

Presentation #1

30 DAY READMISSIONS: A NSQIP DATABASE STUDY OF LOWER EXTREMITY AMPUTATIONS

Erin Dunlap, MD, Daniel Jupiter, PhD, Cory Janney, MD, Vinod Panchbhavi, MD
University of Texas Medical Branch - Galveston

Background

With the implementation of the Affordable Care Act, 30-Day readmissions have been recognized as both a quality improvement measure and a target to lower healthcare costs. It is, therefore, important that hospitals and individual clinicians identify risk factors that could potentially be modified in order to decrease 30-day readmissions.

Objective

This is the first orthopaedic paper that analyzes risk factors for 30-day readmissions, with focus on those potentially modifiable, in lower extremity amputations.

Methods

Using the American College of Surgeons – National Surgical Quality Improvements Project's database, patients who underwent lower extremity amputations were identified. Major and minor covariates were determined with 30-day readmission as the primary outcome. Risk factors for readmission were examined using bivariate and multivariate analysis within all cases, as well as between surgical subspecialties and between elective and emergent cases.

Results

Of the 10,949 cases identified, 1,110 (10.14%) were performed by an orthopaedic surgeon, 7,310 (66.76%) and 2,529 (23.1%), were performed by a vascular or general surgeon, respectively. Of these, 33.18% were elective surgeries and 66.82% were emergent. The total readmission rate for all cases was 14.58%, with 96.73% unplanned. General and vascular surgery patients were more likely to be readmitted than orthopaedic surgery patients (p-value 0.0005). Elective cases were less likely to be readmitted than emergent cases (p-value 0.028). There was no statistical significance between amputation types.

Using bivariate analysis for all readmitted cases, certain co-morbidities and perioperative variables were identified as risk factors for readmission: dyspnea, dependent functional status, history of COPD, history of CHF, hypertension requiring medications, dialysis patient, steroid use within 30 days, bleeding disorder, SIRS prior to surgery, ASA class, age, and days to discharge (Table 1). Notably, smoking history, diabetes mellitus, BMI, operation time, and discharge destination were not found to impact readmission rates. The three surgical subspecialties were compared and found to have statistically significant differences in these risk factors that could possibly account for the discrepancy in readmission rates, as well as differences in post-operative complications: pneumonia, need for intra- or post-operative transfusion, and sepsis.

Conclusion

In lower extremity amputations, the readmission rate is significant with majority of these readmissions unplanned. The rate of readmission is higher in general and vascular surgery patients compared to orthopaedic surgery patients, as well as in emergent cases compared

to elective. Among the risk factors associated with readmission, dyspnea, steroid use within 30 days, SIRS prior to surgery, and days to discharge are potentially modifiable. Knowledge of the remaining factors can help counsel patients and guide surgeons on their increased risk, as well.

Presentation #2

HIGHS AND LOWS OF DISCHARGE OPIOID PRESCRIBING IN COMMON PEDIATRIC SURGICAL PROCEDURES

K Anderson, M Bartz-Kurycki, D Ferguson, A Kawaguchi, M Austin, L Kao, K Lally, K Tsao
University of Texas HSC - Houston

Background

The opioid crisis has prompted providers to evaluate and adjust their current prescribing practices.

Objective

This study evaluated pediatric surgeon discharge opioid prescribing patterns after common general surgical procedures in children.

Methods

A retrospective review of charts of pediatric (ages 1-17) patients at a tertiary children's hospital undergoing common elective or urgent, short-stay (≤ 3 days) general surgical procedures in 2017 was conducted. Opioid medications prescribed and reconciled in the electronic medical record (EMR) at discharge were reviewed and compared to a state-wide electronic registry of filled narcotic prescriptions for verification. Doses were converted to oral morphine equivalents (OME) in milligrams. Descriptive statistics, Kruskal-Wallis test and quantile regression were used for analysis.

Results

Of the 472 pediatric patients, 204 (43%) had documented opioid prescriptions at discharge and 199 (42%) filled these prescriptions. However, 50 (11%) patients filled prescriptions not documented in the EMR, while 55 patients (12%) did not fill documented prescriptions. Patients undergoing laparoscopic cholecystectomy were most likely to receive (51%) and fill (57%) post-operative prescriptions (Table). Total OME filled did not vary significantly by procedure ($p=0.41$). OMEs per kg/day varied from a median of 0.10 mg/kg/day for diagnostic laparoscopy to 0.59 mg/kg/day for circumcisions (p

Conclusion

Discharge opioid prescriptions in pediatric patients undergoing general surgical procedures vary amongst and within procedures. With only half of pediatric patients filling prescriptions, narcotic medications may not be necessary for specific patient groups.

Presentation #3

HYPERTONIC SALINE RESUSCITATION IN TRAUMA FOLLOWING DAMAGE CONTROL LAPAROTOMY: DOES IT ATTENUATE INFLAMMATION AND REDUCE COMPLICATIONS?

P McCarthy, R Rhie, M Buehner, X Shi, C Corkins, K Medellin, N Shults, J Aden, W Sanns, V Sams

San Antonio Military Medical Center San Antonio Military Medical Center

Background

Delayed fascial closure after damage control laparotomy (DCL) commonly leads to fistula formation, increased incidence of infection, prolonged mechanical ventilator requirements, and lengthy ICU time. Hypertonic saline (HTS) use after DCL has been suggested to reduce bowel edema and resuscitation volumes, thus allowing for a quicker time to closure. Some animal studies and small human trials suggest HTS can also attenuate the inflammatory response associated with traumatic hemorrhagic shock and reperfusion injury.

Objective

Our objective was to determine if inflammatory cytokine levels were impacted by HTS resuscitation in trauma patients undergoing DCL and if this led to reduced organ failure, infectious complications, and reduced mortality.

Methods

All trauma patients 18 years or older requiring a DCL were screened to enter the study. If patient or family consented to entering, they were randomized to receive a standard rate of either 3% HTS or 0.9% Normal Saline (NS) solution in this double blinded prospective trial. Demographics, laboratory values, IL-6 and IL-8 levels, and outcomes were compared. Statistical analyses were performed using JMP 13.2 (SAS, Cary, North Carolina). Fisher's exact test, Mann-Whitney U-test, Student's t-test, or one-way ANOVA were used as appropriate. Statistical significance was set at $p < 0.05$.

Results

We enrolled 70 patients who met inclusion criteria of which 62 completed the protocol. Patients receiving HTS (n=31) were similar to those in the NS group (n=29) based on age, sex, body mass index, injury severity score (ISS), initial Glasgow Coma Scale (GCS), Maximum Abbreviated Injury Score (AIS), Trauma Injury Severity Score (TRISS), and Revised Trauma Score (RTS). Two patients had incomplete collection of labs. There were more penetrating traumas noted in the randomization during interim analysis for the NS cohort (64% vs. 36%), but no difference in organ laceration, orthopedic injuries, abdominal trauma, or significant vascular injuries. Mean heart rate, blood pressure, initial hemoglobin, INR, base deficit, lactate, peak creatinine, minimum GFR, delta sodium, serum chloride, and net fluid balance ($p > 0.05$) were not significantly different between the two groups ($p > 0.05$). Difference in percent decrease in IL-6 and IL-8 cytokine levels after 72 hours was similar between the two groups ($p > 0.05$). No significant differences were identified in regard to complications, infection incidence, or mortality rates.

Conclusion

Our study is the largest known human study to date investigating the impact of HTS resuscitation on cytokine profile and outcomes in trauma patients. We did not find any significant difference in pro-inflammatory markers when resuscitating trauma patients

with HTS or NS. We also found no difference in outcomes to include acute kidney injury, infectious complications, significant metabolic derangements, or mortality related to the type of resuscitation fluid used or any correlation to cytokine profiles.

Presentation #4

ARE WE OUT OF THE WOODS YET? THE AFTERMATH OF RESUSCITATIVE THORACOTOMY

J Fitch, S Dieffenbaugher, M McNutt, C Miller, D Wainwright, J Villarreal, G Hall, S Gordy, J Ward, C Wilson, J Suliburk, M Davis, S Todd
Baylor College of Medicine

Background

Survival following traumatic cardiac arrest is low, but resuscitative thoracotomy (RT) is lifesaving for select patients. Data exists on those who are likely to survive RT but is limited regarding hospital course and prognosis following admission to the intensive care unit (ICU).

Objective

The objective of this study was to describe the hospital course and prognosis for RT survivors admitted to the ICU.

Methods

This was a retrospective review of all adult trauma patients who underwent RT following traumatic arrest at the only two level one trauma centers serving our metropolitan area. Data evaluated include patient demographics, injury characteristics, hospital course, and outcome.

Results

Over 66 months ending June 2017, there were 52,624 trauma activations for both centers. 298 (0.6%) patients underwent RT, and 96 of these (32%) survived to ICU admission. Of these initial survivors, the mean age was 35.8 ± 14.5 years. 79 (82%) were male, 36 (38%) sustained blunt trauma, and the mean injury severity score was 32.3 ± 13.7 . 67% of deaths in the ICU occurred within the first 24 hours of admission. 90% of those alive at day 21 survived to discharge. Of those admitted to the ICU, 22% of blunt and 34% of penetrating patients survived to discharge. The mean ICU length of stay (LOS) for survivors was 24.1 ± 17.9 days, while the mean hospital LOS was 43.9 ± 32.1 days. Survivors averaged 1.9 ± 1.5 complications; most commonly acute kidney injury, deep surgical site infection, and deep vein thrombosis. 24 of 28 patients surviving to discharge went home or to a rehabilitation center.

Conclusion

Survival following RT is 9.4%, but there is an increased likelihood of survival with each day the patient remains alive. Families should be counseled to expect a long hospital course with a high likelihood of complications. The overall prognosis for survivors of RT may not be as bleak as previously assumed.

