which is thought to be related to decreased circulating oxygen within the blood. Incidence of congenital heart disease is 1% with a major defect causing cyanotic heart disease in 0.1% of live births. It is hypothesized that one tumorigenesis pathway is through the chronic hypoxia seen in cyanotic heart disease, which leads to activation of cellular pathways that contribute to the reported increased risk of these neoplasms in cyanotic heart disease patients.

**Methods:** We present an interesting case of a paraganglioma found in an adult patient with a complex medical history significant for cyanotic congenital heart disease and repair in childhood.

**Results:** A 24-year-old African American male with a past medical history significant for hypertension, syncope, diaphoresis, obstructive sleep apnea, type II diabetes, adrenal insufficiency, hypoplastic left heart syndrome status post complete repair and ascending aortic aneurysm repair presented to the Emergency Department with complaints of abdominal pain, diarrhea, emesis, and dyspnea. The patient underwent a medical work-up with CT scan which revealed a 3 cm mass in the pelvis near the right iliac artery and vein. MRI demonstrated a retroperitoneal mass abutting the right gonadal vein. Laboratory studies showed an elevated free plasma normetanephrine as well as elevated 24 hour urine normetanephrine. Subsequently, a metaiodobenzylguanidine scan further verified the diagnosis showing an avid neuroendocrine tumor corresponding to the right lower quadrant mass. The patient underwent alpha blockade followed by beta blockade prior to successful resection of the mass. Pathology reported an encapsulated extra-adrenal paraganglioma with proliferation of large cells in a nested pattern, fine delicate vascular stroma and cells with granular cytoplasm. The patient tolerated the procedure well, and was discharged home without complication.

**Conclusion:** We report a case of a paraganglioma in an adult patient with a history of hypoplastic left heart syndrome. This case adds to the growing number of cases linking neuroendocrine tumors with cyanotic congenital heart disease. Catecholamine secreting tumors do intrinsically increase the risk of undergoing any invasive surgical procedure if undiscovered; therefore, screening and awareness of this correlation could expedite detection and facilitate earlier treatment in this population.
Introduction: Over 30,000 cerebrospinal shunts are placed annually in the United States. It is estimated that 11 per 10,000 population per year develop appendicitis. A diagnosis of acute appendicitis with a localized abscess in a patient with a cerebrospinal shunt poses an interesting clinical scenario. Treatment requires broad spectrum antibiotics with appendectomy and shunt revision, repositioning of externalization.

Results: Herein is presented a case of a 73 year old male with a previously placed Ventriculoperitoneal shunt for normal pressure hydrocephalus. He subsequently developed acute appendicitis with a localized abscess. The patient was treated with a laparoscopic appendectomy and repositioning of the shunt away from the abscess cavity. The patient was discharged after a short stay in the hospital on oral antibiotics. His postoperative course was free from a shunt infection.

Conclusion: Acute appendicitis with perforation and abscess formation in the setting of an indwelling VP shunt is infrequent. This case is an example of the natural history of the process and that it can be treated with laparoscopic appendectomy and repositioning of the shunt successfully.
P 237. SEVERE FAILURE TO THRIVE IN INFANT WITH CONGENITAL HIATAL HERNIA
Presenter: Krystal Ortiz MD | University of Puerto Rico
Zequeira J, Ortiz K, Del Valle A

Introduction: Failure to thrive in infants is most often caused due to insufficient caloric intake or gastroesophageal reflux. Both of these can be readily treated with nutritional supplementation, non-medical anti-reflux measures, or acid-suppressing medication. At times there could be genetic, metabolic or a mechanical problems that might contribute to the patient's lack of weight gain. In rare instances the cause of the patient's failure to thrive could be gastroesophageal reflux associated to a congenital hiatal hernia.

Methods: This is the case of a 3.2 kg, 57 week post conceptual age term infant who had severe failure to thrive and was being managed by his pediatrician with caloric supplementation. He was consulted to the pediatric gastroenterologist after the patient failed to gain weight despite all the measures undertaken by the pediatrician. As part of the work up the patient had an upper gastrointestinal contrast study that showed a hiatal hernia with a supradiaphragmatic GE junction along with a segment of the fundus and no intestinal rotational anomalies. The patient had a successful laparoscopic hiatal hernia repair with a Nissen fundoplication despite his small size and is now thriving.

Results: Congenital hiatal hernias are quite rare, reason for which there are no strong recommendations as to how they should be treated. It can be extrapolated from small case series and other retrospective cohorts that plicating the esophagus with the crus and performing the least possible amount of crural dissection might have a role in decreasing the risk of hernia recurrence. It is also recommended that all pediatric patients who have concomitant reflux should get an antireflux procedure performed with the hernia repair. Age or size should not be a contraindication for attempting laparoscopic repair.

Conclusion: Congenital hiatal hernias are a rare cause of infant failure to thrive. Laparoscopic closure can be performed safely and successfully in small infants as long as the surgeon feels comfortable with the small work space and foregut anatomy.
Introduction: Mesenteric cysts are benign congenital cysts with a prevalence of 1 per 20,000 children. They are typically discovered incidentally during abdominal explorations for other reasons and only 25% are diagnosed before the age of 10. Mesenteric cysts with chylous ascites are rare and only case reports exist describing them. When feasible, mesenteric cysts should be excised to prevent recurrence, bowel obstruction or volvulus and resulting complications. We present a unique case of an infant with micro and macro chylous mesenteric cysts with signs discovered on prenatal ultrasound and managed with partial excision of the most prominent cysts. The discovery of possible bowel obstruction on prenatal ultrasound, raised concern for mesenteric cyst early, amongst other obstructive etiologies. Although initially asymptomatic with normal abdominal x-ray, and discharged on day of life two, the parents were taught how to recognize symptoms of bowel obstruction and he was closely followed. He presented at one month with obstructive symptoms, was found to have large mesenteric cystic structures on ultrasound and was immediately taken to the operating room. Due to the extensive number of cysts and intimate involvement of the largest cyst with the superior mesenteric artery, he was treated with partial excision and observation since resection or enucleation were not possible.
Introduction: We present the case of a 6 year old patient with a PRETEXT 4 multifocal hepatoblastoma (HB). The patient presented with bilateral lung metastases at the time of presentation. Initial alpha fetoprotein (AFP) > 100,000 ng/ml and open biopsy confirmed HB. The patient underwent induction chemotherapy per SIOPEL4 with induction with 3 cycles of cisplatin/doxorubicin. AFP decreased to 1470 ng/ml but pulmonary metastatic disease persisted. In order to pursue future liver transplantation the patient underwent bilateral open thoracotomy with indocyanine green (ICG) guided pulmonary metastectomy. ICG (0.5 mg/kg) was injected intravenously 48 hours prior to surgery. Preoperatively, computed tomography (CT) imaging identified 3 nodules in the left lung and 3 nodules in the right lung. ICG fluorescence confirmed these 3 lesions on the left lung and identified 2 more lesions. All 5 ICG positive nodules of the left lung were resected, and 4 nodules were metastatic tumor. For the right lung, the 3 nodules seen on CT and 4 additional nodules were identified with ICG fluorescence. A total of 7 nodules were resected in the right lung, 6 were positive for metastatic tumor. The pathology also revealed predominantly viable metastatic deposits with vascular invasion. Consolidation chemotherapy with carboplatin, etoposide, and doxorubicin was started after surgery but AFP continued to rise. Therapy was changed to irinotecan, carboplatin, and etoposide however AFP did not decrease. He was deemed not to be a transplant candidate and the decision was made to proceed with ICG guided extreme liver resection. He again received intravenous ICG injection 48 hours preoperatively. He underwent a right trisectionectomy with removal of sections 4A, 4B, 5, 6, and 8. ICG fluorescence was detected in all resected segments and intraoperative ultrasound confirmed lesions seen by preoperative MRI. Real-time ICG visualization was then used for real-time dissection of the segment 2/3 lesion that abutted the left hepatic vein and it was successfully resected in its entirety. The patient tolerated the procedure well and was discharged home without any post-operative complications. On followup the patient's AFP is now 55 with no evidence of lung metastasis. This case highlights the use of real time ICG fluorescence of both lung and liver hepatoblastoma as an adjunct to intraoperative ultrasound and conventional imaging.
Introduction: After primary repair of tracheoesophageal fistula (TEF) and esophageal atresia (EA) the incidence of TEF recurrence is 5-10%. The rate of a repeated TEF recurrence is unknown but reports of the number of recurrent TEFs per patient range from 1 to 12. Due to difficulties in diagnosis, care, and intervention the management and surgical repair of recurrent TEF remains a significant challenge to pediatric surgeons. For re-do TEF/EA surgery, it is common to interpose a vascularized flap of tissue between the esophageal anastomosis and tracheal suture line to prevent future recurrences. If a patient fails surgical repair, he/she will require esophageal reconstruction/replacement. We report on a term female infant with TEF and EA who underwent primary operative repair that failed with three TEF recurrences, which all presented with feeding and respiratory issues.

Results: Recurrences were managed with re-operation and an inter-positional flap of pleura and a flap of intercostal muscle on two separate occasions. The third recurrence was managed with complete dissection of the esophagus prior to division of the fistula and the interposition of an omental flap between the esophageal and tracheal repair. To date (73 months post final repair) the patient has had no evidence of TEF recurrence, avoided esophageal reconstruction, and has only needed periodic esophageal dilation.

Conclusion: We present the first American documented use of a viable omental flap to prevent subsequent TEF recurrences in a pediatric patient with the longest documented followup period to date. The omentum’s plasticity, ability to fight infections, and to repair tissue are what help it safeguard anastomosis across surgical disciplines and provide our patient with definitive management. Complete esophageal mobilization and an inter-positional omental flap may be the best solution for complex recurrent TEFs in the pediatric population. Presently there is a lack of data to support the superiority of one tissue type in preventing recurrence of TEF; thus, the omentum provides a good preventative option for refractory and recurrent TEF/EA.
Introduction: Esophageal stricture after caustic ingestion is the most common indication for esophagectomy in children. First-line treatment for esophageal stricture is balloon dilation, which is frequently performed within a few weeks of injury. Operative management is indicated for caustic strictures that are resistant to dilation. Reasons for dilation failure include multiple, extensive strictures and marked irregularity of the esophagus. In these cases, surgical treatment becomes the only therapeutic option. Pediatric experience with minimally invasive esophagectomy is limited and involves thorascopic dissection with laparotomy for gastric mobilization.

Methods: We present a pediatric patient who underwent a minimally invasive esophagectomy due to esophageal stricture resistant to dilatation after caustic ingestion.

Results: The patient is a 12-year-old male who presented to the Emergency Department after accidental caustic ingestion of an alkaline substance. Initial esophagogastroduodenoscopy (EGD) demonstrated circumferential esophageal injury. A laparoscopic gastrostomy tube was placed to allow enteral nutrition during esophageal healing. One month after initial presentation, an esophogram revealed multi-segment irregularity and strictures. The patient underwent a total of seven endoscopic interventions with balloon dilation over a span of four months. The decision was made to proceed with total esophagectomy and gastric conduit reconstruction once it was felt strictures were recalcitrant to endoscopic therapy. A jejunostomy was created for post-operative feeding. The patient had an uncomplicated post-operative course. Since discharge, the patient has tolerated oral intake, no longer requires supplemental enteral feeding, and reports a marked improvement in quality of life.

Conclusion: This case report demonstrates the efficacy and safety of minimally invasive esophageal reconstruction in pediatric patients after resistant esophageal stricture. The timing of esophagectomy and reconstruction technique selection remain controversial aspects of the management of esophageal stricture due to caustic ingestion. Early operative intervention with reestablishment of oral feedings has shown advantages over repeated dilation and tube feeds.
**P 242. OVARIAN LESIONS IN PEDIATRIC PATIENTS: A HISPANIC PERSPECTIVE**  
**Presenter:** Sofia Marcano MD | University of Puerto Rico  
Zequeira J, Marcano S, Longoria T

**Introduction:** Surgical treatment of ovarian disease within the pediatric population has been scarcely described within the United States. Most ovarian masses identified in pediatric patients are benign. This study aims to depict the most common ovarian pathologies within a hispanic population and if any factors could aid into properly classifying these preoperatively.

**Methods:** Retrospective cohort study of patients younger than 18 years old who underwent surgical intervention for ovarian disease from July 2012 to June 2019. These were stratified into non-neoplastic and neoplastic conditions. Neoplastic diseases were subsequently categorized into benign or malignant. SPSS Statistical Software was used for analysis of categorical and numerical variables. A p-value < 0.05 was used to establish statistical significance.

**Results:** 44 patients met our inclusion criteria. The average age was 9.9 years old, mass size 8.82 cm, and mass weight 398.72 g. An open approach was performed in 68.18% (30/44) of patients, while the remaining 31.82% (14/44) underwent a laparoscopic approach. The different pathologies were divided into non-neoplastic 40.91% (18/44) and neoplastic 59.09% (26/44). The neoplastic category was stratified into benign and malignant pathology, 69.23% (18/26) and 30.77% (8/26) respectively. Older age patients were significantly more likely to have a malignant pathology compared to a benign pathology, 11.25 vs 9.7 years old respectively.

**Conclusion:** Prevalence of benign ovarian pathologies are comparable to other studies performed in the American population. However, ovarian malignancies could be more prevalent in hispanic pediatric patients older than 10.
Introduction: Ventriculoperitoneal shunting is the most frequently utilized therapy for hydrocephalus. Complications are common with the overall incidence of 20-40%. Abdominal CSF pseudocyst is a rare finding in the adult population and can necessitate revision of the shunt. We present a case of a 27 year old male with a history of cerebral palsy with a ventriculoperitoneal shunt in place with multiple previous revisions. He developed a large abdominal pseudocyst that resulted in a partial small bowel obstruction. The shunt was functional and had no signs of infection. We attempted an open revision of the shunt but found his adhesive disease to preclude repositioning. Postoperatively the pseudocyst resulted again in a partial obstruction. The cyst was aspirated to alleviate the obstruction and plans were made for placement of a ventriculopleural shunt. However, the patient developed an aspiration pneumonia and parapneumonic effusion precluding placement. The patient ultimately underwent the placement of a ventriculointeratrial shunt followed by aspiration of the pseudocyst with resolution of his symptoms. This case illustrates the stepwise management of the complicated abdominal pseudocyst which is discussed in detail. In conclusion, pseudocysts are a rare finding in the adult population. Treatment can externalization, aspiration, cyst repositioning and removal and requires full evaluation of active infection, function, symptoms, and anatomy of the patient.
P 244. WANDERING SPLEEN WITH SPLENIC TORSION AND PANCREATITIS: SPLEEN PRESERVING MANAGEMENT
Presenter: Alessandra Piscina | Westchester Medical Center
Safaya A, Piscina A, Con J

Introduction: A wandering spleen is a rare clinical entity with an incidence of less than 0.2% in which the spleen has moved from its anatomic position in the left upper quadrant due to ligamentous laxity or absence. Mobility around the vascular pedicle can lead to an increased risk for torsion and vascular compromise. Clinical manifestations of splenic torsion may vary from mild abdominal discomfort to abdominal emergency with splenic infarction. We present a case of a patient presenting with signs of splenic torsion and acute pancreatitis treated with successful spleen preserving operative management.

Methods: 25 year-old male presented to the hospital with acute onset left lower quadrant pain and tenderness. Serum lipase was elevated at 524 U/L. Computed tomography revealed an enlarged spleen in the left lower quadrant with distortion in the splenic hilum and the distal pancreas appearing twisted around the splenic vein. The spleen also showed a small area on the posterior aspect compatible with an infarct.

Results: A diagnosis of splenic torsion with acute pancreatitis was made. The patient underwent an emergent exploratory laparotomy that revealed an enlarged spleen in the left lower quadrant with a twisted redundant hilar pedicle and floppy tissue connecting the spleen to the abdominal wall at the left upper quadrant. The spleen was detorsed. The splenic surface was smooth, with no signs of gross infarction and a palpable splenic artery in the hilum. We performed a splenopexy wrapping the spleen with an absorbable mesh and then anchoring the mesh to the left upper quadrant forming a “sling”. The patient progressed well and was discharged home on post-operative day 2 with normal serum lipase level of 32 U/L. He was seen on his first month follow-up and was found to be doing well and asymptomatic.

Conclusion: In the setting of torsion around the vascular pedicle at the splenic hilum- the tail of the pancreas, also a part of the hilum, may get inflamed leading to symptoms and signs of acute pancreatitis. To preserve splenic function spleen salvage can be implemented in all patients with a viable spleen without any signs of extensive infarction and necrosis. Splenectomy should be reserved for those with signs of extensive splenic infarction on laparotomy or laparoscopy. Splenoraphy with absorbable mesh can be safely performed in young patients where spleen salvage is preferred.
Introduction: Mammary type myofibroblastoma (MTMF) is a rare, benign mesenchymal neoplasm. We report two new cases of extra-mammary type myofibroblastoma of the inguinal region in patients managed at our institution in the same year. The English literature describes few cases of this type of tumor. Two new reports provide us an opportunity to highlight characteristics of this growth, raise awareness of such a rare neoplasm, and review the clinical management of extra-mammary type myofibroblastoma of the inguinal region.

Case Reports: Our first patient is a 33-year-old male referred for evaluation of a rapidly enlarging inguinal mass. Our second patient is a 37-year-old male who presented with groin pain concerning for an inguinal hernia. Diagnostic work up included computed tomography, magnetic resonance imaging, and imaging-guided biopsy. Without definitive oncologic diagnoses, wide excision of the masses was recommended. Pathologic evaluation identified extra-MTMF, and no further intervention was required after excision.

Conclusion: We would like to present these cases to draw the attention of clinicians to extra-MTMF as a rare possibility in the differential diagnosis of a soft tissue mass of the inguinal region. We recommend obtaining imaging studies before biopsy in order to define anatomic location, tumor extent, and tumor relationship to nearby structures. Surgical resection is appropriate for definitive treatment of this benign mesenchymal neoplasm. Regardless of the histological appearance or anatomic location, extra-MTMF has virtually no potential for recurrence or metastasis, even with positive excision margins. Our cases illustrate our institution’s management of extra-MTMF leading to optimal patient outcomes.
Introduction: Crohn’s disease is a primarily a disease of the intestinal tract that manifests with diarrhea, weight loss, and abdominal pain. There is a propensity for intestinal fistula formation. Necrotizing soft tissue infection can be a rare initial presentation of underlying Crohn’s disease, especially in the absence of any of the abdominal signs and symptoms that would typically necessitate workup for Inflammatory Bowel Disease (IBD). A high index of suspicion must be maintained in order to establish a diagnosis, initiate treatment, and prevent morbidity.

Case Presentation: Here, we present a 34 year old African American male patient with no significant medical history who presented with right thigh necrotizing fasciitis originating from retroperitoneal perforation of the cecum secondary to Crohn’s ileocolitis. After emergent colectomy and right thigh debridement, limb preservation was achieved through intensive and prolonged medical and surgical therapy. This required a multidisciplinary approach, including the efforts of the Acute Care surgeons, Burn surgeons, Orthopedic surgeons, Gastroenterologists, and Hyperbaric specialists. The patient survived his initial life-threatening disease and retains a functional limb, though his recovery is ongoing and remains a complex process, as he ultimately manifested colopopliteal and perianal Crohn’s fistulas.

Conclusion: In cases of unexplained necrotizing fasciitis with no inciting event nor overtly identifiable source, early intervention and high suspicion for intraabdominal sources can ultimately lead to life saving and limb-saving source control.
Introduction: Much has been written from the social science perspective surrounding surgeons stress and burn out. The literature is sparse in reference to scientific investigations of the hemodynamic effect of that stress. This prospective clinical study quantifies the physiologic impact of performing surgery upon the surgeon.

Methods: Monitoring devices were affixed to the surgeon (n=42), and recordings of physiologic variables were achieved every 30 minutes. Qualifying cases were projected as being greater than two hours with a baseline pre-operative measurement obtained. Variables recorded included systolic blood pressure (SBP), heart rate (HR), rate pressure product (RPP), oxygen saturation (O2 sat), and end tidal carbon dioxide (CO2).

Results: Differences in baseline minimum and maximum values (mean ± SD) were statistically significant for SBP, HR, O2 sat, and CO2 using Student’s t-test. All physiology measures increased from the start of surgery except there was no difference in RPP.

Conclusion: The practice of surgery is considered demanding in reference to training and lifestyle in comparison to many other medical specialties. This data is among the first to demonstrate the negative physiological impact of surgery upon the metabolic demand of the surgeon. The longitudinal implications of increased physiologic demand over time may have cardiovascular and cerebrovascular consequences.

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Primary Omental Torsion: A Rare Cause of Acute Abdominal Pain

Presenter: Benjamin E Hart DO | Henry Ford Health System
Hart BE, Rountree KM, Prakash SN

Introduction: Omental torsion is a rarely encountered condition wherein the greater omentum twists around its long axis resulting in venous congestion and impaired blood supply. The resulting infarction can be a cause of acute abdominal pain. Most reports of omental torsion occur secondary to another underlying abdominal pathology such as tumors, cysts, or hernias; however, primary omental torsion occurs without association to any other abdominal pathology. We present the case of a 76 year old male with primary omental torsion and infarction managed with partial omentectomy following failure of conservative management.
Figure 1: Intraoperative photo with head superior and feet inferior. The hepatic flexure of colon is visible within the midline laparotomy with the pick up indicating the point of omental torsion. The infarcted omentum is indicated by the arrow.
Introduction: A 37 year old morbidly obese African American female presented 9 days post-laparoscopic sleeve gastrectomy with extensive deep venous thrombosis of the portal, splenic, and superior mesenteric veins, successfully treated with systemic anticoagulation.

Our patient presented with abdominal pain that she described as central, dull, and nonradiating, with associated vomiting. Computed tomography scan of the abdomen and pelvis strongly suggested extensive portal vein thrombosis with involvement of the superior mesenteric and splenic veins. Conservative anticoagulation was presented as the most favorable therapeutic option. The patient received therapeutic enoxaparin, during which she was followed closely in the intensive care unit for 3 days. The patient was discharged on hospital day 4 on daily enoxaparin therapy. A rare complication of bariatric surgery, porto-mesenteric venous thrombosis has been found to occur following laparoscopic sleeve gastrectomy more so than after other bariatric procedures. Multiple suggestions have been offered to explain the pathogenesis of porto-mesenteric venous thrombosis preferentially following laparoscopic sleeve gastrectomy. These include (1) splenic ischemia from ligation of the short gastric vessels, (2) endothelial damage from thermal effect on the left gastroepiploic vessel during skeletonization of the greater curvature, and (3) hepato-splanchnic congestion from liver retraction.

The treatment of porto-mesenteric venous thrombosis in our patient required careful consideration of three management options: conservative anticoagulation therapy, catheter-directed thrombolysis, and thrombectomy. Without prompt initial anticoagulation, risks include intestinal ischemia, infarction, and ultimately necrosis and/or acute pylephlebitis. Asymptomatic portal vein thrombosis may remain undetected until it becomes chronic and causes portal hypertension, as evidenced by the development of venous collaterals, or “cavernous portal transformation.” Thrombectomy is generally reserved for the most severe cases of ischemia.

The risk of deep vein thrombosis continues well into the postoperative period for some bariatric patients. Our patient developed this complication despite the use of standard pre-operative unfractionated heparin and post-operative enoxaparin during her in-hospital recovery. Extended thromboprophylaxis has become increasingly used for bariatric patients believed to be at considerable risk. There is minimal level I evidence to support screening risk factors for those without a personal or family history of previous thrombotic event, or to recommend a dose or duration of therapy for continuing prophylactic anticoagulation post-discharge. As the symptoms of porto-mesenteric venous thrombosis are nonspecific, a high index of suspicion is necessary for diagnosis during the extended postoperative period. Our case highlights the need for prospective controlled trials to identify those patients who would benefit most from extended thromboprophylaxis.
Introduction: Herniation of the ovary is extremely rare, especially without known ovarian pathology or pre-existing abdominal wall herniation. We present a very interesting case due to such a rare clinical finding. Our patient was successfully treated with an operation, and is currently doing well following surgery. In this paper, we intend to discuss the case, and provide a pertinent literature review for similar problems and various management strategies.

Case Report: We present the case of a 33-year-old female with acute appendicitis and no previous evidence of ovarian pathology who was found to have a full thickness herniation of the right ovary through the mesoappendix. The ovary was dissected free during the operation and reduced through the mesentery. It appeared viable following reduction and was left in place while the appendectomy was completed. To the best of our knowledge, there have been no case reports on this anatomical atypia discovered previously.

Discussion and Conclusion: Herniation of the ovary is a rare phenomenon – especially in the absence of underlying ovarian pathology. It has most frequently been implicated in young females as a result of congenital anomalies of the genitourinary tract, or as a sequela of inflammation or malignancy. While rare, the most common site of ovarian herniation is the inguinal canal. This can present as a typical inguinal hernia or incidental finding on imaging. Ovarian hernias are even more rare in adulthood and infrequently occur without an underlying pathology such as an ovarian cyst or malignancy.
P 252. POSTERIOR ARM FASCIO-CUTANEOUS FLAP FOR AXILLARY DEFECT CREATED AFTER RESECTION OF HIDRADENITIS SUPPURITIVA: A SINGLE INSTITUTION CASE SERIES
Presenter: Daniel Garcia MD | Hackensack Meridian Palisades Medical Center
Garcia DA, Ponamgi S, Onayemi AO, Davis JM

Introduction: Hidradenitis suppurativa with its chronic recurrence, multiple ages of onset, and complex treatment makes it a socially taxing and crippling condition. Extensive cases require wide excision of lesions and skin grafting. Local perforator based fascio-cutaneous flaps have been described in the previous literature. Current techniques have a high incidence of secondary infection and recurrence of the disease. We describe our 35-year experience treating six patients with extensive disease who had posterior upper arm fascio-cutaneous flaps with primary closure of the donor site.

Methods: Patients with extensive diseases had an intervention with a posterior upper arm fascio-cutaneous flap with primary closure of the donor site. The inclusion criteria were an extensive disease with prior medical treatment in the axilla. No exclusion was made for comorbidities, BMI, sex, age, recurrence or time of disease.

Results: 6 patients received intervention using this technique (N=6). 0 out of 6 patients lost the flap. Minor suture line breakdown was allowed to heal by second intention. No wound dehiscence was noted. During the follow-up period, no flaps had a secondary infection. All patients reported a return of full functional status at 4 weeks after surgery, there was no loss of range of motion at the shoulder. Patients were satisfied with the cosmetic aspect of this technique.

Conclusion: Reconstruction of axillary defects following wide resection for extensive chronic recurrent hidradenitis using a posterior upper arm fascia-cutaneous flap is a valuable tool for the treatment of this difficult problem. This technique is safe for the excision of extensive disease, there were minor complications after the procedure, with no failures. The technique has a high success rate but due to the small number of patients, more data is required to assess the viability of this technique as a widespread treatment for extensive disease.
**P 253. GASTROGASTRIC FISTULA FOLLOWING RETROCOLIC ROUX-EN-Y GASTRIC BYPASS: A RARE COMPLICATION**

Presenter: Daniel F Verna MD | Greenville Health System
Scott J, Verna D

**Introduction:** In the last 5 years, the number of bariatric procedures has increased. In 2017 alone, approximately 230,000 bariatric surgeries were performed. The laparoscopic Roux-en-y gastric bypass (LRYGB) is the second most common weight loss surgery performed in the United States, accounting for 18% of the total bariatric procedures. The retrocolic LRYGB involves creating a small gastric pouch which is then anastomosed to a limb of jejunum coursing under the transverse colon, through the colonic messengers, thereby bypassing anywhere from 75 to 150 cm of small bowel. A rare complication of this procedure, a gastrogastric fistula, can occur when marginal ulceration near the gastrojejunal anastomosis leads to erosion into the remnant, disconnected stomach.

In this case report, we present a 53 year old morbidly obese male with a history of a retrocolic LRYGB performed in 2013 at an outside hospital, who presented with epigastric pain, reflux and severe halitosis of a few months duration. An esophagogastrroduodenoscopy was performed in order to evaluate for possible hiatal hernia or marginal ulceration Instead, endoscopy revealed a large gastrogastric fistula. Gastrogastric fistulas can present symptomatically in patients with recalcitrant ulcers or weight regain. This symptomatic patient was taken to the operating room where he underwent a partial remnant gastrectomy and gastrogastric fistula take down performed laparoscopically. Due to the retrocolic construction, the Roux limb coursed underneath the stomach. Repair of this unusual complication involves mobilization of the remnant stomach, dividing the remnant stomach at the incisura, and sequestering the gastric pouch from the remnant by dividing the abnormal fistulous connection.

Although rare, the gastrogastric fistula can be managed laparoscopically with proper planning and can restore the normal post-bypass anatomy found after primary operations.
Introduction: A 75 year old female with a hx of peptic ulcer disease, who had a previous subtotal gastrectomy with a Billroth II reconstruction for early gastric cancer 7 years prior presented with a 5 day history of epigastric and RUQ pain. She had stable vital signs and normal lab values. Her abdominal exam was notable for RUQ tenderness, but no signs of peritonitis. A CT scan revealed 2 partially calcified masses in the RUQ, one of which was obstructing the afferent limb of the BII and causing proximal dilation. The radiologists were concerned that the calculus were the result of a choleduodenal fistula, but there was not any pneumobilia, which is classically seen. She underwent upper endoscopy at her local hospital and a large calculus was found at the gastrojejunostomy. Endoscopic attempts at removal were unsuccessful and patient was transferred to a hospital with advanced GI services and surgical services. During the time of transfer, patient had developed a new symptom of persistent burping. Based on her outside records and imaging, the stones were not amenable to endoscopic management. There was concern that if this was not urgently treated, there was a risk of bowel ischemia or perforation. After explaining the unusual findings to the patient and family, the patient was taken to the operating room for exploratory laparotomy and removal of these stones.

Abdominal exploration revealed a large stone in the proximal jejunum approximately 50 cm distal to the gastrojejunostomy and a second palpable stone in the duodenum. The 5cm jejunal stone was mobile, but obstructing the small bowel causing dilation and inflammation. The duodenal stone was not mobile and could not be milked distally out of the duodenum. A Kocher maneuver was performed to expose the length of the duodenum and a large duodenal diverticulum containing the calculus was noted. The diverticulum and stone were 4cm in diameter, the neck of the diverticulum was 1.5cm. The diverticulum was opened to remove the stone, and a diverticulectomy was performed to repair the duodenum. The obstructing jejunal stone was milked proximally into the stomach. A 3cm gastrotomy was made to remove this stone. After the gastrotomy was closed, the gallbladder was extensively inspected and found to be normal in appearance without any gallstones present. Post-operatively, the patient progressed well without any complications. She was discharged on POD 10 after slow reinitiation of diet and return of bowel function.
Introduction: Intestinal injuries from motor vehicle accidents are often managed in the acute setting after evidence of perforation, peritonitis, or clinical instability due to hemorrhage. Within the scope of General Surgery, we are comfortable with managing these straightforward cases; however, chronic, ill-defined symptoms are often not aggressively worked up, and may be referred to other specialties. Delayed presentations such as ours, most often due to small bowel injury with stricture, have been reported in case series or single case reports, but the actual number of affected patients remains unknown as the symptoms can mimic partial small bowel obstruction or fall into the more vague complaint of postprandial pain.

Our patient is a 27 year old male who presented to a Gastroenterology clinic with intolerance to certain foods beginning after a motor vehicle accident two years prior. He was a restrained backseat passenger and evaluation in the emergency department revealed significant abdominal wall bruising and a small volume of free fluid on CT scan. He reported his blunt abdominal injury was managed non-operatively, seemingly without complication. Approximately 6-12 months after the accident, he began experiencing colicky abdominal pain occurring within 1-2 hours after eating, and worse with eating green vegetables. These symptoms were intermittent, but worsened over the following year. Initial workup was unrevealing and he was prescribed Linzess with only mild improvement. Further evaluation would ultimately require capsule endoscopy followed by double balloon endoscopy. Surprisingly, a stricture was suspected with capsule study and confirmed, biopsied, and tattooed with DBE. We met the patient in clinic to discuss surgical resection of the stricture once biopsy results had ruled out inflammatory bowel disease. He underwent laparoscopic small bowel resection without complication and was discharged on post-operative day three. Intra-operative findings revealed the tattooed segment with a clear transition point, along with an adherent tongue of omentum. Final pathology showed lymphoid aggregates which were negative for neoplastic process on flow cytometry. At six month follow up the patient reported complete resolution of his symptoms and is able to eat an unrestricted diet.
P 256. GOBLET CELL CARCINOID TUMORS DURING EMERGENT GENERAL SURGERY
Presenter: Denis Jimenez MD | Spartanburg Regional Healthcare System
Jimenez DS, Orr RK, Thurston BC, Mount MG, Mentzer CJ

Introduction: Goblet cell carcinoid is an uncommon clinical entity with an aggressive course and histologic features of both adenocarcinoma and carcinoid tumors. Presentation is highly variable and early aggressive treatment is paramount. Three cases incidentally discovered during emergent procedures are discussed, highlighting the inconsistency of presentation and challenges associated with management of these uncommon tumors.

Case series: We present three cases of goblet cell carcinoid; two presented as acute appendicitis and one as acute intestinal obstruction. All patients were initially managed as surgical emergencies with diagnosis made incidentally in the post operative period. Further management was dictated by tumor grade with appropriate oncologic resection and adjuvant chemotherapy.

Discussion: Goblet cell carcinoid tumors found incidentally during emergency procedures require attentive follow up. As the behavior of these tumors is often unclear and are associated with high rates of recurrence, a multidisciplinary approach for both surgical and medical management is required.
Introduction: Illicit drug use is increasing with an estimated 964,000 people in the United States having a methamphetamine use disorder in 2017 compared to 684,000 people in 2016(1). One recent finding related to methamphetamine use is the association between methamphetamine use and peptic ulcer disease(2,3). We report a case of a patient who presented with symptoms concerning for esophageal perforation who was found to have a gastric methamphetamine granuloma.

Methods: A 54-year-old male presented with one day of chest pain, chills, fever, and lethargy. He reported choking on chicken the evening before presentation with a subsequent episode of emesis. He continued to have epigastric pain and chest pressure with globus pharyngeus and further vomiting produced small amounts of mucus and blood. His past medical history included hepatitis B and C, hypertension, alcohol use, tobacco use, and amphetamine use. His medications included bisoprolol-hydrochlorothiazide and citalopram. On presentation to the Emergency Department, the patient had a temperature of 101.9° F and leukocytosis of 33.4 K/microL. His initial blood pressure was 93/58, but he became normotensive after intravenous fluid administration. On exam, he was ill-appearing, but his abdomen was soft and minimally tender. A CT angiogram of the chest demonstrated distal esophageal and gastric wall thickening with no pneumoperitoneum or pneumomediastinum. Due to concern for Mallory Weiss tear or esophageal perforation, an esophagram was obtained, which showed no evidence of perforation.

An esophagogastroduodenoscopy was performed to evaluate the esophageal and gastric thickening. This demonstrated a mass concerning for neoplasm with an associated ulcer in the proximal stomach (Figure 1A). Biopsies were taken which demonstrated mucosal ulceration with birefringent crystalline material consistent with methamphetamine on the mucosa and admixed within fibrinopurulent exudate (Figure 1B). No neoplastic process was identified.

Results: The patient was started on pantoprazole for gastric ulcer treatment and was discharged. At his follow-up appointment, the patient endorsed methamphetamine use, but stopped in order to undergo further assessment. Six weeks following his initial presentation, repeat endoscopy showed a stellate scar at the site of the previous ulceration without evidence of tumor (Figure 1C).

Conclusion: With the increase in methamphetamine use in the United States, it can be predicted that incidences of medical complications associated with methamphetamine will also rise. This suggests there will be an increase in cases such as this patient who presented with symptoms of possible esophageal perforation and was found to have a gastric methamphetamine granuloma and peptic ulcer.
Figure 1: A. Gastric mass (lesser curve near gastroesophageal junction) B. H&E slide of biopsy showing mildly birefringent crystals (arrow) consistent with methamphetamine granuloma C. Stellate scar seen during endoscopy 6 weeks after initial EGD
P 258. PREDICTORS OF OPERATIVE INTERVENTION IN PATIENTS WITH LACTIC ACIDOSIS, A COHORT STUDY
Presenter: Eliza M Slama MD, MPH | St. Agnes Hospital
Slama EM, Bankhead-Kendall B, Parker V, Isanaka P, Kieninger A, Braddock A

Introduction: Lactate levels in clinical practice are often used as a quantitative indicator for the severity of hypoperfusion and the responsiveness to therapeutic interventions. In the hospital acute care setting, lactic acidosis combined with the appropriate clinical exam signs warrant surgical evaluation. The purpose of our study was to evaluate all surgical consults for lactic acidosis in a single community hospital to identify what co-factors were most often predictive of the need for surgical management and operative intervention.

Methods: A retrospective chart review within a 5-year period was conducted on all consultations to general surgery in which patients additionally had lactic acidosis, defined as >2mEq. Within this population, various subjective and objective parameters were evaluated. Final analysis compared these parameters between patients with lactic acidosis who underwent surgical intervention and those who did not require operative intervention.

Results: Within the 5-year period, 432 patients met our criteria of a surgical consult placed for lactic acidosis. Final results from the highest quality statistical model showed significant variables as diffuse tenderness on physical exam (p-value=0.0010, OR=2.77), and focal tenderness on physical exam (p-value=0.0440, OR=1.76). The presence of peritoneal signs (p-value=0.0521, OR=2.02), resulted in operative intervention twice as often in patients with lactic acidosis.

Conclusion: To better appropriate healthcare costs, measures need to be taken to ensure resources are being utilized properly. In patients with lactic acidosis, one should go “back to the basics” with the physical examination to determine which patients truly need a surgical consultation.
Introduction: The use of the omentum for soft tissue reconstruction and support was first detailed in 1903 when omentum was utilized as reinforcement for intestinal anastomosis. Over the last 100 years the omentum’s utilization has grown rapidly. We present an interesting case of a 26 year old patient who suffered from resistant chronic dermatitis of the scalp failing multiple therapeutic modalities. He underwent a successful Total Scalp Excision and Reconstruction Using a Free Omental Flap. The first stage of the procedure was total scalp resection. Resection of the soft tissue left exposed bone. Over the next 10 days the patient underwent three operative wound debridement and negative pressure device changes. This was followed by omental harvest based on the right gastroepiploic artery and vein and transfer for coverage of the skull utilizing the superficial temporal artery and veins recipient vessels. The patient was observed for the next 2 weeks to allow granulation of the flap, with 2 wound vacuum changes over this period of time. He then underwent split thickness skin grafting, harvested from the posterior thighs bilaterally for coverage of the omental flap. Advantages of the omental free flap for scalp reconstruction include a long vascular pedicle, reliable connection to the recipient vessels in the superficial temporal arteries and veins, and flap harvest that can be done in a minimally invasive manner.
Introduction: Our goal was to review anatomical landmarks in that would allow safe dissection in addition to the critical view of safety. In this study, we propose to use new surgical technology along with literature reviews to re-introduce two “new” intraoperative anatomical landmarks originally described by Calot in 1891, the Gallbladder-Cystic Duct Plexus (GCDP) and Calot’s arteries, while proposing the use of Calot’s arteries as a landmark for safe transection of the cystic duct.

Methods: A literature review was performed to identify anatomical landmarks prior to establishment of the Critical View of Safety. We also used in tandem with recommended techniques from literature, the use of Robotic Firefly and identification of “Calot's Plexus” to determine how closely we could get to the gallbladder/cystic duct junction with reproducible accuracy.

Results: Using both the Robotic Firefly, Critical View of Safety, and identification of Calot’s plexus, we were able to reproduce proximity of the gallbladder/cystic duct junction.

