



SCIENTIFIC SESSION

RESIDENT FORUM ABSTRACTS

RESIDENT FORUM ABSTRACTS CONTINUED

RF 1. MINIMIZING FUTILE CARE FOR PERITONITIS: AN ANALYSIS OF EARLY POSTOPERATIVE DEATH AFTER EMERGENT LAPAROTOMY

AM Kao, MR Baimas-George, SR Maloney, T Prasad, SW Ross, KR Kasten, BT Heniford

Presenter: Angela Kao MD

Atrium Health

Introduction: Emergent laparotomy in patients with generalized peritonitis, regardless of the etiology, is associated with a significant burden of morbidity and mortality.

In patients with early mortality occurring <72 hours after laparotomy, surgical management was commonly futile in clinical practice, however limited data exists to quantify this temporal pattern. Furthermore, clinical and physiologic predictors of early mortality have yet to be identified. Therefore, we aimed to evaluate early and late mortality after emergent laparotomy for non-traumatic peritonitis and identify predictive factors of futile surgical intervention.

Methods: In this retrospective cohort study, an institutional database at our tertiary referral center was queried for non-trauma patients with peritonitis who received an emergent laparotomy from 2012-2016. Patients with 60-day mortality occurring during the postoperative period were identified and patients were compared based on timing of mortality, with early (<72 hours). Variables analyzed included patient demographics, APACHE score, operative details, and postoperative outcomes. Primary outcome of postoperative death was analyzed by cohort using univariate logistic regression models, with $p\text{-value} \leq 0.05$ considered statistically significant. Multivariate (MVA) models controlling for confounding factors, including age, vasopressor requirement or need for blood transfusions(s) were created to identify laboratory predictors of early death.

Results: During the study period, 534 emergent laparotomies were performed, with 74(13.9%) mortalities occurring. Of these, 28(37.8%) patients had early death occurring within 72 hours, while the remaining 46(62.2%) deaths occurred >72 hours after surgery. Compared to late deaths, patients with early deaths had significantly more deranged physiology, as evidenced by higher APACHE-2 scores (28.1 ± 8.4 vs. 22.9 ± 8.7 , $p=0.01$), worse acute kidney injury (preoperative creatinine 3.7 ± 3.2 vs. 1.9 ± 1.4 , $p=0.001$) and more severe acidosis (pH 7.19 ± 0.12 vs. 7.27 ± 0.13 , $p=0.017$). Additionally, preoperative lactate was increased in patients with early mortality (6.8 ± 4.1 vs. 5.1 ± 4.0 , $p=0.045$). There were no differences in patients' age, hypotension, need for vasopressors or blood transfusion (all $p>0.05$). On MVA, incremental increase in creatinine by each 1.0mg/dL was associated with 76.4% increased odds of early death (OR 1.76, 95%CI 1.23-2.51, $p=0.001$). Similarly, rise in lactate by each 1.0mmol/L correlated with increased odds of early death (1.31, 1.10-1.55, $p=0.0001$). Using probability models, serum lactate ≥ 4 , pH ≤ 7.26 , and creatinine ≥ 2 were predictive for early death with sensitivities of 81%, 75%, and 59% and specificities of 71%, 76%, 96%, respectively.

Conclusion: In this analysis of non-trauma patients requiring emergent laparotomy, nearly 40% of postoperative deaths occurred less than 72 hours after surgery. Elevated preoperative labs of serum pH, creatinine and lactate correlate with increased odds of early postoperative death. Such tools may be used to identify patients in whom surgical management may be futile and help guide informed decision-making discussions to prevent futile surgical intervention, minimize subsequent patient pain and suffering, and maximize the quality of time left to the patient and families.