Presentation #5

A RANDOMIZED CONTROLLED TRIAL EXAMINING THE EFFECTS OF PREHABILITATION PRIOR TO VENTRAL HERNIA REPAIR IN OBESE PATIENTS

K Bernardi, O Olavarria, J Holihan, D Cherla, D Berger, T Ko, L Kao, M Liang
University of Texas HSC - Houston

Background

Previously, we demonstrated that prehabilitation, or preoperative nutritional counseling and exercise, at a safety net hospital can help patients achieve preoperative weight loss goals and results in more patients who are hernia-free and complication-free 7-months post-randomization.

Objective

The Objective of this study was to determine if prehabilitation in underserved, obese patients seeking ventral hernia repair (VHR) resulted in more hernia- and complication-free patients at 2 years post-randomization.

Methods

This was a blinded randomized controlled trial at a safety-net academic institution. Obese patients (BMI 30-40) seeking VHR were randomized to prehabilitation versus standard counseling. Elective VHR was performed once preoperative requirements were met: 7% total body weight loss or 6 months of counseling and no weight gain. Primary outcome was percentage of hernia-free and complication-free patients at 2 years post randomization. Complications included recurrence, re-operation, and mesh complications (i.e. mesh infection).

Results

A total of 118 patients were randomized, 110 (93.2%) completed a median (range) follow-up of 26.6 (19.1- 35.6) months. Baseline BMI (mean±SD) was similar between the groups (prehabilitation 36.8±2.6 and standard counseling 37.0±2.6). At late follow-up, there was no difference in the percentage hernia-free and complication-free patients (75.0% vs 68.5%, $p=0.527$). Almost half of all patients, 44.2% in prehabilitation and 43.2% in standard counseling, gained weight over their baseline and 14.5% of patients (prehabilitation=5, standard counseling=10) sought VHR elsewhere. Underserved minorities lost less weight on average (8.6 vs 13.8 lbs, $p=0.048$) and had a lower percentage of patients were hernia-free complication-free (65.6% vs 75.0%).

Conclusion

While prehabilitation prior to VHR is feasible and effective in the short-term at a safety-net hospital, there was no difference in long-term results. This may be because patients often regain the weight they lost or seek VHR elsewhere after failing preoperative requirements. Continuing diet and exercise programs after VHR, along with national guidelines, and changes in compensation may be important components of tackling VHR in obese patients.

Presentation #6

A PROSPECTIVE, RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED PHASE IIB TRIAL OF THE TUMOR LYSATE PARTICLE LOADED (TLPLDC) VACCINE: AN INTERIM ANALYSIS

T Vreeland, G Clifton, J Myers, D Hale, G Herbert, J Cindass, A Hickerson, T Brown, D Jackson, R Andtbacka, A Berger, J Jakub, J Sussman, A Terando, M Faries, T Wagner, G Peoples

Background

The landscape of melanoma therapy has changed dramatically over the last decade with the growth of immunotherapy, but a high percentage of patients do not respond to current therapies.

Objective

Our novel vaccine strategy has the potential to prime a patient's immune system against their tumor and expand the reach of immunotherapy against advanced-stage melanoma.

Methods

This is a prospective, randomized, double-blind, placebo-controlled phase IIb trial of the Tumor Lysate Particle Loaded Dendritic Cell (TLPLDC) vaccine given to prevent recurrence in patients with stage III/IV melanoma rendered disease-free by standard of care therapies. Patients were enrolled and randomized 2:1 to TLPLDC vaccine or unloaded yeast cell wall particles and autologous dendritic cells.

Results

At the time of this interim analysis, 119 patients were randomized (82 vaccine, 37 control). Groups were similar with the exception of the vaccine group being older. Therapy was well tolerated with only two grade 3 adverse events, one in each group. Disease free survival was not different between groups in the intention-to-treat analysis, but, in the per treatment analysis, the vaccine group showed a strong trend towards improved disease free survival (22.4mo vs 12.9mo, $p=0.07$).

Conclusion

The initial interim analysis of this phase IIb trial of the TLPLDC vaccine to prevent recurrence in stage III/IV melanoma shows that the vaccine is safe and likely improves disease-free survival in patients who complete the primary vaccine series, consisting of 6 months of therapy.

Presentation #7

HERNIAS AMONG PATIENTS UNDERGOING COMPUTED TOMOGRAPHY: PREVALENCE AND IMPACT ON QUALITY OF LIFE

O Olavarria, K Bernardi, A Milton, N Lyons, P Shah, T Ko, L Kao, M Liang
University of Texas HSC - Houston

Background

Two thirds of all Americans are overweight or obese and one half will receive a computed tomography (CT) scan in their lifetime. With the growing obesity epidemic and widespread use of advanced imaging there is a pressing need to quantify the prevalence and impact of hernias among these individuals.

Objective

Our aim was to determine the prevalence of abdominal wall hernias (clinical and radiographic) among patients undergoing CT scans and their impact on patients' quality of life.

Methods

Consecutive patients undergoing elective CT scans of abdomen/pelvis from a single institution were enrolled. In general, CT scans were performed with oral and intravenous contrast with 5 mm cuts. Brief history was obtained in the radiology suite and abdominal wall quality of life (AW-QOL) was measured through the modified Activities Assessment Scale, a validated, hernia-specific survey. On this scale, 1 is poor AW-QOL and 100 is perfect; a change of 7 is the minimum clinically important difference. Standardized abdominal and groin examinations were performed by a surgeon blinded to the CT scan results. Three surgeons blinded to the results of the physical examination reviewed the CT scans for the presence of ventral or groin hernias. The number of patients and their AW-QOL scores were determined for four groups of patients: no hernia, clinical or radiographic hernias, clinically apparent hernias, and occult hernias or hernias only seen on radiographic imaging. Pairwise differences between groups were compared using a Mann-Whitney U test.

Results

A total of 246 patients were enrolled of whom 76 (30.8%) were overweight and 105 (42.6%) were obese. Physical examination detected a ventral hernia in 50 (20.3%) patients and a groin hernia in 17 (6.9%) patients while CT scan revealed 128 (52.0%) and 64 (26.0%) respectively. Of patients with a hernia on CT scan, 85 (34.5%) had an occult ventral hernia and 40 (16.2%) had an occult groin hernia. The AW-QOL, median (IQR), of patients with no clinical or radiographic hernia was 84 (46), while the AW-QOL of those with a clinical hernia was 62 (55) and 77 (57) among those with an occult hernia (Table).

Conclusion

In the era of the obesity-epidemic and widespread use of radiographic imaging, hernias are extremely common. One fourth of individuals undergoing CT abdomen and pelvis scans have a clinical hernia while over 40% have an occult hernia. These hernias have a substantial impact on an individual's AW-QOL. Compared to individuals with no hernias, patients with a clinically apparent hernia and patients with occult hernias have significantly lower median AW-QOL (by 22 and 7 points respectively). Randomized trials are needed to determine if operative repair can result in a clinically significant improvement in AW-QOL.

Presentation #8

PATIENT RELATED FACTORS ASSOCIATED WITH LOWER ABDOMINAL WALL QUALITY OF LIFE

O Olavarria, K Bernardi, A Milton, D Cherla, T Ko, L Kao, M Liang
University of Texas HSC - Houston

Background

It has been shown that ventral and groin hernias affect patient abdominal wall quality of life (AW-QOL). However it is unknown what other factors can alter patient AW-QOL.

Objective

We sought to identify factors independently associated with AW-QOL among patients undergoing computed tomography (CT) scans of abdomen/pelvis.

Methods

Patients undergoing elective CT scans of abdomen/pelvis were enrolled. In general, CT scans were performed with oral and intravenous contrast with 5 mm cuts. History and standardized physical examination were performed by a surgeon blinded to the CT scan results. CT scans were reviewed for the presence of ventral and groin hernias by three surgeons blinded to the results of the physical examination. AW-QOL was measured through the modified Activities Assessment Scale, a validated, hernia-specific survey. On this scale, 1 is poor QOL, 80 is normal, and 100 is perfect; a change of 7 is the minimum clinically important difference. Primary outcome was patient related factors associated with poor AW-QOL. Multivariable linear regression was performed to identify these variables.

Results

A total of 489 patients were enrolled, of which 290 (59.3%) had a ventral hernia, 126 (25.8%) had an inguinal hernia, and 144 (29.4%) had no hernia. On univariate analysis, differences in QOL were affected by the following: obesity (BMI >30 kg/m²), current smoker status, presence of an ostomy, previous abdominal surgery, previous ventral hernia repair, ventral hernia on exam, and hernia size. On multivariable analysis, female sex (-6.2), obesity (-7.3), presence of an ostomy (-11.9), previous VHR (-15.6), and hernia on CT (-6.7) were independently associated with poor AW-QOL. (Table)

Conclusion

Multiple factors affect patients AW-QOL, not just hernias. The factors with the largest negative impact on AW-QOL are iatrogenic: prior ventral hernia repair or creation of an ostomy. With increasing focus on patient QOL, more research is needed to understand AW-QOL among patients with and without hernias.

Presentation #9

DISCLOSURES UNDISCLOSED

Kiya Shazadeh Safavi, Cory Janney, Gregory Schneider, Daniel Jupiter, Vinod Panchbhavi
University of Texas Medical Branch at Galveston

Background

The Center for Medicare and Medicaid Services (CMS) Open Payments database is a public database resulting from the Physician Payments Sunshine Act of 2010. It was designed to increase transparency of physicians' financial relationships with pharmaceutical manufacturers. Comparison between physician reported conflict-of-interest disclosures in journal articles with this database allows us to determine discrepancies in physician reported disclosures. Using this database, our objective was to determine the conflict-of-interest disclosure accuracy rates for papers published to orthopaedic journals.