Conclusion: When looking back at Calot’s original description of the hepatobiliary triangle, we obtain a good groundwork for the anatomical commonalities of the gallbladder. With further dissection through his thesis, we find structures that have failed to be expanded upon. Calot illustrates his thought of what the normal hepatobiliary triangle should look like in. We see a cystic duct and cystic artery arising at almost right angles from their parent structures (right hepatic artery and common hepatic duct respectively) to navigate to the gallbladder, forming the triangle of Calot. It can be noted that the first branches off the cystic artery commonly traverse to the cystic duct close to the infundibulum. Rashid et al. felt that these arteries “entered the cystic duct midway between cystic duct common hepatic duct junction and the cystic duct gallbladder junction to form an “H- configuration.” Further examination revealed this “H” branch arterial configuration to be present in up to 91% of patients and can be used to approximate the gallbladder cystic duct junction for safe clipping.
P 261. TRAUMATIC EVISCERATION AND INCARCERATION OF SMALL BOWEL THROUGH VAGINAL CUFF: A RARE SURGICAL EMERGENCY
Presenter: Joshua J Ferenczy MD | Medical Center of Central Georgia- Navicent Health
Ferenczy JJ, Ayoub M

Introduction: Traumatic herniation of small bowel through a dehisced vaginal cuff is a rare surgical emergency underreported in general surgery literature. Expeditious surgical intervention is required to save the bowel and repair the vaginal defect and should involve both the gynecologist and general surgeon.

We present a case report of a 67-year-old female who presented to the emergency room, nine months after a vaginal hysterectomy, immediately post coitus with complaints of labial swelling, pain, and vaginal bleeding. On examination she was noted to have dusky, incarcerated bowel emanating from her introitus. She was taken emergently to the operating room in conjunction with our gynecological colleagues for exploration. The abdomen was opened and a combination of intra and extra-abdominal pressure was used to reduce the eviscerated bowel. The vaginal cuff was closed. The reduced bowel was examined and noted to be congested so the decision was made to place a temporary abdominal closure device and re-examine the bowel in 24 hours. On return to OR the bowel was noted to be viable and the abdomen was definitively closed. She was discharged from the hospital several days later and has had an unremarkable post-operative course.

Traumatic herniation of the small bowel through a vaginal cuff is a rare case that is usually only reported in gynecologic literature. However, our case demonstrates the importance of the general surgeon’s role to ensure prompt intervention and the ability to determine viability of the bowel and avoid unnecessary bowel resections.
P 262. SPONTANEOUS HEMOPNEUMOTHORAX IN MENSTRUATING TEENAGER: A CASE OF CATAMENIAL HEMOPNEUMOTHORAX
Presenter: Martin Uwah MD | Florida Hospital Orlando
Uwah MS, Thompson WR

Introduction: Catamenial pneumothorax (CP) is a type of spontaneous pneumothorax that is a manifestation of thoracic endometriosis syndrome, a syndrome that includes catamenial hemothorax, catamenial hemoptysis, catamenial hemopneumothorax and endometriosis lung nodules. CP typically presents in women aged 30 to 40 years old but has also been noted in the literature in patients as young as 10 years old. We herein report 1 case of thoracic endometriosis (TE) associated with right-sided catamenial hemopneumothorax in a 17-year-old female managed with chest tube and subsequent video assisted thoracoscopic surgery.

Case description: A 17-year-old female presented to an outside emergency room complaining of a 3 day history of right-sided chest discomfort that worsened with deep inspiration. Chest radiography revealed a large right-sided hydropneumothorax without evidence of tracheal deviation. A 8 French right chest tube was placed with evacuation of approximately 1400 mL of dark blood. Given the concern for catamenial pneumothorax, patient was brought to operating room the next day for Video-Assisted Thoracoscopic excision of endometrial implants with mechanical pleurodesis, diagnostic laparoscopy and appendectomy. Intraoperative findings included: extensive endometrial implants and bulla at the apex the right lung. Implants noted on the diaphragm, visceral and parietal pleura. Stage I endometriosis. Patient tolerated the procedure without complication, chest tube was removed on POD 5 and patient was discharged to home. Early surgical intervention is the mainstay of treatment in patients presenting with catamenial pneumothorax. Postoperatively, hormonal treatment is recommended with the goal of amenorrhea. While thought to be a relatively rare entity, it is a diagnosis that should always be considered—particularly in the young adolescent female presenting with spontaneous chest pain, dyspnea and radiologic findings. Timely diagnosis with appropriate surgical intervention typically leads to full recovery.
**Introduction:** Patient GG underwent a Roux-en-Y gastric bypass in 2012. He had good weight loss but developed abdominal pain and feculent emesis in January 2019. Work up including upper GI and upper endoscopy demonstrated a enterocolic fistula between his roux limb and transverse colon. This was felt likely to be due to NSAIDs and caffeine use.

**Results:** The patient underwent a successful laparoscopic reversal of roux-en-y gastric bypass and resection of the aforementioned fistula. This required an extensive adhesiolysis. He was found to have an approximately 400cm common channel, 60cm bileopancreatic limb, and a 70cm roux limb. His roux limb was found to be antecolic and was fused to his remnant stomach. A gastrojejunal fistula at this fused site was identified and confirmed with an intraoperative upper endoscopy with laparoscopic assistance. This helped define the anatomy. Ultimately the distal roux limb and distal gastric pouch/gastrojejunostomy were divided. Given how densely fused the proximal roux limb was to the proximal remnant stomach, the proximal remnant stomach was divided. The coloenteric fistula was addressed by stapling across the transverse colon just under the fistula which resulted in minimal narrowing. The entire specimen was then removed via a 15mm port. A gastrogastrostomy was performed to reverse gastric bypass. A 19Fr Blake drain was placed posteriorly to the gastrogastrostomy.

**Conclusion:** The patient underwent an upper GI on the second postoperative day demonstrated no leak or strictures. He tolerated a liquid diet and was discharged home POD3. He was seen for follow up approximately two months later and was tolerating a regular diet without issue, though he had gained approximately 15 pounds.
Introduction: This video shows the benefits of using a robotic assisted approach for complex and multiple hernias, even in patients with multiple medical comorbidities. It also highlights the importance of surgeons viewing their own imaging, as it can affect management for our patients.
Introduction: The purpose of this study was to examine early complications among bariatric surgery patients undergoing laparoscopic vertical sleeve gastrectomy (LVSG) at a single community bariatric center. The aim of the study was to assess safety in a community setting.

Methods: This is a retrospective review of bariatric procedure performed by a single surgeon at a rural community hospital from 2014 to 2017. The primary procedure in each case was a LVSG. LVSG performed as a conversion procedure after gastric band removal (GBR) was included in this patient population. 24.5% of patients also underwent hiatal hernia (HHR) at the time of their LVSG. Outcomes of interest were complications requiring medical management, hospitalization operative intervention, and mortality. Patient follow-up was 2 weeks and 6 weeks for the timeframe of this study.

Results: 1000 patients (700 LVS, 245 LVSG + HHR, 55 LVSG + GBR) were analyzed. 10 patients required readmission (within 30 days of the index operation) for complications that did not require procedural or surgical intervention. Only 3 admissions were related to the bariatric procedure: 2 mesenteric vein thrombosis, at 10 day post op and 20 days post op respectively, and 1 leak at 25 days post op. 4 patients required re-operation for complications (3 resulted in no findings and 1 post-op bleed). There were no deaths.

Conclusion: Accepted overall morbidity and mortality rates range from 0% to 17.5% and 0%-1.2% respectively. The reported rates for leak after LVSG range from 1%-3%. Bleeding complications range from 0.3%-1.9%. Porto-mesenteric vein thrombosis is an uncommon complication occurring in less than 1% of patients. LVSF is a procedure with relatively low complications rates. These rates continue to decline with improvements in technique. In certified comprehensive bariatric program with a multidisciplinary approach, LVSG can be performed safely in a community hospital setting with low mortality and morbidity.
<table>
<thead>
<tr>
<th><strong>Table 1: Demographics, Co-Morbidities, and Complications</strong></th>
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<tr>
<td><strong>n=1000</strong></td>
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<tr>
<td><strong>Gender</strong></td>
</tr>
<tr>
<td>Female 839 (84)</td>
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<tr>
<td>Male 161 (16)</td>
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<tr>
<td>Age, years 44.16 ± 10.51</td>
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<td>BMI 45.13 ± 6.12</td>
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<tr>
<td><strong>Co-Morbidities</strong></td>
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<tr>
<td>Diabetes 207 (20.7)</td>
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<tr>
<td>Obstructive Sleep Apnea 525 (52.5)</td>
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<td>GERD 479 (47.9)</td>
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<tr>
<td>Hypertension 535 (53.5)</td>
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<td>Hyperlipidemia 251 (25.1)</td>
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<tr>
<td><strong>Complications</strong></td>
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<tr>
<td>Gastric Leak 1 (0.1)</td>
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<tr>
<td>Mesenteric Venous Thrombosis 2 (0.2)</td>
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<td>Re-operation 4 (0.4)</td>
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<td>Re-admission 10 (1)</td>
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Notes: Continuous data are presented as the mean ± standard deviation, and categorical data are presented as the number and frequency.
Introduction: Mediport placement is performed by general surgeons, vascular surgeons, and interventional radiologists. These catheters use fluoroscopic guidance in the operating room to ensure appropriate positioning. It is common practice for general surgeons to obtain a post-operative chest x-ray (CXR) prior to final disposition in order to evaluate for a pneumothorax or catheter malposition. The study aimed to review whether these routine CXRs provided meaningful clinical information.

Methods: A retrospective chart review was performed for mediports placed by general surgeons from January 1 2014 to December 31 2018 at two teaching hospitals. Cases were generated via CPT code. There was no standardized technique or approach for mediport placement. Cases were reviewed for any documented technical issues, or clinical concerns in the PACU. Charts were reviewed for resident participation, fluoroscopic confirmation of appropriate intraoperative catheter positioning, and use of intraoperative ultrasound to evaluate for pneumothorax. Use of post-operative CXR for catheter positioning and pneumothorax was also noted.

Results: A total of 1280 mediport procedures were identified. One hundred and one were cases were excluded for either improper CPT coding or placement by a different specialty leaving 1179 mediports for analysis. Routine CXR was obtained in 1106 (93.8%) and no CXR in 73 (6.2%). On PACU CXR, two pneumothoraces (0.17%) and three malpositioned catheters (0.26%) were found. Neither pneumothorax required an intervention, although one was admitted overnight for observation. Of the three malpositioned catheters, two required revision (at POD4 and POD12). Intraoperative ultrasound was used to demonstrate pleural slide in 79 cases (6.7%). Of the 73 patients who did not undergo post-operative CXR, none developed any acute complications.

Conclusion: Routine post-procedure chest x-ray after mediport placement by general surgeons seems to be unnecessary. Intraoperative fluoroscopy and ultrasound identify appropriate positioning and pneumothoraces. CXR should be reserved for patients with clinical concerns intraoperatively or who develop concerning symptoms post operatively. Although there are limited numbers in this review, intraoperative ultrasound to demonstrate pleural slide has been shown to correlate well with the presence of a pneumothorax and has easy availability as well as no additional cost.
Introduction: Roux-n-Y gastric bypass is a common choice for weight loss surgery. Though, as with any surgery, it has risks to the procedure. One possible complication with the reconstruction of the intestinal tract is creation of mesenteric defects that pose as potential areas of herniation of bowel causing bowel obstruction. In some cases they can even become strangulated and cause bowel ischemia.

In this case, the patient is a 34 y/o female with a prior history of a laparoscopic roux-en-Y gastric bypass. She presented with acute abdominal pain, nausea, and vomiting. On CT imaging, it was found that the patient had an internal hernia and required emergent surgery. She was found to have a volvulus of her biliopancreatic limb and an internal hernia of her roux limb. We were able to reduce the volvulus and the internal hernia from a small mesenteric defect from the jejunojejunostomy site. We were able to prevent bowel necrosis with timely recognition of her condition and immediate surgical intervention.
Introduction: The objective is to describe our experience with and the technique of the ETEP robotic Rives-Stoppa repair.
Introduction: AN is a 63-year-old female, who presented to an outside hospital on April 16th, 2019 with a chief complaint of severe chronic, right sided chest pain accompanied with new onset, moderate epigastric tenderness, nausea, vomiting, and diarrhea. A CT scan done at the outside facility revealed a right sided Morgagni hernia containing both omentum and transverse colon. AN was promptly transferred via EMS to our institution for advanced surgical consultation. Upon arriving at 0027 hours, AN was received by the on call surgical team in the emergency department, where a history, physical exam, CBC with differential, and CMP were promptly gathered. Physical examination pertinent positives included non-radiating, epigastric tenderness upon palpation without rebounding or guarding. Vital signs were within normal limits. Significant laboratory results included: an elevated erythrocyte sedimentation rate, C-Reactive protein, moderate transaminitis, a microcytic anemia, and hypokalemia. AN was admitted to our facility and made NPO with prompt surgical intervention to follow in the morning, her pre-operative diagnosis was an incarcerated right sided Morgagni hernia. At 0730, hospital day one, AN was brought to the operating suits put under general anesthesia, prepped and draped in standard fashion, with a surgical timeout being performed in accordance with the world health organization protocol. A robotic assisted laparoscopic approach was employed to reduce the hernia, while the diaphragmatic defect was closed with permanent barbed suture and an absorbable mesh overlay. Blood loss was minimal at roughly 25mL, the hernia sac was submitted as a gross specimen for pathological evaluation. AN was post-operatively confirmed to have an 8cm, right sided, Morgagni hernia containing both incarcerated omentum, and moderately obstructed, yet viable transverse colon. There were no intraoperative complications. AN’s post-operative period was complicated by poor ambulation resulting in an extended stay on the inpatient floor at our facility, she was discharged on hospital day four. A robotic repair was favored in this instance to minimize post-operative pain for AN, as well as to reduce her intraoperative procedure time. Currently, only three institutions worldwide have elected to perform Morgagni hernia repairs robotically. All three institutions, however, have reported favorable operative outcomes thus suggesting that a robotic approach represents a new, alternative repair modality compared to the traditional laparoscopic or open approaches.
Introduction: Supravesical hernias are a rare, but noteworthy cause of intestinal obstruction. The supravesical fossa is bounded by the medial umbilical fold and median umbilical fold, hernias into this potential space can be identified by distortion of the urinary bladder on imaging. We present the case of a 70 year old male presenting with intestinal obstruction from strangulated right supravesical hernia and coexisting reducible right inguinal hernia.
Introduction: Left-ventricular assist devices (LVAD) are commonly used as a bridge to heart transplantation in patients with heart failure. Diaphragmatic hernias may develop following transplantation. In this report we compare laparoscopic and open approaches to repair at our institution.

Methods: A retrospective review was performed searching for patients who underwent diaphragmatic hernia repair following LVAD and heart transplantation. We identified one open and one laparoscopic diaphragmatic hernia repair and compared these cases.

Results: Both cases were done urgently following transfer from outside ERs, the patients presenting with severe epigastric pain and vomiting. In the open case, primary repair was performed of a 7-cm defect with pledgeted suture. A jejunal serosal tear was made during reduction, repaired with interrupted suture. A chest tube was placed that was removed on post-operative day 1. Laparoscopically, a 4.5 by 4.5 cm defect was repaired with ePTFE mesh. No thoracostomy tube was placed. Length of operation was 152 minutes open and 102 minutes laparoscopically. Duration of IV analgesic requirement was 4 days following open and 1 day following laparoscopic repair. Hospital length of stay was 6 days and 3 days for open vs laparoscopic approach, respectively. There were no postoperative complications in either case. Follow-up was 9 months after open and 4 months after laparoscopic surgery and both patients were doing “really well”.

Conclusion: In our experience, diaphragmatic hernias occurring after LVAD and heart transplant appear to be safely addressed either open or laparoscopically. Laparoscopic surgery may be favorable due to less post-operative pain, shorter hospital length of stay, and no chest tube placement, however more data would be needed to make a definitive comparison given our low sample size. Consideration of elective diaphragmatic hernia repair in relatively healthy heart transplant recipients with history of LVAD may be warranted.
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<th>Open</th>
<th>Laparoscopic</th>
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<td>Length of anesthesia (intubation to extubation in minutes)</td>
<td>752</td>
<td>102</td>
</tr>
<tr>
<td>Length of IV pain medication (Days)</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>LOS (Days)</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>
THE RARE MIDDLE MESOCOLIC HERNIA: A REPORT OF TWO CASES AND REVIEW OF THE LITERATURE
Presenter: Margaret Montovano BA | Rutgers University
Montovano M, Chernock B, Merchant A, Shapiro M, Oliver J

Introduction: Internal hernias are a particularly rare, and often misdiagnosed, cause of small bowel obstruction. They must be diagnosed and treated expeditiously to avoid severe complications including strangulation and bowel infarction. The middle mesocolic hernia is an exceedingly rare subtype of an internal hernia causing a bowel obstruction. We present two cases of middle mesocolic hernias presenting within two months of each other.

Cases: The patients were a 57-year-old man with a history of spinal cord injury with paraplegia and no prior abdominal surgeries, and a 65-year-old man with a history of chronic alcohol abuse and prior laparoscopic appendectomy and cholecystectomy. Both patients presented with a SBO clinically and radiographically. In both cases, exploration revealed a defect in the base of the transverse mesocolon through which loops of small bowel with no associated peritoneal sac herniated from the peritoneal cavity superiorly into the lesser sac. There was no evidence of bowel ischemia in either case. Both hernias were successfully reduced followed by repair of the mesenteric defects.

Discussion: Congenital mesocolic hernias, also known as paraduodenal hernias, are the most common type of internal hernia. They are caused by embryologic abnormalities in midgut rotation resulting in the protrusion of small bowel into the mesocolon. They are traditionally classified into right, left, transverse, and middle mesocolic hernias, each with a distinct anatomic location and embryologic origin. The middle mesocolic hernia is the rarest subtype defined anatomically as herniation through a defect in the middle transverse mesocolon, to the left of the middle colic artery, without evidence of malrotation. Similar to our patients, two of the four previous reports describing middle mesocolic hernias presented as SBOs with similar symptoms and radiologic findings. CT scan in both of our patients revealed stretching of the mesentery with an inferiorly displaced transverse colon, along with the duodenum and jejunum located anterior and superior to the transverse colon. The transition points seen in the mid-abdomen in both patients was almost indistinguishable from those seen in adhesive disease. These findings, along with those of previous reports, emphasize the importance of considering the middle mesocolic hernia as a cause of SBO, as its rarity in addition to its nonspecific clinical and radiologic features make pre-operative diagnosis challenging.
A CASE OF APPENDICITIS INVOLVING A DE GARENGEOT’S HERNIA TREATED WITH INTERVAL ROBOTIC APPENDECTOMY AND MESH REPAIR

Presenter: Miya Yoshida DO | NewYork-Presbyterian Queens
Yoshida MC, Ogami T, Santos AT, Ferrari-Light D, Kopp M, Ricci-Gorbea J

Introduction: A de Garengeot’s hernia is a femoral hernia containing the appendix, which accounts for 0.5-5% of all femoral hernias. Most patients with de Garengeot’s hernias present acutely with a painful inguinal mass that cannot be differentiated from an incarcerated femoral hernia on physical exam. Although non-operative management has become a reasonable option for an uncomplicated acute appendicitis, the trend in previous literature leans towards urgent surgical intervention for a de Garengeot’s hernia complicated by appendicitis. Here we describe a case of successful non-operative management, interval robotic assisted appendectomy and mesh repair for treatment of a de Garengeot’s hernia. Our patient was a 75-year-old male with moderate chronic obstructive pulmonary disease who presented to the emergency department with two months of worsening right sided abdominal pain. Computed tomography showed inflammation of the proximal appendix, as well as a de Garengeot’s hernia. He was managed non-operatively with intravenous antibiotics to avoid the risk of an emergency surgery and was subsequently discharged with oral antibiotics. He then underwent an elective robotic-assisted surgery six weeks later. This strategy allowed for medical optimization and placement of mesh in an uninfected field. We suggest that initial non-operative management with delayed repair with mesh can be a safe approach in selected patients.
**P 275. AN EVALUATION OF VENTRAL HERNIA REPAIR USING A NEW PROSTHETIC MESH**

Presenter: Rajavi Parikh DO | New Hanover Regional Medical Center
Parikh RS, Bilezikian J, Powers WF, Hope WW

**Introduction:** There are many types of mesh that can be used for ventral and incisional hernia repair including permanent synthetic meshes, absorbable synthetic meshes, and biologic meshes. Synecor is a new permanent synthetic mesh made of a combination of absorbable synthetic component and a permanent synthetic component that can be used intraperitoneally or within the abdominal wall layers. There is little data on outcomes related to this new mesh product. The purpose of this project is to review our outcomes using Synecor mesh in ventral hernia repair.

**Methods:** A retrospective review of all patients undergoing ventral hernia repair using Synecor mesh was performed using the Americas Hernia Society Quality Collaborative (AHSQC) database from 4/2016 to present. Demographic, perioperative, and short-term outcomes (SSI, SSO, SSOPI) were reviewed and descriptive statistics were performed.

**Results:** There were 48 patients who underwent ventral hernia repairs using Synecor mesh. Average age was 58.65 (Range: 29-78) with 50% female and 85% Caucasian. 96% of cases were clean cases. Comorbidities were found in 73% of patients. Open repairs were performed in 56% of cases and included a retrorectus repair in 67% and TAR in 30% of open cases. Laparoscopic repairs were performed in 27% of cases and robotic in 17%. 85% underwent closure of the defect during repair. At 30 day follow up, the rate of SSI was 8%, SSO was 6% and SSOPI was 6%. There were 29% complications and recurrence rate was 4% at an average follow up of 97.4 days (Range: 0 days-1 year).

**Conclusion:** Synecor mesh represents a new synthetic mesh that may be used for ventral hernia repair in either an open, laparoscopic, or robotic fashion. Short-term, preliminary results appear favorable but more study is needed to be able to fully evaluate this new mesh prosthetic.
P 276. INCIDENTAL MUCOCELE OF THE APPENDIX FOUND DURING INGUINAL HERNIA REPAIR
Presenter: Shailja Kataria MD | BronxCare Health System
Kataria S, Farkas DT

Introduction: Appendiceal mucocele is a rare group of mucus filled lesions causing dilation of the appendix. The reported incidence is 0.2 – 0.4% of all the appendectomies performed. It is often encountered incidentally during laparoscopy or laparotomy for unrelated procedures but can also present with appendicitis type symptoms or rarely as an intestinal obstruction. We present a unique case of finding an incidental appendiceal mucocele during open inguinal hernia repair.

Methods: A 49-year-old woman presented to the surgery clinic with pain and swelling in the right groin, and was planned for elective repair of an inguinal hernia. During the procedure, the round ligament had an appearance similar to an appendix, raising the suspicion of an Amyand’s hernia. We therefore opened the sac to identify the appendix, and found a dilated appendix measuring 2.5cm with a normal base. We proceeded with an appendectomy. The mesoappendix was divided first, after which the base of the appendix was divided and the specimen immediately removed. The surgical team changed gloves before proceeding with the hernia repair. The patient has been followed in the office, and there is no sign of infection. Histopathology of the appendix revealed low grade appendiceal mucinous neoplasm. A colonoscopy was done which was normal, and she will receive a CT scan for baseline surveillance.

Conclusion: Mucocele of the appendix is not a single pathologic entity and the term is more descriptive than diagnostic. It describes a distended appendix containing mucus secondary to inflammatory, obstructive or neoplastic etiologies. A recent retrospective study showed that out of 96 patients with mucocele of the appendix, 72 patients (75%) had mucinous appendiceal neoplasm on histology. As such there is a strong recommendation that these be removed even when incidentally found.

This case had an additional concern in that mesh was planned for the hernia. Taking out the appendix converts the case from a clean case to a clean contaminated case, but leaving the appendix would necessitate another operation. The literature in other similar cases such as Amyand hernias is mixed. As there was no gross inflammation in our case, the decision was made to proceed with the appendectomy at the time of the hernia repair.
Introduction: Postoperative Urinary Retention (POUR) is a common complication after inguinal hernia repair. Laparoscopic totally extraperitoneal (LTEP) repair carries a risk of POUR at least 11%, which could result in Foley catheter placement, urethral injury, or risk of urinary tract infection. The increased risks of POUR are attributed to general anesthesia and near bladder pelvic dissection, which are required for LTEP. Tamsulosin is an alpha 1-adrenergic blocking agent exhibiting selectivity for alpha 1 receptors in the human prostate. The half-life of Tamsulosin is 9 to 13 hours. Tamsulosin relaxes smooth muscle in the bladder neck and prostate, and results in improvement in urine flow rate and a reduction in symptoms of Benign Prostatic Hypertrophy. We hypothesized that perioperative use of Tamsulosin is safe and effective in prevention of POUR.

Methods: The data was collected prospectively for patients who underwent LTEP by a single surgeon in a rural community hospital from November 2018 to October 2019 and analyzed retrospectively. The patients who had recent diagnosis of urethra stricture, procedure of bladder and prostate, or Foley catheter dependent status were excluded from the study. A total of three doses of Flomax (0.4 mg each tablet) was prescribed for patients to take orally for 3 consecutive days starting the day prior to LTEP. A bladder scan was performed if there was no voiding three hours after completion of the procedure to determine if there was a need of Foley catheter placement.

Results: There were twenty male patients who underwent LTEP. The average age was 56 ± 19 year old. The average BMI was 26.6 ± 4.4. The average duration of the anesthesia and procedure was 130 ± 28 minutes and 90 ± 29 minutes, respectively. The average ASA score was 2.4 ± 0.7. Bilateral LTEP was performed in 5 patients. All patients in the study voided prior to discharge, without a need of bladder scan or placement of Foley catheter.

Conclusion: Perioperative Tamsulosin is safe and effective in prevention of POUR after LTEP. A larger prospective study is required to further validate the prophylactic effect of Tamsulosin.
Introduction: The “weekend effect”, is the finding that patients admitted to the hospital during the weekend are more likely to have worse outcomes and increased length of stay (LOS) compared to patients admitted during the workweek. Our study aimed to elucidate whether trauma surgery is associated with the “weekend effect”.

Methods: Six-year review of data utilizing our Level 1 Trauma Center (TC) registry. Data included all trauma patients admitted to our TC who underwent initial emergency abdominal surgery. Patients were then divided into two groups based on the start of their initial operation. Group-1: Weekday (7am Monday to 4:59pm Friday). Group-2: Weekend (5pm Friday to 6:59am Monday). Demographic characteristics and outcome measures were compiled and compared between groups. Chi Squared and t-test were used with significance defined as p<0.05.

Results: The total number of patients utilized for this study was 343, with Group-1 containing 175 patients and Group-2 containing 168. Demographic variables were similar between the 2 groups, including mean ISS, AIS, and mechanism (p>0.05 for all). Outcome measures showed there was no significant difference between the 2 groups when comparing average ICU-LOS, and 30-day readmissions. Adjusted, all-cause (O/E) mortality also did not significantly differ between groups (Weekday=0.80 vs Weekend=0.88, p>0.05).

Conclusion: For high performing Trauma Centers, the “weekend effect” can be overcome. Future research is needed to understand the components necessary for a Trauma Center to have good outcomes 24x7.
Introduction: Penetrating intraperitoneal trauma has traditionally been managed with an exploratory laparotomy. Evaluation with diagnostic laparoscopy has been shown to have some benefit in a certain subset of these patients. This presentation involves three trauma patients who benefited from minimally invasive evaluation and treatment.

Methods: Hemodynamically stable patients with penetrating abdominal injuries and who were deemed appropriate candidates for diagnostic laparoscopy were taken to the operating room. If the patient had an injury that could be safely repaired laparoscopically, it was performed. If the patient required conversion to an open procedure, they were excluded from these videos.

Results: Three patients were selected who had intriguing findings on laparoscopy. Two of them were victims of gunshot wounds and one of them was stabbed. All of their intra abdominal injuries were repaired utilizing minimally invasive techniques.

Conclusion: Diagnostic Laparoscopy in trauma is gaining a more well defined role as an option for appropriate surgical management. Hemodynamically stable patients should be selected who do not have any other life threatening injuries. Further study is required to better define patient selection.
P 280. FACTORS AFFECTING RESEARCH PRODUCTIVITY OF BURN SURGEONS: RESULTS FROM A SURVEY OF AMERICAN BURN ASSOCIATION MEMBERS
Presenter: Evander Meneses MD | Kendall Regional Medical Center
Elkbuli A, Narvel R, Zajd S, Dowd B, Hai S, McKenney M, Boneva D

Introduction: While previous studies have examined factors that impact research productivity for surgeons in general, few studies address research productivity specifically of Burn specialists. This study aimed to identify factors that promote and impede research participation and productivity of Burn surgeons, and help elucidate what changes can be made by Departments/Divisions to improve the research productivity.

Methods: A 44-question anonymous research survey tool was administered to Burn surgeons that are members of the American Burn Association (ABA). The questions analyzed factors such as demographics, career accomplishments, current institution type, educational background, research background, barriers to conducting research, and current research productivity. Chi-square tests were used to analyze significance at p < 0.05.

Results: Most respondents reported not having any protected research time (71.4%) or resources provided by their institution (84.5%). A majority believed increasing regulatory policies/IRB restrictions have negatively impacted productivity (65.1%). Factors associated with a positive impact on research productivity included having a mentor, conducting research prior to completing residency, and provision of research resources from their institution such as statistical support, start-up funds, grant writing support, and laboratory space. Age and gender had no statistically impact on research productivity.

Conclusion: Burn surgeons are more likely to publish research and to receive grants when they have mentors, a history of research prior to completion of residency, and research resources from their institution. Barriers to research productivity include lack of institutional support, lack of protected research time, and increased regulatory policy.
Introduction: The role of vaccination to reduce the risk of overwhelming post-splenectomy infection (OPSI) in patients with splenic injury who undergo angioembolization remains unclear. The objective of this study was to define current practices at accredited trauma centers in the state of Michigan and identify factors that influenced the decision to vaccinate.

Methods: This study was a survey distributed to all accredited trauma centers in the state of Michigan in which trauma surgeons were asked about their current vaccination practices after splenic angioembolization. Additionally, surgeon demographics and reasoning behind vaccination decision were quantified.

Results: A total of 35 trauma centers in the state of Michigan were surveyed. Fifty-one trauma surgeons from 24 centers responded. Fifty-one percent of surgeons routinely vaccinate after splenic angioembolization, and 49% do not. Surgeon decision to vaccinate was influenced by which branch was embolized (p<0.001), patient age (p=0.010), and pre-existing immunosuppression (p=0.035). Surgeon age, number of years in practice, fellowship training, prior experience treating patients with OPSI, and trauma level were not found to be significantly associated with the decision to vaccinate. Eighty-six percent of the responders reported that they would consider changing their current vaccination practice for future research.

Conclusion: In the state of Michigan, vaccination practices after splenic angioembolization in trauma patients are not uniform, with approximately half of the trauma surgeons adopting a vaccination policy. Additional research in functional residual splenic anatomy after angioembolization is warranted.
P 282. CECAL VOLVULUS WITHIN A LEFT INGUINAL HERNIA: AN UNCOMMON PROBLEM RESULTING IN A CLOSED LOOP OBSTRUCTION AND LOSS OF DOMAIN
Presenter: Rachel NeMoyer MD | Rutgers University
NeMoyer RE, Hanna J, To J, LaFonte M, Butts CA

**Introduction:** Approximately 75% of all hernias occur within the inguinal region, with a lifetime risk of 25% in men. Due to its serious complications, these hernias present a common problem in adults. Limited cases have been reported of a cecal volvulus with perforation within an ipsilateral inguinal hernia, however, there have been no reported cases of a cecal volvulus affecting the contralateral side.

Here, we present the case of a 61-year-old male with history of schizophrenia and a chronic left inguinal hernia who presented to the Emergency Department with a three-day history of intractable nausea, vomiting, abdominal distention, and abdominal and scrotal pain. The patient was hemodynamically intact and physical examination was notable for a tender large left inguinal hernia (LIH) and a reducible right inguinal hernia. Computed tomography (CT) revealed a closed loop obstruction and pneumatosis from a volvulized cecum within the LIH (Figure 1). The patient was taken emergently to the operating room (OR) for exploratory laparotomy, reduction of LIH and intestinal volvulus, right hemicolectomy, and temporary closure with an ABThera wound VAC. He was left in discontinuity due to ongoing hemodynamic instability and significant loss of domain. He was subsequently closed with a fascio-cutaneous flap after multiple trips to the OR. His hospital course was complicated by acute kidney injury requiring temporary hemodialysis and a scrotal fluid collection which was managed with percutaneous drainage. After an extended hospitalization, the patient fully recovered and was discharged to rehabilitation.

Hernias have a wide range of presentations, ranging from a clinically insignificant defect to life-threatening bowel strangulation with perforation. We have found no previous reports describing a perforated, closed loop obstruction from a volvulized colon in a contralateral inguinal hernia. Furthermore, likely due to anatomic constraints, there have been no reports of the right colon herniating into a LIH. Complicating abdominal wall closure is the inevitable loss of domain which develops due to the displacement of the viscera in giant chronic hernias. Complex abdominal hernias continue to pose a dilemma in treatment. Knowledge of advanced techniques to achieve tension-free closure such as component separation and other flaps greatly improve the chance for successful abdominal closures. Hernias continue to provide challenging problems because of variability in presentation and complexity in management.
Introduction: Surgeons are unevenly distributed across the Unites States (US), particularly in rural areas, which may be the result of disproportionately distributed General Surgery (GS) residencies. We aim to examine the relationship between the distribution of GS residency positions by US region, State, race, and gender.

Methods: A review of the Accreditation Council for Graduate Medical Education and American Osteopathic Association National Residency Matching Program data over a five-year period (2014-2018). Surgery Residency PGY1 positions (SurgPGY1) were categorized into Northeast, Midwest, South, and West regions. SurgPGY1 to population ratios were compared by region. The distribution of SurgPGY1s by race/gender were also compared.

Results: The mean SurgPGY1s per 106 population was 4.18 ± 0.52 for 2018. Most commonly SurgPGY1s are concentrated in the Northeast (5.79 ± 0.64) followed by the Midwest at 4.22 ± 0.37, the South at 5.12 ± 1.41 and lastly the West had the fewest at 1.91 ± 0.39. NY, MA, and DC had significantly higher SurgPGY1s ratios, with DC at 27.05. States with no SurgPGY1s included AK, ID, MT, WY, while AR, MS, and UT were under 2 SurgPGY1s/106. From 2014 to 2018, the percent of ACGME positions given to females has increased 2.93%, while the AOA positions has increased 11.84%. When adjusted for the population by race within the US, the most residencies for their population is Asian (482.42%) in 2018.

Conclusion: There is significant disproportion in the distribution of GS residencies by US region and State. Residency positions were not proportional to population, race, or gender.
Introduction: Emphysematous cholecystitis is a rare condition in which intraluminal/intramural gas is found within the gallbladder secondary to gas-forming bacteria. Differentiation from acute cholecystitis is pertinent as emphysematous cholecystitis carries a higher mortality risk. We present an 83-year-old male diagnosed with emphysematous cholecystitis, retrospectively, on abdominal x-ray.

Results: The patient presented with right sided chest pain, dyspnea, and one month of intermittent right upper quadrant abdominal pain. Diagnostic workup demonstrated normal white blood cell count (WBC), initial X-ray with non-specific gas-bowel patterns, and ultrasound with biliary sludge and gallbladder distention. Hepatobiliary iminodiacetic acid (HIDA) scan revealed non-filling of the gallbladder. On hospital day two the patient developed hypotension, tachycardia, and tachypnea. Repeat X-ray and computed tomography (CT) scan, demonstrated gas within the walls of the gallbladder. The patient underwent exploratory laparotomy and cholecystectomy.

Conclusion: Timely differentiation of emphysematous cholecystitis from acute cholecystitis is pertinent to prevent increased morbidity and mortality. Identification of emphysematous cholecystitis is not always clear-cut with traditional imaging, including ultrasound. CT scan has shown to be more sensitive than ultrasound and x-ray. Increased suspicion for emphysematous cholecystitis is warranted in patients who present with signs of acute cholecystitis although have risk factors for emphysematous cholecystitis.
Introduction: Blunt traumatic dissections of the abdominal aorta are rare injuries, with less than 100 cases reported in the literature. These injuries can be complicated by thrombosis or aortic rupture. The mortality rates are as high as 75% without surgical treatment, and drop to 18-37% with surgical intervention. Historically, these have been repaired with invasive, open surgical procedures.

Here, we present the case of a 51-year-old male who was pinned by a forklift at work and presented with blunt abdominal trauma. The patient was found to be in hemorrhagic shock and diagnosed with an acute abdomen. Advanced trauma life support (ATLS) protocol was initiated and the patient responded to 2 units of packed red blood cells. Computed tomography showed a traumatic abdominal aortic dissection extending into both common iliac arteries with severe flow-limitation to the left common iliac, hemorrhage at the mesenteric root with further hemorrhage within the retroperitoneal space extending to bilateral paracolic gutters, acute transverse process fractures of T12-L4, and a spinous process fracture of L2. There were no clinical signs of limb ischemia. The patient remained hemodynamically stable and was immediately taken to the operating room (OR), where a pancreatic injury and avulsion of the inferior mesenteric vein (IMV) were identified intraoperatively. These injuries were addressed with ligation of the IMV, and wide drainage of the pancreas. The patient then underwent an endovascular aortic dissection repair (EVAR) with an aortobiliac stent graft. Due to continued resuscitation coagulopathy, the abdomen was left open. The patient returned to the OR 24 hours later, the abdomen was re-explored without identification of any further injuries and subsequently closed. The remainder of the hospital course was uneventful and the patient was ultimately discharged home on post-operative day 7. Repeat imaging at six months shows continued patency of the graft without flow-limitation and complete resolution of all traumatic injuries.

Though it is difficult to quantify the incidence of blunt abdominal aortic dissection due to its high mortality in the field, it is important to discuss its management for those that do make it to the trauma center. Fewer than 10 cases of percutaneous endovascular stent placement for these injuries have been reported. The advent of endovascular surgery has presented new methods for these challenging patients. We show this technique is minimally invasive and can be a safe treatment option for these injuries.
EMERGENCY ROOM DISPOSITION BASED ON PREDICTED FORCED VITAL CAPACITY IN ADULTS WITH BLUNT CHEST TRAUMA CAN REDUCE UNPLANNED ICU TRANSFERS

Presenter: Denis Jimenez MD | Spartanburg Regional Healthcare System
Gravely TS, Thurston BC, Mount MG

Introduction: Blunt thoracic trauma is a known cause of morbidity/mortality in trauma patients, especially those with associated rib fractures and pulmonary contusions. TQIP data at our institution indicated a higher than expected risk adjusted rate of unplanned transfers to the ICU. A high percentage of these unplanned ICU admissions were due to respiratory failure in our blunt chest trauma patients. Limited data indicate that predicted FVC after blunt chest injury could be predictive of respiratory complications.

Methods: A practice change was implemented at our level 1 trauma center to stratify patients’ risks of pulmonary complications based on predicted FVC after blunt chest injury. Non-intubated patients with 3 or more rib fractures, sternal fracture or pulmonary contusion diagnosed with chest radiography were screened. ICU admission was indicated with FVC less than 30% of predicted and considered with FVC less than 50% predicted. TQIP data was followed from fall of 2017 until spring of 2019. Additionally, a retrospective review of the trauma registry was conducted to determine compliance with the protocol, baseline trauma characteristics and additional outcomes.

Results: The admission FVC screening protocol was implemented in January 2018. 124 patients have been screened for initial ICU admission based on predicted FVC values after blunt chest injury. More than half of these patients (65) were admitted to the ICU from the ED. Compliance with the protocol was 91%. Mean age for this cohort was 60 years old. Median AIS chest for this patient group is 3. Mean ISS is 14. Of the 6 patients admitted to the floor off protocol, 3 required transfer to the ICU for respiratory support. 4 patients admitted to the floor appropriately per protocol required ICU transfer for respiratory reasons. TQIP odds ratio for unplanned ICU admission was reduced from 2.78 to 1.88 since protocol initiation.