RF 2. FAILURE OF NON-OPERATIVE MANAGEMENT OF SPLENIC LACERATIONS IN TRAUMA PATIENTS ON ANTICOAGULATION

KE Dougherty, JN Collins, JR Burgess, MT Martyak

Presenter: Kristen Dougherty MS

Eastern Virginia Medical School

Introduction: Currently the clear majority of hemodynamically stable trauma patients with splenic injuries not otherwise requiring laparotomy are treated with non-operative management, which encompasses both observation and embolization techniques. While non-operative management or embolization with preservation of splenic tissue is preferable, there is still a risk of continued bleeding ultimately requiring splenectomy. It is known elderly patients on therapeutic anticoagulation that sustain blunt injury have an increased risk of bleeding. We sought to determine the effect of therapeutic anticoagulation on older patients who sustain blunt splenic injuries.

Methods: This is a retrospective cohort study at our Level 1 Trauma Center examining outcomes of trauma patients greater than 50 years old with blunt splenic injuries who were on therapeutic anticoagulation prior to their injury. Age, gender, ISS, grade of splenic injury and management was all gathered from our trauma database. Statistical analysis was done with two sample Z test using a p value < 0.05 as significant.

Results: Over the study period 168 patients met study criteria. Thirty patients were currently taking anticoagulation at the time of their injury, and 138 were not. These groups were similar in average injury severity score (ISS; 15.9 vs. 18.8, $p=0.17$), average grade of splenic injury (2.9 vs. 2.8, $p=0.59$), and average systolic blood pressure on arrival (133 vs 132, $p<0.05$). However, the groups differed significantly in age (76.0 vs. 61.4 years, $p=0.05$) and gender (60.0% male vs 67.4% male, $p<0.05$). We found that patients taking anticoagulation at the time of injury underwent splenectomy 23.3% of the time, while patients not taking anticoagulation underwent splenectomy 11.6% of the time ($p<0.05$). In addition, it was found that patients taking anticoagulation failed non-operative management and required splenectomy 20% of the time while patients not taking anticoagulation failed non-operative management 0.7% of the time ($p<0.05$).

Conclusion: This study examined trauma patients with splenic injuries who were managed by either close observation, splenic embolization, or splenectomy. We found that patients taking therapeutic anticoagulation at the time of their traumatic injury were more likely to undergo splenectomy than patients not taking anticoagulation. We also found that patients taking anticoagulation were more likely to fail non-operative management, which was defined as either close observation or splenic embolization.

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RF 3. FAILURE TO RESCUE: A QUALITY IMPROVEMENT IMPERATIVE IN ACHIEVING ZERO DEATH IN DAMAGE CONTROL LAPAROTOMY PATIENTS

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Presenter: Alison Smith MD, PhD
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Introduction: Failure to rescue (FTR), defined as death after a major complication in surgical patients, is being used to measure outcomes for quality improvement. Major complications frequently occur in patients undergoing Damage Control Laparotomy (DCL). No previous FTR studies have looked specifically into DCL patients. The aim of study was to examine risk factors of FTR and identify potential areas for targeted quality improvement in DCL patients.

Methods: A 10-year retrospective review of all consecutive adult trauma patients who underwent DCL at a Level I trauma center was performed. Demographic and clinical variables were examined for association with FTR. Multivariate regression analysis was performed to identify risk factors of FTR in DCL patients.

Results: A total of 199 DCL patients were analyzed. FTR compromised 8% (16) of the total. Overall DCL mortality was 22 (11%) of which 16 (72%) were FTR. Significantly increased risk of FTR was associated with older age ($p=0.027$), lower initial GCS ($p=0.037$), more units of packed red blood cells (PRBC) ($p=0.028$), and respiratory complications ($p=0.035$). Renal and infectious complications did not significantly increase risk of FTR in this population.

Conclusion: FTR is an important benchmark of quality for trauma patients. This study elucidates potential initial characteristics and complications related to FTR in DCL patients. Efforts in achieving zero death from FTR can potentially improve overall mortality in this subset of patients. Future quality interventions to help minimize FTR should target these specific areas.