Objective

The goal of this study was to analyze the nondisclosure rates of conflicts-of-interest for U.S authors who published research articles to three prevalent orthopaedic journals for the three-year period lasting from January 2014 to December 2016.

Methods

We analyzed conflicts-of-interest (COI) reported by authors of each paper published in three journals: Foot and Ankle International (FAI), The Journal of Bone and Joint Surgery (JBJS), and The Journal of Arthroplasty (JOA), for the years 2014 through 2016. Payment information in CMS Open Payments database was then cross-referenced with each author's disclosure statement to determine if a disclosure discrepancy (nondisclosed COI) was present.

Results

A total of 3,465 authors publishing 1,770 articles were reviewed in this study. Within this sample, 7.1% of authors had a recorded disclosure discrepancy and 13.2% of articles had either a first and/or last author with a disclosure discrepancy. Additionally, great variation in the percentage of authors with disclosure discrepancies was seen between journals, with JBJS at 2.3%, JOA at 3.6%, and FAI at 23.7%.

Conclusion

When observing the percentage of authors and articles with a disclosure discrepancy per journal, there is great dissimilarity between the values seen. Although author confusion and/or forgetfulness regarding COI disclosures may attribute to the number of undisclosed COI's within each journal, it is unlikely to be the source of variance of nondisclosure percentages seen between journals. This variance in disclosure discrepancies between journals may be due in part to how each journal collected and displayed author disclosure information. Nevertheless, inaccuracies amongst physician reported COI statements is a common issue observed amongst all specialties. Physicians should remain vigilant with monitoring their information within the Open Payments database as well as with the accuracy of disclosures in journal publications.

Presentation #10

BARRETT'S ESOPHAGUS DETECTION UTILIZING WIDE-AREA TRANS-EPITHELIAL SAMPLING- A SINGLE CENTER EXPERIENCE.

E Furay, S Doggett, F Buckley
University of Texas at Austin Dell

Background

Wide-area transepthelial sampling (WATS) use has been shown to significantly increase the detection rate of Barrett's esophagus during endoscopic surveillance.

Objective

To compare the detection rate of esophageal intestinal metaplasia or dysplasia when using targeted esophageal biopsies using narrow band imaging (NBI) versus WATS of the esophagus.

Methods

We performed a retrospective review of a single surgeon's experience with GERD patients who underwent screening for Barrett's esophagus with both targeted esophageal cold forceps biopsy using NBI and WATS of the esophagus from April-Sept 2018

Results

A total of 52 patients were identified who underwent endoscopic screening for Barrett's esophagus with both targeted cold forcep biopsy and WATS of the esophagus. Twenty-one percent of the targeted cold forceps biopsies were positive for intestinal metaplasia compared to 42% who underwent esophageal WATS (p=0.03)

Conclusion

WATS esophageal brushings are significantly better at detecting intestinal metaplasia in patients with GERD than targeted cold forceps biopsies using NBI.

Presentation #11

COMPLICATION RATES AFTER ADOPTION OF A CLINICAL PATHWAY FOR EARLY CHOLECYSTECTOMY IN COMPLICATED GALLSTONE DISEASE

Christopher P. Rice, BS, Celia Chao, MD, Daniel Jupiter, PhD, Winston Chan, MS, Krishnamurthy B. Vaishnavi, BS, August Schaeffer, BS, Lance W. Griffin, MD, Whitney R. Jenson, MD, William Mileski, MD
University of Texas Medical Branch - Galveston

Background

The last several years have seen considerable enthusiasm endorsing the adoption of clinical pathways recommending early cholecystectomy for patients presenting with complicated gallstone disease (acute cholecystitis, choledocholithiasis, and gallstone pancreatitis). The University of Texas Medical Branch adopted a pathway for early cholecystectomy in 2009 and reported our initial results supporting early cholecystectomy in 2010. This report represents an additional 8-year follow-up from 2010 to 2017.

Objective

The aim of this study was to determine the complication rates after long-term adoption of a clinical pathway which endorses same-admission cholecystectomy for complicated gallstone disease.

Methods

We performed a retrospective, direct chart review with IRB-approval. We retrieved patient information via the UTMB Acute Care Surgery database, Department of Surgery billing database, and Epic electronic medical record database. Statistics such as Chi-squared test were used where appropriate and a p-value of <0.05 was considered statistically significant.

Results

Two hundred eighteen patients with acute cholecystitis (AC), choledocholithiasis (CD), or gallstone pancreatitis (GP) were treated with a cholecystectomy on their index hospitalization prior to the pathway implementation. One year after introducing the pathway, 87 patients with AC, CD, or GP underwent an early cholecystectomy and were reported in our initial results. Subsequently, 696 patients more patients received treatment via early cholecystectomy in the following 8 years. The increased in complication rates from 18.8% in the pre-pathway group to 26.4% in the late post-pathway group was statistically significant ($p < 0.01$, χ^2 , Table 1). In addition to deaths, the complications identified include common bile duct injuries, bile leaks, retained stones, abscesses, and hemorrhages.

Conclusion

In patients undergoing early cholecystectomy for complicated gallstone disease, we found a significantly increased incidence of surgical complications. Additionally, we found a significantly decreased length of stay for these patients and increased readmissions (possibly due to an increased rate of choledocholithiasis). Our data support the need for a selective approach to patients with complicated gallstone disease and efforts to be made for identifying those at greatest risk for perioperative complications including death.

Presentation #12

USE OF HYPERTONIC SALINE AFTER DAMAGE CONTROL LAPAROTOMY TO IMPROVE EARLY PRIMARY FASCIAL CLOSURE: A SINGLE-CENTER RANDOMIZED CONTROLLED TRIAL

R Rhie, P McCarthy, M Buehner, X Shi, C Corkins, K Medellin, N Shults, J Aden, W Sanns, V Sams, Uniformed Services University

Background

Damage control laparotomy (DCL) has proven to be a successful means to improve survival in severely injured patients. However, when there are delays in primary fascial closure (PFC), significant complications arise. This leads to increased fluid losses and nutritional demands, abdominal wall hernias, enterocutaneous fistula, and intra-abdominal infections. Hypertonic Saline (HTS) use after DCL may reduce bowel edema and resuscitation volume, leading to successful and faster PFC.

Objective

Our primary objective is to determine if there is a higher rate of PFC in patients who undergo DCL when using HTS versus crystalloid resuscitation. This is one of four planned interim analyses as part of a multi-center study to determine efficacy of a particular intervention.

Methods

All trauma patients ≥ 18 years old requiring a DCL were screened to enter the study. If patient or family consented, they were randomized to receive a standard rate of 3% HTS or 0.9% Normal Saline (NS) solution in this double blinded prospective study. Patients were excluded if younger than 18 years old, prisoners, pregnant, had $>1/3$ loss of abdominal wall due to trauma, or had baseline sodium 155 mEq/L. Demographics, vitals, laboratory values, injuries, and outcomes were compared. Statistical analyses were performed using JMP 13.2 (SAS, Cary, North Carolina). Fisher's exact test, Mann-Whitney U-test, or Student's t-test were used as appropriate. O'Brien-Fleming procedure was performed for efficacy to determine further adjustment for power or futility. Statistical significance was set at $p < 0.05$.

Results

We enrolled the first 70 patients (25% of overall enrollment) of a multi-center randomized control trial at our trauma center. 62 patients completed the 72 hour protocol, while 8 were removed early due to clinical deterioration or administrative errors. There was no difference in age, sex, BMI, initial GCS, Maximum Abbreviated Injury Score (AIS), and Trauma Injury Severity Score (TRISS) between patients who received HTS versus those receiving NS. There were more penetrating traumas noted in the NS group (64% vs. 36%), but no difference in concomitant injuries. Initial vitals, INR, lactate, minimum GFR, delta sodium, serum chloride, net fluid balance, complications, and infection rates were not different between the two groups. The HTS and NS groups had no difference in either the time to PFC or discharge with fascial closure ($>90\%$).

Conclusion

We demonstrated no significant improvement in PFC with HTS resuscitation compared to NS in this early interim analysis based on one center's cohort. Our successful closure rate was also higher than the rate reported in the literature. Our interim calculations did not

reject our ability to achieve sufficient power as previously determined, therefore we will proceed with multi-center enrollment and the planned interim analyses as outlined in the protocol. Adjustments in sample size to achieve statistical power will be made as the budget for the protocol allows.

Presentation #13

VARIATION IN THE USE OF RADICAL CYSTECTOMY AMONG PATIENTS WITH MUSCLE-INVASIVE BLADDER CANCER: A MULTI-LEVEL MODEL ANALYSIS

M Ray-Zack , Golla V. , P Kerr, Y Shan, J Baillargeon, Y Kuo, H Mehta, K Chamie, S Williams
University of Texas Medical Branch - Galveston

Background

Radical cystectomy (RC) with extended pelvic lymphadenectomy remains the gold standard for treatment of muscle-invasive bladder cancer (MIBC). However, radical cystectomy remains underutilized, as historically only 21% of patients with MIBC were offered this potentially curative surgery.

Objective

The objective of this study was to use a multilevel model approach to determine the association of patient, physician and hospital characteristics with utilization of RC.

Methods

Using the Surveillance, Epidemiology and End Results-Medicare Data, we identified a cohort of patients aged 66 years or older at diagnosis with stage II-IVa bladder cancer from January 1, 2002 through December 21, 2011. Two-level hierarchical logistic regression model was constructed to determine the variation in RC use attributable to physicians and hospitals and identify patient, physician and hospital characteristics associated with RC use.