Review of trauma registry data before and after implementation for all patients with AIS Chest ≥ 3 demonstrates reduction of unplanned ICU admission from 6.7% to 4.2% (p=0.26) and no change in unplanned intubations, from 6.7% to 6.2% (p=0.8).

Conclusion: Triage of patients with blunt chest injury to the ICU or floor based on emergency department Predicted Percentage Forced Vital Capacity can reduce risk adjusted TQIP unplanned admissions to the ICU. This may not reduce the number of unplanned intubations seen in this patient population. Additional research will be needed to determine how to avoid ICU transfer and unplanned intubation in the highest risk trauma patients.
P 287. TRAUMATIC BRAIN INJURY IN THE ELDERLY: CAN WE REDUCE READMISSION RATE?
Presenter: Tarik J Wasfie MD | Ascension Genesys Hospital
Wasfie T, Maxwell J, Parsons A, Hille J, Cwalina N, Barber K, Shapiro B

Introduction: Traumatic brain injury (TBI) is a devastating traumatic injury, particularly in the elderly, as they associate with multiple comorbid conditions, high subsequent readmission rate, and as the age of the US population increases, so do healthcare costs.

Methods: A retrospective study of 299 patients admitted to our trauma center with traumatic brain injury between 2015-2018. Continuous data was analyzed with descriptive statistics (means, standard deviations) and counts were analyzed with frequencies and percentages. Average days and dosage variables were analyzed by a Student’s t-Test for independent means. Rates of readmission within six months were analyzed according to the exposure variables with Chi square analysis. The association of risk factors for readmission within six months adjusted for confounding variables was analyzed with the proportional hazards ratio regression. Adjustment variables included history of multiple readmissions, gender, age, diabetes, hypertension, coronary artery disease, dementia, renal failure, and admission from home or other. All statistics were conducted with a significance level of p<= 0.05.

Results: There were 299 patients with a mean age of 69 years (SD ± 18.60). There were 154 (51.5%) males and 145 (48.5%) females with mean length of stay of 4.61 days SD ± 4.68). Patients on anticoagulant were more likely to be readmitted within six months than those not on anticoagulant but the difference did not reach significance (34.7% versus 24.8%, p=0.09). Readmission from home was significantly more likely to result in readmission within six months than having a readmission from other locations (97.4% versus 16.7%, p<0.001). Univariate analysis of the main independent risk factors of readmission from home and of anticoagulant use was conducted. Admission from home significantly increased the risk of readmission within six months compared to admission from other institutions (OR: 12.7, p<0.001). Anticoagulant use increased the risk of readmission within six months compared to patients not on anticoagulants, however the effect was not statistically significance (OR: 2.7, p=0.09). Adjustment for age, gender, comorbidity, and anticoagulant use was modeled in an ordinal multiple regression. The final model for predictors of readmission from home was conducted controlling for age and gender. Readmission from home remain a highly significant, independent predictor of readmission at six months (OR:26.6, p= < 0.001).

Conclusion: Traumatic Brain Injury rate is increasing as our population grows older. Readmission rates are high, mainly for recurrence of subdural hematoma and those discharged to home care on anticoagulant therapy. A set of protocols were implemented to reduce the readmission rate.
Introduction: A 14-year-old male arrived via ambulance in extremis after having suffered a transabdominal gunshot wound. Emergent abdominal exploration demonstrated a bullet trajectory from right to left traversing the right lobe of the liver, gall bladder, common bile duct, first portion of the duodenum, mesenteric root, third portion of the duodenum, left renal hilum, and transverse colon. Initial hemorrhage control maneuvers included supraceliac aortic cross clamp, Pringle maneuver, perihepatic packing, a left nephrectomy, and stapled resection of the transverse colon. Vigorous arterial bleeding from the duodenal wounds suggested injury to the superior mesenteric vessels which were approached through the lesser sac dividing the posterior leaf of the gastrocolic omentum exposing the inferior border of the pancreas at the root of the transverse mesocolon. This was facilitated by replacement of the supraceliac aortic clamp with a REBOA placed through a right femoral artery sheath for improved visualization and access. The injuries were an avulsion of the middle colic artery at its origin on the SMA and a 2cm lateral laceration of the SMV at its junction with the splenic vein which were repaired primarily. A damage control posture was adopted due to hypothermia, coagulopathy, and acidosis with cholecystectomy, stapled resection of the first and third portions of the duodenum and stapled resection of the right and remaining transverse colon. He returned to the OR for biliary decompression via PTC, bowel decompression via gastrojejunostomy tube. Subsequent reconstruction consisted of choledochoduodenostomy to the second portion of the duodenum, duodenoduodenostomy between the second and fourth portions, gastrojejunostomy, and temporary abdominal closure with planned reassessment of small bowel viability. Small bowel salvage was complicated by small vessel and SMV thrombosis necessitating resection of the ileum and distal jejunum. Ultimately his abdomen was closed with a terminal jejunostomy in the left lower quadrant. Additional complications included pancreatic necrosis requiring video assisted necrosectomy with new onset diabetes, recurrent bacteremia renal failure (which has since resolved), and hypertension. He is maintained on TPN while undergoing evaluation for small bowel transplant.
Introduction: Efficacy of preoperative usage of Dexamethasone in diabetic patients undergoing total hip/knee replacement for control nausea and vomiting

Methods: A retrospective analysis of 256 diabetic patients undergoing total hip or total knee replacement between January 2017 & July 2018 who received dexamethasone pre, intra, and/or post-operatively. The blood sugar was measured pre, intra and postoperatively to determine the impact of steroid given. Patient age, sex, length of stay, HbA1C, ASA score as well as the rate of nausea, vomiting and postoperative pain score were also measured.

Results: There were a total of 256 consecutive diabetic patients included in the study. The mean age of the group was 68.7 (SD ± 9.10) years. Sex was equally divided between male, 123 (48%) patients, and female 133 (52%). 174 patients had a total knee, (68%) and 82 patients (32%) went for total hip replacement. Mean length of stay was 2.46 (SD±2.08) days. Sixty patients (23.4%) had 4 or more comorbid conditions. However, hypertension was among the most common comorbid condition (203 patients =78.9%). Mean HbA1C was 6.72% (SD±0.94), mean anesthesia score was 2.86 (SD±0.38). 201 patients (78.5%) of patients received pre or intra-operative Dexamethasone and 237 patients (92.6%) received it post-operatively. Mean blood sugar for all patients raised from 131.9 mg/dL to 172.2 mg/dL postsurgery and to 206.1 mg/dL in the first 24 hours and 146.2 mg/dL in the 2nd postoperative day. The changes were significant in patients who preoperatively had poorly controlled diabetes (p<0.01).

Conclusion: Dexamethasone use in diabetic patients undergoing total knee and hip replacement is detrimental, more so in those with poorly controlled diabetes.
NEUROENDOCRINE TUMORS OF THE AMPULLA OF VATER TREATED WITH LOCAL RESECTION: A REPORT OF 3 CASES

Presenter: George Jeha BS | Louisiana State University Health Science Center

Introduction: Neuroendocrine tumors involving the ampulla of Vater are uncommon, thus explicit guidelines for surgical management, including indications for local versus radical resection, are not well established. Pancreatoduodenectomy, which is often the intervention of choice by virtue of location, has increased morbidity compared to local resection. We describe the presentation, management, and outcomes of 3 patients with ampullary neuroendocrine tumors (NETs) who were treated with local resection.

Methods: A query of a web-based database (E-Velos database, Velos, Inc.) containing clinical data from all patients seen at our institution between 2003 and 2016 (n = 2,120) was performed for patients who were diagnosed with ampullary NETs (n = 3). Patients were included if they were diagnosed with a histologically confirmed NET and if operative reports localized the NET to the ampulla of Vater (n = 3). The medical records of these 3 patients were individually reviewed.

Results: Mean age of presentation was 67 years (range, 51–74); 2 were female, 1 was male. Patients presented with abdominal pain (2 patients) and anemia (1 patient). No patients presented with hypersecretion syndromes. Tumor cells expressed chromogranin A and synaptophysin in all 3 cases. Diagnostic work-up included biomarkers, computed-tomography (CT) imaging, magnetic resonance imaging (MRI), nuclear medicine scan, and endoscopy or esophageal ultrasound. Preoperative biopsy was performed in 2 cases and was diagnostic in both instances. The lesions ranged from 1.3–2.5 cm in the greatest dimension. One case was limited to the serosa, 1 case involved the submucosa, and 1 case involved the muscularis propria. All surgeries consisted of local resection with lymphadenectomy. Two cases were treated with transduodenal ampullectomy and 1 case was treated with duodenectomy. One case was complicated by postoperative small bowel hematoma. Despite the presence of lymph node metastases, involvement of the muscularis propria, and primary tumor size > 2.5 cm, patients remained disease-free at 19 to 29 months (Table 1).

Conclusion: Local resection with regional lymphadenectomy is associated with good outcome and is a good option in patients with ampullary NETs and should be considered as an initial treatment option. Pancreatoduodenectomy can be considered in the event of recurrence.
<table>
<thead>
<tr>
<th>Case No.</th>
<th>Presentation</th>
<th>Tumor Size (cm)</th>
<th>CT Scan position</th>
<th>Pre-op Biopsy Result</th>
<th>Ki-67</th>
<th>Depth of Invasion</th>
<th>Nodes Met.</th>
<th>Operation Performed</th>
<th>5-year OS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Abdominal pain, diarrhea</td>
<td>2</td>
<td>No</td>
<td>NET</td>
<td>0.9</td>
<td>Serosa</td>
<td>Neg</td>
<td>Anusctetomy</td>
<td>19</td>
</tr>
<tr>
<td>2</td>
<td>Abdominal pain</td>
<td>1.3</td>
<td>N/A</td>
<td>NET</td>
<td>3</td>
<td>Submucosal</td>
<td>Pos</td>
<td>Anusctetomy</td>
<td>29</td>
</tr>
<tr>
<td>3</td>
<td>Anorexia</td>
<td>2.3</td>
<td>Yes</td>
<td>N/A</td>
<td>2.2</td>
<td>Muscularis propria</td>
<td>Neg</td>
<td>Distal resection</td>
<td>19</td>
</tr>
</tbody>
</table>
Introduction: Topoisomerases are DNA-associated proteins that participate in the winding and unwinding activity involved in DNA replication. A small category of topoisomerases-known as topoisomerase II, in the form of TOP2A and TOP2B-are particularly important in synthesizing new daughter DNA. Additionally, TOP2A is a major protein of interest in cancer research due to its suspected role in elongation. This includes its exclusive expression in the nucleus of proliferating cells and its location behind the replication fork during DNA synthesis. In colon cancer studies, the knock down of TOP2A expression prevents proliferation, invasion, and promotes apoptosis in colon cancer cell lines. Also, manually depleting TOP2A in these cell lines inhibits activities of AKT and ERK, causing decreased cell survival, growth, and absence of transcription factor stimulation. In the carcinogenesis of prostate (PCa) cancer, TOP2A is considered an oncogene, in which overexpression increases the chance of metastasis, decreases time of cancer recurrence, and is, in general, related to poor patient outcome. These findings indicate that TOP2A is an important marker to identify patients with aggressive forms of PCa, and could be an important biochemical pathway in the development and metastasis of neuroendocrine (NE) PCa. Due to the lack of clinical therapies for NEPCa patients, we believe TOP2A’s role in NEPCa may be crucial in targeting novel treatments.
**P 292. PREDICTIVE FACTORS FOR FAILURE OF THE INITIAL DOSE OF RADIOIODINE THERAPY IN GRAVES’ DISEASE: META-ANALYSIS**

Presenter: Mahmoud Shalaby MD | Tulane University School of Medicine  

**Introduction:** Radioactive iodine therapy (131I) is a well-known treatment modality for Graves’ disease (GD). Many different factors influence its success had been studied for a long time. However, the results were conflicting. This study was carried out to identify the factors which can predict treatment failure of radioactive iodine in patients with GD.

**Methods:** Studies published in English on PubMed, Web of Science, midline, and Cochrane Controlled Trials Register databases, from 2000 to May 2019 were searched systematically. Eligible studies provided sufficient comparative data between succeeded and failed groups after 131I therapy were included and Comprehensive Meta-analysis version 3.0 was used.

**Results:** Eighteen studies (9 retrospective cohort studies, 4 prospective cohort studies, and 5 randomized clinical trials) with a total of 4822 GD patients (3591 females and 1231 males) were included in the current meta-analysis. After the administration of the first dose of 131I, 3849 (79.8%) patients were successfully treated, while failure was documented in 973 (20.2%) patients.  
Male gender, free T4 (fT4) level before 131I therapy, reception of 131I therapy 6 months after GD diagnosis, reception of anti-thyroid drugs (ATD) before 131I therapy had, high 24-hours RAI uptake scan (RAIU), and large thyroid volume were positively associated with treatment failure, (RR: 1.23, 95% CI: 1.08 to 1.41, P = 0.002), (OR: 1.49, 95% CI: 1.06 to 2.10, P = 0.02), (RR: 2.10, 95% CI: 1.45 to 3.04, P = < 0.001), (RR: 1.87, 95% CI: 1.02 to 3.41, P = 0.04), and (SMD: 0.74, 95% CI: -0.52 to 0.96, P < 0.001), respectively. Further analysis was done and determined the optimal cutoff values for thyroid volume >35.77 ml (OR: 2.54, 95%CI: 1.67 to 3.86, P < 0.001) and 24- hours RAIU scan >60.62% (OR: 1.45, 95%CI: 1.18 to 1.79, P < 0.001). Meanwhile, patient age, smoking history, the presence of concomitant exophthalmos, TSH, free T3, and TRAb levels prior 131I therapy, and 131I dose did not render a significant association with treatment outcomes.

**Conclusion:** 131I therapy failure can be predicted in the presence of certain criteria. Male gender, high free T4 level, history of anti-thyroid drug usage and Graves’ disease duration for more than six months before 131I therapy. Additionally, the large thyroid volume and high 24-hours radioactive iodine uptake scan should alarm clinicians to the higher chance of treatment failure and the surgical option could be considered.
Introduction: Gluteal Compartment Syndrome (GCS) is rare. It typically results from prolonged periods of immobility following trauma or unconsciousness. Diagnosis is frequently missed or delayed. Here we describe the unique case of gluteal compartment syndrome in a man without preceding trauma, intoxication, or unconsciousness.

Methods: This is a retrospective review of the clinical presentation, operative management, and short term outcome in a patient with GCS. To identify common clinical features of GCS, we performed a literature review using PubMed and Scopus.

Results: Our patient is a 40 year-old man with no medical or surgical history who presented with 2 days of right gluteal pain, right leg weakness, and right leg parasthesias after laying on cold ground for 3 hours while working as a mechanic. On exam he had normal vitals, a tense right gluteal compartment, insensate sciatic distribution, and right foot drop. Biochemical analysis demonstrated no leukocytosis, but creatinine of 10.0mg/dL, potassium of 5.9mEq/L, and creatine kinase of >40,000 K/uL. The general surgery team was promptly consulted in the emergency room, and he was taken immediately to the operating room for a right gluteal fasciotomy. Intraoperatively he was found to have good contractility of his gluteus maximus, but poor contractility of his gluteus medius and gluteus minimus, requiring serial excisional debridements. He underwent a washout on postoperative day (POD) 1 with debridement and wound vac placement. He subsequently had exams and dressing changes at the bedside. On POD 8 he underwent another washout triggered by leukocytosis without underlying infection identified and his wound was closed. His hospital course was marked by acute renal failure requiring hemodialysis. He was discharged on POD 12 and ultimately had full functional and renal recovery.

Conclusion: GCS is a rare condition, and early detection requires a high index of suspicion. It is frequently associated with acute renal failure requiring hemodialysis. This is the only case report of GCS without preceding trauma, intoxication, or unconsciousness after review of 130 case reports. For best chance of limb salvage and functional recovery, prompt gluteal fasciotomy with a Kocher-Langenbeck incision is required. Best outcomes are found with serial debridements and aggressive wound care.
Postoperative Day 1
Introduction: Discuss a case report of Pemberton’s sign in a patient with multinodular goiter and review the literature on Pemberton’s Sd, compare with other case reports and portray a set of conclusions, especially in areas of debate.

Methods: Dr. Hugh Pemberton was the first to describe the physical examination maneuver to demonstrate the presence of an obstruction in the thoracic inlet known as the Pemberton’s sign in 1946. Pemberton’s sign is a maneuver in which elevation of both arms above the head triggers a set of signs and symptoms that are characteristic for the presence of obstruction at the level of the thoracic inlet. will discuss and review the literature as we present a case report of a 56-year-old female who presented with Pemberton’s sign and who later underwent a total thyroidectomy with a complete resolution of her signs and symptoms after surgery.

Results: In rare occasions, an enlarged thyroid goiter may cause superior vena cava syndrome and compression of the trachea that is further appreciated with the execution of this maneuver.

Conclusion: There is some debate regarding the mechanism that takes place for the characteristic presentation of this sign. Some contribute it to the descent of the thyroid into the thoracic inlet, others describe the components of the thoracic inlet compress the thyroid during arm elevation causing this obstructive effect.
Introduction: The geriatric population and diagnosis of adrenal masses continue to be on the rise due to improvements in medicine and radiology. Multiple studies have demonstrated that incidental adrenal masses larger than 4 cm and/or functional adrenal masses need to be surgically removed. However, there is a scarcity of studies evaluating the outcomes of adrenalectomies in the geriatric population. This study aims to compare surgical outcomes and adrenal mass pathologic prevalence in the geriatric population.

Methods: Retrospective study from a prospective database from an endocrine surgery clinic. Patients older than 65 years old who underwent an adrenal mass resection between 2007 and 2019 were included in this study. Surgical procedures, outcomes, and pathologies were compared.

Results: 32 patients met the inclusion criteria. The cohort's demographics were an age of 67.47 years old, 65.62% (21/32) female and a BMI of 29.98. The most prevalent pathology was a pheochromocytoma (Pheo) followed by an adrenocortical adenoma (ACA), 34.36% (11/32) and 28.13% (9/32) respectively. Patients had a length of stay (LOS) of 8.58, estimated blood loss (EBL) of 241.24 ml and tumor size of 4.69 cm. The resection of functional tumors led to a decrease in the use of anti-hypertensive medication but did not reach statistical significance. The majority of the patients 78.12% (25/32) underwent a laparoscopic retroperitoneal approach (LRA). Open and LRA had favorable outcomes with only 15.62% (5/32) of patients having a severe complication without any deaths. However, LRA had a LOS of 2.58 ± 0.58 days, a tumor size of 3.77 ± 0.31, and EBL of 32.25 ± 11.13 which were significantly lower than patients who underwent an open procedure. A laparoscopic-to-open conversion rate of 8.33% (2/24) was observed. Most likely due to excessive bleeding since EBL was significantly higher in this group with 2,850 ml. In addition, patients who underwent an LRA had significantly less severe complications (Clavien-Dindo category above 2) when compared to an open approach, 16.7% vs 83.3% respectively.

Conclusion: The geriatric population can undergo adrenal mass resection safely. An open approach may increase a patient's hospital length of stay, complications, and estimated blood loss. Therefore, we recommended a laparoscopic approach in geriatric patients if tumor size allows it.
Introduction: Pheochromocytomas are rare neuroendocrine tumours (NET) with malignant behaviour in about 10% of cases. The median time from the diagnosis of primary tumour and bone metastasis is 3.4 years. There are no biochemical, histological, or molecular markers to differentiate benign from malignant pheochromocytoma, only the presence of loco-regional invasion or distant metastasis confer malignancy. Bone is the most common site of metastasis (53%), commonly sacrum and pelvis, proximal and distal long bones, and skull. Metastasis to the ribs has been sparsely described.

Methods: We present a case of metastatic pheochromocytoma to the thoracic cage diagnosed one year after resection of the primary tumor.

Results: A 24-year-old female with long-standing uncontrolled hypertension was followed for 1 year after right adrenalectomy that required reconstruction of the inferior vena cava and renal vein for an 11.6 cm pheochromocytoma. During that time metanephrine levels and blood pressure decreased but remained slightly elevated. Following postponement due to pregnancy and successful delivery, single-photon emission computed tomography (SPECT) with metaiodobenzylguanidine (MIBG) scan was performed which showed an avid lesion corresponding to a left seventh rib lesion on CT with cortical destruction. She underwent successful en bloc chest wall resection of left ribs 6 through 8 with pleural mesh reconstruction. Pathology revealed a 6.4 cm metastatic pheochromocytoma with lymphovascular invasion and clear margins.

Conclusion: This case highlights the importance of close follow up after resection of a NET and demonstrates successful multidisciplinary care for a rare and complex disease process.
Introduction: There is a recent shift toward performing a thyroid lobectomy in patients with a preoperative diagnosis of papillary thyroid carcinoma (PTC) when certain criteria are met. PTC has a tumor capsule that can be intact, absent, incomplete or with invasion as described by the pathologist. The American Thyroid Association (ATA) does not provide guidelines for the need of completion thyroidectomy when only these features are present, last updated in 2015. While the prognostic significance of other unfavorable pathologic features, such as angio-lymphatic invasion, multicentricity, and lymph node metastasis have been evaluated, there is a scarcity of studies referring to tumor capsule status. The purpose of our study is to evaluate the prevalence of different pathologic features related specifically to the tumor capsule in patients with PTC.

Methods: Single-center retrospective study of a prospective database from July 2008 to June 2018. Included patients with thyroid surgery and final pathology of PTC. We then evaluated, specifically, the pathologic features associated with tumor capsule. We classified the study groups into two subgroups: intact capsule (TC-), and altered capsule (TC+) which includes absent capsule (AC), incomplete capsule (ICC) and capsule invasion (CI). We then identified the presence or absence of unfavorable features (UF+) in each of the subgroups. UF are angio-lymphatic invasion, perineural invasion, extrathyroidal extension, multifocality, and lymph node metastasis. Pearson’s Chi-Square test was used for analysis with a p-value ≤ 0.05.

Results: 276 patients were included in this study. Histologic presence of TC- and TC+ was 73.91% (204/276) and 26.09% (72/276), respectively. PTC subtypes consisted of Classic Variant 53.99% (149/276), Follicular Variant 34.42% (95/276) and other 11.59% (32/276). Prevalence of UF- within TC- and TC+ were of 41.67% (115/276) and 12.68% (35/276), respectively. In the TC+ UF- group the most prevalent was AC 45.7% (16/35), reaching statistical significance of p<0.01.

Conclusion: Almost 13% of patients with PTC can present with only an altered capsule finding on permanent pathology and further management for such remains unknown. This group of patients deserves to be further studied to determine optimal management.
P 299. THYMIC ADENOCARCINOMA WITH METASTASIS TO THE APPENDIX: A CASE REPORT AND REVIEW OF THE LITERATURE
Presenter: Constantine Saclarides MD | Rush University Medical Center
Saclarides C, Larson B, Barnes C, Price T

**Introduction:** The purpose of this study is to review a rare case of thymic adenocarcinoma (TA) with metastasis to the appendix. TA is a rare, aggressive disease. Extramediastinal metastases in the setting of TA are even rarer. There is a paucity of literature describing TA metastasis to the intestine.

**Methods:** This is a retrospective review of the clinical presentation, operative management, and long term outcome in a patient with appendiceal metastasis presenting with pneumoperitoneum. To identify common clinical features of patients with TA with small bowel and appendiceal metastases, we performed a literature review using PubMed and Scopus.

**Results:** The patient is a 40 year old man who presented with one day of right abdominal pain. Four months previously the diagnosis of thymic adenocarcinoma was confirmed with biopsy. He had known metastases to his brain, left retroperitoneum, and right paracolic gutter on previous CT. He last received radiation and etoposide/cisplatin 4 weeks prior to his presentation. On exam he was tachycardic with peritonitis. His labs demonstrated no leukocytosis and lactate of 3.5. CT demonstrated pneumoperitoneum and free fluid without clear source. Upon prompt laparotomy succus and purulence were encountered, along with an enlarged, necrotic, perforated appendix. An appendectomy was performed. No obvious peritoneal metastases were visualized. On table EGD demonstrated no gastroduodenal pathology. His postoperative course was uncomplicated. He was discharged on postoperative day 5. A G tube was placed at the index procedure in anticipation of needs for venting for inevitable malignant bowel obstructions. Pathology results demonstrated: poorly-differentiated carcinoma of thymus primary involving the appendix and mesoappendix with focal perforation, lymphovascular invasion, and negative margins. Immunostains were positive for CK7 and CD5, and negative for CK20 and CDX2. Our search of PubMed returned 22 articles, and Scopus returned 32 articles. There is one report of thymic adenocarcinoma with metastasis to the distal small bowel.

**Conclusion:** This is the only case report of thymic adenocarcinoma with metastasis to the appendix. In patients with known metastatic TA who present with pneumoperitoneum, surgeons must have a high index of suspicion for appendiceal metastasis. Proper management includes timely surgical intervention with appendectomy, without ileocectomy unless intestinal necrosis is of concern. Our patient survived his index hospitalization and continued palliative chemotherapy for two weeks after discharge, but succumbed to sepsis from pneumonia and expired 6 months later. For optimal chance of survival, a multidisciplinary approach with prompt surgical intervention, aggressive wound management, and close postoperative monitoring are necessary.
**P 300. IMPACT OF SURGEON-PERFORMED ULTRASOUND ON TREATMENT OF THYROID CANCER PATIENTS**

Presenter: Mahmoud Shalaby MD | Tulane University School of Medicine

**Introduction:** Although the 2015 American Thyroid Association (ATA) Management Guidelines for Adult Patients with Thyroid Nodules recommend sonographic evaluation of thyroid nodules to include comprehensive characterization of thyroid nodules and presence/absence of any suspicious cervical lymph nodes in the central/lateral compartments, this extent of sonographic assessment is still not routinely done. We hypothesized that an endocrine surgeon-performed ultrasound (SUS) significantly enhances diagnosis, appropriate surgical planning, and treatment outcome in thyroid cancer patients, when compared to pre-consultation referral ultrasound (RUS).

**Methods:** We conducted a retrospective review study of thyroid cancer patients' records (N= 267), who had undergone a thyroid surgery +/- central/lateral neck dissection at a single academic institution. All 267 patients had undergone a SUS, but only the patients with both pre-consultation RUS and SUS (N= 130) were included in this study to assess the impact of SUS in subsequent management.

**Results:** 26 patients (20%) were noted to have suspicious thyroid nodules which warranted an FNA based on SUS but were missed on RUS. 12 patients had Bethesda III/IV, 14 patients had Bethesda V/VI on FNA, and all 26 patients were confirmed to have malignancy on final pathology. 38 patients (29.2%) were noted to have suspicious central/lateral neck findings on SUS but did not have them reported on RUS. Subsequently, 18 patients (13.8%) underwent a central +/- lateral neck lymph node dissection at the time of index thyroid surgery. Additionally, 8 patients (6.1%) were found to have a parathyroid adenoma based on SUS and required a concurrent parathyroidectomy.

**Conclusion:** A comprehensive neck ultrasound performed by an endocrine surgeon significantly enhances the appropriate assessment, treatment, and outcome of thyroid cancer patients. This finding highlights the critical need for education and improvement in routine neck ultrasonography exams performed in the community and the importance of ultrasonography expertise in endocrine surgeons.
Introduction: A symptomatic adrenal cystic mass discovered during pregnancy presents an exceedingly rare and difficult clinical scenario. Deciding on when to intervene and how to approach the adrenal mass surgically are two primary factors that need to be considered. This paper presents the case of a young female patient with left flank pain whom on diagnostic imaging, was demonstrated to have a large cystic adrenal mass.

Methods: She was taken for a robotic-assisted left adrenal mass excision and partial adrenalectomy during the second trimester of pregnancy.

Results: Pre- and postoperative assessment of her pregnancy with close follow-up of the obstetrics team demonstrated a healthy, viable intrauterine pregnancy. She tolerated the procedure well and was discharged after 5 days inpatient with the resolution of her symptoms on follow-up in the surgeon’s office.

Conclusion: This is the only the second case of robotic-assisted adrenal surgery during pregnancy presented in the current literature and one of only a handful of cases of adrenalectomy during pregnancy for symptomatic hemorrhagic adrenal pseudocyst. This article highlights that robotic-assisted adrenal mass excision and partial adrenalectomy remains a viable and durable surgical option under the given clinical circumstances.
Introduction: Primary hepatic neuroendocrine carcinoma (PHNEC) is an extremely rare tumor with only about 150 cases reported. PHNECs typically present with vague symptoms such as abdominal pain and jaundice. This combination of rarity and lack of unique clinical features make the diagnosis of PHNEC difficult. Even more rare are amphicrine carcinomas, defined as those with both glandular and neuroendocrine differentiation in the same cell. Only a few of cases have been reported of amphicrine carcinomas in the stomach and pancreas and only one other primary to the liver. There are several treatment options that have been attempted such as somatostatin analogues, radiotherapy, transcatheter arterial chemoembolization (TACE), and surgical resection. However, further study of theses rare neoplasms is needed to guide definitive treatment and surveillance.

Case Description: We report a 57-year-old female whose chief complaint on presentation was abdominal pain. Computed tomography (CT) revealed a large mass off segments five and six of the liver. She underwent extensive work-up which included upper and lower endoscopy as well as positron emission tomography (PET) scan, all of which failed to demonstrate a primary tumor. Subsequent biopsy of the mass was consistent with adenocarcinoma. Due to the location of the mass and lack of primary, the mass was initially presumed to be cholangiocarcinoma. She underwent a successful partial right lobectomy and had an uneventful postoperative course. Final pathology was a mixed neuroendocrine and non-neuroendocrine neoplasm, amphicrine type, primary in the liver. She was seen at routine follow-up and continues to do well without evidence of recurrence.

Conclusion: PHNEC tumors are rare. Although several treatment options for hepatic neoplasms are available, we propose surgical resection is the best definitive treatment. A study done by CH Park et al. reported 12 patients with PHNEC. Patients with a single hepatic mass underwent curative surgical resection with free margins had the longest survival rate without recurrence. Those with multiple lesions or metastatic disease underwent systemic chemotherapy with or without surgical resection, and those who did not undergo resection had recurrence. TACE and other methods of liver protection have been utilized but do not appear to significantly extend survival time of patients with PHNEC. It is not clear whether the histology of the tumor deems the tissue amenable to the effects of certain chemotherapies as there have been so few available for study. For now, however, we propose surgical resection as best definitive treatment for these extremely rare carcinomas.
P 303. PRIMARY LOW-GRADE LEIOMYSARCOMA OF THE GALLBLADDER
Presenter: Jillian K Scott MD, RD, CNSC | University of Tennessee Medical Center, Chattanooga
Scott JK, Dowden JE

Introduction: Primary sarcomas of the gallbladder are rare neoplasms with multiple subtypes. The estimated frequency of primary sarcomas of the gallbladder is 1.4/1000 gallbladder malignancies with a female predominance of 5 to 1. Leiomyosarcoma of the gallbladder is an extremely rare subtype, accounting for only 7% of all gallbladder sarcomas. Limited clinical data suggests these tumors have an aggressive nature and are often found at an advanced stage.

Summary: An otherwise healthy 86 year old female presented to the emergency department with abdominal pain, nausea, jaundice and sepsis. Work-up revealed choledocholithiasis and biliary pancreatitis. She eventually underwent an uneventful ERCP with biliary decompression followed by a laparoscopic cholecystectomy the following day. Pathologic evaluation of the gallbladder demonstrated multiple calculi as well as a 2.4 x 2.1 x 1.8 cm friable polyp in the dome. This polyp consisted of spindle cells with prominent osteoclastic giant cells, consistent with a primary low-grade leiomyosarcoma of the gallbladder. The diagnosis was confirmed by an outside pathologist at Brigham and Women’s Hospital. Her case was reviewed at our Tumor Board conference and no further treatment or surveillance was recommended due to the low-grade nature of the tumor and her advanced age. The patient recovered from the surgery without incident and remains well.

Conclusion: Primary leiomyosarcoma of the gallbladder is a very rare tumor that is often at an advanced stage upon discovery. As our patient demonstrates, these can be found at an early, low-grade stage and aggressive therapies are not mandated.
Introduction: This study was undertaken to determine if age influences perioperative outcomes for patients undergoing robotic major hepatectomy.

Methods: With IRB approval, 94 patients undergoing robotic major hepatectomy, from 2012 to 2019, were prospectively followed. Major hepatectomy is defined as a resection of 3 or more segments. With regression analysis, demographic data and perioperative outcomes were compared to increasing age. For illustrative purposes, data are presented as median (mean±SD).

Results: Overall, the patients were of age 62 (61±13.0) years, BMI of 29 (29±5.9) kg/m2 with ASA class of 3 (3±0.5). The mass size was 5 (5±3.0) cm. The operative duration was 252 (276±106.0) minutes with an estimated blood loss (EBL) of 175 (249±275.9) mL. One operation was converted to ‘open’ due to bleeding, accounting for the only intraoperative complication. 9 patients required ICU admission. Postoperatively, 7 patients had complications with 0 in-hospital mortalities, and a length of stay (LOS) of 4 (5±2.6) days. 13 patients were readmitted within 30 days with 0 deaths within 30 days. Readmissions were for coagulopathy (2), congestive heart failure exacerbation (2), surgical site infection (2), wound dehiscence (1), excess drainage from surgical site (1), and other (5).

The only positive correlation found was between increasing age and ASA class. Intraoperatively, no correlation was found when comparing increasing age to operative duration, EBL, and complications. Postoperatively, ICU admission, ICU duration, complications, and readmission within 30 days had no significant correlation except for LOS. With increasing age, LOS had a positive correlation (p=0.0258).

Conclusion: In our experience, there was no significant correlation between increasing age and perioperative outcomes, with the exception of LOS, for patients undergoing robotic major hepatectomy. Increasing age is not associated with increased morbidity nor perioperative mortality. Independently, age has no influence on clinical outcomes. With the application of innovative technology, i.e. the robotic approach, surgeons should be encouraged to undertake major hepatectomy in elderly patients.
**P 305. HEPATIC SUBCAPSULAR HEMATOMA COMPLICATING HELLP SYNDROME IN A 27 WEEK GRAVID PATIENT: INDUCTION OF LABOR FOR CONSERVATIVE NON-OPERATIVE MANAGEMENT**

Presenter: Jessica Geida DO | Inspira Health Network  
Geida J, Lencki S, Slotman G

**Introduction:** Hemolysis, elevated liver enzymes, and low platelets (HELLP) syndrome complicates 1% of pregnancies and affects 10-20% of preeclampsia pregnancies. Hepatic subcapsular hematoma (HSH), a rare but potentially life threatening HELLP complication, can develop from late second trimester through the immediate post-partum period and carries maternal mortality of 17% to 59%. Survival increases with prompt diagnosis and depends on liver capsule status. Given the nonspecific patient symptoms, variable clinical presentations, and low incidence of HSH, diagnosis often is delayed until the liver capsule has ruptured already, presenting then with hemorrhagic shock. This report highlights the importance of keeping HSH high in the differential diagnosis for patients with preeclampsia/HELLP and nonspecific abdominal pain.

**Methods:** Retrospective case review as below.

**Results:** 25yo Caucasian G1P0 @27.3 weeks gestational age presented with new onset shortness of breath, diffuse abdominal pain, nausea, vomiting and diarrhea for several days with associated elevated blood pressure. Her past medical history included asthma, anxiety, and class II obesity with a BMI of 38. Vital signs: blood pressure 146/101 mmHg, heart rate 106 beats/min, and respiratory rate 40 breaths/min with symptomatic shortness of breath. Abdomen: soft but maximally tender in the right upper quadrant, without rebound or guarding. Fetal heart rate had occasional variable decelerations from baseline to nadir of 100 that resolved spontaneously. Chest x-ray: mild compression atelectasis right base. Labs (Table) plus the clinical presentation diagnosed severe preeclampsia with HELLP syndrome. Abdominal ultrasound: maternal ascites. Pulmonary CT angiogram: small bilateral pleural effusions with adjacent atelectasis, no evidence of pulmonary infarct or embolism, plus heterogeneous perihepatic complex fluid collection consistent with HSH. The patient was stabilized and sent to a tertiary care center where abdomen CT scan confirmed the HSH measuring 27.8x18x4.4 cm (Image 1) with adjacent small liver lacerations. Labor was induced, delivering a viable infant weighting 860g. Gastroenterology and general surgery both recommended intensive observational/expectant HSH management. She was discharged home on post-partum day 5. Ten days post-discharge hematology and liver profile normalized. RUQ ultrasound: 22.4 cm HSH at 2 weeks, 12.9cm at 6 weeks post-partum.

**Conclusion:** This case reinforces the need for high suspicion for HSH in the setting of preeclampsia/HELLP syndrome and the indication for early ultrasound/CT imagining. Additionally, it highlights the importance of obtaining imaging based upon symptoms rather than laboratory results. Finally, it emphasizes the importance of intensively observed expectant management rather than premature surgical intervention to minimize maternal mortality in the setting of non-ruptured HSH.
Table 1. Laboratory values on hospital day 1 through 16 days post partum demonstrating HELLP syndrome with elevations in liver function tests, lactate dehydrogenase, and low platelets. Complete resolution and normal values were observed on post partum day 16.

Image 1

Image 1. CT scan demonstrating the subcapsular liver hematoma from transverse view.
**P 306. A RARE PRIMARY GLOMUS TUMOR OF THE LIVER**  
Presenter: Jillian K Scott MD, RD, CNSC | University of Tennessee Medical Center, Chattanooga  
Scott JK, Dowden JE

**Introduction:** The glomus body is a specialized arteriovenous shunt surrounded by modified smooth muscle cells. They are most commonly found in the dermis of the fingers and toes and are involved primarily in thermoregulation. Glomus tumors are rare soft tissue neoplasms derived from the smooth muscle cells of the glomus body. Typically locations for this neoplasm include the dermal and preococygeal soft tissue, especially the distal extremities and the subungual regions. Primary glomus tumors of the liver are exceptionally rare with only seven reported cases in the literature.

**Summary:** A 61 year old AA female patient underwent PET-CT scan secondary to a history of rheumatoid arthritis and a chronically elevated ESR level. This revealed an incidental avid liver lesion in segment 4b. CT-guided biopsy of this lesion proved to be a rare primary glomus tumor of the liver. Her case was presented to our multidisciplinary tumor board and resection was recommended. She underwent a laparoscopic partial left hepatectomy with intraoperative ultrasound examination. Final pathologic evaluation of the tumor confirmed a primary glomus tumor of the liver with benign features.

**Conclusion:** Although exceptionally rare, primary glomus tumors of the liver are possible and resection is warranted. The limited clinical data available suggests that surgical resection is curative.
Introduction: Studies have shown significant improvement in hepatocellular carcinoma (HCC) recurrence rates following the UNOS implementation of a mandatory six-month wait period. However, few have examined the HCC dropout rates for patients awaiting liver transplant surgery. Our objective was to evaluate the outcomes in HCC dropout rates before and after the mandatory six-month wait policy enacted on October 8, 2015.

Methods: We conducted a retrospective cohort study of adult patients who were added to the liver transplant waitlist between January 1, 2012 and March 8, 2019. Pediatric patients (age < 18 were excluded). Data was obtained from electronic medical records and OPTN publicly available national data.

Results: We reviewed 767 patients of whom 193 were waitlisted with the diagnosis of HCC (92 patients pre-policy and 101 patients post-policy). Our HCC dropout rate increased from 11.9% to 20.8% (p=0.03). Our HCC transplant rate decreased from 88.0% pre-policy to 62.4% post-policy (p<0.001). The national HCC dropout rate increased from 26.3% to 29.0%. The national HCC transplant rate decreased from 70.5% to 67.3%.