	No FTR (n = 183)	FTR (n = 16)	Odds Ratio	p
Age, n (range)	26 (21 – 36)	42 (30 – 46)	1.08	0.027
Penetrating, n (%)	178 (88)	12 (75)	0.80	0.815
Total PRBC, n (range)	13 (7 – 26)	42 (19 – 64)	1.04	0.028
ED SBP, n (range)	118 (97-133)	121 (90-132)	0.989	0.408
ED GCS, n (range)	15	14 (11 -15)	0.819	0.037
ISS, n (range)	19 (16 – 26)	21 (16 -26)	1.03	0.538
Respiratory complication, n (%)	68 (37)	14 (88)	7.93	0.035
Renal complication, n (%)	11 (6)	3 (19)	1.87	0.695
Infectious complication, n (%)	4 (2)	1 (6)	5.62	0.450

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RF 4. THE DESEGREGATION OF GRADY MEMORIAL HOSPITAL AND THE CHANGING SOUTH

BP Lovasik, BA Sayed, PR Rajdev, SC Kim, JK Srinivasan, WL Ingram

Presenter: Brendan Lovasik MD

Emory University

Introduction: Grady Memorial Hospital is a pillar of public medical and surgical care in the Southeast. The evolution of this institution, both in its physical structure as well as its approach to patient care, mirrors the cultural and social changes in Atlanta. Grady Memorial Hospital was named for Atlanta journalist Henry W. Grady, who envisioned the “New South”. The 110-bed hospital, built in the heart of Atlanta’s black community, opened its doors in 1892. True to the “separate-but-equal” status of the New South, the original hospital was comprised of a cluster of buildings: two small brick wards and two additional wooden “temporary” wards for Black patients (Figure 1A). The needs of the city quickly outgrew this small facility, and the “Greater Grady” campaign (1912) brought several several hospital expansions. Wards in the new Butler Street additions were reserved for white patients (Figure 1B), while the old hospital housed the wards for black patients. Thus, “The Gradys,” with separate and unequal facilities and services, were born. Virtually every aspect of care at Grady continued to be segregated by race until the mid-20th century (Figure 1C). In 1958, the opening of the “New Grady” with 21 floors and over 1100 beds further cemented this legacy of the separate “Gradys:” one wing of the new facility was designated for black patients, one wing for white patients, and a hallway connecting them for the physicians and personnel (Figure 1D). By the 1960s, civil rights activists brought change to Atlanta. The Atlanta Student Movement, with the support of Dr. Martin Luther King Jr., led protests outside of Grady (Figure 1E). A series of judicial and legislative rulings, including *Bell vs. Grady Memorial Hospital* (1962), *Simpkins vs. Cone Memorial Hospital* (1963), and Title III of the Civil Rights Act (1964), integrated medical boards and public hospitals. The desegregation of Grady finally occurred with a quiet memo that belied years of struggle: on June 1st, 1965, a memo from hospital superintendent Bill Pinkston announced “All phases of the hospital are on a non-racial basis, effective today”. Particular note must be made of several Grady surgeons who served as allies to and leaders of this change. Daniel C. Elkin MD, then the Chief of Surgery at Grady, was the first to successfully petition for black physicians to practice at Grady (1930). John D. Martin MD, Chairman of Surgery at Emory University, helped unite the surgical residency programs at Grady and Emory in 1961. Alvin Johnson MD, a surgical resident, was the first black resident to train at Grady (1962). Asa Yancey MD was the first black physician to be named to the Grady hospital staff (1962) and the Emory Department of Surgery faculty (Figure 1F); Yancey would later serve as the Medical Director at Grady for over a decade. The future of Grady is deeply rooted in its past, and Grady’s mission is unchanged from its inception in 1892: “It will nurse the poor and rich alike and will be an asylum for black and white”.

RF 5. TRANSVERSUS ABDOMINIS PLANE BLOCKS IN COLORECTAL SURGERY: BETTER PAIN CONTROL AND PATIENT OUTCOMES WITH LIPOSOMAL BUPIVACAINE COMPARED TO BUPIVACAINE

L Guerra, S Philip, E Lax, L Smithson, R Pearlman, A Damadi

Presenter: Lucinda Guerra MD

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Introduction: Pain control after surgery requires a multimodal approach and must be balanced with risks and side-effects of a given intervention. Transversus abdominis plane (TAP) blocks are a safe and effective way to provide immediate post-operative pain relief after laparoscopic-assisted colectomy, shown to decrease narcotic requirements. The link between narcotic use and ileus and the subsequent increase in length of hospital stay and healthcare costs makes this of particular interest. We compared standard bupivacaine TAP blocks to those done using liposomal bupivacaine to look for differences in pain control, narcotic requirements, return of bowel function and length of stay (LOS) post-operatively.