Results

The study cohort included 7,138 patients diagnosed with bladder cancer by 4,630 physicians who were affiliated with 864 hospitals. Of all patients, 1884 (26.4%) underwent RC. Utilization of RC varied among hospitals (median use = 25%, inter-quartile range 16.4-34.5%). In a two-level model (physician and hospital characteristics), the variance in RC utilization attributable to the hospital was 12%. This was reduced to 5.5% after controlling for patient, physician and hospital characteristics. RC use was predicted by patient's age, sex, race, stage, grade and Charlson comorbidity score (Table 1). No hospital characteristics were statistically significant for RC utilization.

Conclusion

We describe variation in radical cystectomy use according to patient, provider and hospital characteristics. Herein, provider and hospital factors do not largely contribute to the variation in receipt of RC. Further research in identifying predictors for RC use are needed to confirm these findings.

Presentation #14

QUALITY OF VASCULAR SIMULATION RESEARCH

Tracy Cheun, Esther Bae, Mark Davies

University of Texas Medical Center - San Antonio

Background

Surgical simulation has become an increasingly popular way to teach vascular trainees and measure their progress, with research interest in this area growing accordingly. Numerous simulation models exist, but measures of validity are inconsistent in quality.

Objective

Our aim is to evaluate the quality of vascular simulation research, both to measure current conditions as well as to establish benchmarks so future studies may be improved.

Methods

A systematic review was performed using PubMed, EMBASE, and PsycINFO from 1985 to 2017 to identify English-language articles pertaining to vascular surgery simulation, which identified 643 citations. Articles were systematically evaluated using the Medical Education Research Study Quality Instrument (MERSQI), a validated tool to assess quality in medical education research in the domains of study design, sampling, data type, validity, analysis, and outcomes. Results were analyzed using descriptive statistics and stratified by publication date to identify any trends in vascular simulation.

Results

After abstract review, 61 articles were retrieved for full-text assessment, and 49 studies encompassing 1336 subjects were included for review. Average MERSQI score was 12.9 out of 18 possible points and ranged from 8 to 17. Scores trended upward over time (Figure 1), with a significant difference between studies published prior to 2008 compared to those published in or after 2008 (12.0 +/- SEM 0.4 vs 13.9 +/- SEM 0.3; $p < 0.001$). Performance across domains varied (maximum score 3 for each domain), with outcomes performing the lowest (1.57) and data type the highest (2.92).

Conclusion

The quality of vascular simulation research has been improving, particularly over the last ten years. Continued studies to address weak areas, particularly in the types of outcomes measured, are warranted as gains could translate into ability to accurately assess real-world performance and eventually improve patient care.

Presentation #15

THE USE OF EPIDURAL ANALGESIA IN CHILDREN UNDERGOING MAJOR ABDOMINAL SURGERY: RACIAL AND ETHNIC DISPARITIES

J Chica, J Rodean, M Bartz-Kurycki, P Owusu-Agyemang, K Tsao, M Austin
University of Texas HSC - Houston

Background

Racial and ethnic disparities are a pervasive problem within healthcare and have been observed in the treatment of acute and chronic pain. However, this has not been well-studied in the pediatric population.

Objective

This study aims to determine whether disparities exist in epidural analgesia use for pediatric patients undergoing major abdominal operations.

Methods

Using the Pediatric Health Information System (PHIS) database, a retrospective review of all patients ≤ 18 years old who underwent a major abdominal operation between 2004-2017 as defined by the All Patient Refined Diagnosis Related Groups (APR-DRG) was performed. Demographic and clinical characteristics were compared between those who received epidural analgesia and those who did not. A generalized linear model with random effects for hospital was used to determine the adjusted odds of receiving epidural analgesia.

Results

A total of 48,167 patients underwent a major abdominal operation during the study period. Of these, 6.5% (3,157) received epidural analgesia. Most were non-Hispanic white (NHW) (57%), <1 year old (34%), and male (57%). In our multivariate model that adjusted for age, gender, race/ethnicity, insurance status, severity of illness within each APR-DRG, and year of operation, non-Hispanic black (NHB) race/ethnicity and age < 1 year were associated with a decreased odds of receiving epidural analgesia compared to NHW race/ethnicity and age 12-18 years, respectively. The odds of receiving epidural analgesia for a major abdominal operation increased within each time period

Conclusion

The use of epidural analgesia in children has increased over the last decade. However, NHB race/ethnicity was independently associated with a decreased odds of receiving epidural analgesia after adjusting for other important clinical and sociodemographic factors. Further studies are needed to understand the factors driving this disparity.

Presentation #16

TRENDS IN RESIDENT OPERATIVE TRAUMA: HOW TO TRAIN FUTURE TRAUMA SURGEONS?

T. Musonza, S.R. Todd, B. Scott, M.A. Davis, J. Potts
Baylor College of Medicine

Background

The Accreditation Council for Graduate Medical Education (ACGME) outlines requirements for both operative (10 cases) and non-operative trauma (40 cases). The objective of this study was to assess the operative trauma experience by general surgery residents. We hypothesized that the operative trauma experience of general surgery residents has declined over time, including exploratory laparotomies.

Objective

To evaluate the trends in resident operative trauma experience over the past 29 years and identify directions for training future trauma surgeons

Methods

This was a retrospective review of the past 29 years (1989-1990 through 2017-2018) of ACGME case log reports for completing general surgery residents. Total operative trauma cases performed as surgeon (surgeon junior and surgeon chief) were recorded and analyzed. The number of general surgery residents completing ACGME programs annually over that same period were also recorded and analyzed. A p value < 0.05 was considered significant.

Results

Over the study period, the number of ACGME general surgery residency programs decreased from 279 to 251, while the number of general surgery residents completing residency increased from 981 to 1,198. The total number of operative trauma cases (mean per resident) decreased from 79.6 to 29.9, ($p < 0.001$), while the total number of trauma exploratory laparotomies (open and laparoscopic) was unchanged from 10.0 to 9.4, ($p = 0.47$). Additionally, the total number of gastrointestinal operative trauma cases decreased from 10.6 to 4.0, ($p < 0.001$), the total number of vascular operative trauma cases decreased from 8.6 to 4.5, ($p < 0.001$), and the total number of vascular operative trauma cases (excluding fasciotomies) decreased from 6.9 to 2.4, ($p < 0.001$).

Conclusion

As the number of general surgery residents has increased over the past 29 years, the overall operative trauma experience has decreased. Although this is not true for trauma exploratory laparotomies, it is true for both gastrointestinal and vascular operative trauma cases. In addition to the increased number of general surgery residents, the increasing non-operative nature of trauma and the proliferation of trauma centers are most likely to blame. In order to adequately train future trauma surgeons, residency programs cannot solely rely on the operating room. Additional training beyond residency may be required.

Presentation #17

OCCUPATIONAL TRAUMATIC INJURIES RARELY AFFECT GENITOURINARY ORGANS: A RETROSPECTIVE, COMPARATIVE STUDY

JL Wenzel, AN Dixon, AB Patel, JC Webb, S Ali, CVR Brown, JS Wolf, EC Osterberg
University of Texas at Austin Dell

Background

Occupational injury (OI) is associated with a significant impact to the economy and society. OIs affect productivity, earnings, quality of life, and have been reported to rival the economic burden of a cancer diagnosis. To date the impact of OIs on genitourinary (GU) organs is unknown.

Objective

We sought to determine the mechanisms of injury associated with an OI to GU organs and compare GU OIs with GU non-OIs.

Methods

A single institution, retrospective study was conducted at a level 1 trauma center between 2010-2016 of all patients with GU injuries. OI was defined as any traumatic event that occurred in the workplace requiring hospital admission. Types of occupations were recorded in addition to the location of injury, mechanisms of injury, concomitant injuries, operative interventions, total cost, and mortality. GU OI patients were then compared to GU non-OI patients.

Results

623 patients suffered a GU injury, of which 39 (6.3%) had a GU OI. Fall (43%) was the most common mechanism of injury; followed by motor vehicle collision/motorcycle crash (31%), crush injury (18%), and pedestrian struck (8%). The adrenal gland (38%) and kidney (38%) were the most commonly injured organs. There was no difference in mortality (13% GU OI vs. 15% GU non-OI, $p=0.70$) or total direct cost (\$21192+28543 GU OI vs. \$28215+32332 GU non-OI, $p=0.45$). Total costs were decreased with mortality from a GU injury (odds ratio (OR) 0.3, CI 0.26-0.59; $p<0.001$) and increased with higher injury severity scores (OR 1.1, CI 1.09-1.2; $p<.0001$). Total costs were not affected by OI status.

Conclusion

Occupational injury patterns present and affect GU organs in a similar manner to other traumatic events.

Presentation #18

THE TRIAL EFFECT: IMPROVED OUTCOMES IN CONTROL ARM OF RANDOMIZED CONTROLLED TRIAL IN PEDIATRIC APPENDICITIS

K Anderson, M Bartz-Kurycki, D Ferguson, T Parker, F Varhidy, L Kao, K Lally, K Tsao
University of Texas HSC - Houston

Background

The term 'trial effect' describes beneficial outcomes from participation in randomized controlled trials (RCTs) regardless of treatment assignment. This study compared outcomes in pediatric perforated appendicitis (PA) patients enrolled in the control arm of a RCT to those treated outside of a RCT.

Objective

We hypothesized that pediatric PA patients included in the control arm of an RCT would have better outcomes than those treated outside of an RCT.

Methods

Data on all pediatric (age <18 years) PA patients who underwent appendectomy at single center between 1/1/2014 to 12/31/2017 was retrospectively reviewed. An RCT was conducted between 4/2016 and 3/2017, in which PA patients were assigned to intra-abdominal betadine irrigation vs no irrigation to evaluate the primary outcome of post-operative intra-abdominal abscess (IAA). Patients were managed according to the same appendicitis protocol during all time periods, before, during, and after the trial. Purposeful selection ($p \leq 0.20$) was used for multiple regression.