Conclusion: Dropout rates for HCC patients increased locally and nationally since implementation of the mandatory six-month wait period for HCC patients. The UNOS mandate is achieving the goal of increased organ allocation for non-HCC patients with fewer completions of transplants for HCC patients. Further studies are indicated to analyze the financial burden associated with extended treatment for HCC patients and improved liver function vs. HCC progression in HCC dropout patients.
<table>
<thead>
<tr>
<th></th>
<th>Local HCC(^1)</th>
<th>Pre-Policy(^2)</th>
<th>Post Policy(^3)</th>
<th>p-value</th>
</tr>
</thead>
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<tr>
<td></td>
<td>N=193</td>
<td>N=92</td>
<td>N=101</td>
<td></td>
</tr>
<tr>
<td>Dropout Rate</td>
<td>11 (12.0%)</td>
<td>21 (20.8%)</td>
<td>0.03</td>
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<tr>
<td>Transplant Rate</td>
<td>81 (88.0%)</td>
<td>63 (62.4%)</td>
<td>&lt;0.001</td>
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<tr>
<td><strong>OPTN HCC Exception(^4)</strong></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>N=16,449</td>
<td>N=7,950</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dropout Rate</td>
<td>2,093 (26.3%)</td>
<td>2,462 (29.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transplant Rate</td>
<td>5,607 (70.5%)</td>
<td>5,716 (67.3%)</td>
<td></td>
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</tr>
</tbody>
</table>

\(^1\) Liver waitlisted patients diagnosed with HCC  
\(^2\) Pre-Policy: 05/07/2012 – 10/7/2015 (1,248 days)  
\(^3\) Post Policy: 10/8/2015 – 03/8/2019 (1,248 days)  
\(^4\) OPTN liver waitlist removals: patients with HCC exception  
\(^5\) OPTN Pre-Policy: 2012-2014  
\(^6\) OPTN Post Policy: 2016-2018
**P 308. HEPATIC ARTERY ANEURYSM IN THE SETTING OF ACUTE PANCREATITIS AND GIANT CELL ARTERITIS**

Presenter: Mridul Pansari MD | Florida Atlantic University

Ohanisian L, Pansari M, Rubay D, Morrow M, Basich G, Lopez-Viego M

**Introduction:** Visceral artery aneurysms are rare with an incidence of 0.1%-0.2%. Of these, 20% are hepatic artery aneurysms (HAAs). Despite the potential of remaining asymptomatic for long periods of time, the risk of rupture for HAAs is 20%-80%. Treatment includes operative management with open or endovascular techniques. HAA in the setting of pancreatitis has been reported in two prior cases outside of the United States. However, there have been no cases describing the association of HAA and giant cell arteritis (GCA). We present a rare case of an 80-year-old male with a history of GCA who was found to have developed HAA following an episode of acute pancreatitis that was repaired surgically with an open technique. To our knowledge, the association between HAA with acute pancreatitis and GCA has not been reported before.

**Conclusion:** HAAs are rare. Traditional risk factors include smoking, arteriosclerotic disease, fibromuscular dysplasia, and cystic medial necrosis. Treatment includes operative management with open or endovascular techniques. Preoperative angiography is essential in assessing for collateral pathways, the circulation to the liver, pancreas, spleen, and stomach as well as the extent of involvement of the celiac artery trunk. To our knowledge, this is the third case of HAA after an episode of acute pancreatitis. We conclude that HAAs should be on the differential diagnosis of a patient with a history of acute pancreatitis. Additionally, HAAs may be a sequela of acute pancreatitis and GCA, although further research is needed to corroborate these findings.
Introduction: Serous cystadenoma is the most common benign pancreatic neoplasm. Given its primary location in the body and tail of the pancreas, obstructive jaundice is the least common presenting symptom. Herein, we describe an unusual presentation of serous cystadenoma and its successful resolution.

Methods: A 76-year-old female presented to her PCP with fatigue and heartburn. Laboratory values were notable for elevated liver enzymes prompting an abdominal US, which showed a pancreatic mass. MRI/MRCP showed a multiloculated cystic mass in the head of the pancreas measuring >7cm suggestive of serous cystadenoma, with upstream biliary and pancreatic duct dilation. Her CA 19-9 was >700. She subsequently developed worsening nausea and jaundice. ERCP and biliary stenting was performed; however, she ultimately required a PBD, which was placed to external drainage. Subsequently, during a preoperative CT scan, the patient went into PEA arrest with ROSC after CPR. Her sodium was 103 (likely from biliary losses) and no underlying cardiac abnormality was revealed. Given her symptoms, she was taken to the operating room. After diagnostic laparoscopy confirmed no evidence of metastatic disease, a pylorus-preserving pancreaticoduodenectomy was performed. The tumor was densely adherent to the portal-SMV junction but after isolating venous inflow, it was carefully dissected away from the portal-SMV confluence.

Results: Her hospital course was notable for a periumbilical wound infection that resolved with antibiotics and wound care; she was discharged on POD9. Pathology revealed a 5.9cm serous cystadenoma and all lymph nodes were negative.

Conclusion: Serous cystadenomas of the pancreas are benign processes representing 1-2% of pancreatic exocrine neoplasms and 25% of pancreatic cystic neoplasms. They are most often diagnosed incidentally, and their prevalence is increasing given improving imaging diagnostics. Serous cystadenomas presenting with obstructive jaundice remain few in the literature. Most notably, the disseminated variant of serous cystadenoma involves the entire pancreas and can lead to obstructive jaundice. This is most often seen in Von Hippel-Lindau disease and is treated with total pancreatectomy. Nevertheless, microcystic variants can readily contribute to obstruction of the bile duct. Size greater than 4 cm is most often cited as the lesion characteristic most associated with the presence of any symptoms. Some authors contend that it is most likely the configuration of the lesion and bile duct rather than the actual size of the lesion contributing to obstructive jaundice. Nevertheless, regardless of size, any serous cystadenoma of the pancreas contributing to symptoms is indicated for removal.
P 311. A CASE ON THE FRONTLINES OF TREATMENT FOR CHOLANGIOCARCINOMA

Presenter: Tyler D Fields MD | Atlanta Medical Center
Fields TD, Nguyen KT

Introduction: With the recent development of the category “borderline resectable” for pancreatic cancer, guidelines for additional cancers are following suit. We recently had a patient with intrahepatic cholangiocarcinoma that we feel is a good representation of this borderline resectable category.

JC is a 49 yo male, with a nonsignificant medical history that had an incidental liver mass found on imaging related to a urology procedure. A CT showed a 6.5 cm hepatic mass near the confluence of the hepatic veins. MRI confirmed a 6.0 x 2.9 cm segment 4A and 8 lesion, involving the middle hepatic vein, close to the right and left hepatic vein, sitting on top of the IVC, and close to the portal plate. Additional imaging showed no metastatic disease. Liver biopsy confirmed intrahepatic cholangiocarcinoma. Our tumor board recommended neoadjuvant chemotherapy, followed by attempted resection. He underwent 4 cycles of neoadjuvant therapy with paclitaxel, gemcitabine, and cisplatin. After his neoadjuvant treatment, his restaging scans showed concern for slight enlargement of the cancer, but no metastatic disease.

Prior to surgery, his imaging showed a stable liver mass partially encasing / narrowing the middle hepatic vein near the IVC and abutting the wall of the intrahepatic IVC with no metastatic disease. He had an open central liver resection en bloc with caudate lobectomy (segments 1, 4a, 4b, 5, and 8), cholecystectomy, complete portal lymphadenectomy, and partial IVC resection with primary repair. The pathology confirmed a 3.8 x 1.7 x 5.5 cm mass with negative margins and no positive lymph nodes (pT1bN0). His post-operative stay was uncomplicated, and he was discharged on post-op day 9. He is undergoing adjuvant radiation due to close surgical margins with follow-up every 3 months.

This case highlights the category of borderline resectable cholangiocarcinoma. The patient underwent neoadjuvant treatment with minimal local progression, but no metastatic disease. He achieved clear margins in an area that would force some surgeons to follow the unresectable algorithm for cholangiocarcinoma. The possibility of improved survival with neoadjuvant treatment is encouraging, though randomized controlled data are lacking.
A. Central liver resection en bloc with caudate divided showing mass.
B. Resection bed with exposed right hepatic vein, left hepatic vein, inferior vena cava, and portal plate (within left hand).
C. CT Imaging of mass prior to any neoadjuvant therapy.
P 312. OMENTOPEXY COMBINED WITH ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY FOR LATERAL DUCT INJURY AT HEPATIC DUCT BIFURCATION

Presenter: Wei Wei MD | Twin County Regional Healthcare, Duke LifePoint Healthcare
Weiz W, Fanous M

Introduction: Bile duct injury is a devastating complication from laparoscopic cholecystectomy. When identified during the procedure, based on the injury pattern, the injured bile duct was frequently deferred for surgical repair or reconstructed. The endoscopic retrograde cholangiopancreatography (ERCP) based sphincterotomy and stenting was reportedly effective in treating low or distal lateral common bile duct (CBD) injury by decreasing the distal CBD pressure gradient to facilitate the bile drainage. However, in the circumstance of proximal lateral CBD injury, the routine biliary stent may not provide adequate coverage of the leak site, which posed a unique clinical challenge when such high level biliary duct injury occurred.

Methods: A type D injury based on the Strasberg-Bismuth classification was identified in an 85 year-old male patient during the laparoscopic cholecystectomy. The intraoperative finding revealed a contracted and atrophic gallbladder with surrounding abscess and adhesions. The usual biliary duct anatomy was unclear due to the extensive surrounding inflammation. During the dissection around the fundus of the gallbladder, a small side hole was identified from a tubular structure with minimal bilious leakage. The intraoperative cholangiogram was performed and showed the bile leakage at the level of the bifurcation of right and left hepatic ducts. A vascularized omental pedicle was freed and pulled up without tension to the site of bile leakage. This patch was stitch secured at nearby falciform ligament. A Jackson-Pratt (JP) drain was placed nearby. The ERCP based sphincterotomy and stenting was performed next day after cholecystectomy.

Results: The intraperitoneal bilious drainage resolved with the JP drain output fluid turned serosanguinous within 48 hours and remained unchanged after patient resumed oral intake. The patient did not complain any abdominal discomfort and tolerated oral intake well. The laboratory studies including serum white blood cell count, liver enzymes, and total bilirubin were within normal ranges prior to discharge and at clinic follow up. The patient was discharged a week later and the JP drain was removed in clinic. At 10 months follow up, there was no evidence of bile leak or stricture.

Conclusion: The combination of omentopexy and endoscopic stenting can be a safe alternative treatment in the challenging scenario of high lateral bile duct injury. A larger number of studies are needed to further validate the benefit of omentopexy in management of high level lateral biliary duct injury.
Introduction: Allen Oldfather Whipple, known as the 20th Century’s major innovator in pancreatic surgery, is only part of a long heritage of pioneering pancreatic surgeons that have contributed to the development of the pancreateoduodenectomy. Here, we explore the history of pancreas surgery leading to Whipple’s now-eponymous operation.

Results: Early pancreatic operations by Trendelenburg (first distal pancreatectomy, 1882), Billroth (1884), and Senn (1886) were important contributions to early approaches to pancreatic operations. The first successful resection of ampullary carcinoma would be performed by William Halsted (1899), though the patient died shortly thereafter of local recurrence. Walter Kausch would follow this experience with the first major partial duodenectomy en-bloc with the pancreas (1909) in a two-stage operation for ampullary carcinoma. Whipple’s major breakthrough in pancreatic surgery came from a series of insulinoma resections (1933-35), a favorable pathology for curative pancreatic surgery, demonstrating excellent results. In 1935, Whipple reported the first case of complete duodenal excision and head of the pancreas in a 2-stage procedure for ampullary carcinoma. In 1940, Whipple reported his first one-stage pancreatectoduodenectomy for insulinoma during a demonstration at the American Surgical Association. Whipple would continue to perform 37 pancreatectoduodenectomies in his career, including 30 for cancer. Other important contributions to Whipple’s surgical legacy were his development of the porto-caval shunt (1935-46) with Arthur Blakemore and leadership of the Columbia Department of Surgery for 25 years, where he was the first to offer Charles Drew a position in academic surgery. Charles Child would continue this legacy as the first to perform pancreatectoduodenectomy with portal vein resection.

Conclusion: The history of pancreatic surgery has rich and colorful history, and includes contributions from several famous surgical leaders. The legacy of the pancreatectoduodenectomy demonstrates the application of centuries of dedicated anatomical, pathologic, and surgical study to produce an elegant operation to cure diseases of the pancreas.
Introduction: Background: Increased mammographic density is a risk factor for breast cancer (BC). Volumetric breast density is defined as the ratio of fibroglandular volume to breast volume. Automated, quantitative methods of calculating breast density may be more accurate than visual qualitative assessments. Limited data exist regarding the relationship between volumetric breast density measures and BC subtypes.

Methods: Records of 3387 patients diagnosed with invasive BC at our institution between 2005 and 2013 were retrospectively analyzed. BC subtype was determined based on estrogen receptor, progesterone receptor (collectively referred to as hormone receptors (HR) )and human epidermal growth factor receptor (HER2) expression. Volumetric density measures were calculated from mammograms of the non-cancerous breast by Volpara® software, version 1.5.12. For each measurement, calculations from the craniocaudal and mediolateral oblique views were averaged. ANOVA and the Chi-square test were used to compare demographic and clinical variables according to subtype.

Results: Among 3387 eligible patients, 8 Males were excluded. 1355 had raw mammographic data available for analysis. 267 did not have complete information about HER2 status and were excluded from further analysis. Overall, the mean age at diagnosis was 58.2 ± 12.2 years. There was a significant age difference between HR+/HER2- group (59.6 years) and the triple negative group (55.8 years) (p<0.0001). Most patients were either white (59.8%) or black (38.7%). A larger percentage of White women had the HR+ / HER2+, HR+ / HER2– and HR- / HER2+ subtypes while the contrary was true for the triple negative subtype. Nearly half (46.3%) of the cancers at diagnosis were stage 1, 36% were stage 2, 10.9% were stage III, and 2.4% had metastatic disease. A minority of the cancers (11.1%) were well differentiated tumors, 43.4% were moderately differentiated, and 43.1% were poorly differentiated. Overall mean volumetric breast density (VBD) was 8.2% ± 10.3%, mean breast volume (BV) was 985.3 cm3 ± 581 cm3 and mean fibroglandular volume was 63 cm3 ± 38 cm3. There were significant differences in fibroglandular volume based on subtype (p<0.03). Volumetric breast density and breast volume did not show significant differences based on subtype.

Conclusion: These results suggest an association between volumetric breast density measures and breast cancer subtype. Given the distinct etiology of various breast cancer subtypes, an improved understanding of the relationships between breast density and risk of specific breast cancer subtype is essential.
<table>
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<tr>
<th>Age at diagnosis (years)</th>
<th>Race (n, %)</th>
<th>HR+/HER2+</th>
<th>HR+/HER2-</th>
<th>HR+/HER2+</th>
<th>HR-/HER2-</th>
<th>p-value</th>
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<td>White</td>
<td>56 (56%)</td>
<td>433 (66.8%)</td>
<td>48 (59.3%)</td>
<td>114 (44.0%)</td>
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<td>Black</td>
<td>41 (41%)</td>
<td>204 (31.5%)</td>
<td>32 (39.5%)</td>
<td>144 (55.6%)</td>
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<td>Other</td>
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<td>11 (1.7%)</td>
<td>1 (1.2%)</td>
<td>1 (0.4%)</td>
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<tr>
<td>Stage</td>
<td></td>
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<tr>
<td>I</td>
<td>35 (35%)</td>
<td>362 (55.9%)</td>
<td>26 (32.1%)</td>
<td>81 (31.3%)</td>
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<tr>
<td>II</td>
<td>42 (42%)</td>
<td>194 (29.9%)</td>
<td>32 (39.5%)</td>
<td>125 (48.3%)</td>
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<tr>
<td>III</td>
<td>32 (32%)</td>
<td>57 (8.8%)</td>
<td>13 (16.1)</td>
<td>37 (14.5)</td>
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<td>IV</td>
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<td>4 (1.5%)</td>
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<td>23 (3.4%)</td>
<td>12 (7.4%)</td>
<td>12 (4.8)</td>
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<tr>
<td>Grade</td>
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<td>&lt;0.0001</td>
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<td>I</td>
<td>4 (4%)</td>
<td>114 (17.6%)</td>
<td>0 (0%)</td>
<td>3 (1.2%)</td>
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<tr>
<td>II</td>
<td>36 (36%)</td>
<td>387 (59.7%)</td>
<td>22 (27.7%)</td>
<td>27 (10.4%)</td>
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<td>III</td>
<td>54 (54%)</td>
<td>137 (21.3%)</td>
<td>56 (69.3%)</td>
<td>222 (85.7%)</td>
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<tr>
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<td>10 (1.5%)</td>
<td>3 (3.7%)</td>
<td>7 (2.7%)</td>
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<td>Volumetric Breast Density (%)</td>
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<tr>
<td>Breast Volume (cm³)</td>
<td>1039.5 ± 489.5</td>
<td>955.5 ± 580.8</td>
<td>950.9 ± 586.4</td>
<td>1054.6 ± 805.1</td>
<td>P &lt; 0.0792</td>
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<tr>
<td>Fibroglandular Volume (cm³)</td>
<td>69.3 ± 41.4</td>
<td>60.6 ± 37.8</td>
<td>66.6 ± 45.6</td>
<td>67.3 ± 34.18</td>
<td>P &lt; 0.0304</td>
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LYMPHEDEMA AFTER SENTINEL NODE BIOPSY OF UPPER EXTREMITY CUTANEOUS MALIGNANCIES IS RARE AND QUESTIONS THE VALUE OF REVERSE AXILLARY MAPPING FOR BREAST CANCER PATIENTS

Presenter: Raulee Morello MD | Ochsner Clinic Foundation
Morello RTS, Jeter LK, Corsetti R, Mackey A, Higgins S, Kattar N

Introduction: Sentinel lymph node (SLN) mapping and biopsy for upper extremity cutaneous malignancy identifies the first draining lymph node in the axilla. This is technically the same node that is identified during the breast cancer staging procedure known as axillary reverse mapping (ARM) where the first draining node from the upper extremity is identified during breast cancer axillary surgery and avoided so that the risk of subsequent lymphedema may potentially be reduced. We performed this study to determine the risk of lymphedema after SLN biopsy for upper extremity cutaneous malignancy and its implications for adding ARM to axillary breast cancer surgery.

Methods: We reviewed the electronic medical records of a single surgeon’s treatment of all patients with upper extremity cutaneous malignancies that underwent sentinel lymph node biopsy. Lymphedema was defined as evidence of swelling, edema, or lymphedema of the extremity on physical exam. No objective assessment to make a diagnosis of lymphedema was used for this study. Six patients subsequently had a complete axillary lymph node dissection and were also included in the study. For patient that had a complete lymph node dissection, the presence of lymphedema was determined prior to these patients after sentinel node biopsy but before a full axillary dissection was performed. The number of lymph nodes resected and the length of follow up were included.

Results: A total of 69 patients were identified between 2012 and 2018. Only a single patient demonstrated lymphedema after sentinel lymph node biopsies (1.45%). Of the six patients that went on to have full axillary lymph node dissections two developed lymphedema (rate of 33.3%). The mean number of lymph nodes resected for the sentinel lymph node biopsy was 2.6 with a range of 1-12. The mean follow-up was >2 years with a range of 2-368 weeks.

Conclusion: The rate of lymphedema after axillary sentinel lymph node biopsy for upper extremity cutaneous malignancies is low (1.45%). The benefit of ARM in reducing the rate of lymphedema is not conclusive. This low rate of lymphedema after resection of the primary draining node of the upper extremity questions the value of ARM during SLN biopsy for breast cancer.
Introduction: The instance of contralateral axillary lymph node metastasis (CAM) has been thought to make up less than two percent of breast cancers with nodal metastasis. This rare and perplexing condition has led to changing opinions on the physiology of the disease and the proper therapeutic approach to management. We report a case of CAM in a 67-year-old female who presented to a community-based hospital with complaints of a recurrent left-sided breast mass seven years after a left-sided lumpectomy for ER- / PR- / HER2+ high-grade invasive ductal carcinoma. Workup included bilateral breast ultrasound, which revealed both left and right-sided conspicuous breast masses. PET scan imaging highlighted increased activity within the right axilla. In March 2019, a bilateral modified mastectomy with axillary lymph node dissection was performed. The pathology report revealed a 4.0 cm, ER- / PR- / HER2+ invasive mammary carcinoma of the left breast, a 6.0 mm, ER+ / PR+ / HER2- invasive mammary carcinoma of the right breast, and an ER- / PR- / HER2+ axillary node on the right-side. This pattern of disease is consistent with a distinct primary tumor of the right breast and contralateral axillary lymph node spread of tumor from the recurrent left breast mass. Cases of CAM pose a problem when determining the most appropriate therapeutic option. The dilemma stems from the equivocal classification of CAM as either regional nodal involvement or metastatic disease. Previously the AJCC (American Joint Committee on Cancer) had classified CAM as metastatic disease, but recent changes to AJCC guidelines have left physicians without clear classifications or recommendations. Numerous small studies have analyzed survival rates in cases of CAM, most of which have concluded that axillary lymph node dissection, followed by radiation and hormonal chemotherapy improves outcomes over chemotherapy and radiation alone. This is indicative of direct spread of disease being the most likely etiology. The results of these studies may have future implications on official classifications and recommendations for surgical management of the condition.
Introduction: Surgical resection of a tumor is a primary treatment option for patients with cancer. The extent of tumor removal determines the type of additional treatment that will be needed post-surgery to manage the patient’s care; and is vital to the patient’s eventual outcome. Currently, the methods used to assess clean (or negative) margins versus involved (or positive) margins lack real-time capabilities. Imaging techniques such as X-ray, computed tomography, magnetic resonance imaging, and positron emission tomography are only used pre- or post-operatively because they require bulky imaging equipment and have slow imaging speed. The purpose of this study is to validate the use of intraoperative ICG for better definition of pancreatic tumor margins.

Methods: We have developed a method to assess intraoperative surgical margins using an optical, hand-held imaging device and Indocyanine Green (ICG), an FDA-approved intravenous contrast agent. The imaging device is an investigational, pen-shaped camera that can detect ICG fluorescence within tissue. ICG is a near infrared (NIR) dye that is passively targeted to solid tumors mainly via the enhanced permeability and retention (EPR) effect. The imaging system consists of a light source (LD or LED) to generate the excitation light, a spectrometer to detect the emission signal from the tumor sample, two independent adjustable filter modules, a specially designed bifurcated fiber, and a computer for data acquisition. This study will enroll a total of 15 subjects who have a histological or cytological diagnosis of adenocarcinoma, islet cell carcinoma, or neuroendocrine carcinoma of the pancreas; and undergo a pancreatic resection. Patients will be dosed with ICG at 0.22 mg/kg, 2-hours prior to surgery; and undergo intraoperative as well as ex vivo imaging of tumor and tumor margins.

Results: In preclinical studies using mice with xenograft tumors and dogs harboring spontaneous tumors, we found that 2–24 hours post intravenous injection of ICG, the dye passively leaked into tumor tissue. These finding were validated in 4 dogs bearing tumors; no side-effects of ICG were observed in these studies. Currently, we are validating the capabilities of our imaging system in human subjects both (1) intraoperatively by examining the operative cavity after tumor removal and (2) ex vivo using the resected tumor tissue. Preliminary results indicate that ICG is sensitive to tumor tissue (accumulates in tumor tissue) and sufficiently specific to tumor tissue (ICG does not accumulate in normal peritumoral tissue).
Human Pancreatic Tumor Visualization

Ex vivo image(s) of human pancreatic resected tumor visualized using the ICG-assisted NIR imaging.

Ex vivo image(s) of negative pancreatic margins under the ICG-assisted NIR imaging.
**Introduction:** Our objective was to evaluate whether a designation as a “Melanoma Center of Excellence” (COE) by the Melanoma Hope Network® influenced referral patterns along the Southeastern Gulf Coast. Designation as a COE requires the sponsoring institution to meet certain clinical, research, and outreach requirements prior to designation. One of the touted benefits of such designation is an increase in patient referrals.

**Methods:** Utilizing billing data, a retrospective chart review was conducted to identify melanoma referrals. Each patient’s chart was reviewed and clinical data obtained. Data in the two and a half years prior to COE designation was compared to the two and a half years following COE designation. Additionally, staging data and number of sentinel lymph node biopsies in the pre and post COE timeframes were compared as a marker for disease complexity.

**Results:** In the two and a half years preceding COE designation, there were 39 referrals for surgical evaluation of melanoma. Following COE designation, there were 145 referrals for surgical evaluation of melanoma, which represented a 371% increase. The percentage of patients requiring a sentinel lymph node biopsy rose from 46% to 65%. In the post-COE cohort there was an increased proportion of stage 2 (21% vs 15%) and stage 3 (12% vs 5%) disease as compared with the pre COE cohort.

**Conclusion:** Designation as a Melanoma Center of Excellence was associated with changes in referral patterns for surgical evaluation of patients with melanoma along the Southeastern Gulf Coast. Along with a numerical increase in referrals, the complexity of referrals post COE designation appears to increase.
**Introduction:** Regional tumors involving the brachial plexus are rare and may provide a challenge for surgeons. When such tumors are encountered, it is important to consider surgeon experience, pre-operative imaging, clinical presentation, and multidisciplinary tumor board review prior to surgical intervention. Imaging findings are key in the decision to proceed with biopsy, marginal, or radical resection, as the consequences of indiscriminate radical resection carries serious implications.

Here we present three cases of soft tissue tumors presenting in the upper shoulder girdle, all exceeding 14 cm in size, and involving the brachial plexus to varying degrees. All consist of men with different medical histories and presentations, but all underwent marginal resection with identification and preservation of critical neurovascular structures.

**Case Descriptions:**

Patient A presented with increasing right axillary swelling without any pain and neurologically intact. Pre-operative MRI showed a lipomatous mass encasing the brachial plexus and axillary vasculature. The 14 cm mass was excised and found to be a benign lipoma, MDM2 negative. The patient has done well post-operatively without any adverse sequelae from surgery.

Patient B presented with a left axillary mass causing worsening pain and weakness. MRI showed a complex, asymmetric, partially encapsulated lipomatous lesion extending along the brachial plexus, consistent with lipoma or low-grade liposarcoma. Based on tumor board recommendations and patient preference, surgical excision was performed of the 14.5 cm tumor without a preceding biopsy. Post-operatively he had mild paresthesias and edema, but complete resolution of his pain. Pathology revealed a well-differentiated liposarcoma, MDM2 positive, that has not recurred at his six months follow-up.

Patient C presented with increasing pain and paresthesia from a right axillary mass. MRI showed a multilobular lipomatous lesion partially surrounding the neurovascular structures of the brachial plexus. The 18 cm mass was excised and found to be a benign lipoma. The patient has done well post-operatively without complication or recurrence.

**Discussion:** While regional brachial plexus tumors pose challenges for surgeons, a multidisciplinary and imaging-based approach is critical. Once identified as low grade lipomatous lesion, marginal resection should be considered rather than radical resection. Lipoma is a benign tumor and well differentiated liposarcoma is a low-grade malignancy that has little to no metastatic potential but does carry the risk of recurrence or dedifferentiation to high grade liposarcoma. Disease specific survival has not been found to be affected by positive margins or conservative management. Therefore, marginal resection can be performed with close post-operative follow-up.
Introduction: Liposarcoma of the spermatic cord is a rare diagnosis and comprises 5-7% of paratesticular sarcomas. A common presentation of liposarcoma is a slow growing, non-tender, painless, nodular mass of varying size located within the scrotum. These can easily be confused with inguinal hernia, hydrocele, or other tumor of the testis or epididymis and preoperative diagnosis is very challenging.

Methods: A 46-year-old African American male with a history of HIV presented to the general surgery clinic as a referral from Urology for left inguinal hernia. The patient noticed the presumed hernia two years ago and the Urologist had obtained an US that revealed an inguinal hernia with incarcerated omentum. On exam he had significant left scrotal distention. He was taken to the OR for repair, however, on intraoperative assessment there was only a very small direct hernia noted and no evidence of a hernia sac. Urology continued further workup outpatient but all tumor markers including AFP, LDH, and HCG were negative. So he was prepped for scrotal exploration and excision of presumed lipoma after six weeks of recovery.

Results: A hemi-scrotal incision was made and the lipomatous material was dissected out and was noted to be extremely firm and indurated. The cord and testicle ran through the lobulated mass. A portion was sent for frozen and pathology came back as liposarcoma. Completion orchiectomy was done and the spermatic cord contents were ligated at the external ring. Final pathology showed a 12.5cm high grade de-differentiated liposarcoma with a positive margin at the spermatic cord. Staging CT was done and was negative for metastatic disease. After discussion at tumor board it was decided to do radiation and then completion radical left groin dissection.

Conclusion: After completion of chemotherapy he was taken back to the OR for re-excision, mesh explant, and complex closure. Pathology did reveal residual tumor within the specimen but all of the margins were negative. The patient has done well and is currently four years out and remains disease free. Liposarcoma of the paratesticular tissues is a rare diagnosis with only about 200 cases reported in the literature. However, it needs to be kept in the differential in people with large, slow growing testicular masses that mimic an inguinal hernia.
Introduction: Spindle cell lipomas are rare, slow growing tumors that are usually seen in 40-70 year old males. They typically form in the subcutaneous tissue of the upper back, posterior neck, and shoulders. They account for 1.5% of all reported lipomatous tumors. These lesions share similar morphology with other fatty, spindle cell, or myxoid lesions—both benign and malignant. The histologic distinction between spindle cell lipoma and liposarcoma is important as surgical management and prognosis of these two entities are dramatically different.

A 59-year-old male was evaluated in the outpatient office with complaints of a large, slowly enlarging, posterior neck mass that has been present for several years. The mass was causing intermittent sharp pain. The patient also had difficulty sleeping due to the size of the mass. He denied having any other masses on his body. He was found to have a soft, freely moveable, subcutaneous mass at the base of the posterior neck measuring 9 x 6 cm. Surgical excision was performed revealing a firm yellow solid lipomatous mass. Final pathology demonstrated spindle cell lipoma. The patient presented for routine post-operative follow-up without any acute complications.

Spindle cell lipoma is a rare variant of lipomatous tumors. They are benign and do not have any malignant potential. Local excision is usually curative. In addition to the typical adipocytes seen in benign lipomas, these masses have unusual features such as spindle cells which may also be seen in malignant liposarcoma. Spindle cell lipomas differ from liposarcomas, however, in that they lack the presence of lipoblasts. CD34 positivity may also differentiate spindle cell lipoma from liposarcoma but CD34 can be seen in a variety of mesenchymal tumors including some liposarcomas. Spindle cell lipomas can be treated with local excision alone but an oncologic resection of at least 2 cm is required for surgical excision of liposarcoma. If the preoperative diagnosis of malignancy is suspected, MRI or core needle biopsy maybe performed to aid in diagnosis.
Introduction: A 30 year old Caucasian female, G2P1001 at 33w6d and history of spina bifida in childhood initially presented with low grade fever, leukocytosis, tachycardia, abdominal pain, and contractions. She was admitted to the OB/GYN service and was monitored for preterm labor. She was treated for chorioamnionitis and soon thereafter underwent a spontaneous vaginal delivery at 34 weeks, which was presumptively secondary to chorioamnionitis. She had a routine postpartum recovery, leukocytosis trended down and patient was afebrile. She was discharged home.

The following day, postpartum day four, she presented to the ED after developing progressive worsening abdominal pain, persistent fever, and new onset of left sided abdominal pain. She underwent a CT scan of her chest, abdomen, and pelvis, which demonstrated distended post partum uterus filled with blood products, edema, air, and complex fluid collection. There were extra luminal locules of air along the uterus and upper abdominal free fluid. She was admitted and treated with broad spectrum intravenous antibiotics. General Surgery was consulted for perforated viscus.

The patient was taken to the operating room for an emergent diagnostic laparoscopy, which was converted to an exploratory laparotomy and the patient was noted to have purulent peritonitis. She was found to have an indurated and perforated sigmoid colon, which was resected and a descending end colostomy was created. She remained in the ICU post operatively and required vasopressors for treatment of septic shock. Her placental pathology did not demonstrate any evidence of chorioamnionitis and her blood cultures began growing Streptococcus anginosus.

After transfer out of the ICU, she underwent an uneventful postoperative recovery and was discharged home on postoperative day 11. She received outpatient intravenous antibiotics per Infectious Disease recommendations. Her pathology demonstrated Stage IIA, pT3 pN0 M0 Moderately Differentiated Sigmoid Adenocarcinoma with 6cm macroscopic tumor, perforation, suspected perineural invasion, negative margins, 0/14 lymph nodes positive, and KRAS Mutation. She saw Medical Oncology and her case was presented at tumor board. A month later she had a port placed and is currently undergoing adjuvant chemotherapy with plans for restaging and possible colostomy reversal after completion of treatment.

Results: A lesser-known milestone in immunology deserves celebration: the 240th anniversary of the publication of John Hunter’s Account of the Free Martin manuscript, one of the first formal studies in the Western scientific canon to critically analyze the freemartin. In this manuscript, we explore the study of the freemartin condition and its impact on the discovery of immunologic tolerance and the field of transplant surgery – from the ancient Romans, to early modern anatomists Valsalva, Scarpa, and Hunter, to contemporary immunologists Owen, Medawar, and Billingham, and to legendary transplant surgeon Joseph Murray.

Conclusion: The legacy of freemartin cattle in the understanding of acquired tolerance and transplant immunology represents generations of scientific inquiry guided by careful observation and occasional serendipity, and the present-day immunologists and surgeons exploring immune transplant tolerance owe much to the history of the freemartin, several millennia in the making.
**P 326. NEW KIDNEY ALLOCATION SYSTEM INCREASING KIDNEY TRANSPLANT WAIT-TIME LIST IN THE HISPANIC POPULATION**

Presenter: Texell Longoria-Dubocq MD | University of Puerto Rico
Longoria-Dubocq TX, Pizarro-Gonzalez Y, Mayorga-Perez I, Hernandez-Rivera P

**Introduction:** The Kidney Allocation System (KAS) implemented on December 4, 2014, was expected to improve kidney transplant list wait-time. This new system added a Kidney Donor Profile Index (KDPI), which estimates donor kidney quality, and an Estimated Post-Transplant Survival (EPTS), which measures kidney recipient’s overall survival. Short-term studies demonstrated that the implementation of the KAS improves the waiting-time list, organ sharing and transplants within minority groups, such as Hispanics and African Americans. This study aims to demonstrate the KAS effects on kidney transplants within a Hispanic transplant center.

**Methods:** Retrospective study from a prospectively maintained database from a single-transplant center. Hispanic patients who underwent kidney transplant from July 2013 to June 2017 were included in this study. Multi-organ transplants were excluded. Patients were divided into pre-KAS and post-KAS if transplant occurred before or after KAS enactment on December 4, 2014. A 3-year period was divided into 1.5 years pre-KAS and 1.5 years post-KAS groups to maintain homogeneity, as well as provide to provide a 1-year post-transplant graft and patient survival. EPTS and KDPI were calculated using the OPTN calculator for patients before KAS implementation. SPSS software was used for statistical analysis of numerical and categorical variables using a p-value < 0.05 to establish statistical significance.

**Results:** The overall number of kidney transplants performed during the study period was 220. All of the patients were Hispanic. They were divided into their respective groups as described, pre-KAS 50.5% (111/220) and post-KAS 49.5% (109/220). The pre-KAS had a significant shorter waiting-time list than the post-KAS group, 900.05 (±65.84) vs 1126.75 (±86.61) respectively. Patients were expected to have significantly longer survival in the post-KAS group, with 41.3% (45/109) being in the EPTS less than 20 category compared to 20.9% (23/111) in the pre-KAS group. However, no difference in mortality was observed. KDPI distribution was similar between both groups with no significant changes in graft failure rates.

**Conclusion:** Similar studies from large volume centers have demonstrated an improvement in the wait-time list. In this Hispanic cohort, KAS increased the wait-time list by approximately 25%. Not meeting KAS objective of improving the wait-time list. Also, the implementation of EPTS and KDPI led to a more objective patient selection and kidney allocation but had no effect on 1-year mortality or graft failure rates. The objective of KAS may have led to improvements in large centers but in smaller centers results have not been the same.
**P 327. LAPAROSCOPIC-ASSISTED ABDOMINAL WALL PEXY OF PERITONEAL DIALYSIS CATHETER IN PRESENCE OF INTRAPERITONEAL ADHESION HELPS ACHIEVE A LONG TERM FUNCTION**

Presenter: Wei Wei MD | Twin County Regional Healthcare, Duke LifePoint Healthcare
Wei W, Fanous M

**Introduction:** Peritoneal dialysis (PD) is used to treat patients with end-stage renal disease (ESRD). Recently, PD has been gaining popularity, in particular, in rural community, because of its convenience, efficacy, and durability. However, PD catheter placement has been controversial in patients with a history of previous abdominal surgeries or peritonitis, because of significant risk of PD catheter malfunction and complications, which was related to PD catheter migration. The dilemma is that surgical division of these adhesions to place the PD catheter results in more adhesions. This case highlights the impact of laparoscopic securing the catheter to the abdominal wall to keep it in an adhesion free area on patency and function in a patient with extensive intraperitoneal adhesions.

**Subjects:**
A 76 year-old white male was on hemodialysis for ESRD secondary to diabetes and hypertension. Because of transportation difficulty and intolerance to hemodialysis, the patient was switched to peritoneal dialysis, which later was complicated with peritonitis and sepsis. A year after removal of the initial PD catheter, patient desired for replacement of PD catheter.

**Technique:**
After pneumoperitoneum was established, the diagnostic laparoscopy revealed significant intraperitoneal adhesion mainly located at the left side of abdomen with right side of abdomen spared. The Tenckhoff PD catheter, which was straightened by a steel stylet, was inserted via the 5 mm trocar. The steel stylet was removed. The pig tail of PD catheter was navigated away from the adhesion and directed to the right side abdomen for internal fixation. The catheter at the 9 cm from the PD catheter cuff was attached to the right paramedian peritoneum using laparoscopic suturing technique with a 3-0 silk suture.

**Results:** PD started one week after placement. The patient had excellent inflow and outflow for 9 months to date without complication or a need of revision.

**Conclusion:** The laparoscopic pexy of PD catheter to abdominal wall to keep PD catheter in an adhesion free compartment is beneficial in selected patients. Future study with a larger number of patients is needed to further validate this strategy.
P 328. OPERATIVE VS. NON-OPERATIVE MANAGEMENT OF HEMORRHAGE IN THE POSTOPERATIVE KIDNEY TRANSPLANT PATIENT

Presenter: Robert Shaw | Tampa General Hospital
Reavis T, Buggs J, Shaw R, Meruva V, Montz F, Rogers E, Kumar A, Bowers V

Introduction: Postoperative hemorrhage has been described at rates of 14 percent in kidney transplant literature. The preferred management of postoperative hemorrhage in this population is not well described. The objective of this study was to determine a difference in outcomes with operative vs. non-operative management of hemorrhage after kidney transplantation.

Methods: We conducted a retrospective cohort study of consecutive kidney transplants from 2012-2019 (living and deceased donors). We classified patients with the complication of hemorrhage based on the objective finding of hematoma on either ultrasound or CT scan. Management was defined as operative (surgical intervention with or without transfusion) or non-operative (with or without transfusion).

Results: We performed 1,758 KTs of which 135 (8%) demonstrated hematoma on ultrasound or CT scan (66 operative vs. 69 non-operative management). The clinical signs and symptoms of low urine output (p=0.044), drop in hemoglobin (p<0.000), abdominal pain (p=0.005) and mean arterial pressure < 70 mm Hg (p=0.034) were 92.5% predictive of postoperative hemorrhage in our kidney transplant patients. There were no differences between groups based on medical history, pre-op anticoagulation, anastomosis type, cold ischemic time, lowest hemoglobin, delayed graft function or complications. Patients with non-operative treatment of postoperative hemorrhage had shorter lengths of stay (p<0.000), better graft survival (p=0.01), and better patient survival (p=0.01).