Methods: Fifty-two patients undergoing elective colectomy were recruited to receive liposomal bupivacaine, and data were collected prospectively during their hospital stay. All patients received laparoscopic TAP blocks bilaterally using a total of 40cc of liposomal bupivacaine mixed with regular bupivacaine. Data collected included amount of narcotic medication in morphine equivalents used during hospitalization, number of days to ambulation, number of days to bowel function, and LOS. All patients were on the enhanced recovery after surgery protocol post-operatively, which included scheduled acetaminophen, ibuprofen, and gabapentin by mouth, as well as clear liquid diet starting on post-operative day zero. Statistical analysis using Student's t test was done for quantitative data; $p < 0.05$ was considered statistically significant.

Results: 50 of the 52 patients treated with liposomal bupivacaine were compared to the last 50 patients recruited to the control/bupivacaine TAP block arm of the study. Two patients were excluded, 1 due to pre-existing chronic opioid dependence, and 1 who received scheduled narcotic medication for the first 24 hours post-op. The same data parameters were collected, and again, all patients were on the enhanced recovery after surgery protocol pathway. Patients treated with liposomal bupivacaine needed less narcotics (5.06 vs 18.75 mg in morphine equivalents, $p = 0.0002$), had a quicker return of bowel function (1.7 vs 2.4 days, $p = 0.0002$), and lower LOS (2.7 vs 3.4 days, $p = 0.0146$). Time to ambulation post-operatively was also noted to be decreased, but did not reach statistical significance.

Conclusion: Patients undergoing colon and rectal surgeries appear to require fewer narcotics and have better patient outcomes with liposomal bupivacaine TAP blocks, compared with traditional bupivacaine TAP blocks. Based on our data, liposomal bupivacaine appears to be superior to bupivacaine TAP blocks in terms of narcotic requirements, length of stay, and return of bowel function. Given this data, use of liposomal bupivacaine in place of plain bupivacaine TAP blocks appears to have clear clinical advantages.

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RF 6. PHYSIOLOGIC TENSION: TECHNIQUE FOR MEASURING AND BASELINE VALUES

P Tenzel, J Bilezikian, R Parikh, D Coffey, W Powers, W Hope

Presenter: Paul Tenzel MD

New Hanover Regional Medical Center

Introduction: Tension is one of the most discussed terms relating to hernia surgery and repair. Tension free repairs were first popularized in inguinal hernia with the use of mesh prosthetics. Despite the universally accepted opinion that tension and reduction of tension is an important concept in hernia repair there is very little know about the physiologic tension of the abdominal wall related to ventral hernia repair. The purpose of this project was to attempt to measure physiologic tension in patients without hernia repair and help determine a normal baseline tension.

Methods: Patients were enrolled in a prospective IRB approved protocol to measure abdominal wall tension from 2/2014 to present. Patients undergoing abdominal surgery without hernia repair were included. Demographic information and operative details were documented. Abdominal wall tensions were measured using scales attached to Kocher clamps that are clamped to the fascia and then brought together in the midline. Measurements were made in the mid portion of the incision. Total tension, surgeon's estimation of tension, and grading of the fascia were recorded. Descriptive statistics were calculated.

Results: Eleven patients met inclusion criteria and had tension measurements performed during surgery. Average age was 58 years old (range 26-74) with 55% Caucasian, 82% Male, and an average BMI of 27 (range 18-34). Operations included exploratory laparotomy for small bowel obstruction or small bowel mass in 6 patients, colorectal surgery in 3 patients, and exploratory laparotomy and splenectomy in a trauma patient. Average tension measurements for these patients were 1.9 lbs (range 0-6.5lbs). Surgeon grading of tension was an average of 2.2 (1-5) and rated the fascia as excellent in 5 patients, Good in 5 patients, and Fair in 1 patient. No patient has developed an incisional hernia.