Results

Among 50 enrolled control RCT patients, 16% had post-operative IAA compared to 26% of non-RCT patients (n=414). Non-RCT patients were similar to control RCT patients except for symptom duration and Pediatric Appendicitis Score (table). Post-operative IAA and secondary outcomes did not vary by time period amongst the non-RCT group. After adjustment, control RCT patients had 60% lower odds for IAA (OR 0.40, 95% CI 0.17-0.96) and shorter LOS (OR 0.90, 95% CI 0.82-0.99), as compared to non-RCT patients; however, no difference in readmissions or emergency visits were observed.

Conclusion

Participation in RCTs may confer patient benefit beyond the potential advantages of the intervention tested. The trial effect provides strong evidence for promoting RCTs to answer clinically important questions.

Presentation #19

ACUTE KIDNEY INJURY SEVERITY AND MORTALITY AFTER TRAUMA: A COMPARISON OF REFERENCE CREATININE ESTIMATES

G Hatton, R Du, S Wei, J Harvin, K Finkel, C Wade, L Kao
University of Texas HSC - Houston

Background

Acute kidney injury (AKI) is staged by assessing a percent increase from a reference creatinine (RCr). Increased stage correlates with AKI severity and worsened clinical outcomes. Most trauma patients do not have a true RCr available on presentation, which leads to inaccurate staging and inconsistent reports of the relationships between AKI stage and clinical outcomes. Numerous RCr estimates have been utilized to diagnose AKI in trauma patients. It is currently unknown which RCr estimates lead to AKI staging that correlates with increased mortality.

Objective

We aimed to determine the RCr estimates resulting in AKI staging that correlates with increased mortality.

Methods

A retrospective cohort study was conducted at a single, level 1 trauma center. Adult (≥ 16 years) trauma patients requiring intensive care unit admission during two non-contiguous time periods between January and June of 2012 and 2017 were included. Five unique RCr estimates were identified in trauma literature, including admission creatinine (Cradm), lowest creatinine during the first day of hospitalization (Crd1low), and lowest creatinine during the first week of hospitalization (Crw1low). Additionally, the Modification of Diet in Renal Diseases (MDRD) and the trauma-specific MDRD (T-MDRD) equations, which account for age, race, and sex, were used to calculate an RCr estimate. AKI diagnosis and stage was determined using each RCr estimate according to the Kidney Disease Improving Global Outcomes creatinine guidelines. The relationship between AKI stage and mortality was assessed with univariate and multivariable analyses. Mortality of patients without AKI was used as the baseline for statistical analysis.

Results

Of 912 study patients, most were male (71%), white (47%), middle-aged (median 43 years, IQR 27, 60) and severely injured (median injury severity score 19, IQR 11, 29). In-hospital mortality occurred in 9% of patients. Each stage of AKI was associated with a higher mortality when using the Cradm, Crd1low, and MDRD RCr estimates ($p < 0.01$). Additionally, mortality rose with each subsequent AKI stage (Figure). However, when using Crw1low, mortality was higher with AKI stage 3 ($p < 0.01$), but there was no difference in mortality at AKI stages 1 or 2. AKI diagnosed with the T-MDRD RCr estimate was not associated with mortality at all stages. After adjusting for age, injury severity score, and arrival systolic blood pressure, stage of AKI using Cradm, Crd1low, and MDRD RCr estimates were significantly associated with mortality.

Conclusion

AKI diagnosed with the Cradm, Crd1low, and MDRD estimates was associated with increased mortality with progressive AKI severity. AKI diagnosed with Crw1low and T-MDRD did not correlate with mortality. Because the Cradm, Crd1low, and MDRD RCr estimates correlated with clinically important outcomes at each stage, they should be favored when diagnosing post-traumatic AKI.

Presentation #20

AN ANALYSIS OF ADHERENCE TO TACTICAL COMBAT CASUALTY CARE GUIDELINES FOR THE ADMINISTRATION OF TRANEXAMIC ACID

A Fisher, B Carius, M April, J Naylor, J Maddry, S Schauer
Texas A&M Scott and White

Background

Hemorrhage is the leading cause of potentially survivable deaths in combat. Among patients anticipated to require massive transfusion, the Committee on Tactical Combat Casualty Care (TCCC) recommends tranexamic acid (TXA) as an adjunct intervention. Previous data suggests adherence to TXA administration guidelines is low. We sought to measure adherence to TXA administration guidelines among patient population at high risk for massive transfusion.

Objective

We seek to analyze TXA administration among combat casualties reasonably expected to require blood transfusion with a larger dataset encapsulating a broader time period and both major theaters of operations building in previous published data.

Methods

This is a secondary analysis of a previously published dataset from the Department of Defense Trauma Registry from January 2007 to August 2016. Based on TCCC guidelines, we measured proportions of patients receiving prehospital TXA: (1) casualties undergoing tourniquet placement; (2) casualties sustaining amputations sustaining amputation proximal to the digits; and (3) patients sustaining gunshot wounds (GSW), (4) receiving ≥ 10 units of blood products within 24 hours of injury. We also seek to describe subjects receiving TXA overall.

Results

Our initial dataset captured 28222 casualties. Within our dataset, overall 255 subjects received TXA. The median age was 23, most were male (99.2%), injured by explosive (63.9%), had a composite injury score of 17, with the majority of serious injuries occurring to the extremities (61.5%). Most survived to hospital discharge (90.6%). Of the 28222, 4071 subjects had a tourniquet placed of whom 135 (3.3%) received prehospital TXA; 1899 subjects had an amputation proximal to the digit with 106 (5.6%) receiving prehospital TXA; and 6660 subjects had a GSW with 88 (1.3%) receiving TXA prehospital. Of 4246 subjects who received ≥ 10 units of blood products within the first 24 hours, 177 (4.2%) received prehospital TXA.

Conclusion

We identified low TXA administration despite the TCCC recommendations. These findings reinforce previous research. Future studies should seek to both identify reasons for limited TXA administration and methods to increase future utilization.

Presentation #21

DESMOPRESSING IS A TRANSFUSION SPARING OPTION TO REVERSE PLATELET DYSFUNCTION IN PATIENTS WITH SEVERE TRAUMATIC BRAIN INJURY

EJ Furay, MJ Daley, P Satarasinghe, JD Aydelotte, PG Teixeira, TB Coopwood, S Ali, CVR Brown

University of Texas at Austin Dell

Background

Platelet dysfunction is an independent predictor of increased mortality in patients with severe traumatic brain injury (TBI). Platelet transfusions have been shown to be an effective treatment strategy to reverse platelet inhibition and reduce mortality, but may be associated with shortages, cost and transfusion related complications. Therefore, desmopressin (DDAVP) is an attractive alternative to enhance platelet aggregation.

Objective

We hypothesized that DDAVP would correct platelet dysfunction similarly to platelet transfusions in patients with severe TBI.

Methods

This retrospective study evaluated all blunt trauma patients admitted to an urban, level one trauma center from July 2015 to October 2016 with severe TBI (Head AIS ≥ 3) who presented with platelet dysfunction (defined as adenosine diphosphate [ADP] inhibition $\geq 60\%$ on thromboelastography [TEG]) and subsequently received treatment. Per our institutional practice patients with severe TBI and platelet dysfunction are transfused one unit of apheresis platelets to reverse inhibition. During a platelet shortage, we interchanged DDAVP for the initial treatment. Patients were classified as receiving DDAVP or platelet transfusion (PLT) based on the initial treatment.

Results

A total of 57 patients were included (DDAVP n=23; PLT n=34). When comparing the DDAVP group to the PLT group there was no difference in age (41 vs. 40, $p=0.86$), male gender (82% vs. 74%, $p=0.44$). PLT patients were more often Caucasian (94% vs. 65%, $p=0.005$). There was no difference in admission systolic blood pressure (138 vs. 142, $p=0.68$) or pulse (97 vs. 105, $p=0.30$). Patients who received DDAVP were more severely injured (ISS: 29 vs. 23, $p=0.045$) but there was no difference in Head AIS (4 vs. 4, $p=0.16$). Prior to treatment both groups had similar ADP inhibition as measured by TEG (ADP 86% vs. 89%, $p=0.34$). After treatment both the DDAVP and PLT groups had similar correction of platelet ADP inhibition ($p=0.28$).

Conclusion

In patients with severe TBI and platelet dysfunction, DDAVP is an alternative to platelet transfusions to correct platelet dysfunction.

Presentation #22

PTSD IN TRAUMA: DOES MECHANISM MATTER?

M Bobbs, B Coopwood, I Tabas, S Ali, S Manser, CVR Brown
University of Texas at Austin Dell

Background

Every year in the United States, up to 40% of the 2.8 million patients requiring hospital admission for traumatic injuries meet criteria for post traumatic stress disorder (PTSD) in the 12 months following their injuries. Risk factors associated with PTSD development after a traumatic injury have not been well studied.

Objective

To prospectively assess if there are specific risk factors associated with the development of PTSD after a traumatic injury, including the mechanism of injury.

Methods

The Primary Care - PTSD (PC - PTSD) screen was administered to admitted patients meeting inclusion criteria. Patients with symptoms were randomized to an interventional or control group. Both groups completed in-hospital interviews, then 45-day and 90-day telephone interviews. Follow up collected the PTSD Checklist-Civilian (PCL-C) assessment and qualitative data on barriers to seeking treatment.