Conclusion: We found better outcomes of graft and patient survival with shorter lengths of stay when we utilized non-operative management of postoperative hemorrhage in kidney transplant patients. Our findings suggest a role for conservative non-operative management in select patients, while recognizing it is ultimately the surgeons' decision on how best to manage the complication of post-operative hemorrhage.
<table>
<thead>
<tr>
<th>Recipient Characteristics</th>
<th>Operative Management</th>
<th>Non-Operative Management</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=135</td>
<td>N=66</td>
<td>N=69</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>37.9%</td>
<td>36.2%</td>
<td>0.86</td>
</tr>
<tr>
<td>Hyperension</td>
<td>95.5%</td>
<td>97.1%</td>
<td>0.68</td>
</tr>
<tr>
<td>Coronary Artery Disease</td>
<td>26.8%</td>
<td>14.5%</td>
<td>0.13</td>
</tr>
<tr>
<td>Pre-Operation Anti-Coagulants</td>
<td>40.9%</td>
<td>49.3%</td>
<td>0.39</td>
</tr>
<tr>
<td>Cold Ischemia Time</td>
<td>13.5</td>
<td>12.5</td>
<td>0.46</td>
</tr>
<tr>
<td>Anastomosis Type: End to Side</td>
<td>97.0%</td>
<td>98.5%</td>
<td>0.62</td>
</tr>
<tr>
<td>Aortic Patch</td>
<td>59.1%</td>
<td>55.1%</td>
<td>0.73</td>
</tr>
<tr>
<td>Stent Placement</td>
<td>80.3%</td>
<td>82.6%</td>
<td>0.83</td>
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<table>
<thead>
<tr>
<th>Recipient Outcomes</th>
<th>Operative Management</th>
<th>Non-Operative Management</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=135</td>
<td>N=66</td>
<td>N=69</td>
<td></td>
</tr>
<tr>
<td>Length of stay (mean days)</td>
<td>16.3</td>
<td>10.7</td>
<td>&lt;0.000</td>
</tr>
<tr>
<td>Lowest Hgb (mean)</td>
<td>7.0</td>
<td>7.2</td>
<td>0.33</td>
</tr>
<tr>
<td># or RBC transfusions (mean)</td>
<td>2.9</td>
<td>2.8</td>
<td>0.92</td>
</tr>
<tr>
<td>Delayed Graft Function</td>
<td>30.2%</td>
<td>20.3%</td>
<td>0.23</td>
</tr>
<tr>
<td>Cardiac Complications</td>
<td>21.2%</td>
<td>14.5%</td>
<td>0.37</td>
</tr>
<tr>
<td>Pulmonary Complications</td>
<td>6.1%</td>
<td>7.2%</td>
<td>1.00</td>
</tr>
<tr>
<td>Infection Complications</td>
<td>25.8%</td>
<td>13.0%</td>
<td>0.08</td>
</tr>
<tr>
<td>Overall Graft Survival (days)</td>
<td>1,764.3</td>
<td>2,464.5</td>
<td>0.01</td>
</tr>
<tr>
<td>Overall Patient Survival (days)</td>
<td>1,811.9</td>
<td>2,501.6</td>
<td>0.01</td>
</tr>
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</table>
**Introduction:** Recurrent toxic shock syndrome is uncommon. A certain level of clinical suspicion is indicated with a complex sepsis presentation in the post-operative kidney transplant patient. The objective of this case review was to present an interesting finding of recurrent toxic shock syndrome in a living donor kidney transplant patient.

**Methods:** We conducted a single case series of recurrent post-operative toxic shock syndrome in a living kidney transplant recipient through the review of electronic medical records.

**Results:** The patient was a 19-year old Caucasian female with a four-year prior single episode of toxin mediated sepsis and chronic kidney disease secondary to autosomal recessive Alport’s syndrome (confirmed via renal biopsy and genetic testing). She received an HLA 2A 2B 1DR mismatch, CMV -Donor/-Recipient kidney from her 21-year old friend. The patient received Campath and IV steroid induction after total cold ischemic time of 170 minutes with 40 minutes of revascularization. POD #5 she required re-exploration with reimplantation and stenting of the transplanted ureter. The patient subsequently spiked a fever of 101.6 with a generalized rash prompting collection of blood cultures which demonstrated no growth. Infectious Disease was consulted due to persistent fevers despite IV antibiotics. POD #12 the patient returned to the OR for evacuation of hematoma after decline in Hgb to 5.8 and CT confirmed perinephric hematomas. Kidney biopsy showed no rejection and donor specific antibody was unremarkable. The patient underwent one treatment of empiric plasmapheresis for possible non-HLA antibodies followed by initiation of Clindamycin. The patient’s condition improved, and she was discharged home with a normal creatinine.

**Conclusion:** Recurrent toxic shock syndrome is rare but should be added to the differential diagnoses of immunocompromised patients undergoing kidney transplantation with a history of prior toxin mediated sepsis and persistent fevers unresponsive to antibiotics.
Kidney Transplant Ultrasound

Pelvic CT Scan
Introduction: Vascular complications such as hepatic artery stenosis or thrombosis can occur following liver transplantation. Doppler ultrasound is the primary method of screening for vascular complications in the early post-operative period. The objective of this study was to investigate patients with abnormal ultrasound findings who received subsequent vascular intervention and determine a correlation with vascular complications in the liver transplant patient.

Methods: A retrospective chart review (January 2014 to March 2019) was conducted on consecutive adult patients undergoing deceased donor liver transplantation. Primary outcomes included abnormal ultrasound findings and performing an intervention (transplant angiography or surgery). Abnormal ultrasound findings were defined as: (1) resistive index < 0.5 of right, left, or common hepatic artery (CHA), (2) CHA peak systolic velocity > 250 cm/sec, or (3) CHA acceleration time > 0.1 sec.

Results: Of 391 liver transplants, 388 patients had at least one ultrasound within 45 days post-transplant. Of these, 125 (32%) had abnormal ultrasound findings with 31 (25%) of them undergoing intervention. In addition, 264 patients had at least two ultrasounds. Of these patients, 110 (41.7%) had at least one abnormal ultrasound finding with 36 (33%) undergoing intervention. Lastly, 49 patients had two abnormal ultrasounds within 45 days post-transplant with 23 (47%) requiring evaluation of the hepatic artery by angiogram or surgery. Ultimately 91% of patients with two abnormal ultrasounds and further intervention had clinical arterial stenosis or thrombosis.

Conclusion: Liver transplant patients, with two consecutive abnormal ultrasounds within 45 days post-transplant, should receive a follow-up due to increased likelihood of hepatic artery complication requiring intervention suggesting increased utility of repeat ultrasound to decrease the incidence of graft loss.
### Patients with One or Two Ultrasounds 45 Days Post-Transplant

<table>
<thead>
<tr>
<th></th>
<th>Patients with one ultrasound within 45 days post-transplant</th>
<th>Patients with two ultrasounds within 45 days post-transplant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number</td>
<td>388</td>
<td>264</td>
</tr>
<tr>
<td>Positive ultrasound findings</td>
<td>125 (32%)</td>
<td>110 (41.7%)</td>
</tr>
<tr>
<td>Underwent intervention</td>
<td>21 (25%)</td>
<td>26 (33%)</td>
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</table>

### Patients with Two Abnormal Ultrasounds and Intervention Type

<table>
<thead>
<tr>
<th>Patients with two abnormal ultrasounds within 45 days post-transplant</th>
<th>Total Number</th>
<th>Underwent intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>49</td>
<td>23 (47%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intervention type (N = 23)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reoperation</td>
<td>7</td>
</tr>
<tr>
<td>Thrombosis leading to thrombectomy</td>
<td>4</td>
</tr>
<tr>
<td>Stenosis leading to revision</td>
<td>2</td>
</tr>
<tr>
<td>Kink/compression leading to repositioning</td>
<td>1</td>
</tr>
<tr>
<td>Angiogram</td>
<td>16</td>
</tr>
<tr>
<td>Mild stenosis (0-25%)</td>
<td>1</td>
</tr>
<tr>
<td>Moderate stenosis (26% - 75%)</td>
<td>3</td>
</tr>
<tr>
<td>Severe stenosis (76% - 99%)</td>
<td>7</td>
</tr>
<tr>
<td>Stenosis NOS</td>
<td>2</td>
</tr>
<tr>
<td>Occlusion</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
<tr>
<td>Reoperation and Anglo</td>
<td>3</td>
</tr>
</tbody>
</table>
Introduction: End stage renal disease (ESRD) remains a significant cause of overall morbidity and mortality. Current treatment modalities include dialysis and/or renal transplant with the latter remaining the preferred therapy. In 2017, there were 92,685 patients on the waitlist with only 21% receiving a kidney. Due to the increasing demand, approximately 40% of patients on the waitlist are electing to potentially receive higher risk/abnormal organs to increase their chances of allocation. Horseshoe kidneys are a common congenital variant that have now been deemed suitable for transplant whether en bloc or split. Although data is limited, there have been multiple case reports demonstrating successful outcomes in patients receiving horseshoe kidneys.

Our patient is a 60-year-old female diagnosed with ESRD secondary to polycystic kidney disease. She was on the waiting list for 2 years while managing her ESRD with peritoneal dialysis. On admission, her creatinine was 9.7 with a GFR of 4. The following morning, the horseshoe kidney arrived after procurement from a deceased donor. During backtable preparation, the horseshoe kidney was noted to have multiple renal arteries and veins originating from the aorta and inferior vena cava (IVC) and dual ureters. Decision was made to ligate the proximal aorta and IVC and transplant the organ en bloc. The standard retroperitoneal approach was performed on the right while ensuring ample exposure of the external iliac artery and vein due to the sheer volume of the donor kidney. An end to side anastomosis was performed from the donor aorta and IVC to recipient external iliac artery and external iliac vein, respectively. The donor organ began functioning immediately. Only one donor ureter was able to reach the bladder, therefore, the second was anastomosed to the native ureter. Cold ischemia time was 772 minutes and warm ischemia time was 17 minutes. The patient did well post-operatively with adequate urine output and improvement in creatinine to 2.8. She was discharged on post-operative day 3. She has been seen on routine follow up and continues to do well with satisfactory allograft function.

Despite the overall increase in deceased donor renal transplants, the waitlist continues to increase as well as the discard rate for procured kidneys, with anatomical variations contributing to 6-8% of total discarded kidneys. This case describes a successful renal transplant with a horseshoe kidney and illustrates the necessity of utilizing congenital or anatomical variants to help increase allocation to patients on the waitlist.
P 332. ORGAN DONOR BODY MASS INDEX DOES NOT SIGNIFICANTLY IMPACT EITHER GRAFT OR RECIPIENT SURVIVAL AFTER LIVER TRANSPLANT

Presenter: Brenda Ma DO | University of Mississippi Medical Center
Ma BL, Parikh K, Carter KT, Kutcher ME, O'Brien R, Koller F, Copeland H

Introduction: Seventy percent of adults in the United States are overweight or obese. Given the association between obesity and liver disease, the purpose of our study is to examine the effect of donor body mass index (BMI) on recipient outcomes in liver transplantation.

Methods: The United Network for Organ Sharing (UNOS) database was retrospectively reviewed from 1/2007-3/2018 for donor livers. After exclusion of multiorgan transplant (tx) and age (donor < 15 years(y), recipient < 18y); 56,835, patients went on to receive liver transplants. Random survival forest modeling, a powerful nonparametric method with less restrictive model assumptions than Cox’s proportional hazard regression, was used to analyze 1- through 5-year recipient and graft survival.

The median, 25th, and 75th percentiles for age were 44y (28y, 55y) for donors and 57y (50y, 62y) for recipients; 41% of donors were female as were 32% of recipients.

Results: Donor BMI ranged from 10.6-72.6 kg/m2 (mean 27.8 kg/m2), with 54,073 (95%) having BMI < 40 kg/m2, 2,260 (4%) with BMI 40-50 kg/m2, and 432 (1%) with BMI ≥ 50 kg/m2. Donor BMI was not significantly associated with patient or graft survival as assessed by random survival forests (Figure 1).

Conclusion: Donor BMI alone impacts neither recipient nor graft survival after liver transplantation. If appropriately sized for the recipient under consideration, donors at the extremes of obesity should not be ruled out based on BMI alone.
Figure 1. Survival curves for patient (A) and graft (B) based on donor BMI. The survival curves were estimated nonparametrically without model assumptions.
**P 333. A RARE CASE OF PERFORATED JEJUNAL DIVERTICULITIS**

Presenter: Mohamed Nagi MD | Ocala Health

Nagi M, Deturris S, Ang D

**Introduction:** Jejunal diverticulosis is a rare condition with clinical incidence of 0.5%. It is less common than colonic and duodenal diverticulosis. It is usually asymptomatic and diagnosed incidentally but it may cause chronic symptoms and acute complications. The aim of the case report is to increase the awareness about the disease.

**Case Report:** This is a 56-year-old Caucasian male who presented with abdominal pain and fever and was diagnosed with transverse colon diverticulitis with microperforation on CT scan. Patient was treated nonoperatively with antibiotics and was discharged home. Two months later, he presented with similar recurrent abdominal pain and was found to have leukocytosis and jejunal small bowel inflammation with microperforation and abscess formation. MRI Enterography was obtained and showed small bowel diverticulitis. Patient was taken to OR and underwent small bowel resection and primary anastomosis. Patient did well and was discharged home.

**Discussion:** Jejunal diverticulosis etiology is unknown but believed to be result of intestinal dyskinesia. It is more common in older patient and majority of cases are asymptomatic. It is associated with complications as stasis, bacterial overgrowth, malabsorption, bleeding, diverticulitis and perforation.

Treatment of choice for perforated jejunal diverticulitis is segmental resection, if diverticula is extensive, resection is limited to include only the perforated diverticulitis and leave the non-perforated diverticula to avoid short bowel syndrome. In our case, jejunal diverticulosis segment was 50 cm, so decision was made to resect the whole segment including the perforated diverticulitis.

**Conclusion:** Jejunal diverticulitis is uncommon and can be misdiagnosed. Awareness of the disease and have it in the differential diagnosis of abdominal pain will lead to right diagnosis. CT and MRI are helpful tool in making the diagnosis and evaluating its extent.
P 334. TIME FROM ORGAN DONATION REFERRAL TO PROCUREMENT DOES NOT IMPACT SURVIVAL IN ABDOMINAL TRANSPLANT RECIPIENTS
Presenter: Clayton O Rooks MD | University of Mississippi Medical Center

Introduction: The majority of organs for transplantation are procured from brain dead (BD) donors. BD has been shown to be a major contributing factor to inferior graft function post-transplant.

Additionally, a recent study showed that as the time from referral to procurement increases, the mortality for the heart transplant recipient increases. The purpose of this study is to look at the effect of the interval from referral to procurement on mortality in abdominal transplant recipients.

The United Network for Organ Sharing (UNOS) database was retrospectively reviewed from 01/2007 - 03/2018 for donor livers, pancreata, and kidneys. After exclusions for multi-organ transplants, DCD donors, and age (donor < 15 years(y), recipient < 18y); 56,835, 2,312 and 72,044 patients went on to liver, pancreas, and kidney transplant, respectively. The primary outcome was 3-year survival. Modeling was done via random survival forests and Weibull regression.

For liver transplants, donor age ranged from 15-93y (mean 43y), recipient age from 18-82y (mean 55y), and 41% of donors were female as were 32% of recipients. For pancreas transplants, donor age ranged from 15-57y (mean 25y), recipient age from 18-68y (mean 43y), and 31% of donors were female as were 49% of recipients. For kidney transplants, donor age ranged from 15-59y (mean 35y), recipient age from 18-96y (mean 51y), and 38% of donors were female as were 40% of recipients. Neither time from referral to recovery nor admission to recovery of the donor is a significant predictor for survival for abdominal organ recipients using either modeling approach (all p-values ≥ 0.13 using Weibull regression and relative importance ≤ 0.02 compared to a maximum relative importance of 1.00 for recipient length of stay (LOS) post-transplant using random forests for all organs).

The time from referral to procurement and from admission to procurement of abdominal transplant donors does not affect recipient survival. While recovery should be performed expeditiously, a delay due to operating room or staff availability will not affect overall outcomes.
Figure 1. Survival curves with 99% confidence intervals for time from referral to recovery of the donor for kidney (A), pancreas (B), and liver (C).
Introduction: Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal tumors of the gastrointestinal tract, yet they account for less than 1% of all gastrointestinal neoplasms. Current estimates report a total number of GIST cases in the United States to range from 4-6,000. These neoplasms may occur anywhere along the GI tract, however the stomach is the most common place of origin (60%) followed by the small intestine (30%). Presentation typically manifests as a GI bleed, but other symptoms may include acute abdomen (tumor rupture), obstruction, pain, progressive distention and early satiety. GISTs range in size from less than 1 cm to more than 40 cm, with an average of 5 cm. We present the largest case to date with a GIST tumor measured at 55x45x20 cm. The presentation of the patient, diagnosis, treatment, and potential implications are discussed in this case report.
Introduction: School violence continues to afflict our educational institutions. Our ability as a nation to eradicate this phenomenon is challenged. In response, an institutional initiative was launched to empower educators and school support staff in life-saving skills aimed at hemorrhage control. This prospective study quantifies the educator’s transformation from pre-course to post-course confidence in the ability to stop a life-threatening hemorrhage.

Methods: The American College of Surgeons Committee on Trauma “Stop the Bleed Program” was promoted as a quality improvement initiative to schools within the geographic catchment of this Level I Trauma Center. Participants from schools (n=324) opting to participate were given a pre-course, and post-course survey using a Likert Scale in order to assess their confidence in their ability to render life-saving hemorrhage control. A statistical analysis of the 324 pre to post-course evaluations measuring change in confidence were used to evaluate improvement in readiness of school systems to respond in mass casualty incidents.

Results: There was a significant increase in self-confidence within the school participants with their readiness to recognize and potentially stop a life-threatening hemorrhage.

Conclusion: This “Stop the Bleed” quality initiative has demonstrated a statistically significant improvement in the confidence of teachers and school personnel to render lifesaving care in the event of a mass casualty or isolated incident of life-threatening hemorrhage. These results support the validity of the training in making a difference in this sub-population of responders.
Introduction: A comparative study to compare the carcinogenic properties between traditional cigarette and e-cigarette, with the focus on the current status and usage of e-cigarette, and current research and future direction.

Methods: Retrospective data analysis and literature review

Results: Modern (Electronic Nicotine Delivery Systems) ENDS was developed in 2003, and appeared in the US market circa 2006-2007. E-cigarette use, from 2017 to 2018, increased 78 percent among high school students (11.7% to 20.8%) and 48 percent among middle school students (3.3% to 4.9%) from 2017 to 2018. 3.62 million middle and high school students were current users of e-cigarettes in 2018. According to a 2013-2014 survey, 81 percent of current youth e-cigarette users cited the availability of appealing flavors as the primary reason for use.

Conclusion: Newer studies utilizing advanced collection methods were able to detect carcinogenic chemicals that were absent from older studies. We still need further studies to confirm these findings, and new collecting technologies are under development to better detect any other carcinogenic chemicals.
Introduction: Chronic lower extremity wounds are a difficult and costly problem and are increasing in frequency as our population ages. We review our early experience with a fully synthetic nanofiber scaffold in treating lower extremity wounds refractory to conventional treatment.

Methods: We used the nanofiber scaffold in ten consecutive patients with lower extremity wounds that had not responded to at least a month of conventional management. Nine of the patients were male. Age range was from 54 to 74 years. Comorbidities were common. Nine had diabetes, five were morbidly obese, and six had venous insufficiency. All had adequate arterial inflow for wound healing, as demonstrated by either palpable pulses or ABI’s over 0.8. Patients underwent debridement of all non-viable tissue, then application of a fenestrated piece of the scaffold (Restrata-Acera Surgical) with stabilization of the material with either a negative pressure device or a gauze bolster. Patients were seen two times a week. If a single application did not result in healing, subsequent applications were done at two week intervals.

Results: We treated twelve wounds in the ten patients. All were on the lower extremity, and etiologies included diabetic plantar ulcers, venous stasis ulcers, and trauma. All of the wounds healed. Ten healed with Restrata alone. In the remaining two patients Restrata was used as a bridge to prepare the wound for a split thickness skin graft. All but one patient required no more than two applications of the product. The remaining patient required three applications to a chronic lateral malleolar of twenty years duration for initial healing. However, he recurred about 2 months later and has had three more applications. The wound is now almost completely healed again, and we do not anticipate using more of the product in his treatment. Restrata was also quite economical. The cost of Restrata was $141 per square centimeter. Previously, we had used an amniotic based product for similar wounds, and it cost $190 per square centimeter. Also, the amniotic product requires weekly applications, whereas the nanofiber product is applied every two weeks. The scaffold has resulted in significant cost savings.

Conclusion: Use of a totally synthetic nanofiber scaffold in the treatment of refractory lower extremity wounds appears to be an effective tool for healing. In addition, costs with this product are significantly less than with amniotic based products. Larger case numbers will be needed to confirm these conclusions.
<table>
<thead>
<tr>
<th>Patient details</th>
<th>Wound location</th>
<th>Size (cm)</th>
<th># of applications</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>54, F</td>
<td>Calf</td>
<td>11.5 x 9.2 x 0.5</td>
<td>2</td>
<td>healed with split thickness skin graft</td>
</tr>
<tr>
<td>55, M</td>
<td>Ankle</td>
<td>1.0 x 0.5 x 0.4</td>
<td>1</td>
<td>healed</td>
</tr>
</tbody>
</table>
| 74, M          | bilateral calves and ankles (4 wounds) | 2.5 x 3.0  
|                |                | 3.0 x 2.5  
|                |                | 2.1 x 2.3  
|                |                | 2.2 x 2.0  | 2                | healed                                       |
| 57, M          | below knee amputation (BKA) stump | 2.0 x 2.5  | 2                | healed                                       |
| 64, M          | lateral malleolus | 2.0 x 2.5  | 6                | healed x 2, see explanation in text          |
| 72, M          | lateral foot plantar side | 1.0 x 1.0 x 0.2 | 1                | healed                                       |
| 76, M          | great toe      | 0.9 x 0.8 x 0.4 | 2                | healed                                       |
| 70, M          | calf           | 3.0 x 2.0 x 0.4 | 1                | healed                                       |
| 76, M          | plantar foot wound | 3.0 x 3.5 x 1.0 | 2                | healed with split thickness skin graft       |
| 71, M          | great toe      | 2.7 x 2.6 x 0.3 | 1                | healed                                       |
**P 339. HOW DO YOU VITAMIN? CURRENT TRENDS IN MICRONUTRIENT SUPPLEMENTATION AMONG BARIATRIC SURGERY PATIENTS**

Presenter: Sophia M Foroushani MS | Tulane University School of Medicine

Foroushani SM, Freeman M, Osinubi T, Bartholomew D, Baker J, Levy S

**Introduction:** Post-operative bariatric surgery micronutrient supplementation regimens can be cumbersome, inconvenient, and unpalatable, which presents potential barriers to adherence. While there are many studies evaluating the effects of micronutrient deficiencies, there are very few studies evaluating post-operative supplement usage patterns. The purpose of this investigation is to describe micronutrient supplementation use among bariatric surgical patients.

**Methods:** Post-operative bariatric surgery patients living in the United States were invited to participate in anonymous survey describing vitamin use patterns. The survey was posted in online social media bariatric support groups.

**Results:** Preliminary data shows that, of the 480 respondents included in this study 452 (94.2%) were female and the median (interquartile range) age was 49 (41-56). Four hundred thirty four (90.4%) patients said that they take their multivitamin and/or calcium/vitamin D supplements. Of these, 429 (98.8%) take multivitamins; 313 (73.0%) reported taking them daily and 73 (17.0%) reported taking them 4-6 days a week. However, adherence with calcium/vitamin D supplementation was lower with 356 (82.0%) respondents taking them. Of these, 242 (68.0%) reported daily use and 65 (18.3%) reported use 4-6 days per week. Most patients describe taking more than two supplements each day (figure 1). Each month, 135 patients spend less than $20, 283 (59.0%) spend between $20-50 and 62 (12.9%) spend more than $50 to buy their vitamin supplements.

**Conclusion:** Micronutrient supplementation is important for post-operative bariatric surgical care. It is important to understand the current usage patterns to identify barriers to adherence and improve patient care. Our data indicates moderate adherence to typically recommended supplementation regimens. In order to ensure high quality care, inconsistencies in supplementation patterns should be addressed as part of the typical post-operative course. More research in this area is warranted in order to determine the most effective methods of increasing patient compliance.
Introduction: Emergency general surgery (EGS) continues to emerge as a distinct clinical practice; however, the specialty continues to exist without mandated national accreditation standards. Because of this, EGS does not have essential dedicated registrars, program managers (PM), and other processes that drive modern trauma programs. An enhanced EGS-specific quality program, modelled after an established trauma program, was created at the authors’ institution. Service-based Advanced Practice Providers (SB APP) integrated the tasks of an EGS PM into their role. Our aim is to describe in detail the maturation of an EGS quality program that evolved with SB APP administrative oversight, thus validating the need for a dedicated EGS PM.

Methods: In 2017, a separate EGS quality structure was formalized under the auspices of a hospital-wide Surgical Quality Safety Council with primary focus on scheduled quality meetings, peer review and outcomes review. A novel registry to track all EGS admissions, within the framework of an existing trauma registry, was created. All admission, service-specific dashboards, and readmission data were manually audited by SB APPs and compared to data generated by the Electronic Medical Record (EMR) to confirm accuracy and identify opportunities for process improvement. The primary goals were reduce surgical site infections, readmissions, and potentially preventable conditions.

Results: An EGS quality meeting and peer review process operationalized the review of surgical quality metrics and mortalities. Service dashboards, including patient volume, mortality, complications, readmission and infection prevention indicators, were reviewed by SB APPs. Annual EMR data for all EGS patients was compared to data collected via manual review with a novel registry logic. Comparison of EMR generated data versus EGS registry data identified under-representation of total admissions: in 2016, the EMR identified 130 admissions with registry logic identifying 625 actual EGS admissions. The EMR identified 515 admissions in 2017 and 485 admission in 2018 with registry logic identifying 777 and 712 respectively. Review of readmission data revealed an error of 14 patients in 2017 and 11 patients in 2018.

Conclusion: Our findings demonstrate that standard hospital EMR-generated data under-represented the actual EGS patient population, while readmissions were over-represented. The quest to improve quality of care for the EGS patient requires timely review of high-quality, accurate data by dedicated and trained personnel. Our process revealed the vital functions of an EGS PM were crucial in clarifying data, maintaining quality metrics, and confirms the need for dedicated PM support in the evolution of the EGS specialty.
P 341. SCREENING FOR POTENTIAL OPIOID ABUSE IN THE ACUTE CARE SURGICAL SETTING
Presenter: Kathryne Adams | Rush University Medical Center
Adams K, Petersen M, Siparsky N

Introduction: The opioid epidemic has led to changes in the prescription of opioid therapy around the time of surgery. One approach to this challenge adopted within the primary care setting is to identify patients at risk of addiction through pre-prescription screening. We conducted a pilot study to determine if the Opioid Risk Tool (ORT) would be effective in the acute surgical setting.

Methods: With institutional review board approval, 24 subjects were recruited into the study. The subject completed the ORT and was prescribed an opioid after surgery. The subject was followed for one month, at which time aberrant behavior was assessed by questionnaire, chart review, and Illinois Prescription Monitoring Program database review.

Results: Using the ORT, 11 subjects (46%) scored moderate to high risk for opioid misuse. Upon discharge, 18 subjects (75%) were prescribed an opioid analgesic; aberrant behavior was displayed by 50% (n=9) of these subjects after discharge. The most frequent aberrant behaviors observed (n=10, 60%) were nondisclosure of previous prescription and additional prescriptions post-discharge. Over half of the subjects (n=5, 56%) with aberrant behavior scored in the low-risk range on the ORT. Of these, 80% (n=4) were prescribed higher than the cohort’s average morphine milligram equivalents (24.7mme).

Conclusion: The ORT is not a useful tool in identifying acute care surgical patients at risk of aberrant behavior. We found low-risk individuals that displayed aberrant behavior, which is associated with the prescription of higher-than-average morphine milligram equivalents.
P 342. INCIDENCE AND PREDICTORS OF POST-OPERATIVE RESOURCE UTILIZATION IN INCARCERATED PATIENTS
Presenter: Mary Kate Bryant MD | WakeMed Health & Hospitals
Bryant MK, Brittain C, Reynolds K, Maine RG, Udekwu P

Introduction: Incarcerated persons frequently return to emergency departments (ED) for routine postoperative concerns instead of presenting to clinic. The aim of the study was to understand the timing, frequency, and predictors of returning to the ED in the postoperative incarcerated population.

Methods: We conducted a retrospective cohort study of incarcerated patients who underwent any elective or emergent operation from 2015-2018 at a large urban hospital. Incarcerated persons were identified by payor status. For patients with multiple operative encounters, a subsequent encounter was included if >90 days after most recent ED or inpatient evaluation or if presenting complaint was unrelated to the diagnosis from the prior encounter. Univariate logistic regression models determined predictors of returning to the ED within 90 days.

Results: 72 patients (Mean [SD] age 36.4[11.8]; 90.3% male) had 106 operative encounters, of which 47 (44.3%) encounters resulted in ED visit within 90 days of discharge. Median time from discharge to reevaluation was 9 days [IQR 5,27]. 60.8% presented during non-clinic hours. 31.9% were readmitted with mean length of stay of 5.5[3.4] days, and 18 (38.3%) required an additional operation. In univariate analysis, predictors of return to ED were younger age (OR 0.96), history of mental disorder (OR 3.10), emergent indication of initial surgery (OR 6.18), not having a follow-up appointment (OR 0.34), and presenting after trauma (OR 25.08), p<0.05.

Conclusion: A large percentage of incarcerated patients returned to the ED following surgery. Strategies to reduce postoperative ED utilization will ultimately improve incarcerated patient outcomes and reduce overall costs.
Introduction: The implementation of a stringent process improvement program (PI) with continuous systematic data analysis and identification of areas for growth throughout all the phases of patient care is the backbone of any successful trauma program. At Orange Park Medical Center (OPMC), a Florida state designated Level II Trauma Center, there was significant dichotomy in team member engagement in the PI process. An new initiative was started involving weekly meetings to expeditiously review the patients seen, identify inconsistencies in patient care, devise corrective strategies. Advanced Practice Providers (APPs) were incorporated in this to raise awareness of TQIP filters, help recognize issues and facilitate the implementation of corrective interventions.

Methods: APP involvement included attendance at the weekly meetings as well as data analysis of certain problems. The first projects included: 1. Evaluation of time to clearance of lactic acidosis, 2. Review of a cohort of patients who sustained myocardial infarction (NSTEMI) during their hospitalization and 3. Time initiation of enteral nutrition in the ICU. Flow sheets were created to capture the necessary data which was uploaded for PI nurse review.

Results: APP involvement has led to documentation PI issues on the team’s daily sign out sheet and has allowed for efficient and concurrent identification of concerns. For example, they found a problem with timely collection and processing or urine studies. This was taken to our hospital-wide monthly PI meeting where a multi-level system process breakdown was identified and has extended to the corporate level for corrective action.

From the focused projects, there has been enhanced understanding of timely resuscitation and lactate clearance leading to clinical care improvement. In the evaluation of the patients who sustained an NSTEMI, anemia with delayed transfusion to a specific trigger was a common thread. There is now a better recognition that some patient will require earlier transfusion. The nutrition study led to a standardized ICU enteral nutrition policy with extensive staff education.

Conclusion: Integration of APPs into the PI process leads to improved clinical outcomes. With their consistent provision of daily care, they are ideally positioned to allow for early identification of areas requiring improvement, decreasing complications and assisting in the development and implementation of corrective actions throughout the continuum of patient care. The “halo effect” of their involvement in the PI process is that they are more in tune to critical issues as they make daily clinical decisions.
Introduction: Surgical site infections (SSI) are the most common type of hospital acquired infections and account for roughly $3.5 billion to $10 billion in additional healthcare expenditures, as well as increasing morbidity and mortality. Multiple factors affecting development of surgical site infections have been identified and include prophylactic antibiotics (first dosage completed within 30 minutes before incision,) clean and sterile surgical site (chlorhexidine or betadine for surgical preparation,) normothermia (temperature above 36 degrees Celsius,) high fraction of inspired oxygen (FiO2 greater than 80%), underventilation (ETCO2 40-45 mmHg,) and controlled serum glucose (blood glucose between 140-180 mg/dL.) In this study we sought to specifically evaluate the effect of underventilation on the development of surgical site infections.

Methods: A retrospective review of data from the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP®) was collected on all patients who developed a surgical site infection at a single institution from 2015 to 2018. We excluded patients under the age of 18 and any patients that had an active infection prior to surgery or gross contamination of the surgical area. We compared the rate of SSI development in patients whose intraoperative ETCO2 mode was controlled between 40-45 mmHg to those whose mode was outside of that range.

Results: The mean age of the study cohort was 54.5 years old. SSI occurred in 25.8% (8 of the 31 patients) who had an intraoperative ETCO2 of 40-45 mmHg vs 51.7% (178 of the 344 patients) whose intraoperative ETCO2 were outside of that range (P = .0057).

Conclusion: This study suggests that maintaining intraoperative underventilation decreases rates of SSI development in surgical patients.
Introduction: Pressure ulcers (PUs) affect 2.5 million patients annually. Advanced PUs that do not improve with conservative management require surgical debridement and reconstruction. However, even for successfully reconstructed PUs, the 1-year recurrence rate is approximately 50%. New strategies are needed. Mesenchymal stem cell (MSC) exosomes are putatively the primary mechanism whereby MSCs induce tissue regeneration. Exosomes are 30-150 micron-diameter microvesicles, are cell-free, and contain mRNA, miRNA, and proteins that upregulate cell-signaling pathways that mediate cell growth, migration, and angiogenesis.

Here, we report the first use of these exosomes for successful closure of a recurrent Stage 4 ischial ulcer. The patient was a 38-year old wheelchair-bound male with a history of cerebral palsy and multiple prior PUs requiring over 50 surgeries; these left him with few locoregional options for reconstruction. He presented with a Stage 4 right ischial ulcer that had not improved after nine months of conservative management. The patient underwent debridement and reconstruction with a large posterior thigh flap. The ulcer recurred, the flap was re-advanced, and the ulcer recurred again with a tract to the periosteum (Stage 4). After extensive discussion, the patient agreed to trial exosome injections into the peri-ulcer tissues. Following 2 treatments, the ulcer was reduced to Stage 3 (Fig. 1B). After a total of six injections over eight weeks, the PU healed with no sinus tracts or signs of infection.

This case report is notable because the primary endpoint for most studies of PU treatment is not complete closure of the ulcer, but instead, a 50% reduction in wound diameter. Here, we demonstrate that exosomes can effectively and nonsurgically heal an advanced, refractory PU. Larger trials of this promising new therapy are needed.
Figure 1: Progressive healing of a recurrent Stage 4 ischial ulcer following MSC exosome treatments. Photos A-C and E document the state of the ulcer at 1 week following: A) first injection, B) second injection, C) third injection, D) fourth injection, E) fifth injection, and F) sixth injection. Photos D and F were taken 2 weeks following a treatment.
P 346. A CASE REPORT OF A STRANGULATED PARASTOMAL HERNIA WITHIN A STRANGULATED PROLAPSED ILEOSTOMY
Presenter: Nikhil Patel MD | Atlanta Medical Center
Patel NP, Ramsay PT

Introduction: Background: This report presents a unique case report regarding a patient with recent ileostomy creation developing a strangulated prolapsed ostomy with a loop of strangulated intestine within a fold of the prolapse ostomy. Prolapsed ostomy and parastomal hernias are well known complications of ostomy creations, but the combination of the two processes highlights an unusual surgical complication necessitating urgent operative intervention in order to both establish diagnosis and treatment.

CASE PRESENTATION: Patient VG is a ninety-year-old female with recent history sigmoid volvulus resection and end ileostomy creation, subsequently presenting to the emergency department with concern for a painful parastomal hernia. On exam, patient had a significantly large, protruding mass from the stoma with edematous and necrotic appearing tissue, originally thought to be a strangulated parastomal hernia. Patient was taken to the operating room emergently for exploration and resection of strangulated segment of bowel. After careful and meticulous dissection around the ostomy and attempt to divide the strangulated segment, we noted that the stoma had prolapsed beyond the fascial defect and a large segment of small bowel had herniated within the fold of the prolapsed ileostomy. Both the prolapsed ileostomy and the herniated small bowel demonstrated severe vascular compromise and evidence of necrosis. We therefore resected the distal ileostomy as well as the compromised portion of small bowel. The abdomen was opened up by a midline incision where the entire small bowel was inspected. No other areas of intestinal compromise were noted, and the ends of resected small bowel segment located mid-jejunum were anastomosed with stapler, and the ileostomy was recreated in the same fascial opening. Following surgery, patient had a hospital complicated by prolonged ileus and initially required total parenteral nutrition, but slowly regained bowel function and gradually tolerated oral diet. She was subsequently discharged home about twelve days following surgery.
Introduction: Historically, gluteal compartment syndrome (GCS) has been a rare entity, limiting clinician familiarity with this diagnosis. Timely identification is essential as it can rapidly result in muscular necrosis, acute renal failure, permanent nerve damage, and significant debility. A major risk factor for GCS is prolonged down time. In light of the current opioid epidemic, increased awareness of the potential for GCS in patients found down is essential.

Case Report: A 34-year-old male was found down after an unknown but prolonged period of time in the setting of known history of intravenous drug use. He presented to the hospital complaining of right buttock and leg pain. He was amnestic to the events preceding his loss of consciousness. On physical examination, he had abrasions on the right side of his body and right gluteal swelling. He was admitted to a medicine service for rhabdomyolysis with markedly elevated creatine phosphokinase (CPK) and acute kidney injury (AKI). Over the first hours of his admission, they noted increasing buttock swelling and consulted general surgery. The surgeon’s initial examination demonstrated diminished sensation with “burning” reported when the lower extremity compartments were compressed. Strength was intact as were distal pulses. After 24 hours of stable serial examinations, the patient’s neurological exam abruptly worsened with loss of sensation below the knee and diminished sensation in the thigh. He was taken to the operating room for emergent right gluteal compartment release. Intraoperatively, muscle which was initially ischemic-appearing improved in perfusion. Postoperatively, there was immediate improvement in the patient’s neurovascular exam with normalization over the following days. His rhabdomyolysis and AKI resolved. He was discharged home on postoperative day 6 with negative pressure wound VAC therapy for his gluteal wound.

Discussion: The diagnosis of myofascial compartment syndrome of the upper and lower extremities is well-recognized and discussed in the literature. In contrast, GCS is a rare phenomenon with scarce discussion in general surgical literature. The most commonly reported etiology is prolonged immobilization. Diagnosis of GCS is usually clinical though compartment pressures may be measured. Pressures greater than 30 mmHg are diagnostic of GCS (normal: 0-8 mmHg). Treatment involves surgical release of the gluteal compartments to alleviate pressure on the sciatic nerve. There should be a high index of suspicion for a diagnosis of GCS when evaluating patients found down. With timely recognition and intervention, functional outcomes are favorable.
**Introduction:** Mesh selection for complex ventral hernia repair can be a challenge depending on pre-existing patient factors and evidence of surgical field contamination. Historically, synthetic meshes have been considered contraindicated in contaminated fields due to increased risk of infection. The development of biologic mesh has been considered to be an option for high-risk infection cases. The Ventral Hernia Working Group produced guidelines in 2010 with recommendations for mesh use when accounting for patient factors such as smoking status and immunosuppression. The aim of this study is to evaluate the effects of these factors in our population and the incidence of post-operative complications.