Conclusion: Obtaining tension measurements are feasible during abdominal surgery. Physiologic tension appears to be approximately 2 pounds. Further study is needed with a larger sample of patients.

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RF 7. EVALUATION OF OPERATIVE WASTE IN A MILITARY MEDICAL CENTER ANALYSIS OF OPERATING ROOM COST AND WASTE DURING SURGICAL CASES

BC Bandera, ED Rose

Presenter: Elizabeth Rose MD

Dwight D. Eisenhower Army Medical Center

Introduction: Operating rooms (OR) contribute to at least 40% of hospital costs. There is an existing cost waste in operating rooms for surgical instruments, tools, and supplies that are opened without being used. There is a paucity of data evaluating the hospital cost of opened but unused OR supplies. The goal of this observational study is examine the type and cost of opened but unused OR supplies for general surgery OR cases.

Methods: We are currently performing a quality improvement project of operating room cost waste observing 30 cases. Surgical cases of a senior surgeon who had been at the institution greater than 5 years was evaluated for items opened appropriately, and whether the items are used as a pilot study to combat rising hospital costs.

Results: We are evaluating 30 general surgery cases. It was found that the cost of instruments opened but not used was \$1,226.23. Of the cases evaluated, we found a range of 3.5-13.5% of total items were wasted, an average of 4.8%. The cases evaluated were laparoscopic cholecystectomies, laparoscopic inguinal hernia repairs, laparoscopic sleeve gastrectomies, laparoscopic Nissen fundoplication, robotic assisted inguinal hernia repairs, and open inguinal hernia repairs. We found that for the open inguinal hernia case there was minimal waste. The highest waste was among the least familiar and most complex cases such as robotic assisted inguinal hernia repair at 13.5% and \$459.20.

Conclusion: We found on average for less complex cases that \$13.01 were potentially wasted per case while for more complex cases up to \$565.03 were wasted per case. We identified the outdated preference cards, lack of instrument knowledge, circulating nurse and surgical technician distractions as reasons for contributing to waste. We plan to continue this quality improvement project for at least 30 general surgery cases in an effort to improve on operating room costs.

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RF 8. DOES DISTANCE TO THE TRANSPLANT CENTER AFFECT POST KIDNEY TRANSPLANT READMISSION RATES?

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Presenter: Jessica Schucht MD

University of Louisville

Introduction: Many transplant recipients travel long distances to their transplant center, and a significant number are from rural or remote areas with challenging access to their transplant team. As such, it is a common practice in many transplant centers to keep recipients near to the center for a period immediately following discharge from the transplant admission. Unplanned readmission is an increasingly important quality metric, and correlation between distance to the transplant center and readmission has not been described. The aim of this study was to examine the relationship between distance to the transplant center and readmission after kidney transplantation.

Methods: All patients undergoing deceased donor kidney transplant at a single center over a three-year period from were analyzed via retrospective chart review for factors associated with distance to the transplant center and readmission within 90 days of transplant using standard statistical techniques. Recipients at our center are discharged directly home following the transplant admission, rather than to local housing arrangements. Those who lived further than one-hour from transplant center were considered non-local recipients. P values <0.05 were considered significant.

Results: Of 141 patients, the overall 90-day readmission rate was 38.3%. Baseline differences between the two groups are displayed in the table. Non-local residents were more likely to be Caucasian (66.1% vs. 45.6%; $p=0.032$) and from rural areas (56.5% vs. 13.9%; $p<0.001$). The 90-day readmission rate between non-local and local residents was not statistically significantly different (30.7% vs. 44.3%; $p=0.098$). Length of stay was similar between non-local and local recipients (5 vs. 4.2 days; $p=0.314$), as were rates of delayed graft function (27.4% vs. 27.9%; $p=0.955$) and unplanned reoperation (6.5% vs. 7.6%; $p=1.0$). Donor characteristics other than age were similar between the two groups (table). Non-death-censored graft survival was actually higher at 1 and 3 years for the non-local group (96.8% and 96.8% vs. 89.7% and 78.4%; $p=0.016$). This difference remained significant after adjusting for baseline differences between the two groups (HR for graft failure = 0.195, 95% CI 0.039-0.975, $p=0.046$).