Results

Of the 152 patients included, 135 (89%) patients completed follow-up assessments at 45 days, and 129 (85%) completed follow-up assessments at 90 days. ICU length of stay, ventilation days, and severe extremity injuries were all associated with development of PTSD at both 45 and 90 days. Gender and race were not associated with development of PTSD. Independent risk factors for the development of PTSD at 45 days included younger age and penetrating injuries. However, penetrating injuries appeared to be the only independent risk factor for development of PTSD at 90 days.

Conclusion

Understanding risk factors for patients more likely to develop PTSD after a traumatic injury can help guide in-hospital and post-discharge screening and interventions to better set goals for recovery.

Presentation #23

BLUNT VS. PENETRATING TRAUMA: IS THERE A RESOURCE INTENSITY DISCREPANCY?

J Fitch, P Albin, A Patel, M Yanoff, D Scaria, C Wilson, J Suliburk, S Gordy, G Hall, S Todd
Baylor College of Medicine

Background

Traumatic injury is a leading cause of morbidity and mortality. Caring for critically injured patients requires significant resources. The rising cost of healthcare makes the responsible allocation of limited resources critical; yet not all trauma centers see the same mechanism of injury distribution.

Objective

The objective of this study was to compare resource utilization between patients with blunt and penetrating mechanisms of injury. We hypothesized that among patients with equivalent triage, blunt trauma patients would be more resource intensive than penetrating trauma patients throughout their hospital course.

Methods

This was a retrospective analysis of all Code I (highest level activation) trauma admissions at a busy urban Level I Trauma Center from January 1, 2013 – December 31, 2017, excluding burn patients and those with an unknown mechanism of injury. Data evaluated include patient demographics, injury details, hospital charges, mortality, and specific hospital resource utilization. A p value < 0.05 was considered significant.

Results

Over the five year study period, 4,578 patients were identified: 2,037 blunt trauma patients and 2,541 penetrating trauma patients. Blunt trauma patients were older (40.6±16.1 vs. 33.2±12.2, p<0.0001), less frequently male (79.6% vs. 89.1%, p<0.0001), and more severely injured (ISS 18.7±14.4 vs. 12.3±12.7, p<0.0001). Blunt trauma patients required more radiologic studies (20.9±21.6 vs. 11.7±16.9, p<0.0001), more medications (25.3±18.5 vs. 17.3±15.6, p<0.0001), and more consults (2.8±1.9 vs. 2.4±1.8, p=0.0452), resulting in higher mean daily hospital charges (\$12,403±\$12,971 vs. \$10,076+\$10,956, p<0.0001). Clinically, blunt trauma patients required more mechanical ventilator days (6.72±10.2 vs 1.5±5.3, p<0.0001), more intensive care unit days (5.8±10.1 vs 2.7±7.4, p<0.0001), and a longer total hospital stay (11.5±16.1 vs 7.7±13.2, p<0.0001). Blunt trauma patients were also significantly less likely to survive to discharge (85.1% vs 88.8%, p=0.0003).

Conclusion

Among similarly triaged trauma patients, blunt trauma patients were more severely injured and required significantly more resources than penetrating trauma patients. Understanding this pattern will allow trauma systems to better allocate limited resources based on each center's mechanism of injury distribution. Given current changes in the healthcare funding climate, efficient resource allocation is more critical than ever before. Trauma centers with a higher proportion of blunt trauma patients may require greater financial support.

Presentation #24

OCULAR TRAUMA COSTS IN TEXAS, 2013-2014

De la Rosa, Elizabeth, MD, Mulla, Zuber, PhD, Nelson, Patricia, MD
Texas Tech University HSC - El Paso

Background

Injuries to the eye are a leading cause of monocular blindness and visual impairment in the United States, and worldwide. An estimated 2.4 million eye injuries occur in the United States annually, resulting in nearly 1 million Americans with permanent visual impairment due to trauma with > 75% being monocularly blind. Current published rates of ocular trauma range from 8.14 to 13.3/100,000 population. This is associated with a large cost to the society, not only with direct hospitalization costs, but also with related loss of productivity and long-term disability. Eye injury is also the leading cause of eye-related hospital admissions. There are few national studies looking at the incidence rate of hospitalized ocular traumas. Of the published studies, many look at statistics from one or few medical centers or rely on national registry data that may not be accurate due to voluntary reporting. The studies that do exist are outdated and do not look at the direct medical cost burden.

Objective

Our goal was to analyze the current characteristics and hospital costs associated with ocular trauma in Texas.

Methods

We investigated the characteristics and hospital costs associated with ocular trauma injuries via a query of the Texas Hospital Inpatient Discharge Public Use Data File (PUDF) for years 2013-2014. The PUDF contains clinical, demographic, and billing information for millions of individuals who were discharged throughout Texas from reporting hospitals, representing approximately 88% all hospitals in Texas. The Department of Defense and Veteran's Affairs Hospitals are excluded. The patient's age group was the independent variable of interest: 18-44, 45-64 and ≥ 65 years. We looked at adnexal injuries, (i.e. laceration of the eyelid, laceration of the periocular area, penetrating wound or orbit, etc.) as coded by ICD-9 condition codes: 870.*, open globe injuries (i.e. penetrating eyeball injury) as coded by ICD-9 condition codes: 871.*, and closed globe injuries (i.e. contusion of the eyelid, periocular or orbital tissue) as coded by ICD-9 condition codes: 921.*. Chi-square tests, Fisher's exact tests, and analysis of variance were used to analyze the data.

Results

We identified 1498 patients with adnexal injuries of which 817 were 18-44 y, 398 were 45-64 y, and 283 were ≥ 65 y. In each of the three age groups, the majority of the patients were non-Hispanic, White individuals. A statistically-significant association between age and sex was noted ($p < 0.0001$): in the youngest age group, 48.2% of the patients were male, 35.0% had missing values for sex (identity protected if related to drug/alcohol use or HIV positive), and the remaining 16.8% in this group were females, while in the oldest age group 51.2% of the patients were female. The mean length of stay did not vary significantly across the three age groups: 6.4, 6.4, and 5.3 days in the youngest, middle, and oldest age groups, respectively ($p = 0.32$). Hospital mortality increased with age, from 0.6% in the 18-44 group, 2.3% in the 45-64 group, and 4.6% in the ≥ 65 group ($p < 0.0001$). The mean total

charges ranged from \$58,171 (SD: \$63,950) in the oldest age group to \$97,266 (SD:169,336) in the youngest group ($p=0.001$).

Similarly, we identified 644 patients with open globe injuries of which 313 were 18-44 y, 192 were 45-64 y, and 139 were ≥ 65 y. In each of the three age groups, the majority of the patients were non-Hispanic, White individuals. A statistically-significant association between age and sex was noted ($p<0.0001$): in the youngest age group, 68.7% of the patients were male, while in the oldest age group 48.2% of the patients were female. The mean length of stay did not vary significantly across the three age groups: 5.5, 4.7, and 5.0 days in the youngest, middle, and oldest age groups, respectively ($p=0.53$). The mean total charges ranged from \$54,656 (SD 43,142) in the oldest group to \$79,634 (SD 120,131) in the youngest group ($p=0.02$). There was no significant difference in hospital mortality in these patients. Of note, eviscerations and enucleations of the eyeball were more frequent in the 18-44 y group compared to the ≥ 65 y group (eviscerations: 4.2% vs. 1.4%; enucleations: 7.7% vs. 3.6%). The most common procedure of the open globe injuries was "Repair of laceration of cornea."

Finally, we identified 2877 patients with closed globe injuries of which 774 were 18-44 y, 725 were 45-64 y, and 1378 were ≥ 65 y. In each of the three age groups, the majority of the patients were non-Hispanic, White individuals. A statistically-significant association between age and sex was noted ($p<0.0001$): in the oldest age group 65.8% of the patients were female. The mean length of stay did not vary significantly across the three age groups: 5.0, 6.0, and 5.7 days in the youngest, middle, and oldest age groups, respectively ($p=0.01$). The mean total charges ranged from \$52,268 (SD 49,603) in the oldest group to \$63,724 (SD 84,673) in the middle group ($p=0.02$). Hospital mortality increased with age, from 2.1% in the 18-44 group, 3.2% in the 45-64 group, and 44.9% in the ≥ 65 group ($p<0.002$).

Conclusion

In conclusion, ocular trauma is prevalent and results in significant hospital costs, on average more than \$50,000 per occurrence. The hospitalization costs are similar across all age groups, but are the highest in the 18-44 year old population despite lower mortality. This was contrary to our initial hypothesis assuming increased age would be associated with more comorbidities and would result in a higher total hospitalization cost. The 18-44 year group suffered more severe injuries, as represented in their higher rates of evisceration and enucleation (absolute procedures to remove non-functional eyes). In our study alone, in one year in Texas, there were 60 individuals 18 years old or greater that underwent surgical removal of their eye during hospitalization. The resulting permanent disability of monocular blindness adds to the societal cost of ocular trauma, well beyond the direct costs incurred during the 5-6 day hospital stay. There are a large number of closed globe injuries, especially in our female >65 year group, likely representing falls. Our results support the importance of prevention of ocular trauma in all age groups. In future studies we hope to better stratify the hospital costs based on the services provided for each injury type, hoping to identify the most costly aspects of the hospitalization.

Presentation #25

IDENTIFYING PROHIBITIVE RISK FACTORS FOR HEPATIC RESECTION IN METASTATIC NEUROENDOCRINE TUMORS

B Heidenreich, J Bader, V O'Connor, D Nelson
William Beaumont Army Medical Center

Background

Currently there are few systemic agents available with proven long term efficacy for the treatment of metastatic neuroendocrine tumors (NET). As such, hepatic debulking is often recommended as a means to obtain durable disease control. However, perioperative risk must be carefully weighed against the potential oncologic benefit achieved.

Objective

The purpose of this study is to identify patient, disease and treatment-related factors that may be associated with prohibitive risk for resection.