**Methods:** A retrospective review was conducted to evaluate patients undergoing ventral hernia repair with a single surgical group from 2010 to 2018. The patients were followed for at least 6 months post-operatively. Outcomes were grouped as follows: surgical site infections (SSI’s) were defined as wound infections and surgical site occurrences (SSO’s) were defined as seromas, hematomas, fistulas, or development of wound dehiscence. Univariate and multivariate logistical analyses were conducted using the SAS (version 9.4, Cary, NC) statistical software.

**Results:** A total of 316 patients were included in this study. An SSO was noted in 112 (25.4%) patients and an SSI occurred in 31 (9.8%) patients. Average length of follow up was 222 weeks. Average BMI was 33.2 and average operating time was 133.4 minutes. There was a statistically significant difference in BMI between patients who had an SSI and those who did not (p=0.0004). Multivariate analysis revealed that BMI and previous wound infection were significant independent predictors for SSI. Median age, BMI, and operating time were not significant predictors of SSO. COPD, violation of GI tract, and Ventral Hernia Work Group grade were significant predictors of postoperative SSO on multivariate regression analysis. Mesh type was not identified as an independent risk factor for development of an SSI or an SSO.

**Conclusion:** The results of this retrospective review suggest that BMI and history of prior wound infections were associated with increased occurrence of SSIs. History of COPD, evidence of violation of GI tract at time of operation, and VHWG grade were independent factors associated with SSOs. The type of mesh used was not an independent predictor for development of an SSI or SSO. These data can improve patient selection for open ventral hernia repair and predicting post-operative complications.
Introduction: The repair of very large type IV paraesophageal hernias are an exciting challenge for the foregut surgeon. Reduction of the hernia, containing intraabdominal structures such as colon, liver, or pancreas, can be made more difficult by chronic inflammation and scarring. After reduction of the hernia sac and its contents, the closure of the hiatus presents a secondary challenge, as chronicity and large size may result in attenuation of the diaphragm and crura. Therefore, in select cases, reinforcement of the primary closure using biosynthetic mesh may be appropriate. In this video, we demonstrate the reduction of a type IV paraesophageal hernia containing the entirety of the stomach, as well as parts of the transverse colon and pancreas. After primary closure of the hiatus, the tissue repair is reinforced with Bio-A (GORE) mesh. Several configurations of mesh placement are reviewed.
Introduction: eTEP stands for “extended-view totally extraperitoneal ventral hernia repair”. This technique, first described by Jorge Daes in performing totally extra-peritoneal laparoscopic inguinal hernia repairs and then popularized by Belyansky and colleagues for laparoscopic and then robotic ventral hernia repair, mimics the open Rives-Stoppa technique in both indications - inclusive of primary, incisional, and recurrent ventral hernias - and the placement of the mesh between the rectus muscle and the posterior sheath (also known as the retrorectus space). From a durability perspective, eTEP has been shown in early studies to be just as efficacious as an open technique. This similar result in durability is accompanied by other advantages unique to the approach: minimal mesh fixation is required, thus reducing the likelihood that historical means of mesh fixation contribute to cases of chronic pain. eTEP also eliminates any contact between bowel and mesh, as there is no entry into the abdomen or placement of intraperitoneal mesh, and elimination of peritoneal or midline fascial defects decreases future hernia risk. Previous studies have suggested other advantages in outcomes, including decreases in operative times, overall costs, and complications. Significant decreases in hospital lengths of stay compared to the open procedure along with decreased narcotic use and faster return to normal activity have also been observed. In the submitted video, we are presenting and demonstrating key steps to the robotic eTEP procedure as well as our experiences, tips, pitfalls, and proposed best practices with regard to this innovative approach to ventral hernia repair.
Introduction: Pyoderma gangrenosum (PG) is a chronic inflammatory disorder characterized by nonhealing cutaneous ulcers. It is an understudied disease: there are no universally accepted diagnostic criteria and its pathogenesis remains unknown. Furthermore, very few molecular data have been published. One consequence of this paucity of knowledge is that no therapeutic standard of care has been established. Our multidisciplinary group successfully treated a PG ulcer using dehydrated human amnion/chorion membrane (dHACM). To gain mechanistic insight into how dHACM modifies PG’s pathology, we developed transcriptional profiles of the ulcer pre- and post-dHACM treatment.

Methods: Before dHACM treatment, 3 tissue biopsies were procured from distinct sites within a lower extremity PG ulcer. The biopsies were immediately frozen and stored at -80°C. Seven days after dHACM was applied, 3 post-treatment biopsies were again procured and stored. Total RNA was isolated from the biopsies. cDNA prep, quality analysis, and RNAseq were performed. Gene enrichment analysis, pathway analysis, and functional annotation were performed (Illumina HiSeq platform). Genes of interest were further identified by cross-referencing our transcriptome data against published PG literature.

Results: Pre- vs. post-treatment specimens were transcriptionally distinct when analyzed by hierarchical clustering and principal component analysis. 626 genes were differentially expressed in pre- vs. post-treatment groups: 226 overexpressed and 400 underexpressed post-treatment (p-value < 0.05). Of the top 30 most significant differentially expressed genes, several were previously implicated in PG: NAMPT, CSF2RB, CSF3, IL6, IL11. Several other genes are key in inflammation (SOCS3) and tissue hyperproliferation (CTGF, MMP1, MMP3, MMP13). RT-qPCR confirmed these gene expression changes. Gene ontology analysis demonstrated significant downregulation by dHACM of critical PG-related gene pathways including Inflammatory Response (p = 2.3 x 10^{-13}, GO:0006954), Positive Regulation of Cell Proliferation class (p = 2.6 x10^{-9}, GO:0008284), and Extracellular Matrix Disassembly (p = 2.2 x 10^{-8}, GO:0022617).

Conclusion: These transcriptional data yield novel insights into 1) the molecular mechanisms underlying the pathogenesis of PG and 2) the molecular mechanisms via which dHACM, an innovative new therapy for PG, may exert its benefits. Specifically, dHACM significantly reduces inflammation and hyperproliferative pathways. Our next step is to expand the study to include more patients.
Introduction: Lipomatous tumors exist on a wide pathologic spectrum ranging from benign lipomas and atypical lipomatous tumors (ALTs) to well-differentiated and de-differentiated liposarcomas. Benign lipomas typically only merit resection when causing significant cosmetic or functional impairment. ALTs often have fairly benign features but typically present as larger fatty masses and can demonstrate septations or nodularity on imaging. MRI has been proven the imaging of choice for distinguishing benign lipomatous tumors from more concerning pathology such as ALTs or liposarcomas. Lipomas present as high signal masses that saturate on fat sequencing. ALTs on the other hand are characterized by containing components of non-adipose tissues, such as calcifications, vessels, muscle fibers, myxoid, etc. One variant of ALT presents intramuscularly which can be seen as well-circumscribed verses infiltrative into tendon. Similarly, MR imaging of a liposarcoma can appear with irregular nodularity and tumor heterogeneity. ALTs are pathologically difficult to distinguish from well-differentiated liposarcomas and rarely metastasize. However, ALTs and liposarcomas are both treated by surgical resection. Lipomatous tumors most commonly present on the extremities followed by the retroperitoneum; however, occasionally these tumors can present intramuscularly. Here we present a case of an intramuscular distal iliopsoas lipomatous mass incidentally found on CT urogram during a hematuria workup.

Results: 56-year-old female presented with an incidentally identified intramuscular lipomatous mass in the distal iliopsoas muscle. On CT the mass measured 3.2 x 1.8cm and demonstrated internal calcifications. Follow-up MRI was performed to better characterize the mass and demonstrated a 3.7 x 2.1cm fat signal intensity nodule in the right iliopsoas muscle with punctate internal soft tissue nodularity. Given the challenging location of the tumor, we utilized an anterolateral approach that is typically used for orthopedic access to the hip. The sartorius muscle was mobilized and retracted laterally thereby exposing the intramuscular iliopsoas mass. The mass was resected en bloc by segmentally resecting the distal iliopsoas muscle. The patient tolerated the surgery well and was discharged home ambulating independently. Surgical pathology was consistent with a lipoma with chondro-osseous metaplasia.

Conclusion: Resection is recommended for lipomatous masses with atypical radiographic features such as thickened or irregular nodularity and non-adipose components. Given that calcifications/ossifications are seen in 10%-32% of liposarcomas and the unusual, iliopsoas location of the tumor in the above case, pathologic evaluation was necessary to distinguish the mass from a liposarcoma. An anterolateral approach can be effectively utilized for radical resection of distal iliopsoas masses.
Figure 1: Lipomatous distal iliopsoas mass in a 56-year-old female demonstrated on CT (left) showing low attenuation and scattered calcifications, MRI T1 (middle) and MRI T2 (right) fat-saturating images identified with red arrow.
Introduction: The incidence of Alcoholic Liver Disease (ALD) has increased, causing ALD to become a primary indication for liver transplantation in the United States. The objective of this study was to evaluate an association between alcohol taxation and the prevalence of alcoholic liver disease.

Methods: We conducted a retrospective study of United Network for Organ Sharing (UNOS) adult waitlist additions for liver transplantation between January 2007 and December 2016. We included patients with the diagnosis of alcoholic cirrhosis, alcoholic cirrhosis with hepatitis C, and acute alcoholic hepatitis. We also analyzed the average excise tax (2007-2016) for beer, wine and spirits in listing states of liver transplant waitlist additions.

Results: There were 24,316 UNOS liver transplant waitlist additions with the diagnosis of alcoholic liver disease out of 104,805 listings, an annual increase from 22 to 28 percent. The mean value for beer tax was significantly lower for alcoholic liver disease patients than for non-alcoholic liver disease patients across all age groups (p<0.001).

Conclusion: Our research demonstrated an association between lower beer tax and higher alcoholic liver disease prevalence across all age groups. These findings raise the need for further investigation of a potential public health concern for an association between alcoholic liver disease and beer tax.
### Adult Liver Transplant Waitlist Additions by Diagnosis and Age Category

<table>
<thead>
<tr>
<th>Liver Transplant Waitlist Additions</th>
<th>18-34 years</th>
<th>35-54 Years</th>
<th>≥55 Years</th>
<th>p-value</th>
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<tr>
<td>ALD</td>
<td>566 (10%)</td>
<td>11,473 (30%)</td>
<td>12,277 (20%)</td>
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</tr>
<tr>
<td>Non-ALD</td>
<td>5,124 (90%)</td>
<td>26,240 (70%)</td>
<td>49,125 (80%)</td>
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</tbody>
</table>

### Mean Tax²

<table>
<thead>
<tr>
<th></th>
<th>ALD</th>
<th>Non-ALD</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wine</td>
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<td></td>
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<tr>
<td></td>
<td>0.66</td>
<td>0.68</td>
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<td>Beer</td>
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<tr>
<td></td>
<td>0.22</td>
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<td></td>
<td>0.26</td>
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<tr>
<td></td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
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<tr>
<td>Spirit</td>
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<tr>
<td></td>
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<td>0.20</td>
<td>0.80</td>
</tr>
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</table>

¹ALD—Alcoholic liver disease

²Distilled spirit, beer, and wine tax rates—as of January 1st, 2017: Federation of Tax Administrators, the Tax Foundation, the Council of State Governments, the Advisory Commission on Intergovernmental Relations, the Distilled Spirits Council of the United States, and author’s calculations. Alcohol tax rates are converted into a standard measure of dollars per gallon. [https://www.taxpolicycenter.org/statistics/state-alcohol-excise-taxes](https://www.taxpolicycenter.org/statistics/state-alcohol-excise-taxes)

**NOTE:** The national data reported here have been supplied by the United Network for Organ Sharing as the contractor for the Organ Procurement and Transplantation Network. The interpretation and reporting of these data are the responsibility of the author(s) and in no way should be seen as an official policy of or interpretation by the OPTN or the United States Government. Based on OPTN data as of September 7, 2018.
**P 354. UNKNOWN LEFT UPPER QUADRANT MASS IN A 19 YEAR OLD: WORK UP AND TREATMENT**

Presenter: Ramola Panchal MD | University of Mississippi Medical Center
Panchal R, Shaw T, King D, Petro AB

**Introduction:** Splenic cysts are rare and there is a lack of evidence based guidelines regarding optimal surgical management. Splenic cysts causes are numerous and include: post traumatic cysts or pseudocysts, echinococcal cysts, congenital cysts, hemangiomas, and polycystic kidney disease with associated splenic cysts. Non-infectious cysts may be observed over time. However, if they are symptomatic, as in this case, or if they are enlarging, surgical management is often necessary for treatment and diagnosis.

A 19 year old male with no prior medical history presented with a prolonged history of anorexia, abdominal fullness, and weight loss. Work up was initiated with lab studies including CEA and CA 19 levels, both of which were negative. Antibodies for Echinococci were also obtained and found to be negative. Computed tomography (CT) imaging showed a complex cystic mass beneath the diaphragm and exerting a mass effect on the spleen which displaced it inferiorly and posteriorly. The mass measured 14 cm x 11 cm x 7 cm. Imaging was unable to delineate if the lesion was arising from the spleen or as a primary peritoneal lesion. Although imaging indicated benign features, a definitive diagnosis could not be concluded. Given its size, unknown etiology, and patient symptoms, the decision was made for laparoscopic surgical excision. Intra-operatively, the spleen was noted to be adherent to the diaphragm, medial segment of the left lobe of the liver, and the spleen. The mass was fluid filled, and a sample was sent for cytology along with a biopsy of the wall. After confirming the pathology and cytology to be a benign process, the cyst was dissected off the surrounding structures, and resected off the spleen. The patient tolerated the procedure well, without any complications. He was discharged on post-operative day 2. Final pathology revealed the mass to be a splenic pseudocyst. Follow up CT scan performed 8 weeks post operatively showed complete resolution of the mass without any reoccurrence.

A full work up must be done to rule out a malignant or infectious process of an unknown splenic cyst. If symptomatic, laparoscopic cyst removal is a viable treatment option for symptomatic or large splenic cysts.
Figure 1: Pre-operative CT scan showing LUQ Mass
Introduction: Motivated by the intra-operative discovery of an anomalous branch of the radial artery during radial forearm flap (RFF) harvest, the purpose of this study was to systematically review the literature regarding anatomical abnormalities of the radial artery that can affect flap harvest and perform a meta-analysis to estimate the prevalence of such abnormalities.

Methods: A systematic review of the literature was conducted using five online databases to identify all instances of radial artery anatomical variations. Abstracts were reviewed and categorized into either 1) large cohort studies of anatomical variations identified by angiogram or 2) case reports specifically mentioning anomalous or accessory branches of the radial artery. Data from the large cohort studies were included in a random effects meta-analysis to estimate the prevalence of such variations. Case reports were reviewed and summarized.

Results: Eighteen angiogram cohort studies containing a total of 18,115 patients were included in the meta-analysis. Accessory branches or double radial arteries were the most uncommon anatomical variant reported, with an estimated average prevalence of 0.5%. Prevalence estimates for more common anatomical variants, including radial artery tortuosity, hypoplasia, loops, abnormal origin, and stenosis were also calculated. Twelve case reports detailing anomalous branches of the radial artery were reviewed, six of which involved accessory branches encountered during radial forearm flap harvest with no incidence of flap loss.

Conclusion: Radial artery accessory branches are exceedingly rare, but the prevalence of anatomical variations that can affect harvest of the RFF warrant consideration. We recommend surgeons comprehensively screen prior to RFF harvest to avoid intra-operative discovery of anatomical variants and suggest a low threshold for repeat perfusion testing intra-operatively if radial artery accessory branches are encountered.
Introduction: Traumatic diaphragmatic injury (TDI) is a rare, but potentially life-threatening diagnosis, complicated by difficulty of diagnosis, which can be delayed by days or years, often presenting as a hernia containing hollow-viscus organs. The true incidence of TDI is unknown, though suggested as 1-7% in blunt trauma, and 10-15% of penetrating traumas. Computer tomography is the best imaging modality for diagnosis, though a subtle presentation with non-specific clinical findings may lead to a missed diagnosis. A high index of suspicion along with recognition of key radiographic findings may improve early diagnosis of this injury.

Case Description: We report a case of a 54 yo M with history significant for GERD abuse who presented as a restrained driver in driver-side collision with roll-over and complaint of right-sided chest pain. He was admitted with injuries notable for a right hemo-pneumothorax and right 11-12 rib fractures with imaging incidentally noting a hiatal hernia. He underwent emergent, right-sided tube thoracostomy in the ED. No occult injuries were noted on tertiary survey. He was discharged on hospital day 6 following chest tube removal with an otherwise unremarkable course. He re-presented one day after discharge with respiratory distress, nausea, and chest pain and with significant findings of diaphragmatic rupture suggested by CT scan. He underwent emergent open repair of his injury. He was transferred to the ICU post-operatively and was discharged on post-operative day 11 in stable condition.

Discussion: Our case highlights the difficulty in diagnosis of TDI. Prior studies have suggested 12-66% of patients had a missed diagnosis on initial evaluation. Here, the patient’s rupture was misinterpreted as a simple hiatal hernia. He had no concomitant intra-abdominal or intrathoracic injuries which might prompt further workup. Diagnosis is often delayed given non-specific findings without clear radiographic evidence or overt respiratory distress. CT alone has a sensitivity of 80% and a specificity of up to 100% in diagnosis thus making it the best imaging study, though findings can be subtle. Distracted fragments of the diaphragm such as in the “dangling diaphragm,” can be seen from torn edges. A “dependent viscera sign” is noted when herniated organs touch the posterior pleura as they are not held in place anteriorly by the diaphragm. Most commonly, an elevated hemidiaphragm, typically with a difference of 4-5 cm, is noted. Nevertheless, a high suspicion must be kept, and surgery is often the only means of diagnosis, and the only means of treatment.
**P 357. CHOLECYSTOCOLONIC FISTULA WITH ASSOCIATED SIGMOID PERFORATION**
Presenter: Nicholas Michael MD | Duke University
Michael N, Montgomery SP

**Introduction:** We present a case of perforation of the sigmoid colon secondary to a gallstone. There have only been 6 prior reports of this in the literature. The patient presented with an acute abdomen. On imaging there was found to be a fistula from the gallbladder to the transverse colon and perforation of the sigmoid colon with an adjacent calcified mass and pneumoperitoneum. The patient was taken emergently to the operating room where she was found to have a perforated sigmoid colon from a large gallstone. An extended left colectomy which included the sigmoid perforation and the transverse colonic cholecystocolonic fistula was performed. A cholecystectomy was also completed and an end colostomy of the ascending colon was performed.

In a review of the literature only 6 other cases of sigmoid perforation from gallstones were identified. There were 31 other cases of colonic gallstones identified, but they primarily caused obstruction. In the other cases of perforation, a Hartman’s procedure was performed with no attempt to address the fistula. While it is well accepted in the literature that cholecystoduodenal fistulas do not require takedown of the fistula, this issue is unresolved in the literature for colonic fistulas. Two concerns with not addressing the fistula are the potential for cholecystitis or cholangitis from fecal flora and potentially biliary colitis causing diarrhea/abnormal ostomy output and malabsorption. Recommendations on the appropriateness of dealing with the fistula at the time of the initial surgery are limited by the small number of cases and the lack of knowledge of the residual symptoms when the fistula was not addressed.
**P 358. INTESTINAL MALROTATION IN THE ADULT: A CASE SERIES**  
Presenter: Rosalynn Nguyen DO | Bassett Medical Center  
Nguyen R, Crouse R, Talbot E, Allard-Picou A

**Introduction:** During embryogenesis, the absence of appropriate rotation of the midgut as it returns to the abdominal cavity results in intestinal malrotation. This congenital anomaly usually manifests during infancy with an estimated prevalence between 1:200 to 1:6,000 live births. Less commonly, malrotation can present in an older child or adult. Older patients may present with acute volvulus or obstruction, but more often will have nonspecific abdominal pain, nausea with biliary or nonbiliary emesis, and weight loss. The diagnosis of malrotation is very often delayed for these patients. This report aims to increase understanding of intestinal malrotation in adults and the possible post-operative trajectories.

The first case is a 62-year old female who had symptoms for much of her life. She experienced post-prandial abdominal pain, nausea, and eventual weight loss. Her delay in diagnosis was likely related to her intellectual disability and difficulty in clearly expressing her symptoms. She had seen multiple providers and after a variety of diagnostic tests, was found to have intestinal malrotation. She underwent a Ladd’s procedure, after which her symptoms entirely resolved and she did very well. Our second case is a 24-year-old woman who presented with chronic post-prandial right upper quadrant abdominal pain, nausea, and borderline biliary dyskinesia. Her workup was prolonged with presentation to multiple different providers with varying symptoms. Imaging eventually revealed intestinal malrotation, as seen in Image 1, which was associated with inversion of the SMA & SMV. She underwent an uncomplicated Ladd’s procedure with cholecystectomy. Her post-operative course was complicated by multiple readmissions for subjective complaints, without clear anatomic abnormalities. After two months of slow diet advancement, she tolerated a regular diet and was symptom-free.

When compared to patients younger than 16 years old, a higher percentage of older patients experience post-operative complications and may require additional surgery. Altogether, treating adults with malrotation can be considered just as intensive as with their infant cohorts. Increased awareness of this disease process and its presentation is necessary so that adult patients may be diagnosed earlier. Adult patients may require a longer period of vigilance post-operatively and management of their symptoms.
Introduction: To examine the use of a dobhoff feeding tube to diagnosis and therapeutically drain an abscess, adjacent to the pubic symphysis, via a tract found within a decubitus ulcer overlying the ischial tuberosity.

Methods: We present a case of a 39 yo male with a h/o GSW/SCI who presented with three decubitus ulcers and an abscess adjacent to his pubic symphysis. IR attempted to drain the pubic abscess, but was unsuccessful. Shortly thereafter, purulent drainage was noted from his ischial decubitus ulcer. Repeat CT imaging showed no communication but did show a foci of gas adjacent to the bladder, bladder wall thickening and stranding. CT cystogram revealed no evidence of fistula or bladder involvement. It was difficult to definitively determine where the drainage was originating. Radiology didn't recommend a fistulogram and the patient wasn't a candidate for MR d/t the bullet lodged in his spine from previous GSW. The decision was made to place a dobhoff tube into the tract to determine the origin of the abscess, and to allow us to irrigate and drain the fluid collection. An 8 French dobhoff was inserted into the sinus tract and secured to the patient. CT scanned was obtained which clearly identified the radiopaque dobhoff tube extending from gluteal region, superiorly and anteriorly to the pubic symphysis. The dobhoff was secured in place and attached to a foley bag to allow gravity drainage. The tube was irrigated TID with sterile saline. Over the course of several days the abscess had completed resolved with no evidence of a residual fluid collection on repeat imaging.

Conclusion: A Dobhoff tube is made of polyurethane, PVC that's traditionally used for enteral feedings. It's a small-bore, flexible tube that's comfortable to the patient and easily manipulated from the nasopharynx to the stomach or duodenum to bypass the larynx. The tube is inserted using a guide wire called the stylet, which gives the tube more rigidity during insertion. It is radiopaque, comes in 8-10 Fr and can be easily identified on XR.

Complex abscesses within the pelvis can be difficult to manage without correctly identifying where an abscess originates and to what extent it drains. Radiological imaging modalities have greatly enhanced the ability to image, localize, and drain hard reach fluid collections. Although we will continue to rely heavily on these modalities, there are instances where the dobhoff tube may be utilized to diagnose and drain an abscess.
P 360. LYMPHOMA: A RARE DIAGNOSIS FOLLOWING ROBOTIC RECURRENT INGUINAL HERNIA REPAIR
Presenter: Damian Korsich MD | Florida Hospital Orlando

Introduction: Tumors of the inguinal canal are exceedingly rare, the majority being metastatic, gastrointestinal or urogenital in origin. We present a case of follicular lymphoma diagnosed during routine histological evaluation of a surgical specimen following robotic inguinal hernia repair.

Case Presentation: A physically active 90-year-old male with history of bilateral inguinal hernia repair 20 years prior presented with a one-year history of enlarging right groin mass. At the time of presentation he had no nausea, vomiting or constipation and denied any fevers, chills or weight-loss. His past medical history was significant for a AAA (measuring 4.3 cm, stable), COPD and an MI requiring PCI several years prior. Surgical history included an appendectomy (75 years ago), cholecystectomy and cataract surgery. He endorsed tobacco use (90 pack-years) and heavy alcohol use 50 yrs prior. There was no family history of malignancy reported. On physical exam a noticeable bulge felt on the right inguinal canal with strain but was easily reducible. Also present, a small left inguinal hernia. There was no hepatosplenomegaly or no appreciable lymphadenopathy.

CT scan of the abdomen and pelvis showed a small right inguinal hernia with herniation of right anterior bladder wall and a small left inguinal hernia containing fat. He subsequently underwent robotic-assisted laparoscopic repair of bilateral inguinal hernias with mesh. Intraoperative preliminary diagnosis was of a right spermatic cord lipoma.

The hernia sac, measuring 5.0 x 4.5 x 1.2 cm, was grossly described as a tan-yellow, lobulated fatty tissue with membranous sheath. There was a relatively dense atypical lymphocytic infiltrate associated with Congo Red staining. Most of the small lymphocytes were positive for CD20, PAX-5, BCL-2 and CD10; a small population of T cells positive for CD3. Immunostains were negative for CD43, Cyclin-D1 and CD5. These findings were consistent with a low-grade follicular lymphoma.

The patient had an unremarkable postoperative course and was seen for follow-up in clinic. Extensive counseling and further medical options were discussed with the patient. He was ultimately referred for an oncologic evaluation but opted against further work-up and management.

Conclusion: This case illustrates the highly variable presentation of lymphoreticular disease with an important reminder for surgeons to maintain vigilance and a wide differential diagnosis for even the most seemingly benign process. It also underscores the gravity of sending surgical specimens for customary pathological evaluation even in the context of a grossly benign appearance of a specimen.
P 361. CASE REPORT: ACUTE ACALCULOUS CHOLECYSTITIS IN THE SETTING OF TYPE B AORTIC DISSECTION

Presenter: Sarah Cottrell-Cumber DO | University of Mississippi Medical Center

Introduction: Acute acalculous cholecystitis (AAC) is an uncommon diagnosis but may be life-threatening if untreated. It is usually seen in patients in severe stress states including polytrauma, multiple burns, sepsis, or recent surgery. The exact mechanism is ill-defined, but contributing factors are bile stasis and ischemia.

Methods: We present a case of ischemia-related AAC after thoracic endovascular aneurysm repair (TEVAR) for a Type B aortic dissection.

Results: The patient is a 45-year-old male with no significant past medical history who presented as a transfer from an outside hospital for evaluation of an acute aortic dissection. Computed tomography angiography (CTA) on admission revealed a Type B aortic dissection extending into the bilateral iliac arteries. The patient underwent emergent TEVAR with the Vascular Surgery. Acute Care Surgery was consulted post-operatively to evaluate the patient for intestinal ischemia. Repeat CTA showed patent flow through the superior mesenteric artery, and the patient was managed conservatively with clinical improvement. The patient was discharged home but returned to the Emergency Department within two days of discharge with right upper quadrant abdominal pain. He was found to have a large pericholecystic fluid collection without evidence of cholelithiasis or choledocholithiasis on readmission imaging. The patient was taken to the operating room for a laparoscopic cholecystectomy. Intraoperative findings of extensive gallbladder wall necrosis confirmed a diagnosis of acute gangrenous cholecystitis. The patient subsequently developed pancreatitis and a pancreatic pseudocyst favored to be secondary to foregut ischemia. Interventional radiology was consulted for percutaneous drainage with resolution of clinical symptoms.

Conclusions: This case report adds to the limited literature on AAC in the setting of aortic dissection. Terminal visceral organ ischemia is a life-threatening complication of aortic dissection. The diagnosis of AAC may be challenging, but a high clinical suspicion in this select group of patients is imperative to avoid a misdiagnosis.
P 362. PREDICTING SUCCESSFUL LAPAROENDOSCOPIC TRANS-HIATAL ESOPHAGECTOMY BY MEDIASTINAL HEIGHT MEASUREMENT
Presenter: Shane W Monnett DO | West Virginia University, Charleston

Introduction: Laparoendoscopic THE provides advantages over traditional THE by not only avoiding pain and disability associated with laparotomy but by also allowing a more precise esophageal mobilization via a video-assisted approach. However, we have noted that occasionally the length of the gastric conduit is insufficient to allow delivery into the neck and requires mini-laparotomy to complete the procedure. We hypothesized that the need for laparotomy or thoracotomy correlate with mediastinal height.

Methods: A retrospective chart review of all patients who underwent attempted laparoendoscopic THE at a single tertiary referral center between March 2003 and January 31, 2019 was performed. Patients' mediastinal height was measured from the superior endplate of T1 to T12 vertebrae using CT imaging of the chest by investigators blinded to the surgery technique and analyzed for correlation to successful completion of a totally laparoendoscopic procedure. Data were also collected regarding patient demographics, patient height, pathology results, past medical and surgical history, ICU and hospital length of stay, postoperative complications, and need for reoperation.

Results: A total of 21 cases met inclusion criteria, 9 successful laparoendoscopic and/or laparoscopic THE procedures and 12 failed procedures (those requiring addition of a mini-laparotomy or thoracotomy). Both groups were demographically similar. The mean mediastinal length for successful laparoendoscopic surgery was 23.5cm whereas the mean mediastinal length for failed laparoscopic surgeries was 24.8cm (p = 0.03). Patients overall height was not found to correlate with successful completion of totally laparoendoscopic THE.

Conclusion: This study demonstrates that a shorter mediastinal length is associated with successful laparoendoscopic or laparoscopic THE. This information is readily available to clinicians from routine pre-operative staging studies (chest CT) and may be used to potentially predict the success rate of a totally laparoendoscopic approach. Further larger prospective evaluation of these findings is warranted to determine more specific height thresholds and possible implications.
P 363. PROLIFERATING PILAR TUMOR: A RARE NEOPLASM OF THE SCALP
Presenter: Steven Kim MD  |  Emory University
Kim SC, Payne SH, Fay KT, King CL, Knaus WJ, Delman KA, Russell MC

Introduction:
Proliferating pilar tumors (PPTs) are rare neoplasms that arise from the sheath of hair follicles. They most commonly occur on the scalp and affect females. While they can undergo malignant transformation, PPTs typically do not metastasize to distant sites. Early recognition and distinction from other soft tissue tumors is helpful in preventing progressive growth and disfigurement.

Case Presentation: A 45 year old female presented complaining of a scalp mass which had been present for years but grew to 7cm over the prior two months (Figure 1a). After consultation with the team, the patient was taken to the operating room for radical resection of her scalp mass because of suspicious features for malignant degeneration such as rapid growth and exophytic nature.

The patient underwent resection with 2cm margins (Figure 1b). The wound bed was dressed with a wound vac. On final pathology, the specimen was identified as a proliferating pilar tumor with negative margins. Plastic surgery then placed a skin graft over the resection bed. She was discharged with a bolster dressing and is doing well.

Conclusions: First recognized in 1966, PPTs represent a spectrum of tumors that arise from the follicular isthmus. While they are generally considered benign, they can grow rapidly and even have the potential for malignant degeneration if left untreated. 90% of lesions occur on the scalp, and 80% of cases occur in females.

The diagnosis is established with histology. Features include lobules of squamous epithelium that abruptly transitions to trichilemmal keratinization with variable atypia and mitotic activity. Studies have attempted to establish criteria that predict PPT behavior. One review found that PPTs with non-scalp location, rapid growth, >5cm, infiltrative growth, and significant atypia with mitotic activity have increased incidence of recurrence or metastasis. But one of the largest series studied 76 cases of PPT and tumors were stratified into three groups of severity based on behavior (e.g. local regrowth, recurrence, metastasis). The most important characteristics on histology that stratified the groups were degrees of invasive growth, atypia, pathologic mitotic forms, necrosis, and vascular/neural invasion.

The early detection and distinction of PPTs from other soft tissue masses is important because these lesions have the risk of malignant degeneration. A multidisciplinary approach coordinating histopathology and coverage of the defect after radical resection are essential for providing proper care and follow up. When recognized and treated appropriately, surgical resection of proliferating pilar tumors is curative for patients.
Introduction: The robotic platform has hit surgery like a tsunami, but little is known about the number and variety of robotic operations performed in the USA. We undertook this study to describe the number and variety of robotic operations undertaken for hepatopancreatic (HP) and foregut disorders.

Methods: Data beginning 2015 through March 2018 was analyzed for da Vinci™ robot application for HP disorders, GERD, and achalasia. Joint Point Analysis was undertaken with Pearson product-moment correlation to measure robot application over time.

Results: Robotic HP operations increased from 1,891 in 2015 to 2,811 in 2017 (49% increase) (Figure). Robotic hepatic operations increased from 524 in 2015 to 1,083 in 2017 (107% increase). Robotic pancreatic operations increased from 1,367 in 2015 to 1,728 in 2017 (26% increase). Quarter after quarter, robotic application increased for HP operations, hepatic operations, and pancreatic operations (p<0.001 for each; r=0.94, 0.99, 0.80 respectively) with acceleration over the last months (Figure). The application of the Xi robot platform increased from 12% of robotic HP operations in 2015 to 71% in 2018 (1,075% increase in numbers).

Robotic fundoplications and myotomies increased from 8,442 in 2015 to 13,125 in 2017 (55% increase); quarter after quarter robotic fundoplications and myotomies increased (p<0.01; r=0.94) with acceleration over the past months (Figure). Robotic fundoplications increased from 7,573 in 2015 to 12,077 in 2017 (59% increase). Robotic Heller myotomies increased from 869 in 2015 to 1,048 in 2017 (21% increase). Quarter after quarter, robotic application increased for fundoplications and Heller myotomies (p<0.001 for each; r=0.69, 0.99 respectively) with acceleration over the past months. The application of the Xi robot platform increased from 13% of robotic foregut operations in 2015 to 64% in 2018 (935% increase in numbers).

Less than 10% of HP operations, fundoplications, and myotomies are undertaken robotically. Of the 7,813 robotic HP operations undertaken in 2015-March 2018, 19% were undertaken in the 5 busiest centers in the US.

Conclusion: There has been an accelerating increase in the number of robotic operations for hepatopancreatic disorders, GERD, and achalasia over the past 3 ¼ years. Application of the Xi robot has dramatically increased, both absolutely and relatively. Today, still only a small proportion of operations for hepatopancreatic disorders, GERD, and achalasia use the robotic platform; this is changing and changing fast.
Introduction: Traditionally, excision of large cystic neoplasms in the tail of the pancreas have been performed through upper midline incisions in order facilitate dissection and removal of the large specimen. In this case, we present a method to remove a large mucinous cystic neoplasm by performing a laparoscopic dissection and extraction of the mass through a Pfannenstiel incision, both improving cosmesis and reducing the risk for future hernia formation in a young patient. This case also demonstrates optimal port position, instrument choice, and operative strategy to efficiently and safely remove a mass like this.
P 366. THE CYST THAT PERSISTED: CASE REPORT OF A RECURRENT HEPATIC CYST ENGULFING THE GALLBLADDER AND DUCT OF LUSCHKA
Presenter: Samantha Demoss | Eastern Virginia Medical School
Demoss SD, Aziz M, Collins JN, Feliberti EC

Introduction: Symptomatic large hepatic cysts are an uncommon pathology for which laparoscopic cyst unroofing is regarded as an effective treatment with a low recurrence rate. In this case report, we present the surgical management of a recurrent large hepatic cyst engulfing the gallbladder with a duct of Luschka.

Case Presentation: A 79-year-old female with a history of laparoscopic large hepatic cyst unroofing seven years prior was referred for the evaluation of left lower quadrant abdominal pain.

Preoperative CT scan revealed numerous hepatic cysts, the largest cyst measuring 8.4 x 6.4 cm encompassing the gallbladder. Comparison with previous scans indicated the cysts had grown gradually following the unroofing procedure. HIDA scan showed normal uptake of radiotracer in the liver and excretion into bile ducts and duodenum. A large area of decreased radiotracer uptake was noted at the expected gallbladder location, corresponding to the large hepatic cyst. There was no evidence of gallbladder filling after 2 hours.

The patient underwent a repeat laparoscopic cyst unroofing and cholecystectomy. The right hepatic cyst was identified and approximately 300cc of brown-tinged serous fluid were drained. While excising the lateral portion of the cyst, a structure resembling the cyst wall was cut and drained bilious fluid. A cholangiogram through the aberrant duct showed filling of a peripheral branch of the right hepatic bile duct. Further dissection in this area identified a lobulated structure engulfed within the cyst wall, possibly the gallbladder. A second cholangiogram showed filling of the infundibulum of the gallbladder into the common bile duct and duodenum. A cholecystectomy was performed with excision of the exophytic portion of cyst and the cyst wall adherent to the liver was fulgurated.

Case Discussion: This interesting case highlights the intraoperative discovery of the gallbladder engulfed within the wall of a recurrent large hepatic cyst further complicated by a duct of Luschka. Given the capacity of large cysts to encompass local structures, diligent attention to the biliary tree anatomy during cyst wall dissection is necessary. Intraoperative cholangiogram is an indispensable tool in cases where biliary anatomy is unclear.
P 367. COMPARISON OF BIOMET OMNIMAX VERSUS TRADITIONAL ARCH BAR PLACEMENT IN TRAUMA PATIENTS WITH FACIAL FRACTURES
Presenter: William Aukerman MD | Duke LifePoint Conemaugh Memorial Medical Center
Aukerman W, Shayesteh K

Introduction: Facial fractures are a very common injury in trauma patients, with the mandible being the second most commonly injured facial bone. These have historically been treated with the traditional arch bar system supported by intradental wires. The Biomet Omnimax MMF system provides a technically simpler means of fixation, which is advertised to reduce OR time and potentially avoids complications.

Methods: A retrospective chart review was performed of patients admitted to Memorial Medical Center (MMC) with facial fractures requiring operative intervention from November 2013 through October 2016. 41 patients were included in the study after patients who did not meet including criteria were removed (18 traditional arch bar group; 23 Biomet Omnimax system). A statistical analysis was then performed to compare cost, operating room time, short term complications, and outcomes.

Results: 41 patients met inclusion criteria (18 traditional arch bar group; 23 Biomet Omnimax system group). Mean surgical duration for the Biomet Omnimax system versus traditional arch bars was less; however, this was not statistically significant (84.9 minutes vs 96.6 minutes, P=.450). Operating charges for the Biomet Omnimax system versus traditional arch bars was greater, which was statistically significant ($30,781 vs 19,550, P=.005). Short term complications (unexpected return to OR, 30 day infection rate, neuropathy, malocclusion, and facial contour deformities) were not statistically significantly different between the Biomet Omnimax system versus traditional arch bars (P=.492, P=.196, P=.450, P=.381, and P= not computable, respectively)

Conclusion: The Biomet Omnimax system is non-inferior to traditional arch bars in terms of short term complications (unexpected return to OR, 30 day infection rate, neuropathy, malocclusion, and facial contour deformities). At our institution, the mean surgical duration was less; however, this was not statistically significant. The operating charges were statistically significantly higher for the Biomet Omnimax system than traditional arch bars.
**P 368. ARGON PLASMA COAGULATION OF A BENIGN TRACHEAL POLYP IN A 47-YEAR-OLD FORMER SMOKER**

Presenter: Sunny J Patel | Medical College of Georgia at Augusta University
Patel SJ, Drevets P, Mehrotra M, Schroeder C

**Introduction:** Benign tracheal tumors are extremely rare in occurrence. Although generally asymptomatic at presentation, tracheal tumors have the potential to cause life-threatening airway obstruction and even become malignant. Given the rarity of these tumors, no standard protocol for management and treatment exists. Treatments can vary depending on the size, character, and surrounding vasculature of the polyp. In heavy smokers, like the patient presented in this case, bronchial tumors have a high malignant potential and require evaluation and removal.

**Methods:** We report the case of a 47 year-old man with an incidental tracheal polyp seen on a screening CT for lung cancer. Initially referred to pulmonology for bronchoscopy with brush sampling, the patient was then referred to our thoracic surgery department for definitive management. A bronchoscopy was performed and the tumor was successfully ablated with argon plasma coagulation. Final pathology confirmed a fibroepithelial polyp negative for malignancy.