Conclusion: Patients who live remotely from the transplant center do not experience higher rates of readmission or worse graft outcomes than those who live nearby, and thus may be managed safely at home rather than requiring them to remain locally for a period after the transplant admission. Surprisingly, graft survival is actually better in the non-local patients. This may reflect the largely urban nature of the area surrounding our transplant center, but needs further study to allow conclusions regarding this difference to be reached.

RF 9. ANALYSIS OF A MULTIMODAL, ALGORITHMIC APPROACH FOR THE TREATMENT OF LIVER ABSCESES

RC Pickens, JK Sulzer, I Siddiqui, K Thompson, D Vrochides, EH Baker, JB Martinie, L Ocuin, DA Iannitti

Presenter: Ryan Pickens MD

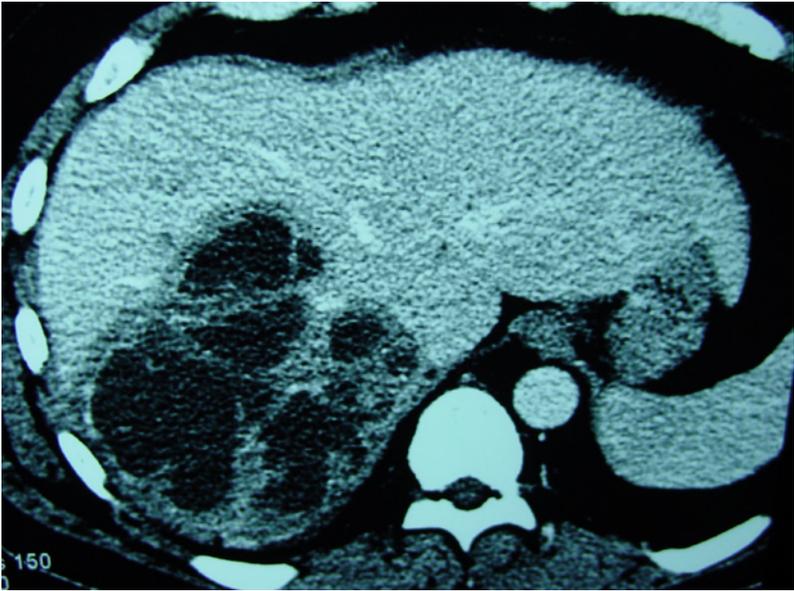
Atrium Health

Introduction: Management of pyogenic hepatic abscesses (PLA) often requires multimodal treatment strategies but there is wide variation in treatment pathways between surgeons and across healthcare systems. Recent literature has proposed that percutaneous drainage should be performed as a first-attempt in all amenable abscesses with surgery reserved as a rescue method. This study is a retrospective review and internal validation of a multimodal treatment algorithm for PLA at a high-volume hepatopancreatobiliary center of excellence.

Methods: Retrospective analysis was performed on patients with PLA between 2008 and 2018 at our institution. Patients with recent hepatic trauma or surgery with subsequent abscess, or cholecystectomy for cholecystitis with unroofing of adjacent hepatic abscess were excluded. An established institutional algorithm was used to assign intended first-line treatment as antibiotics alone for Type I abscesses (small 3 cm, multilocular). Failure of initial treatment was defined as persistent or recurrent abscess on imaging requiring repeated or escalated treatment with drainage or surgery. Outcomes were compared between patients with first-line treatment following the algorithm versus patients treated with alternate first-line therapy.