Methods

Using the 2014-2016 ACS-NSQIP targeted hepatectomy database, all patients undergoing resection for metastatic NET were identified. Patient, disease and treatment-related characteristics were examined. Multivariable analysis was performed to determine risk factors for 30-day morbidity and mortality.

Results

472 patients underwent hepatic resection for metastatic NET. Median age was 59 + 11.2 years and a slight majority were male (50.6%). The most frequent co-morbidities included active smoking (11.4%), diabetes (16.7%), and hypertension (46.4%), and the majority of patients were ASA 3 (68.4%). Surgical resection consisted of 70.1% (n=331) partial hepatectomy, 23.1% (n=109) total left or right hepatectomy, and 6.8% (n=32) trisegmentectomy. A planned open approach was used in 81.1% of patients. The majority of tumors were 5cm. More than 8 lesions were treated 15.2% (n=72) of cases. Overall 30-day mortality was low at 1.5%, while overall 30-day morbidity reached 22.5%. The most common complications were deep organ space infections (8.1%) and sepsis (5.9%). Preoperative risk factors associated with increased risk of major postoperative morbidity included male gender and >10% weight loss in the 6 months prior to surgery. Age alone was not associated prohibitive operative risk ($p > 0.2$). While extent of resection was not an independent risk factor, biliary reconstruction was the single most important prognostic factor with an associated 7-fold increased risk of 30-day overall complication rate (OR 7.16; CI 1.71-30.0123; $p=0.007$).

Conclusion

Overall mortality associated with hepatic resection for metastatic NET was low. Traditional co-morbidities including age were not found to be independent risk factors for 30-day morbidity. Special consideration should be given to patients requiring biliary reconstruction as these patients had significantly increased odds of major morbidity in the early perioperative period.

Presentation #26

COMPARING COSTS OF RADICAL CYSTECTOMY WITH TRIMODAL THERAPY FOR PATIENTS DIAGNOSED WITH LOCALIZED MUSCLE-INVASIVE BLADDER CANCER

M. Ray-Zack, Y. Shan, P. Kerr, C. Kosarek, H. Hudgins, U. Jazzar, D. Tyler, S. Freedland, T. Swanson, A. Kamat, J. Gore, S. Kaul, H. Mehta, S. Williams
University of Texas Medical Branch - Galveston

Background

There is conflicting evidence on whether trimodal therapy (TMT) is comparable to radical cystectomy (RC) for the treatment of muscle-invasive bladder cancer. Comparative cost studies are lacking, adding further to the complexity of determining an optimal treatment approach.

Objective

In this study, we evaluated the survival and intensity effects of TMT vs. RC on total costs of care for patients with bladder cancer.

Methods

A retrospective review using the Surveillance, Epidemiology, and End Results (SEER)-Medicare database identified patients aged 66-85 years with clinical stage T2-4a bladder cancer from 2002-2011. Total Medicare cost and its components within one year were analyzed for patients undergoing RC or TMT. Inverse probability of treatment weighting was used to adjust for differences in baseline characteristics. A two-part estimator was used to examine the effect of TMT vs RC on total costs within one-year follow-up.

Results

A total of 728 patients who underwent TMT were compared to 2,235 who underwent RC. Median total costs were exponentially higher with TMT than RC over time: 3-months (Difference \$11,805, Hodges-Lehmann (H-L) 95% Confidence Interval (CI) \$7,745 to \$15,864), 6-months (Difference \$62,370, H-L 95% CI \$55,581 to \$69,160), and 1-year (Difference \$109,027, H-L 95% CI, \$98,692 to \$119,363). Median outpatient costs were significantly higher for TMT at 3-months (\$64,727 vs. \$33,033), 6-months (\$150,017 vs. \$52,589), and 1-year (\$255,280 vs. \$78,233) than RC (all $p < 0.001$). Significantly increased median costs associated with TMT than RC were attributed to radiology services (\$60,599 vs. \$7,467; Difference \$56,713, H-L 95% CI, \$53,797 to \$59,628), and pharmacy services (\$49,587 vs. \$13,098; Difference \$19,670, H-L 95% CI, \$17,285 to \$22,055) (figure 1). In adjusted analyses, patients undergoing TMT had higher cost compared to RC at one-year follow-up: median difference \$130,348 (95% CI \$107,533 to \$160,536).

Conclusion

TMT was associated with increased costs compared with RC among patients with muscle invasive bladder cancer, markedly due to increased outpatient costs. Extrapolating cost figures to the total US population resulted in excess spending of \$600 million for TMT compared to RC for patients diagnosed in 2011. Taking survival benefits and costs into account, RC may be the preferred treatment modality in patients that are candidates for either treatment.

Presentation #27

EARLY POSITIVE FLUID BALANCE AND ACUTE KIDNEY INJURY IN THE POST-TRAUMATIC SETTING

RE Du, GE Hatton, S Wei, JA Harvin, KW Finkel, CE Wade, LS Kao
University of Texas HSC - Houston

Background

Appropriate fluid management is important in preventing acute kidney injury (AKI) in susceptible populations, such as severely injured trauma patients. Although restrictive fluid management is increasingly being used after injury, it is unclear how it has affected fluid balance and risk of AKI in severely injured trauma patients.

Objective

We aimed 1) to determine the frequency of 48-hour positive fluid balance in severely injured trauma patients and 2) to evaluate for an association between AKI and a positive or negative fluid balance as compared to euolemia (defined as a 48-hour fluid balance between -2L to 2L).

Methods

A retrospective cohort study was conducted at a single, level 1 trauma center. Adult (≥ 16 years) trauma patients requiring intensive care unit admission between January and June of 2017 were included. Patients who died within 48-hours, developed rhabdomyolysis, or who had a prior history of end-stage renal disease or congestive heart failure were excluded. The primary outcome was AKI within 7 days of admission, defined according to Kidney Disease Improving Global Outcomes (KDIGO) creatinine-based criteria using the lowest creatinine from the first hospital day as baseline. Univariate and multivariable analyses were performed.

Results

Of 365 patients, 74% were male and 44% were Caucasian. The median age was 41 years (IQR 27-59) and the median injury severity score (ISS) was 18 (IQR 10-29). Positive fluid balance ($>2L$) was observed in 49% of patients while negative fluid balance ($<-2L$) was observed in 2%. AKI was diagnosed in 105 (29%) patients. Patients with AKI were older, had a higher ISS, higher arrival base deficit, higher 48-hour fluid balance, and lower arrival systolic blood pressure. Mortality rate was 13% in patients with AKI versus 2% in patients without AKI ($p < 0.001$). After adjusting for age, ISS, and base excess, there was increased odds of AKI for increasingly positive fluid balances (figure): $>2L$ (OR 2.2, 95% CI 1.3-3.6); $>4L$ (2.8, 1.5-5.1), $>6L$ (4.1, 1.8-9.0), and $>8L$ (9.0, 2.5-32.6). A negative fluid balance ($<-2L$) was not associated with AKI (1.6, 0.3-9.0).

Conclusion

Positive fluid balance in excess of 2L at 48 hours occurs in half of severely injured trauma patients and is independently associated with AKI. As fluid balance increases, the odds of AKI also increase. This may be related to residual confounding despite adjusting for age and physiologic status, or to pathologic consequences of excess fluid administration such as kidney edema. A better understanding of the drivers of fluid administration is needed to determine whether a restrictive resuscitation strategy reduces AKI.

Presentation #28

THE IMPACT ON MANAGEMENT FOR REPEAT ABDOMINAL IMAGING FOLLOWING HIGH GRADE RENAL TRAUMA

JL Wenzel, JC Webb, S Ali, CVR Brown, BN Breyer, D Bayne, EC Osterberg
University of Texas at Austin Dell

Background

Kidney injury is common in patients with abdominal trauma, impacting 8-10% of cases. Renal trauma is classified using the American Association for the Surgery of Trauma (AAST) criteria, dividing into 5 major grades. Current evidence supports conservative management of both low (Grades 1, 2, 3) and high (Grade 4, 5) grade renal trauma, and suggests that routine repeat imaging is not needed in the management of asymptomatic patients with low grade renal trauma. However, American Urological Association guidelines require repeat imaging in high grade renal trauma, even in asymptomatic patients without any other clinical indications.

Objective

We sought to investigate the impact of repeat abdominal imaging following high grade renal trauma on clinical outcomes and management.

Methods

A retrospective analysis of renal trauma cases at three level 1 trauma centers between 1999 and 2017 was performed. High-grade trauma patients were categorized by management following initial imaging (immediate intervention versus conservative management). The conservatively managed group was subdivided into symptomatic and asymptomatic, then followed to determine if an intervention occurred after repeat imaging. The primary outcome measure was intervention after repeat abdominal imaging.

Results

Refer to graph for description of cohort. In 55 patients with high grade renal trauma, 7 were symptomatic at time of reimaging and 48 were asymptomatic. Intervention occurred after reimaging in 1/7 (14.3%) symptomatic patients and 6/48 (12.5%) asymptomatic patients. All 6 asymptomatic patients who underwent intervention after reimaging were found to have injury to the collecting system; intervention consisted of stent placement for an expanding urinoma. Collecting system injury was seen in only 42.9% (18/42) asymptomatic patients where no intervention occurred after reimaging and was found to be a statistically significant predictor of need for surgical intervention ($p=0.022$).

Conclusion

In three level 1 trauma centers, reimaging in high grade renal trauma resulted in a low rate of surgical intervention. There are currently no guidelines that address the role of specific initial imaging findings in the need for reimaging. Our data suggest that reimaging criteria could be refined based on specific initial imaging findings such as collecting system injury, rather than renal trauma grade alone.