**Results:** Benign fibroepithelial tracheal polyps are extremely rare. Tracheal tumors in adults, especially in smokers, are generally malignant. Bronchoscopic examination can assess tumor size and nature and help direct decision-making in determining treatment options. The thoracic surgeon is well-equipped to both diagnose and definitively treat tracheal polyps.

**Conclusion:** Given their potential to cause severe airway and lung disease, physicians must remain vigilant to detect tracheal polyps on imaging obtained for other purposes. Often asymptomatic, the consequences of an overlooked tracheal mass are potentially severe. Prompt referral of incidentally found tracheal tumors to trained thoracic surgeons allows for definitive treatment and improved probability of successful outcomes.
P 369. AN INSTITUTIONAL STUDY OF GASTROINTESTINAL BLEEDING IN MECHANICAL CARDIAC SUPPORT

Presenter: Alexander P McNally MS | Eastern Virginia Medical School
McNally AP, Colten YA, Bandy NL, Martyak MT, Baran DA, Herre JM, Britt RC, Collins JN

Introduction: Mechanical circulatory support has proven as lifesaving therapy in patients with complex medical diagnoses. However, mechanical support therapy requires combination anticoagulation which may increase the risk of adverse bleeding, including recurrent gastrointestinal bleeding (GIB). This study will review the incidence of suspected GIB, associated risk factors, types of procedures and interventions, and complication rate in this cohort of patients at one institution.

Methods: All patients at our institution under durable and non-durable mechanical circulatory support were retrospectively reviewed for GIB. Patient demographics, etiology of heart failure, co-morbidities, and coagulation status were documented. Medical records were reviewed to determine GIB etiology, location, rate, type of procedure performed in evaluation, and complication rate.

Results: A total of 427 patients were reviewed, with 116 patients (27.2%) accounting for 218 episodes of suspected GIB during our study period. Durable support patients experienced 96.7% of recorded bleeds. A mean length of time from reception of mechanical support to initial GIB episode was 193.6 days. Higher rates of GIB were recorded among patients with pre-existing comorbidities of hypertension (182; 83.9%) and diabetes mellitus (146; 67.3%). A previous GIB was recorded in 55.2% of cases. Confirmed bleed location was determined as upper in 123 cases (57.5%), lower in 78 cases (36.4%) and both in 13 cases (6.1%). The most common etiology of bleed included angiodysplasia/vascular malformation (35.8%) and unknown (29.4%), followed by peptic ulcer (7.8%), diverticular disease (7.3%), and colonic polyps (4.6%). Endoscopic procedure and intervention were performed in 90.4% of consults, including 143 esophagogastroduodenoscopies (EGD), 72 push small bowel endoscopies (SBE), and 78 colonoscopies. Surgical and endovascular intervention accounted for 4% of total procedures. An average of 1.7 procedures was performed per patient admission. Management through blood transfusion was performed in 81.2% of cases. The overall complication rate was 34.8%. The most frequent complication was chronic GIB (89.4%), followed by post-intervention shock (5.3%), vasopressor support 24 hours post-procedure (2.6%), and pre-intervention shock (2.6%).

Conclusion: Gastrointestinal bleeding is a complication in patients under mechanical circulatory support. Development of this disorder is multifactorial and presents with many etiologies. Confirmed diagnosis of this disorder requires multiple procedural interventions and overall incidence carries the risk of further medical complications. Development of further studies to evaluate diagnosis technique and best management practice for this disorder is important for long-term outcomes in this patient population.
<table>
<thead>
<tr>
<th>Total Bleeds</th>
<th>n=218</th>
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<tbody>
<tr>
<td>Durable Support</td>
<td>211 (96.7%)</td>
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<tr>
<td>Non-durable Support</td>
<td>7 (3.3%)</td>
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<tr>
<th>Comorbidities</th>
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<tr>
<td>Hypertension</td>
<td>182 (83.9%)</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>146 (67.3%)</td>
</tr>
<tr>
<td>Previous GI Bleed</td>
<td>120 (55.2%)</td>
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<table>
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<tr>
<th>Bleed Location</th>
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<tbody>
<tr>
<td>Upper</td>
<td>126 (57.5%)</td>
</tr>
<tr>
<td>Lower</td>
<td>79 (36.4%)</td>
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<tr>
<td>Both</td>
<td>13 (6.1%)</td>
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<table>
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<tr>
<th>Etiology of Bleed</th>
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<tbody>
<tr>
<td>Angiodysplasia/Vascular malformation</td>
<td>78 (35.8%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>64 (29.4%)</td>
</tr>
<tr>
<td>Peptic Ulcer</td>
<td>17 (7.8%)</td>
</tr>
<tr>
<td>Diverticular Disease</td>
<td>16 (7.3%)</td>
</tr>
<tr>
<td>Colonic Polyps</td>
<td>10 (4.6%)</td>
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<tr>
<td>Other</td>
<td>33 (15.1%)</td>
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<tr>
<th>Endoscopic Procedures</th>
<th></th>
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<tbody>
<tr>
<td>Esophagogastroduodenoscopy</td>
<td>143 (65.6%)</td>
</tr>
<tr>
<td>Push Small Bowel Endoscopy</td>
<td>72 (33.0%)</td>
</tr>
<tr>
<td>Colonoscopy</td>
<td>78 (35.8%)</td>
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<table>
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<tr>
<th>Complications</th>
<th></th>
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<tbody>
<tr>
<td>Chronic GIB</td>
<td>68 (89.4%)</td>
</tr>
<tr>
<td>Post-intervention Shock</td>
<td>4 (5.3%)</td>
</tr>
<tr>
<td>Vasopressor Support 24hrs post-procedure</td>
<td>2 (2.6%)</td>
</tr>
<tr>
<td>Pre-intervention Shock</td>
<td>2 (2.6%)</td>
</tr>
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P 370. THERAPEUTIC HYPOTHERMIA WITH PROGESTERONE IMPROVES NEUROLOGIC OUTCOMES IN VENTRICULAR FIBRILLATION CARDIAC ARREST IN ELECTROCUTION: A CASE SERIES
Presenter: David Rubay MD | Florida Atlantic University
Rubay D, Qafiti F, Lama G, Morrow M, Genuit T, Lottenberg L, Borrego R

Introduction: Trauma by electrocution imposes mechanical, electrical and thermal forces on the human body. Often, the delicate cardiac electrophysiology is disrupted causing dysrhythmia and subsequent cardiac arrest. Anoxic brain injury (ABI) is the most severe consequence and the main cause of mortality following cardiac arrest. Establishing a working protocol to treat patients who are at risk for ABI after suffering a cardiac arrest is of paramount importance. There has yet to be sufficient exploration of combination therapy of both progesterone and therapeutic hypothermia (TH) as a neuroprotective strategy in patients who have suffered cardiac arrest.

Methods: The protocol required TH initiation upon transfer to the intensive care unit (ICU) with a target core body temperature of 33 degrees Celsius for 18 hours. This was achieved through a combination of cooling blankets, ice packs, chilled IV fluids, nasogastric lavage with iced saline, and intravascular cooling devices. Progesterone therapy at 80-100mg intramuscularly every 12 hours for 72 hours was initiated shortly after admission to the ICU.

Results: We present a case series of three patients (mean age = 29.3, mean presenting Glasgow Coma Score = 3) who suffered ventricular fibrillation (VF) cardiac arrest from non-lightening electrocution, and who had considerably improved outcomes following the TH-progesterone combination therapy protocol. The average length of stay was 13.7 days. One patient was extubated with full neurological recovery at day 4 and two patients at day 8.

Conclusion: The cases presented suggest that there may be a role for neuroprotective combination therapy in post-resuscitation care of VF cardiac arrest. Whereas TH is well documented as a protective measure, and whereas progesterone administration is a safe therapy with promising, albeit currently inconclusive, neuroprotective effect, future protocols involving TH and progesterone in these patients should be further explored.
**Introduction:** Traumatic Brain Injury (TBI) is a very common diagnosis that continues to carry significant morbidity and mortality. Patients with TBI routinely require mechanical ventilation and may suffer from Acute Respiratory Distress Syndrome (ARDS). As management strategies of these two pathologies both differ significantly and have opposite treatment goals, we aim to examine the clinical outcomes of patients with concomitant diagnoses presenting to trauma centers across the nation.

**Methods:** Using the National Trauma Data Bank (2010-2015), patients who were older than 18 years of age with TBI were selected. TBI was defined as the presence of ICD-9 codes for brain injuries and was stratified into moderate, and severe using the Abbreviated Injury Score (AIS) of the head region. Already-established ICD-9 code used to describe ARDS were selected then stratified into mild vs moderate-severe ARDS (96 hours of mechanical ventilation). Patients with severe injuries (AIS>3) in other body parts were excluded from the analysis. Demographic, clinical and hospital characteristics were described. Outcomes studied were mortality, ICU days, and hospital length of stay (LOS).

**Results:** In our analysis, 876,300 patients presented with moderate to severe TBI. Of those patients, 1,183 patients had a concomitant diagnosis of ARDS. Majority of these patients had severe TBI (70%), and 30% had moderate TBI. Distribution over ARDS groups was almost similar (Mild 51.3%, Moderate-Severe 48.7%). In patients with TBI without ARDS, mortality was 3.1% (0.5% in moderate TBI, ad 6% in severe TBI). However, in patients who went to develop ARDS mortality was 1.5% (0.3% in moderate TBI, and 2% in severe TBI), p<0.01. ICU days were significantly different between ARDS groups with median of 2 [IQR 0-2] in patients without ARDS compared to median of 2 [1-5] in mild ARDS, and median of 13 [9-19] in moderate-severe ARDS, p<0.01. Similarly, hospital LOS showed a similar trend with a median of 3 [2-6] in patient who did not develop ARDS, a median LOS of 6 [2-11] in mild ARDS, and a median LOS of 21 [15-28] in moderate-severe ARDS, p<0.01.

**Conclusion:** ARDS in TBI patients is shown to worsen hospital outcomes leading to an increase in the morbidity of patient who survive their initial injury. Further studies and guidelines are needed for management of these two pathologies when encountered together.

<table>
<thead>
<tr>
<th>Moderate and Severe TBI (n=876,300)</th>
<th>NO ARDS (n=875,117)</th>
<th>ARDS</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mild (n=607)</td>
<td>Mod-Severe (n=576)</td>
</tr>
<tr>
<td>Mortality</td>
<td>3.1%</td>
<td>1.5%</td>
<td>1.6%</td>
</tr>
<tr>
<td>ICU days</td>
<td>0 [0-2]</td>
<td>2 [1-5]</td>
<td>13 [9-19]</td>
</tr>
</tbody>
</table>
Introduction: A 55-year-old female with a history of chronic back pain, anxiety, and depression was admitted to the hospital for an elective subtotal colectomy and ileorectal anastomosis for colonic inertia. On admission, her medications were documented: acetaminophen/oxycodone (5/325 1 PO q 6 hours prn), escitalopram (10mg 1 po q day), cyclobenzaprine (10 mg 1 po tid), bupropion (100 mg 1 po q day) and omeprazole (40 mg po BID). The surgery was uneventful, and the patient was started on home medications and a clear liquid diet within 24 hours of the surgery. On postoperative day 2, the patient vomited 500 cc of bilious liquid, became confused, agitated, and developed visual hallucinations. Since drug and/or alcohol withdrawal was suspected, the patient’s husband was contacted to review her medication and social history. After some prodding, the husband revealed that in addition to her prescribed medications, the patient, in an attempt to alleviate her pain and anxiety, for many years, was taking an over-the-counter preparation called Kratom (5-10 g, oral daily). The patient became febrile (40.1 degrees C), tachycardic (155 beats/min) and hypotensive (80/undetected) and the patient was transferred to the ICU for presumed septic shock. Diagnostic studies revealed right basal pulmonary infiltrates most consistent with aspiration pneumonia. She was transferred from the ICU within 24 hours and subsequently discharged from the hospital in good health on Day 12.

When our patient became nauseous and vomited, we initially suspected that her symptoms were secondary to an ileus or obstruction. Although an ileus may have contributed to the patient’s emesis, our working diagnosis did not explain the patient’s hallucinations. Our patient was given lorazepam (1 g, IV push) for this episode of agitation, since the timing and symptoms were congruent with alcohol or benzodiazepine withdrawal. Once we ascertained that the patient was taking excessive amounts of Kratom, our management became supportive in the form of haloperidol (5 mg, intramuscular). Although there have been anecdotal reports of Kratom withdrawal management with buprenorphine, standard management is largely supportive in the form of IV hydration and treatment of symptoms as they arise.

Over-the-counter and herbal supplements, such as Kratom, can often be addictive and result in withdrawal effects, which can complicate a postoperative course, leading to a prolonged hospitalization and increased healthcare costs. Because of the increasing popularity of Kratom, physicians need to become familiar with the pharmacology and potential adverse effects.
Introduction: Extracorporeal membrane oxygenation (ECMO) is increasingly being utilized as a rescue modality for patients with severe reversible pulmonary failure, such as acute respiratory distress syndrome (ARDS). Approximately 15% of cancer patients will present with acute respiratory failure, which carries a mortality rate of 70% when these patients are intubated. However, ECMO is underutilized in patients with hematological malignancies due to concerns regarding immunosuppression and coagulopathy.

We present a case of a 33-year-old woman with acute myeloid leukemia (AML) who developed febrile neutropenia, sepsis and ARDS during induction chemotherapy and was successfully rescued with ECMO.

A 33-year-old woman with no prior medical history presented to her primary care physician with complaints of suprapubic and lower abdominal pain. Routine labs were sent, and she was found to have an elevated white blood cell count of 40,000. She was referred to hematology and oncology and further workup was consistent with a diagnosis of acute myeloid leukemia. The patient was admitted for induction chemotherapy and did well until hospital day 20 when she developed pleuritic chest pain and became tachypleic and tachycardic. She was worsened over the next several days and was diagnosed with ARDS based on computed tomography (CT) findings (Figure 1). She continued to decompensate, and the decision was made to initiate veno-venous ECMO on hospital day 29. She did well on ECMO, recovered lung function, and was successfully decannulated on hospital day 35. She currently doing well and is in remission.

Acute respiratory distress syndrome may develop in patients with hematological malignancies, resulting in high morbidity and mortality. Although ECMO has been relatively contraindicated in this patient population in the past, it may be of benefit in select patients especially with literature supporting running VV ECMO with no anticoagulation.
Figure 1. Pre-ECMO CT findings showing diffuse ground glass opacities and development of extensive consolidation in both lower lobes.
Introduction: Blunt subclavian artery injuries are exceedingly rare. This study reviews two cases which occurred at our institution & discusses the diagnosis, management & repair of these rare injuries.

Methods: A retrospective review of the last 10 years of our Level 1 trauma center registry only revealed the 2 blunt subclavian artery injuries. Therefore, a detailed review of these 2 cases is presented.

Results: Both patients presented in shock following motorcycle accidents. Patient 1 was a 48 year-old male who had a >30cm defect over an open iliac wing fracture, an open right humerus fracture & brachial artery laceration, rib fractures, pneumothorax & subarachnoid hemorrhage. Following repair of the brachial artery, he was found to have poor inflow. Angio revealed the arterial injury which was repaired with a subclavian-axillary PTFE bypass. While the bypass was successful, the patient suffered ischemic injury to the arm leading to amputation. On post-op day 5 he expired. Patient 2 presented with a right humerus fracture, forearm fracture, comminuted clavicle fracture & pneumothorax. Shortly after initial resuscitation he became hypotensive & was taken for laparotomy. Hepatorrhaphy was done for Grade IV liver injury. Once normotensive, the patient was found to have a pulseless right arm. CTA revealed injury to the right subclavian at the thoracic outlet. An emergent subclavian-axillary PTFE bypass was performed. The patient survived & the arm was salvaged.

Conclusion: Blunt subclavian injuries occur in complex injury patterns. The diagnosis is challenging & must be considered when other common locations for hemorrhage have been ruled out. More subtle findings such as an expanding chest wall or neck hematoma may alert the clinician early of extra-pleural bleeding. Regardless of the technique (open versus endovascular repair), early diagnosis is key to a good outcome.
Blunt Subclavian Artery Injury: “Blood on the Floor and Four More” Does Not Always Locate the Source of Hemorrhagic Shock

Benjamin Hazen MD, Deepika Koganti MD, Jaime Benarroch MD, Victoria Teodorescu MD, Ravi Rajani MD, Jonathan Nguyen MD, April Grant MD

Emory University SOM, Morehouse SOM, Atlanta, Georgia

Introduction

Subclavian artery injury caused by blunt trauma is exceedingly rare, accounting for only 2-3% of all subclavian artery injuries. The subclavian artery is well protected by surrounding anatomic structures, and thus clinicians must have a high index of suspicion in order to identify and treat this injury. Physical exam as well as CT Angiogram can aid in diagnosis in HOS patients, although most injuries are found in the operating room.

Case #1

A 40yo male presented after an MVC. He was nonresponsive on arrival but awake/civil with GCS 3. On scene he was found to have open rhumena fracture with pulseless extremity, a large open disengaging injury at Clavicle with exposed comminuted R clavicle fracture. His RAST was negative. He became hypotensive and increasing altered. Massive transfusion was initiated, the patient intubated and taken to the OR. His large wound was explored revealing only diffuse muscular injury, torso required no intra-abdominal source of bleeding. The patient was still unstable at this time requiring massive transfusion. Bilateral chest tubes were placed without any visible output. The RAS was found to have a brachial irritation and bypass was performed. However, there was poor inflow, and sternotomy revealed the R subclavian artery injury. Of note, t...

Case #2

A 35yo male presented hypotensive with GCS 3 after an MVC. He was rapidly intubated and 2u PRBC immediately transfused with good initial response. His RAST was negative. However, his BP dropped again acutely with brief cardiac arrest requiring compressions and rapid return of ROSC. ITP was intubated and he was taken to OR. Exploratory laparotomy revealed a grade 4 liver laceration which was packed and repaired. Post-operatively, he underwent trauma scans and was returned to ICU. His RAS was noted to have obvious rhumena fracture with no pulse. He was taken immediately for CTA and a comminuted clavicle and a R subclavian artery injury. The patient was emergently taken back to the OR for ORIF of the right clavicle and PTTE bypass graft, as well as right humerus splinting and fasciotomies.

Case #1 OR and Clinical Course

The patient underwent sternotomy and cardiopulmonary bypass for PTTE bypass graft. Although the bypass was technically successful, the patient suffered irreversible ischemic damage ultimately requiring amputation. The patient developed multistem system organ failure and expired.

Case #2 Clinical Course

The remainder of the patient post-operative course was relatively uncomplicated. The patient's arm was able to be salvaged and he was discharged to a Subacute Rehab Facility.

Discussion

Two types of injuries to the subclavian artery are described in this literature. The first is caused by elongation of the artery, most commonly after rapid deceleration such as seen in a motor vehicle collision. Alternatively, the artery can also be lacerated by bony fractures after first rib or clavicular fractures. This case series was intended to highlight the rarity of subclavian artery injury by blunt mechanism. Furthermore, clinicians should consider this type of injury in hypotensive patients without evidence of hemorrhage in the chest, abdomen, pelvis or lower extremities. Despite technological and operative advances, this injury still has devastating outcomes with significant morbidity and mortality. However, prompt diagnosis of these injuries can be life-saving.
P 375. DELAYED FINDING OF ATRIAL RUPTURE FOLLOWING SIGNIFICANT BLUNT FORCE TRAUMA: A BRIEF REPORT
Presenter: Jaclyn Isabella MD | University of Oklahoma Health Sciences Center
Grimes AD, Harville LE, Velazco-Davila L, Cross AM

Introduction: Traditionally, blunt cardiac rupture with an intact pericardium presents with signs and symptoms of cardiac tamponade. Atrial tears are typically rapidly fatal and require a high index of suspicion and emergent operative repair.

Case Description: A 34 year old female involved in a motor vehicle collision presented to an ACS verified Level 1 trauma center as a multisystem trauma in extremis. Focused assessment with sonography for trauma (FAST) examination was positive for fluid in the abdomen, but negative in the pericardium. She underwent an emergent exploratory laparotomy with distal pancreatectomy and splenectomy. Post-operative trauma CT imaging revealed a pericardial effusion, prompting central venous pressure monitoring (CVP) and echocardiogram, which revealed a normal CVP and simple effusion without tamponade physiology, respectively. A pericardial window was planned due to the uncertain natural progression of the effusion, but she developed signs of cardiac tamponade in the OR. Median sternotomy revealed right atrial appendage rupture which was repaired primarily.

Discussion: This is an atypical presentation for a significant right atrial apex rupture. When caring for patients with severe blunt force trauma, the clinician must have a high index of suspicion for blunt cardiac trauma. The FAST exam may be misleading. The surgical approach should be a median sternotomy with cardiopulmonary bypass available if cardiac injury is suspected.
**P 376. INTERCOSTAL NERVE BLOCKADE FOR RIB FRACTURES**
Presenter: Parker Mullen MD | University of South Alabama Medical Center
Mullen PR, Farley P, Caposole M, Simmons JD, Kinnard CM

**Introduction:** this video demonstrates a bedside intercostal nerve blockade for rib fractures.
Introduction: Veno-venous extracorporeal membrane oxygenation (VV-ECMO) is a well-established means of respiratory support for refractory hypoxemia or respiratory acidosis. It has shown to be effective in the setting of acute respiratory distress (ARDS), airway obstruction, lung transplant, and hyperventilation diseases. However, the role of VV-ECMO in the setting of traumatic bronchial injuries warrants further investigation. Previous descriptions have included VV-ECMO as a bridge to surgery for tracheobronchial injuries, but not as definitive therapy. A 32-year-old male presented to an ACS-verified Level 1 Trauma Center as a blunt trauma after a motorcycle crash. Initially on scene, breath sounds were diminished, a King airway was inserted and right chest needle decompression was performed. He was immediately intubated upon arrival to our facility and bilateral chest tubes were placed. His extensive injury burden included spine fractures, rib fractures, bilateral pulmonary contusions and hemopneumothoraxes.

Upon arrival to the ICU, he had severe hypoxemia and was hemodynamically unstable. His previously placed chest tube had a persistent air leak resulting in an unresolved pneumothorax and tension physiology. An additional chest tube was placed but his tidal volumes and respiratory acidosis persisted. Emergent bronchoscopy confirmed suspicion noting a full thickness bronchial injury at the level of the bronchus intermedius.

Given concern for his rapid progression and unstable respiratory status, options such as placing the patient on high frequency oscillatory ventilation versus single lung ventilation were considered but ultimately rejected for fear of further pulmonary insult. Instead, he was cannulated in the ICU for VV-ECMO as a bridge to definitive surgical intervention. A 23 French venous cannula was placed in the right femoral vein and a 21 French arterial catheter in the right internal jugular vein. This was performed without anticoagulation due to an unstable spine fracture. A bronchial blocker was placed in the right mainstem bronchus permitting single-lung ventilation exclusively to the left lung. Over the course of the next four days, oxygen saturations improved with enhanced aeration of the lungs. After remarkable clinical improvement, resolution of the bronchial injury was confirmed on bronchoscopy. The bronchial blocker was subsequently removed and the patient was decannulated from VV-ECMO. The patient was eventually extubated to nasal cannula five days later.

This case illustrates the role of VV-ECMO and lung isolation as definitive therapy for bronchial injury. Their ability to allow oxygenation while providing the lung time to heal could serve as an alternative approach to management of traumatic bronchial injuries.
Introduction: Despite advances in operative management of many vascular injuries, traumatic retrohepatic inferior vena cava (RHIVC) injuries remain a technical challenge and carry a very high burden of morbidity and mortality. Here we detail a novel interdisciplinary approach with promising results. A 60 year old male presented with a gunshot wound to the right upper abdomen. A large retrohepatic hematoma was encountered on exploration and initial management with packing alone was unsuccessful. Exploration of the hematoma revealed anterior and posterior injuries to the suprarenal IVC which were managed in the damage control setting with primary suture repair. The only concomitant injury was a right hemothorax managed with a chest tube. In the 48 hours following injury, the patient developed bilateral lower extremity swelling and progressive renal dysfunction and thrombosis at the site of repair was confirmed with venography. An operative plan was devised to resect the segment of IVC whose lumen was compromised by the initial repair and replace it with an interposition graft. Because the patient would not tolerate a prolonged period of time without preload required by total hepatic vascular exclusion, the patient was placed on cardiopulmonary bypass for the operation with venous cannulas in the IVC (via the right femoral vein) and the right atrium. Postoperatively, the patient did well and had complete resolution of renal dysfunction and lower extremity swelling. He did require a decortication for retained hemothorax prior to successful discharge to a rehabilitation facility. Not all patients with RHIVC injuries are candidates for this kind of staged repair as they may have concomitant injuries that preclude the use of cardiopulmonary bypass to facilitate exposure and repair. However for selected patients, a management strategy of initial damage control with suture repair, or even ligation, with bridging to a staged repair in a more controlled setting may offer an improved prognosis.
P 379. EVACUATION OF A TRAUMATIC EXTRA-PERICARDIAL ANTERIOR MEDIASTINAL HEMATOMA CAUSING CARDIAC TAMPOANDE VIA EMERGENT MEDIAN STERNOTOMY

Presenter: Travis M Sullivan MD | Virginia Commonwealth University
Sullivan TM, Grigsby CK, Anand RJ, Leichte SW

Introduction: Mediastinal hematomas can be caused by both blunt and penetrating trauma, but often require only monitoring. We present the rare case of an anterior mediastinal hematoma from a thoracic gunshot wound (GSW) causing delayed cardiac tamponade.

Methods: A 21-year-old man presented to our Level 1 trauma center with a GSW to the left axilla. He was alert, ambulatory, and hemodynamically stable upon primary survey without hard signs of vascular injury. Chest radiograph demonstrated a minuscule left pneumothorax and missile in the right chest cavity. Computed tomography angiography (CTA) of the chest demonstrated a transmediastinal course of the GSW, tracking from the left axilla through the superior anterior mediastinum into the right chest without cardiac involvement, (Figure 1). Echocardiography of the heart demonstrated good cardiac function without clinically relevant mass effect. However, a side branch of the left subclavian artery was noted to have active contrast extravasation and the patient was taken to the interventional radiology (IR) suite.

Results: Selective embolization of the pectoral branch of the left subclavian artery was performed on night of admission. On hospital day one, repeat CTA chest re-demonstrated active extravasation from the previously embolized artery with significant increase in size of the left axillary and superior mediastinal hematoma. This resulted in a mass effect upon the anterior border of the heart but without hemodynamic compromise. Repeat angioembolization was performed, and a newly identified left subclavian/axillary vein injury was stented. Following this procedure, the patient acutely developed tachycardia. Emergent cardiac ultrasound demonstrated an enlarging mediastinal hematoma compromising systolic function. The patient underwent emergent median sternotomy and evacuation of the anterior mediastinal hematoma. This intervention immediately resolved his hemodynamic instability ability to be rapidly weaned off vasopressors prior to leaving the operating theatre.

Conclusion: Traumatic extra-pericardial hematoma causing cardiac tamponade is a rare but possible fatal injury. Immediate evacuation via median sternotomy is a life-saving procedure. Patients with large mediastinal hematomas without obvious hemodynamic compromise require close observation and a high index of suspicion for the development of potentially lethal tamponade.
Introduction: Traumatic chylothoraces can be challenging clinical entities to manage, and significantly complicate patient’s recovery trajectories when present. Whether a consequence of blunt or penetrating mechanisms, conservative management methods are preferred, but operative intervention may be necessary if the chylous output fails to cease. Timely recognition and diagnosis are important in order to allow for best efforts at conservative therapies or operative interventions. While traumatic chylothorax is a recognized complication after blunt thoracic trauma, bilateral chylothoraces after blunt trauma is a rarer entity. We report the case of a 21-year-old male trauma patient involved in a motor vehicle collision who sustained a T11 vertebral body fracture where bilateral chylothoraces subsequently developed. Herein we describe our clinical course and use this case as an opportunity to comprehensively review post traumatic chylothorax management strategies.

Results: A 21 year old trauma patient presented with a T11 vertebral body fracture, with subsequent development of bilateral chylothoraces. A left sided chylothorax resolved with conservative management. A high output right sided chylothorax required operative management. The patient was eventually discharged home after his recovery from operative interventions and injuries.

Conclusion: We report the case of a 21-year-old male trauma patient involved in a motor vehicle collision who sustained a T11 vertebral body fracture where bilateral chylothoraces subsequently developed. Herein we describe our clinical course and use this case as an opportunity to comprehensively review post traumatic chylothorax management strategies.
Introduction: Geriatric patients represent a significant and growing proportion of the trauma population. Given effects of frailty and comorbidities, the geriatric trauma population is prone to increased morbidity and mortality compared to younger patients. The impact of end stage renal disease (ESRD) remains unknown in this population.

Methods: Trauma Quality Improvement Project (TQIP) database was analyzed to include all geriatric (>65 years old) trauma admissions from 2010 until 2016. Dialysis dependence was defined by ESRD co-morbidity codes. Demographic factors, GCS, injury mechanism, Injury Severity Scores (ISS), blood pressure on presentation and medical co-morbidities were compared between the two groups. Mortality, length of stay data and discharge destinations were compared for ESRD and non-ESRD patients. Multivariate logistic models and analysis of covariance were used to evaluate outcomes.

Results: 510,043 patients were evaluated, with 12,864 (2.52%) being dialysis dependent. The dialysis patients had significantly higher rates of all measured co-morbidities. Mechanism of injury was overwhelmingly blunt in both groups. Mortality was significantly higher in the dialysis population (OR 1.76, p< 0.0001), as was length of stay (8.2 vs 7.0 days, p< 0.0001). Dialysis patients were less likely to be discharged home (OR 0.66, p< 0.0001). These results remained significant even after adjustment for ISS, GCS, comorbidities and demographic factors.

Conclusion: In the geriatric trauma population, dialysis dependence prior to admission is an independent and significant risk factor for poor outcomes including mortality, prolonged hospital stay and discharge to a skilled nursing facility even after adjusting for patient factors and co-morbidities.

Figure 1: Outcomes of Geriatric Trauma Patients

<table>
<thead>
<tr>
<th>Outcome</th>
<th>On Hemodialysis</th>
<th>Not on Hemodialysis</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality, OR (95%CI)</td>
<td>1.76 (1.67,1.85)</td>
<td>ref</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Destination*, OR (95% CI)</td>
<td>0.66 (0.63,0.69)</td>
<td>ref</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>LOS, d, mean (95% CI)</td>
<td>8.2 (8.06,8.34)</td>
<td>7.0 (6.98,7.02)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>ICU LOS, d, mean (95% CI)</td>
<td>5.5 (5.33,5.67)</td>
<td>5.1 (5.07, 5.13)</td>
<td>0.25</td>
</tr>
<tr>
<td>Ventilator LOS, d, mean (95% CI)</td>
<td>6.8 (6.41,7.19)</td>
<td>6.7 (6.64,6.76)</td>
<td>0.15</td>
</tr>
</tbody>
</table>

*probability modeled off of likelihood of discharge home
**P 382. EFFECT OF MUSIC THERAPY ON ICP CONTROL IN THE BRAIN INJURED PATIENT**

**Presenter:** Pamela Jones CRNP | Reading Hospital

Baum H, McCall A, Sherwood A, Engle L, Layser S, Weidman C, Muller A, Ong A

**Introduction:** Music therapy has been shown to reduce anxiety-related physiological parameters in mechanically ventilated patients. Its effect on intracranial pressure (ICP) in patients with traumatic brain injury (TBI) is not well studied. Music therapy could potentially offer an inexpensive and noninvasive adjunct for control of ICP. We hypothesized that MT would lower ICP in TBI patients.

**Methods:** We conducted a prospective pilot trial with a repeated measures design. Brain injured normotensive patients ≥ 18 years with an ICP monitor were eligible for inclusion if the ICP was ≥ 10 mmHg one hour prior to intervention. Exclusion criteria included an ICP ≥ 20 mmHg, need for ongoing cerebrospinal fluid drainage, vasopressor support, need for adjustment in sedation or analgesia medication doses in prior one hour, potentially disruptive or stimulating procedures during the trial period, and hearing impairment. Each enrolled patient received three sequential treatment phases via headphones: no music (placebo, P1), relaxing music (M), and no music (placebo, P2). Duration of P1, P2 and M were 15 minutes each. Halfway through the study period, the study protocol was changed to shorten the duration of P1 and P2 each to 5 minutes to facilitate necessary bedside care. ICP was recorded for each minute throughout the three treatment phases. Patients with two or more study interventions had the interventions performed on different days. For each study intervention, M and P2 were respectively compared to P1 using the unpaired t test. A p value of < 0.05 was deemed significant.

**Results:** Seven patients (admission Glasgow Coma Score 3-10) were enrolled with 12 study interventions successfully completed. Four patients were excluded due to ICP monitor removal prior to the intervention (n=2), increasing ICP > 20 mmHg (n=1) and equipment malfunction (n=1). In three study interventions, mean ICP was lower in the M and/or P2 phases compared to P1, while in four study interventions, mean ICP was higher in the M and/or P2 phases (Table).

**Conclusion:** In this pilot study, music therapy had a modest effect in lowering ICP in certain TBI patients, but was associated with ICP elevation in others. These inconsistent effects of music could have been modulated by patient or environment-related factors. The use of music in critically ill patients with TBI deserves further study.
Introduction: Patients with multiple rib fractures are at higher risk for respiratory complications and mortality. Current recommendations are admission with close observation for patients at high risk for significant respiratory complications (SRC); namely, patients over sixty-five years of age concurrent with four or more rib fractures. However, the duration of close monitoring is not clear and often patients are transferred out of critical care setting after a brief period. We hypothesize that SRC arise beyond seventy-two hours from time of hospital admission.

Methods: Retrospective chart review of adult patients admitted to Level 1 Trauma Center from 2015 to 2018 with three or more rib fractures who were initially breathing spontaneously and developed SRC. Demographic and clinical data were analyzed and date of onset of SRC was noted. SRC were defined as respiratory failure or respiratory distress requiring intubation or noninvasive ventilatory support. Data were analyzed using standard statistical methods.

Results: 1058 patients met inclusion criteria, of which 343 (32%) developed a complication. Of these, twenty two patients developed a rib-fracture-related SRC and were included in the final analysis. All were admitted to the Trauma Intensive Care Unit (TICU) for close observation. Nine patients (40%) were transferred out of the TICU after this initial observation period (3.5 days avg.) and developed SRC thereafter. One of these patients died. Onset of SRC in this group was 7.4 days following admission. On average, patients with 3 or more rib fractures were transferred from the ICU 7.6 days after admission, and developed SRC 6 days after admission.

Conclusion: Significant respiratory complications are uncommon amongst patients with rib fractures admitted to our trauma center. When they did occur, they commonly developed after their initial period of close observation in the ICU. Therefore strategies to prevent SRC should include daily reassessment of respiratory risk and be sustained beyond the initial close observation period.
Introduction: Traumatic brain injuries (TBI) contribute to over 1.7 million emergency room visits and hospitalizations in America annually, and over 52,000 deaths are attributable to TBI each year alone. Economic burden is substantial at an estimated $76 billion. Treatment recommendations are in constant development with ongoing clinical research to help alleviate this burden. To provide evidence-based assessment, treatment, and care for patients with TBIs, a dedicated guideline called the TBI Pathway was developed in conjunction with the trauma and neurosurgery departments. This guideline seeks to prevent secondary injury resulting from hypoxia and/or hypotension. Our performance improvement inquiry in particular analyzes the outcomes of the Severe TBI Pathway, those patients who present with a TBI and a Glasgow Coma Scale (GCS) less than or equal to 8. From November 2018 to September 2019, a total of 73 patients met criteria for the Severe TBI Pathway and were assessed for adherence to guidelines and resulting mortality. Out of the 73 patients included, 63 (92%) were placed on the appropriate severe TBI pathway. Patients placed on the correct pathway were found to have a mortality rate of 49% (n = 31). Patients not placed on the TBI pathway (n = 6) were noted to have a mortality rate of 67% (n = 4). We will continue to analyze compliance with specific components of the pathway in the future to evaluate if there is any increased in morbidity or mortality associated with deviation from guidelines developed in a multidisciplinary manner and based on evidence-based recommendations.
P 386. ARE MRCP/ERCP VALUABLE ADJUNCTS IN STABLE ADULT TRAUMA PATIENTS WHEN PANCREATIC INJURY IS NOTED ON INITIAL CT?

Presenter: Shannon Brindle MD | Geisinger Medical Center
Brindle SA, Berglund DD, Tyre L, Factor M

Introduction: The 2016 Eastern Association of Trauma management guidelines for pancreatic injury are determined based on injury grade as indicated by computed tomography (CT) imaging. While CT quality has improved, previous reports demonstrate limited sensitivity in detecting pancreatic injury. Magnetic resonance cholangiopancreatography (MRCP) and endoscopic retrograde cholangiopancreatography (ERCP) have been utilized to evaluate pancreatic injury but there is a paucity of data regarding use in adult trauma populations. The purpose of this study is to determine if ERCP or MRCP are valuable adjuncts for evaluation of pancreatic injuries in adult trauma patients.

Methods: Patients sustaining pancreatic injury after blunt abdominal trauma from 2005 – 2018 were identified using our institutional trauma registry. Pancreas-specific information was obtained through chart review. Preliminary injury grades were assigned based on chief resident radiologist review of CT images using the American Association for Surgery of Trauma grading scale. Final injury grades were determined via repeat imaging or evaluation in the operating. Differences between the injury grades were compared among adjunct diagnostic modalities.

Results: Fifty-seven adult trauma patients were included for analysis. All suffered blunt abdominal trauma and had CT imaging. The CT images were evaluated and graded; with 23 confirmatory studies completed (fig. 1). Eighteen injuries were evaluated in the OR. Twenty-five patients had a change in injury grade (-0.35 ± 2.37). Thirty-two patients had no direct treatment for the injury.

Conclusion: CT imaging alone is not a reliable for grading pancreatic injuries. The use of MRCP/ERCP are valuable diagnostic adjuncts in stable adult trauma patients with pancreatic injuries. Conservative management can be considered in high grade injuries.
Introduction: Introduction: Spinal stab wound resulting in an external cerebrospinal fluid (CSF) leak is rare. Traumatic CSF leakage can be potentially complicated by pneumorrhachis and pneumocephalus that can be neurologically debilitating and life threatening. Here, we describe the case of a patient who suffered CSF leak after being stabbed in the back.

Case: 31 y/o M presented to the emergency room after he was stabbed in four areas on his back, including a posterior cervical horizontal wound at around the level of C7, four centimeters para-median on right. Patient had no other traumatic injuries. He was neurologically intact, with 5/5 motor exam in both upper and lower extremities, intact sensation and normal reflexes. Wounds were irrigated and stapled. Patient returned to the emergency room five days later for clear drainage from the cervical para-median wound. He also had associated headaches and photophobia without any focal neurological deficits. Case was discussed with our neurosurgical colleagues and an MRI of the cervical spine was performed that revealed a linear tract containing fluid extending from the skin to C5-C6, with small fluid collection contiguous with the spinal canal, suspicious for CSF leak (Fig.1). There was also a defect in the posterior inter-spinous ligament suggestive of penetrating ligamentous injury. Drainage and symptoms persisted despite primary closure of the wound. Hence, the patient was taken to the operating room for a lumbar drain placement. Post operatively, patient was kept flat, serial neurological examinations were performed, and he was given broad-spectrum antibiotics. His symptoms improved and the lumbar drain was discontinued on post-op day three, after which he was discharged on oral antibiotics. Post discharge course was uneventful, drainage ceased and wound healed well.