Results: During the study period 300 patients underwent treatment for pyogenic liver abscesses. Eighty-two were excluded for penetrating liver trauma (n=15), recent hepatic surgery (n=39), or unroofing of abscess at cholecystectomy (n=28), leaving 219 patients eligible for inclusion. First-line treatment was delivered through antibiotics alone for 47 patients (21.5%), percutaneous drainage with antibiotics for 120 patients (54.8%), and surgical intervention for 52 patients (23.7%). Large multilocular abscesses (Type III) had significantly lower failure rates following algorithmic approach with primary surgical treatment (3/32) compared to first-line antibiotics or percutaneous drainage (24/80) (9.3% versus 30.0%, p=0.021) with no 30-day mortalities for either group. Large unilocular abscesses (Type II) failed first-line percutaneous drainage in 25.5% (13/51), with 10 patients requiring escalation to surgery. Treatment of Type II abscesses with primary surgery rather than percutaneous drainage was successful in 88.2% (15/17) with no 30-day mortalities.

Conclusion: Primary surgical intervention is highly successful in the treatment of large pyogenic liver abscesses. While antibiotic therapy remains the mainstay of treatment for small acute liver abscesses, in light of higher failure rates for percutaneous drainage we propose that surgical intervention should be considered for select patients with large complex abscesses as up-front definitive treatment.



RF 10. PEDIATRIC TRAUMA SYSTEM EVALUATION BEFORE AND AFTER LEVEL 2 VERIFICATION AT SANFORD MEDICAL CENTER FARGO

MD Dixon, SA Engum

Presenter: Michael Dixon MD

University of North Dakota

Introduction: ACS verified trauma centers have shown significantly higher survival rates over non-verified trauma centers, improved mortality rate in states with ACS-verified Level 1 Pediatric Trauma Centers, and decreased complications. However, few significant changes are appreciated in the first two years after verification. Minimal research has been performed on ACS Level-2 Pediatric Trauma Verified Centers. We wished to analyze the affect of ACS Level-2 Pediatric Trauma verification at our institution, which serves a rural state as the only ACS Level-2 Pediatric Trauma Center, in order to better guide care for our patients and community.

Methods: In 2014, Sanford Medical Center Fargo became the only Level II Pediatric Trauma Center in North Dakota, serving patients from Spokane to Minneapolis. A retrospective review of Sanford Medical Center Fargo's pre-existing trauma database from May 1, 2013 - April 30, 2014 as an ACS Level III Pediatric Trauma Center compared to January 1 - December 31, 2015 as a Level II. Patients < 18 years old, $p < 0.05$. Categories: Number of Patients, Age, Gender, Race, Home City, Home State, Home County, Mechanism of Injury, Injury City, Injury State, Injury County, Injury Location, Hospital Transfer, Reference Hospital, Transport Mode, Team Level, ED Disposition, ED LOS, Admission Service, LOS, ICU LOS, Ventilation Days, ISS, Comorbidities, Mortality, Procedure Codes.

Results: Patient number increased by 23% from 167 to 205 patients. Statistically significant increase in the 3 - 6 year old trauma patients ($p = 0.0002$); Motorized Recreational Vehicle ($p = 0.028$), Violent ($p=0.009$) and Other ($p = 0.0374$) Mechanism of Injury categories; Ambulance ($p = 0.0124$), fixed wing ($p = 0.0028$) and Personal Owned Vehicle ($p = 0.0112$) transportation. Statistically significant decrease in Public Injury Location ($p = 0.0071$) and ALS ambulance transportation ($p = 0.0397$). Non-statistically significant increase in mean ISS from 6.3 to 7.0 and Native American trauma from 14% to 20%.

Conclusion: Prolonged ACS Level 1 Pediatric Trauma Center Verification has been shown to positively impact patients; however minimal data exists on ACS Level II Verification. This study revealed early increases in patient number, motorized recreational vehicles and violent injuries, utilization of personal vehicles and fixed wing EMS in transport to the facility as well as a non-statistically significant increase in mean ISS. Our findings are consistent with current Level 1 ACS Pediatric Trauma Center data revealing minimal statistically significant changes in patient outcome in the initial post verification period. Future benefits to patient outcomes including decreased complications and increased mortality will require continued analysis as the Level II Pediatric Trauma Center continues to mature and affect our rural and highly Native American community.