Discussion: Most cases of CSF leakage resolve spontaneously. If conservative management fails, treatment involves primary closure of the wound to prevent air escaping into the wound. In addition, placement of a downstream lumbar drain reduces the intradural pressure and decreases outflow through the traumatic wound.
P 388. A MULTIDISCIPLINARY APPROACH TO PENETRATING NECK TRAUMA IN A PATIENT WITH SELF-INFlicted GUNSHOT INJURIES TO ZONES 1-3 OF THE NECK
Presenter: Timothy Chung DO | Duke LifePoint Conemaugh Memorial Medical Center
Chung T, Mishler M, Aukerman W, Nannapaneni S, Shayesteh K

Introduction: Penetrating neck trauma comprises five to ten percent of all traumatic injuries in adults and carries up to a ten percent mortality rate for those affected (2). Given the complex anatomical region and potentially fatal, debilitating injuries to the cervical region, management of penetrating neck trauma can be challenging and often requires a multidisciplinary approach, especially as delayed diagnosis of injuries and treatment is known to result in high morbidity and mortality of these wounds.

Methods: A case of penetrating neck trauma via self-inflicted gunshot wound to zones 1-3 of the neck in an intoxicated, suicidal 60 year old male is presented. Immediately after stabilization by the trauma surgery team, surgical reconstruction using a pectoralis major pedicled myocutaneous flap was completed by the plastic and reconstructive surgery team. The patient’s hospital course was complicated by necrosis of the myocutaneous flap edges, injury to the phrenic nerve, oropharyngeal swallowing dysfunction, and left diaphragmatic dysfunction.

Results: The trauma team initiated prompt multidisciplinary responses to each of these complications as they arose by involving the plastic and reconstructive surgery, otolaryngology, gastroenterology, and speech language pathology teams. Immediate involvement of the psychiatry, dietary, and pharmacy teams allowed for early optimization and monitoring of the patient’s psychological and nutritional statuses. The timely initiation of multidisciplinary care in this patient’s case allowed for the patient to not only to survive a potentially fatal penetrating neck trauma, but to be discharged to a rehabilitation facility with an independent level of function.

Conclusion: Given the complications due to severe penetrating neck trauma of zones 1-3 in this case, it is essential for early involvement of the appropriate subspecialty teams in order to achieve the best possible outcome for the patient.
P 389. TIPS FOR INTRAPERITONEAL VARICEAL BLEED FOLLOWING TRAUMA
Presenter: Vanessa Hernandez MD | Greenville Health System
Hernandez V, Cull JD, Peterman DE, Roberts JG, Hinshelwood JR, Blum B

Introduction: Acute care surgeons are experienced with esophageal variceal bleeds. These bleeds are managed with medications including vasopressin, octreotide, beta blockers as well as procedures such as ligation and banding. Bleeding varices in the peritoneum (ectopic varices), however, are rare and are associated with high morbidity and mortality. Unlike esophageal variceal bleeds, variceal bleeding in the peritoneum is not amenable to endoscopic banding. A standardized treatment has not been established to treat ectopic variceal bleeding, but often these bleeds are treated with surgery or expectant management with mortality rates reported as high as 65% and recurrence rates in survivors as high as 80% within 6 months. This is a case report describing the successful use of TIPS (transjugular intrahepatic portosystemic shunt) to treat a bleeding intraperitoneal varix in a trauma patient. The patient was a 56-year-old male with a past medical history of diabetes, cirrhosis and ulcerative colitis status post proctocolectomy with end ileostomy who presented at a level I trauma center after a motor vehicle crash. The patient was lethargic on arrival with normal vital signs. Secondary exam was negative for injuries and the FAST exam was negative. Laboratory findings were significant for an alcohol level of 329 and a base deficit of 5. The patient underwent CT scan of his head/neck/chest/abdomen and pelvis due to his altered mental status and alcohol intoxication. The CT scan demonstrated multiple varices with an active bleed from an intraperitoneal varix adjacent to the head of the pancreas. Interventional radiology was consulted, and the patient underwent a TIPS procedure. An a-line was placed, and the patient was admitted to the ICU for serial hemoglobin and abdominal exams. The patient’s hemoglobin decreased from 11.1 to 7.2 over the following two days and then stabilized. The patient did not require transfusions during his hospital stay and was discharged from the ICU on hospital day 3. The patient was discharged home on hospital day 9.

This is the first report to describe using a TIPS procedure to treat an ectopic variceal bleed in a trauma patient; however, other small studies have demonstrated the benefit of using TIPS to treat spontaneous bleeding ectopic varices. Patients with spontaneous bleeding ectopic varices treated with TIPS have mortality rates of 23-41% with reductions in rebleeding rates to 23% within 1 year.

In conclusion, a TIPS procedure is an acceptable treatment strategy in hemodynamically stable patients with intraperitoneal variceal bleeds.
**P 390. PELVIC BINDER UTILIZATION IN COMBAT CASUALTIES: DOES IT MATTER?**

Presenter: William J Parker MD | Uniformed Services University- Walter Reed National Military Medical Center


**Introduction:** The purpose of this study was to evaluate the utilization of pelvic binders, the proper placement of binders, and to determine any differences in blood product transfusions between combat casualties with and without a pelvic binder identified on initial imaging immediately after injury.

**Methods:** We conducted a retrospective review on all combat injured patients who arrived at our military treatment hospital between 2010 and 2012 with a documented pelvic fracture. Initial imaging (x-ray or CT) immediately after injury were evaluated by two independent radiologists. Young-Burgess (YB) classification, pelvic diastasis, correct binder placement over the greater trochanters, and the presence of a pelvic external fixator (ex-fix) was recorded. Injury severity score (ISS), whole blood, and blood component therapy administered within the first 24-hours after injury were compared between casualties with and without a pelvic binder.

**Results:** 40 casualties had overseas imaging to confirm and radiographically classify a YB pelvic ring injury. The most common fracture patterns were antero-posterior (53%) and lateral compression (30%). 48% (19/40) did not have a binder or ex-fix identified on initial imaging or in any documentation after injury. Ten patients had a binder, with 30% positioned incorrectly over the iliac crest. ISS (34±1.6) was not statistically different between the binder and no-binder group. Pubic symphysis diastasis was significantly lower in the binder group (1.4±0.2 vs 3.7±0.5, p<0.001). There was a trend towards decreased 24-hour total blood products between the binder and no-binder groups (75±11 vs 82±13, p=0.67). This was due to less cryoprecipitate in the binder group (6±2 vs 19±5, p=0.01).

**Conclusion:** Pelvic binder placement in combat trauma may be inconsistent and an important area for continued training. While 24-hour total transfusions do not appear to be different, no-binder patients received significantly more cryoprecipitate.
**Introduction:** To evaluate the effectiveness of a multimodal pain management protocol in reducing inpatient and discharge opioid use.

**Methods:** Following IRB approval, a retrospective review was performed at a single urban level 1 trauma center. Patients 18 years and older admitted directly to the trauma floor service following significant traumatic fractures (specifically spine, thoracic, pelvis, and long bone) were included. Isolated fractures of the face, single rib fractures and fractures of the extremities distal to the ankles and wrists were excluded. Any patients requiring ICU management were also excluded. The multimodal pain management protocol utilized NSAIDs, gabapentinoids, skeletal muscle relaxants, acetaminophen and tramadol. The protocol focuses on the daily escalation of these medications with concurrent attenuation of true opioids. The goal of these titrations is complete opioid cessation within 24 hours of discharge while maintaining adequate pain management. Opioid utilization in the inpatient setting and administration of opioid prescriptions at discharge were compared between historical controls and patients admitted following the introduction of the protocol.

**Results:** All opioid medications administered during the patient’s admission were tabulated in oral morphine equivalents. The control group received a mean of 49.3mg per day compared with 27.1 mg/day in the multimodal pain regimen (MMPR) group (p<0.01). There were no significant differences in patient reported pain levels between controls (5.4) and the study group (5.1, p=0.35) within 72 hours of admission. In the control group approximately 87% were discharged with opioid pain medications, as compared to 29% in the study group.

**Conclusion:** This multimodal pain management strategy was effective at reducing the amount of opioid used by patients admitted to the trauma floor while providing adequate analgesia. It also showed a reduction in the percentage of patients receiving a prescription for opioid pain medication at discharge.
Introductions: Ride-share scooters have been increasingly popular with shifting societal expectations to meet transportation demands in large metropolitan cities. These scooters solve an important problem in transportation classically known as the "last mile." Despite their utility, there have been limited safety measures implemented by legislators and few studies examining the types of injuries sustained in these accidents. The aim of this study was to evaluate the mechanisms and resulting patterns of injury from standing motorized scooter accidents in an emergency and trauma setting.

Methods: This is a retrospective, single center historical cohort study that is examining the injury patterns of standing motorized scooters. This study occurred at a level one trauma hospital in an urban setting. Chart review of electronic medical records was utilized to identify any patient that presented to the hospital in the trauma bay or emergency room from May 2018 to September 2019. Ride share scooters were originally implemented en masse in Atlanta in May 2018. Exclusion criteria included patients that underwent motorcycle or moped accidents. Patient demographics, mechanism of injury, loss of consciousness, helmet status, and injuries by system were extracted for analysis.

Results: The average age of the subjects was 31.8. 47% of the patients were men. 58.8% of the patients endorsed a loss of consciousness. Preliminary data results have shown acute injuries in 52.9% of patients. Of these patients, 44.4% presented with multiple system injuries. 77.8% of patients with injuries required admissions and 44.4% of injured patients required operative interventions. By system, 5.8% of all patients exhibited abdominal findings, 23.5% of all patients exhibited facial fractures, 17.6% of all patients exhibited intracranial injuries, and 23.5% of all patients exhibited orthopedic extremity injuries.

Conclusion: Scooter accidents primarily happen in younger populations. Loss of consciousness is highly prevalent in these patients primarily due a to lack of proper head protection. This is evidenced by the observed frequency of facial fractures and intracranial injuries. Orthopedic extremity injuries were also common in this group because of a lack of safety features or enclosure on ride-share scooters. These findings lead us to have a high index of suspicion for acute injuries for individuals that have experienced trauma in the setting of a standing motorized scooter accident.
P 393. VIDEO-ASSISTED THORACOSCOPIC SURGERY AS AN ADJUNCT TO RIB FIXATION

Presenter: Timothy Nowack MD | Medical Center of Central Georgia- Navicent Health
Nowack T, Nonnemacher C, Christie DB

Introduction: Rib fixation is an emerging and effective procedure that stabilizes the chest wall after significant traumatic thoracic injury. Standard post-operative management includes chest tube suction to resolve hemo- and pneumothoraces, which may lead to increased hospital stay length. The use of Video-Assisted Thoracoscopic Surgery (VATS) has not been fully developed as an adjunct at the time rib fixation procedures, despite it being commonly used for similar conditions. We hypothesize that adjunct VATS at time of rib fixation will decrease total chest tube days and total hospital inpatient stay days when compared with controls.

Methods: This study is a retrospective, matched pairs review of trauma patients from our institution from March 2017 to September 2019 who underwent rib fixation procedures for major thoracic bony injury and adjunct VATS at the time of procedure (N=11). Paired matches were established with patients that did not undergo VATS procedure at time of rib fixation accounting for age, sex, trauma mechanism, number of ribs fractured, and number of ribs plated. Outcomes measured included total number of chest tube days, total chest tube output, total inpatient stay days, and total ICU stay days.

Results: Patients who underwent adjunct VATS at time of rib fixation were noted to have an average of 203.64mL of retained hemothorax after initial trauma. Total number of chest tube days was shortened (2.91 days vs 4.64 days, p = 0.0313) when the patient had undergone adjunct VATS. Total chest tube output over the course of inpatient hospitalization was less in patients undergoing adjunct VATS (542mL vs 654mL, p = 0.5800); however, this was not significant. Additionally, total hospital inpatient stay days (12.11 days vs 13.64 days, p = 0.6852) and total ICU stay days (2.70 days vs 4.73 days, p = 0.3114) were less although not significantly.

Conclusion: Adjunct Video-Assisted Thorascopic Surgery at time of rib fixation is an effective means of retained hemothorax control from initial trauma. While subsequent output from intraoperatively placed chest tubes is not significantly lessened, the total duration of requirement of the chest tube device is significantly shorter. The earlier removal of the chest tube may also account for non-significantly shorter ICU and hospital stay times. Additionally, adjunct VATS allows for intraoperative examination and injury assessment of intrathoracic structures that are poorly visualized of radiographic images.
Introduction: Emergency preparedness for mass casualty events has become an area of increasing importance given a rise in mass shootings across the United States. These events can stress Emergency Medical Systems (EMS) and trauma centers through the depletion of critical resources. The objective of this study was to survey trauma surgeons regarding preparedness for these potentially catastrophic situations.

Methods: A 22-question anonymous survey was distributed to trauma surgeons who were active or senior members of the Eastern Association for the Surgery of Trauma (EAST) society. The survey was distributed three times over a 2-month period. Results were compiled and analyzed for each question.

Results: The survey response rate was 19.1% (n=333/1740). Majority of respondents were from Level I trauma centers (n=251/332, 75.6%) with American College of Surgeons accreditation (n=256/330, 77.6%). The Northeast was the most common region represented in the US and 3 participants (n=3/332, 0.9%) were international. Less than one third of responses (n=87/330, 26.4%) indicated the ability of EMS to give pre-hospital blood. All respondents stated that their trauma center has a massive transfusion protocol (MTP). 30.0% of responses (n=99/330) indicated that an MTP at their institution could be initiated in less than 2 minutes of patient arrival. Fewer participants reported specific MTP for mass shooting events (n=22/331, 6.7%) or mass casualty events (n=35/331, 10.6%). However, the majority of participants reported that their institution was prepared for more than one simultaneous MTP (n=214/292, 73.3%).

Conclusion: Critically ill patients with significant transfusion requirements or multiple victims with hemorrhagic shock can stress EMS and trauma hospital systems. Our study found that the majority of trauma centers have MTPs, however significantly less resources dedicated to the development of specific protocols for pre-hospital blood transfusions, mass casualty or mass shooting events. Future events should focus on improving this area and also developing more universal practices for trauma centers.
Survey responses (%)

- MTP for trauma patients
- Protocol for multiple MTPs
- MTP for mass casualty
- MTP for mass shooting
**Introduction:** Gunshot violence in America has reached epidemic proportions with 335,609 firearm-related deaths between 2000 and 2010 (1). According to the Global Burden of Disease Study 2015, total firearm deaths has increased by 6.3% since 2005 and accounted for 42.4% of all interpersonal violence deaths between 1980 and 2015 (2). Though gunshot violence continues to rise worldwide, firearm assaults in the United States were more than ten times higher than the combined number of deaths for the next 4 highest countries by GDP (3). We believe an issue is emerging as new military grade ballistics for standard civilian weapons are reaching the marketplace.

The Radically Invasive Projectile (RIP) is a new projectile recently developed by G2 Research promising to be “the last round you will ever need.” The RIP projectile is a solid-copper, hollow-point, fragmenting bullet designed to retain its shape upon impact. The geometry at the tip of the projectile mimics that of a trocar, edges with three angles leading into a single point, allowing efficient penetration of the dermis. The 9MM 96 gram projectile fragments into a cone shape of eight, 6 gram segmental projectiles and one central 50 gram projectile. This stands in contrast to a true hollow point which expands to 13mm, retains its 96 grams of total weight and is more readily deformable projectile due to its lead composition. Bullet fragmentation creates a synergistic effect by magnifying the rate of energy transfer to the tissues along the wound track thus amplifying tissue damage in an unpredictable pattern.

At our Level One Trauma Center we have seen the effects of this new ammunition and associated injuries in three recent gunshot victims. All patients were single males in their early twenties, the victims of assault or accidental discharge. Injuries included a non-operative extremity wound, a comminuted femur fracture with complete transection of the superficial femoral artery and vein, and an abdominal wound with extensive injuries including multiple small and large bowel enterotomies and lacerations to the pancreas, kidney, and spleen. The greatest morbidity from the RIP projectile resulted from entry into the abdomen, requiring multiple surgical interventions and weeks of intensive care.

The extent of damage inflicted by a single RIP projectile is significantly greater than the majority of high velocity projectiles we have encountered at this institution. RIP bullets and like munitions potentially pose a new threat that is not on the radar of the public.
Introduction: The combination of traumatic simultaneous diaphragmatic rupture and chest wall herniation remains rare, with 42 cases of traumatic transdiaphragmatic intercostal hernia (TDIH) reported in the literature since 1946. An accurate count of cases is difficult to obtain, as TDIH nomenclature has been variable123 We present our single center series of 7 patients, the largest reported to our knowledge, and discuss the challenges of repairing these difficult injuries.

Methods: After obtaining institutional review board approval, data was abstracted from the electronic medical record on all adults who underwent evaluation and treatment for traumatic TDIH between July 2014 and January 2019.

Results: Of the 7 cases of traumatic TDIH, 6 patients developed TDIH secondary to cough; the 7th patient presented with chronic chest wall pain after an episode of heavy lifting. All patients were obese or overweight. Pain and a “popping sensation” were the most common presenting symptoms. 4 patients had history of tobacco abuse. All patients underwent operative intervention with primary repair of the diaphragm and suture approximation of the ribs. 3 patients had onlay mesh repair of the chest wall and/or abdominal wall. One patient had plating of his rib fracture. 3 patients had recurrence of the intercostal portion of the hernia. No patients have undergone re-operation thus far.

Conclusion: While previously thought to more commonly occur on the left side due to the protective effects of the diaphragm,2 the majority in this series had right sided injuries and review of the literature demonstrates equal distribution of left and right sided TDIH. Herniation through the 9th-10th interspace remains the most common location.4 The chest wall injuries in these patients are complex, and may extend inferiorly to involve the abdominal wall musculature. CT imaging is imperative not only for diagnosis but also for operative planning. It is best to manage these hernias acutely to re-establish normal anatomy. If the chest wall cannot be re-approximated, reconstruction with mesh is required. High rates of complications are not unexpected given the complicated and rare nature of the injury. Given the high rate of intercostal hernia recurrence, it is likely that mesh repair or wire fixation should be more often used in the treatment of this injury; best mesh type and placement has yet to be established. Rib plating should be considered in cases of instability or flail.
P 397. VALIDITY OF PHYSICAL EXAMINATION IN THE INTOXICATED TRAUMA PATIENT FOLLOWING A FALL: AN EXPLORATORY RETROSPECTIVE REVIEW
Presenter: Anthony Kopatsis MD | Mount Sinai Hospital

Introduction: Whole-Body CT (WBCT) scans are a quick and reliable method of identifying injuries in the trauma patient, especially in intoxicated patients who often cannot provide a reliable history. While WBCT scans are associated with a decreased mortality and hospital stay in patients with a high mechanism of injury, their utility in intoxicated patients following a fall remain unknown. The objective of this study was to evaluate the validity of physical examination to identify injuries in the acutely intoxicated patient when compared to WBCT scan findings.

Methods: This study is a retrospective review of intoxicated trauma patients who were found down secondary to a witnessed fall < 20ft, GCS > 8 and not requiring intubation. Documented history and physical examination were compared to imaging findings to evaluate the accuracy of physical examination in identifying internal injuries. Sensitivity, specificity, positive predictive value, and negative predictive value were calculated for physical exam when compared to WBCT findings. The chi-squared test was used to evaluate associations between physical exam and CT findings, and the t-test was used to evaluate associations between clinical variables and false-negative physical exam results.

Results: 43 out of 523 intoxicated patients over a 2-year period met the inclusion criteria. All patients had an injury that required admission to the hospital. Of 19 patients with a positive chest CT, 13 had had a negative physical exam, for a physical exam sensitivity of 32%. Of 8 patients with a positive abdominal CT, 6 had had a negative physical exam, for a sensitivity of 16%. No clinical predictors were found to be associated with false negative (vs true negative) physical exam results.

Conclusion: In our study, physical examination had low validity and missed potential injuries, especially that of the chest when compared to WBCT scans. Intoxicated patients who present to the emergency department for trauma evaluation after low level falls are susceptible to significant injuries. Our findings suggest that physical exam of the chest and abdomen is insufficient to identify internal injuries in the intoxicated patient after low-level falls.
Table 1: Patient Demographics

<table>
<thead>
<tr>
<th>Sex</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>36</td>
<td>84</td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Height of Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 10 feet</td>
<td>29</td>
<td>67</td>
</tr>
<tr>
<td>10 to 20 feet</td>
<td>14</td>
<td>33</td>
</tr>
<tr>
<td>Age (mean, SD)</td>
<td>50.6</td>
<td>15.8</td>
</tr>
<tr>
<td>Trauma Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 1</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>Level 2</td>
<td>30</td>
<td>70</td>
</tr>
<tr>
<td>Level 3</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Loss of Consciousness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>26</td>
<td>60</td>
</tr>
<tr>
<td>Negative</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Not documented</td>
<td>11</td>
<td>26</td>
</tr>
<tr>
<td>ISS (mean, SD)</td>
<td>10</td>
<td>6.4</td>
</tr>
<tr>
<td>Glasgow Coma Scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 to 12</td>
<td>8</td>
<td>35</td>
</tr>
<tr>
<td>12 to 15</td>
<td>35</td>
<td>81</td>
</tr>
<tr>
<td>ED presentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMS</td>
<td>31</td>
<td>72</td>
</tr>
<tr>
<td>Walk-in</td>
<td>12</td>
<td>28</td>
</tr>
</tbody>
</table>

Table 2: Correlation of Physical Exam and CT Findings

<table>
<thead>
<tr>
<th></th>
<th>Positive CT</th>
<th></th>
<th>Negative CT</th>
<th></th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Chest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Physical Exam</td>
<td>6</td>
<td>86</td>
<td>1</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Negative Physical Exam</td>
<td>13</td>
<td>36</td>
<td>23</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Abdomen/Pelvis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Physical Exam</td>
<td>2</td>
<td>33</td>
<td>4</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Negative Physical Exam</td>
<td>6</td>
<td>16</td>
<td>31</td>
<td>84</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: T-test results

<table>
<thead>
<tr>
<th></th>
<th>Negative PE-Negative CT Mean</th>
<th>Negative PE-Negative CT SD</th>
<th>n</th>
<th>%</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EtOH (mg/dl)</td>
<td>281.4</td>
<td>121</td>
<td>294.2</td>
<td>105.1</td>
<td>0.752</td>
</tr>
<tr>
<td>ISS</td>
<td>11.3</td>
<td>6.6</td>
<td>9.3</td>
<td>6.8</td>
<td>0.392</td>
</tr>
<tr>
<td>Age (years)</td>
<td>49.8</td>
<td>18.7</td>
<td>49.4</td>
<td>12</td>
<td>0.936</td>
</tr>
<tr>
<td>Abdomen/Pelvis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EtOH (mg/dl)</td>
<td>293.1</td>
<td>111.8</td>
<td>247.5</td>
<td>90.3</td>
<td>0.355</td>
</tr>
<tr>
<td>ISS</td>
<td>11.5</td>
<td>6.8</td>
<td>10.7</td>
<td>5.8</td>
<td>0.769</td>
</tr>
<tr>
<td>Age (years)</td>
<td>49.9</td>
<td>15.9</td>
<td>55.5</td>
<td>15.9</td>
<td>0.439</td>
</tr>
</tbody>
</table>

ISS: Injury Severity Score, SD: Standard Deviation, EtOH: Ethanol
P 398. FALLS FROM TREE STANDS ARE INCREASING
Presenter: Charles Walker MD | Geisinger Medical Center
Walker C, Young K, Fluck M, Baro S, Smith J

Introduction: Elevated stands are commonly used by hunters to dissipate their scent and improve their visual field while hunting deer. The objective of this study was to examine the trend of the fall rate and quantify the type and severity of the injuries sustained from these accidents.

Methods: From 1987 to 2016 victims of falls from tree stands were abstracted from the Pennsylvania State trauma registry and merged with the number of licensed hunters obtained from Pennsylvania Game Commission to calculate injury rates per 100,000 licensed hunters.

Results: There were 1176 victims of falls from tree stands between 1987 and 2016. Rates of falls increased from 0.59 to 9.60 over the 29 years. This trend was inverse to the rates for hunting related shooting incidents which decreased from 3.75 in 1987 to 0.57 in 2016. Deer hunters in the 40-49 year old age group had the highest rates, 11.09. A majority of the victims had multiple injuries (80.1%) with injuries to the thorax, spine and lower extremities being most common. Fatalities rate was only 0.9% but serious disabilities were experienced by 24.9% of the victims.

Conclusion: The rates of falls from tree stands continues to rise in contrast to shooting related incidents which fell over the same time period. Falls from tree stands usually cause multiple injuries, are usually non-fatal but commonly cause lasting disabilities. The data also illustrates the need for more accurate surveillance of these falls as well as ongoing education and prevention strategies.
P 399. PREDICTORS OF INAPPROPRIATE HELICOPTER TRANSPORT FOR TRAUMA PATIENTS
Presenter: Christopher Brown MD | Louisiana State University Health Science Center
Brown C, Irfan W, Cavalea A, Mosier W, Schoen J, Marr AB, Stuke LE, Greiffenstein P, Moore M,
Hunt JP

Introduction: Helicopter transport (HT) has decreased time to life-saving definitive trauma care for large segments of the population. However, this has come at significant cost with flights often being in excess of $25,000 per event. Identifying the characteristics of an inappropriate HT presents the opportunity for large savings in helicopter transport costs.

Methods: Trauma Registry records of all HT to an urban level I trauma center for the 3 years of 2016 through 2018, were reviewed. Inappropriate HT was defined as those patients who were discharged home from the Emergency Department (ED) or had a hospital length of stay (LOS) of 1 day or less and did not die. Chi-square analysis and Student’s t-test were used for univariate analysis. Predictors with a p-value < 0.2 were subject to binary logistic regression analysis. A p-value < 0.05 was considered significant.

Results: There were 713 patients who had HT during the study period with 148 (20.8%) patients considered inappropriate. In univariate analysis, gender, blunt/penetrating mechanism, transport time, and all specific mechanisms except falls were found to not be associated with inappropriate HT. HT agency was significant on univariate, but not multivariate analysis. The crude and adjusted odds of significant predictors are presented in the table. The average ISS of the inappropriate HT group was 3.86(±3.85) compared to 16.80(±11.23) (p=0.0001, Student’s t-test) for the appropriate group.

Conclusion: Helicopter transport of patients with a GCS > 8 was strongly associated with inappropriate HT. A SI < 0.9 and a fall mechanism were also associated with inappropriate HT while age > 55 was significantly not associated with this. Triage of helicopter transport, using specifically GCS, has potential to decrease unnecessary flights and reduce costs.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Crude Odds</th>
<th>Adjusted Odds(95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GCS &gt; 8</td>
<td>26.35(6.43-107.97)</td>
<td>24.01(5.82-99.00)*</td>
</tr>
<tr>
<td>Shock index (SI)&lt;.9</td>
<td>3.00(1.63-5.51)</td>
<td>2.05(1.08-3.90)*</td>
</tr>
<tr>
<td>Fall</td>
<td>1.87(1.17-2.99)</td>
<td>2.05(1.16-3.61)*</td>
</tr>
<tr>
<td>Age &gt; 55</td>
<td>0.55(0.32-0.93)</td>
<td>0.43(0.23-0.80)*</td>
</tr>
</tbody>
</table>

* p<0.05
Introduction: TS is a 32-year old helmeted male motorcyclist struck by a tractor trailer. He arrived as an alert to a level I trauma center, hypotensive in the field. Vital signs on arrival BP 82/48, HR 81, Temp 31.5°C, RR 20, spO2 98% on room air. GCS 14 (E4, V4, M6) with obvious pelvic and bilateral lower extremity deformities, open perineal wound with hemorrhage, and positive fast in the pelvis. A pelvic binder was placed, massive transfusion protocol initiated, bilateral lower extremities were splinted, and he was taken to the OR emergently for exploratory laparotomy in a hybrid operative room with interventional radiology and orthopedics on standby. His exploratory laparotomy revealed a zone III retroperitoneal hematoma which was packed. Pelvic angiography showed occlusion of the internal iliac arteries bilaterally from external compression from hematoma. His perineal wound was explored and found to have a complete circumferential shearing injury to the distal rectum and anus, ultimately requiring end colostomy and suprapubic catheter.

He sustained an open book pelvic fracture, bilateral sacroiliac joint dislocation, and a comminuted right acetabular fracture. At subsequent operations after resuscitation and diversion with end colostomy, the pubic symphysis was re-approximated using a Synthes anterior symphysis plate, three cortical screws into the left hemipelvis, and three cortical screws into the right hemipelvis. The SI joint was reduced using a Star frame and cannulated screws. The right acetabular fracture was reduced and fixated using a four-hole Stryker pelvic recon plate. He underwent right below the knee amputation for ischemic right lower extremity.

Conclusion: This case represents a rare blunt pelvic injury with total disruption of the rectum and urethra as well as multiple orthopedic interventions for unstable pelvic fractures and ischemic right lower extremity.
Introduction: To study the relationship between time of year in regard to resident training, the “weekend effect” and treatment outcomes of patients with firearm injuries hospitalized in the United States.

Methods: National Inpatient Sample 2016 was used. Inclusion criteria were a principal diagnosis of firearm injury. Exclusion criteria were less than 16 years and elective admissions. The primary outcome was in-hospital mortality. Secondary outcomes were morbidity (traumatic shock, prolonged mechanical ventilation (PMV), acute respiratory distress syndrome (ARDS) and ventilator associated pneumonia (VAP)), and resource utilization (length of stay and total hospitalization charges and costs). Multivariate regression models were used to adjust for the following confounders: severity and mortality risk APDRG, age, sex, median income in patient’s zipcode, Charlson comorbidity score, hospital region, urban location and bedsize. July, August, and September were compared to April, May, and June as new residents begin their training in July. Weekend admission was defined as any admission that occurred between 00:00 Saturday and 23:59 Sunday.

Results: 31,335 patients were admitted with firearm injuries in 2016, 46% of whom were admitted April-June, 54% were admitted July-September, and 36% of whom were admitted on weekends. The mean age was 32 years (confidence interval (CI):31-33) and 89% were male. Patients admitted in July-September and on weekends had similar in-hospital mortality rates compared to April-June and weekday admissions (adjusted odds ratio (aOR):0.76 (0.56-1.05), p=0.09), (aOR):0.98 (0.81-1.18), p=0.81), rate of traumatic shock (aOR:1.28 (0.92-1.76), p=0.14), (aOR:0.90 (0.75-1.09), p=0.29), PMV (aOR:0.97 (0.69-1.36), p=0.87), (aOR:0.84 (0.66-1.08), p=0.18), ARDS (aOR:0.34 (0.10-1.10), p=0.07), (aOR:1.02 (0.39-1.86), p=0.69), and VAP (aOR:1.23 (0.46-3.33), p=0.68), (aOR:0.52 (0.22-1.19), p=0.12), respectively. Similarly, length of stay (adjusted mean difference (aMD):-0.18 (-0.97-0.60), p=0.65), (aMD):-0.26 (-0.95-0.43), p=0.46), total hospitalization charges (aMD:-$2,632 (-$15,483-$10,219), p=0.69), (aMD:-$2,519 (-$13,349-$8,312), p=0.65), and costs (aMD:-$1,314 (-$4,374-$1,745), p=0.40), (aMD:-$581 (-$2,844-$1,682), p=0.62) were not different between the two groups.

Conclusion: Time of year and day of admission does not affect in-hospital mortality, in-hospital morbidity or resource utilization among patients admitted to the hospital with firearm injuries.
Introduction: Apophysomyces is a rare variant of mucormycosis that infects immunocompetent individuals. This case highlights an overwhelming fungal soft tissue infection of the flank following a gunshot wound to the abdomen.

Methods: A 52-year-old male from Sudan was treated for transabdominal gunshot wound, exiting at the right flank. He underwent colectomy and colostomy and his initial course was unremarkable. During the second postoperative week, however, he developed severe and progressive necrosis of the soft tissue of the right flank requiring serial debridement. In the ensuing three weeks, serial debridement due to progressive necrosis was required. Leukocytosis of 85,000 cells/µL was noted. Concern for calciphylaxis and fungal infection prompted multiple cultures and biopsies of the soft tissue, which were initially negative. Following the fourth debridement on postoperative day 25, a fungal culture was performed on corn meal agar; angioinvasive fungal hyphae were noted on gram stain. The final culture grew Apophysomyces variabilis. Intravenous amphotericin B was started, and debridement of nonviable tissue continued as necessary. Topical amphotericin B was added to the flank wound dressing changes. Posaconazole was subsequently added.

Results: Following initiation of anti-fungal therapy with amphotericin B, the flank wound began granulation and there was no further necrosis. Cultures became negative on postoperative day 40 after eleven total debridements. Skin grafting was performed. Attention was directed to nutrition and physical therapy. The patient steadily improved and was scheduled for rehab placement.

Conclusion: A. variabilis infections are most frequently described in India and Latin America in case reports. Apophysomyces is likely under-identified as its spores are not produced readily in typical culture media, it requires prolonged incubation time (seven to ten days), and it has specific nutritional and temperature requirements. Treatment includes systemic amphotericin B and aggressive surgical debridement, but all-cause mortality is still estimated at 54%. Fungal infections in a trauma patient population were demonstrated in the aftermath of a 2011 Joplin, Missouri tornado when thirteen people acquired Apophysomyces infections, five of which were fatal. This case highlights the importance of a high suspicion of fungal infection in a wound with unexplained progressive necrosis. Pathology and microbiology support are critical to timely diagnosis. Appropriate anti-fungal therapy and surgical intervention can be life-saving.
Figure 1. Necrotic vessel with acute inflammation and fungal hyphae (H&E; 20X)

Histologic evaluation of tissue from wound debridements showed extensively necrotic tissue with acute inflammation, and fungal hyphae within the lumen and walls of large vessels, as well as surrounding soft tissue, consistent with an angioinvasive fungal infection.
NEUROLEPTIC MALIGNANT SYNDROME: A RARE CAUSE OF MULTISYSTEM ORGAN FAILURE IN A BURN PATIENT

Presenter: Michael Z Caposole DO | University of South Alabama Medical Center
Caposole M, Ficarino H, Davis N, Krebsbach M, McGowin E, Alexander K, Ding L, Kinnard C, Simmons JD

**Introduction:** Neuroleptic malignant syndrome (NMS) is well described in the medical literature but rarely seen among acutely ill surgical patients. A 44-year-old male transferred to our facility with a reported chemical burn to his hands and back after exposure to hydrochloric acid. Prior to transfer, the patient received treatment for presumed acute coronary syndrome after developing ventricular tachycardia in the presence of elevated serum troponins shortly after the accident. Although cardiac catheterization was unremarkable, an echocardiogram revealed severe cardiomyopathy with an ejection fraction of 25%, and the patient subsequently developed multiple organ failure. On hospital day two, the patient was transferred to our regional burn center for treatment of chemical burns to the hands and back (2% total body surface area) as well as multiple organ failure. The multiple organ failure was accompanied by sustained core temperature of 103.5OF, severe hypocalcemia requiring 14g of intravenous calcium and a creatine kinase of >100,000 units/L. After confirming no hydrofluoric acid was involved, further investigation revealed the patient takes ziprasidone, a second-generation antipsychotic, for the treatment of his bipolar disorder. Given this new information and his clinical picture with only minor chemical burns, neuroleptic malignant syndrome became the unifying diagnosis. Over the following week, the multi-organ dysfunction resolved with supportive treatment. NMS is a rare but well-known adverse effect of antipsychotic therapy. It is a clinical diagnosis manifested by a spectrum of symptoms including the tetrad of hyperpyrexia, rigidity, autonomic instability, and altered consciousness. Per the literature, an elevated creatine kinase (CK) greater than four times the upper limit of normal is consistent with NMS, and a CK >100K is almost pathognomonic. Patients can also present with a leukocytosis, hepatic failure, renal failure and heart failure as well as broad electrolyte disturbances including hypocalcemia in the absence of infections or other known causes. In our patient, we hypothesize that dehydration, the hot conditions at his job, and immense stress (catecholamine surge) following his trauma was the triggering event. This case highlights the importance of considering alternate diagnoses in patients whose clinical presentation does not fit the most “obvious cause.”
**Introduction:** The state of Georgia has worked to develop a comprehensive, inclusive trauma system under the Georgia Trauma Network Care Commission, a governmental body formed in 2007 to help organize trauma care in Georgia. This model has attempted to foster tight collaboration between level 1, 2 and 3 trauma centers within the state. In most instances, transfer for a higher level of care results in a transfer from a Level 2 or 3 center to a Level 1 center, we recently treated a patient whose management required an escalation of care necessitating transfer from a Level 1 to a Level 2 center that possessed ECMO capability and capacity.

**Methods:** This a case study evaluating the unique collaboration between a Level 1 and Level 2 Trauma Center in the state of Georgia.

**Results:** A 43yo male presented after being in a rollover MVA with tachycardia, hypertension and combative with GCS of 12. Secondary revealed a deformity over the R clavicle. CT scan found: trace R IVH, prevertebral swelling from C2-C5, a R clavicle fracture, bilateral pulmonary contusions, stranding around the head of his pancreas, fractures of R ribs 1&2 and L rib 1, and T12 and L2 TP fractures. On return, his breathing became increasingly labored. He was intubated and bilateral chest tubes were placed. Throughout his first week in the SICU, he remained hypoxic. On HD7 he was started on cisatracurium and HD8 on epoprostenol. He developed a ventilator associated pneumonia which was treated. By HD15, he was in severe ARDS. Several consults were made for ECMO, but there was no availability in the city. On HD21, he nearly coded twice due to refractory hypoxia and was rescued by epinephrine boluses. Attempts were again made to locate an ECMO center with capacity. On HD22, the Northeast Georgia Medical Center (NEGMC), a level II trauma center 55 miles away stated they had a device and the capacity for mobile ECMO. The Grady Trauma team cannulated him percutaneously at the bedside. He was then transferred to NEGMC for ECMO management. He was successfully decannulated after 13 days. After a week of PT and OT, he was discharged home for additional rehabilitation.

**Conclusion:** The use of ECMO in this patient in which all other resources for the treatment of ARDS were exhausted resulted in a good outcome for an otherwise poor prognosis. This case also demonstrates the advantage of having an interconnected trauma system throughout the state.
An interhospital transfer for ECMO from a Level 1 Trauma Center to a Level 2 within the Georgia Trauma System
Nicolas Major BS, Allison Dupont MD, Bryan C. Morse MD, Bront Keeling MD, Jonathan Nguyen DO, Chris Dente MD, Jesse Gibson RN, Charles Richart MD, Liz Atkis RN, April A. Grant MD

BACKGROUND
Established in 2007, the Georgia Trauma Network Care Commission has worked to organize and foster tight collaboration between all the trauma centers in the state. While transfers typically occur from a lower level to a higher-level center, we highlight this unique case to illustrate the close collaboration that is present within the Georgia Trauma System.

PATIENT PRESENTATION
A 43-year-old male presented to the trauma bay after being in an MVA. On the primary survey, he was tachycardic, hypertensive, and combative with a Glasgow Coma Scale of 12. He calmed down with haloperidol and was taken for CT. On return he developed worsening tachypnea and RSI was performed. Bilateral chest tubes were also placed for edema, severe development of chest wall crepitus.

On Trauma Day 21, the Northeast Georgia Health System (NEGHS) stated they had the ability to transport him on ECMO. This system is a level 2 trauma center approximately 90min from Atlanta. The Trauma Team at Grady did the consultation and he was taken back to NEGHS for ECMO management. He recovered remarkably well and was discharged from NEGHS back to his home in New York City 3 weeks later.

Conclusion: This unique case illustrates the need for a robust state trauma system, and the collaboration that is necessary to save these patients' lives.

ICU Course:
His injury complex included: Trace right interventricular hemorrhage. Peri-vertebral swelling C2-C5, R clavicle fix Bilat pulmonary contusion, Stranding around head of pancreas, R rib 1, L rib 1, Non-displaced R T12 and L L1 TP fracture. Over the next week his pulmonary function worsened necessitating the addition of adjuncts such as ventilator and a redastin bed.

His pulmonary status waxed and waned, but on trauma day 16 it was clear he was in fulminated ARDS. Multiple calls were made to transfer him to an ECMO center, however, there was no capacity at any center in Atlanta.