Presentation #29

SHOULD WE AGREE THAT WE DISAGREE? EFFORTS TO CREATE A MULTI-INSTITUTIONAL APPLICANT SCREENING TOOL FOR SURGERY RESIDENCY

Aimee K. Gardner, Katelyn Cavanaugh, Ross Willis, Daniel Dent, Henry Reinhart, Mark Williams, Brad Scott, Michael Truitt, Brian Dunkin
Baylor College of Medicine

Background

Residency application packets may not provide residency programs with objective and relevant information on many of the non-cognitive skills required for success in surgical training.

Objective

We sought to determine if a single pre-interview assessment tool could be created for a group of surgical residencies that would allow broad administration to all their applicants while also providing each program with objective information about candidate competencies they valued.

Methods

Surgical residencies within the same geographical region engaged industrial organizational psychologists (IOPs) to conduct a multi-method job analysis at each location. Each program provided 10-15 subject matter experts (SMEs) who are central to their educational mission or represent an ideal incumbent trainee to participate in the process. Each SME participated in a one-hour semi-structured interview based on the critical incident technique to identify critical competencies required for success in their program. SMEs also rated the criticality (1=not essential; 5=absolutely essential) of 20 core competencies needed among residents upon entry. Using the data derived from the job analyses, a 50-item situational judgment test (SJT) was created to measure the valued competencies across all programs. SMEs provided review and input to the tool to determine consensus and to inform the unique scoring algorithm to be used by each program.

Results

Seventy-three SMEs across five programs were interviewed (71% faculty; 23% resident; 6% administration). Overall interrater agreement of the criticality of competencies required among entering trainees was 0.84; within-program agreement ranged from 0.57 to 0.92. Competencies rated most critical across all programs included integrity (4.94 ± 0.24), dependability (4.70 ± 0.58), professionalism (4.42 ± 0.76), communication (4.38 ± 0.67), and resilience (4.30 ± 0.73). However, only integrity and dependability appeared across all programs' top 10 lists. Four of the top 10 competencies (feedback receptivity, integrity, resilience, team orientation) had substantial mean differences ($p < 0.05$) between at least two programs. Fifty-six percent (28/50) of the SJT items had appropriate consensus within at least one of the five programs. However, only two items reached consensus among all five programs. Thus, the final tool resulted in 20 SJT items, pulling 100 unique data points (5 data points per item) from each applicant. However, given the consensus levels achieved among all programs in the prior step, each individual program could only use 5 (25 data points) to 11 (55 data points) items from the final tool.

Conclusion

These data suggest that there is substantial within- and between-program variability in what competencies are valued in entering residents. This may prevent universal applicant assessment tools from adequately capturing each program's unique values, expectations, and culture.

Presentation #30

LONG-TERM EFFICACY OF SUBXIPHOID VERSUS TRANSPLEURAL PERICARDIAL WINDOW FOR PERICARDIAL EFFUSION

Rodrigo Zea-Vera, Sujana Balla, Rachel Kaplan, Matthew J. Wall Jr, Ravi K. Ghanta
Baylor College of Medicine

Background

Pericardial window is a surgical treatment strategy for pericardial effusion. A window can be created via a transpleural or a subxiphoid approach. Transpleural drainage via thoracotomy or thoracoscopy is hypothesized to provide more durable freedom from recurrent pericardial effusion than a subxiphoid pericardial window.

Objective

We sought to compare operative outcomes and long-term freedom from recurrent effusion in subxiphoid versus transpleural pericardial windows in patients with non-traumatic pericardial effusions.

Methods

We identified 46 patients at our institution who underwent a pericardial window from 2001-2018, after excluding patients who underwent prior sternotomy, thoracotomy, or traumatic injury. Patients were stratified by surgical approach and presence of malignancy. Primary outcome was freedom from recurrent moderate or greater pericardial effusion. Secondary outcomes included operative mortality and morbidity and long-term survival. Operative mortality was defined as death within 30 days of surgery. Operative morbidity included pericarditis, cardiac arrest, bleeding, and surgical site infection. Survival and recurrent pericardial effusion were determined by medical record review, with a follow-up of 67 patient-years. Fisher's exact test and Wilcoxon rank-sum test were used to compare groups. Long-term survival and freedom from effusion recurrence were determined using Kaplan-Meier method.

Results

Subxiphoid windows (n=31; 67%) were more frequently performed than transpleural windows (n=15; 33%). Patient demographics and co-morbidities were similar between the two groups. Effusion etiologies included malignancy (n=22; 48%), idiopathic (n=12; 26%), uremia (n=8; 17%), and collagen vascular disease in (n=4; 9%). Perioperative outcomes were comparable between the two surgical approaches, except for longer drain duration (7 vs 4 days, p=0.029) in the subxiphoid group (Table). Pain medication requirements were similar between subxiphoid and transpleural approaches. Overall survival and freedom from moderate or greater pericardial effusion recurrence at 5 years was 37% (95% confidence interval [CI]: 19-54%) and 69% (95%CI: 52-86%), respectively. No patient required percutaneous or operative drainage for recurrent effusion. There was no difference in long-term survival (p=0.90) or freedom from pericardial effusion recurrence (p=0.70) between surgical approaches (Figure). Operative mortality in patients with malignancy was 32%. Two-year survival for patients with malignancy was 11% (95%CI: 0-28%). When comparing malignant vs non-malignant etiologies, no difference was found for recurrence of effusion (p=0.70).

Conclusion

Pericardial window provides effective long-term management of pericardial effusion. Patients with malignancy have low operative mortality with low incidence of recurrent effusion, supporting palliative indications. Subxiphoid and transpleural windows are equivalent in long-term efficacy and both surgical approaches can be considered.

Presentation #31

PRACTICE PATTERNS OF PRIMARY HYPERPARATHYROIDISM IN AN ACADEMIC HEALTH SYSTEM

John J. Nguyen-lee, MD, Vishwanath Chegireddy, MD, Ugoeze Nwokedi, MD, Feibi Zheng, MD, MBA

Houston Methodist Hospital

Background

Hyperparathyroidism has numerous health implications including increased risk of fractures, kidney stones, depression, cognitive impairment, and cardiovascular dysfunction such as hypertension, stroke, and myocardial infarction. Additionally, failure to diagnose and treat hyperparathyroidism can impair patients' quality of life and increase the financial burden for both patients and health care systems. There are NIH criteria to guide clinicians in diagnosing and treating primary hyperparathyroidism. However, previous studies have reported low adherence rate to NIH consensus guidelines for surgical treatment of PHPT.

Objective

To determine practice patterns for the diagnosis and management of primary hyperparathyroidism (PHPT) within the primary care group of an academic health system and identify opportunities for system level improvement.

Methods

We reviewed laboratory data from 459,002 primary care office visits from 155,350 unique patients at our institution between January 2016 through December 2017, and identified patients with hypercalcemia (>10.4 mg/dL). We determined whether patients had parathyroid hormone measured, had hyperparathyroidism documented, had appropriate workup for hyperparathyroidism, met the NIH consensus guidelines for surgery, and were referred to surgeons.

Results

We identified 2,271 patients with single elevated calcium and only 641 patients (28%) had PTH checked. In that cohort, 227 patients (35%) had elevated calcium and PTH consistent with "classic hyperparathyroidism." Of those, 146 patients (67%) met the NIH consensus criteria for surgery and 41 patients (28%) were referred for surgical evaluation. Dual-energy x-ray absorptiometry (DEXA) scan was performed in 99 patients (41%) and 28 patients (11.6%) had radiology imaging ordered to evaluate for nephrolithiasis.

Conclusion

Our study confirms that primary hyperparathyroidism is an under-recognized and under-treated. System-level interventions to raise physician awareness about PHPT and evaluation of hypercalcemia could potentially lead to improved rates of surgical treatment for PHPT and improve patient outcomes. These interventions could include CME lectures to primary care physicians, best practice advisories for serially hypercalcemic patients, easy to use order sets for disease specific workup, and distribution of work-lists of patients who would benefit from referral for discussion of parathyroidectomy.

Presentation #32

EXPLORING THE FAILURE-TO-RESCUE CONCEPT FOR PEDIATRIC TRAUMA PATIENTS

B Johnson, E Rosenfeld, W Zhang, S Shah, A Vogel, B Naik-Mathuria
Baylor College of Medicine

Background

Failure to rescue (FTR) is defined as death following a treatable complication. This concept has been studied in adult trauma patients, showing that high and low-mortality trauma hospitals have similar rates of major complications, but differ in their FTR rates.

Objective

The aim of this study is to examine whether failure-to-rescue is also a hospital quality indicator in pediatric trauma.

Methods

Children <15 were identified in the National Trauma Databank (NTDB) research datasets between 2007-2014. Hospitals were classified as a high, average or low-mortality based on risk-adjusted observed-to-expected in-hospital mortality ratios using the modified Trauma Mortality Probability Model. Regression modeling was used to explore the impact of hospital quality ranking on the incidence of major complications and failure-to-rescue. Major complications studied were sepsis, coagulopathy, cardiac arrest, pneumonia, acute respiratory distress, pulmonary embolism, stroke and myocardial infarct

Results

Of the 125,057 children, 31,600 were treated at low-mortality hospitals, 86,443 at average, and 7,014 at high-mortality hospitals. Children at low mortality hospitals were slightly older (7 vs. 6 years, $p < 0.01$). There was no difference in gender, Glasgow comma score (GCS) on admission, or age adjusted blood pressure. Prior to adjustment for patient demographics, transfer status, mechanism of injury, and severity low-mortality hospitals had a lower rate of complications [0.47% (low) vs 0.77% (high), $p < 0.01$] and mortality [0.01% (low) vs. 0.03% (high), $p < 0.01$]. Following adjustment, low-mortality hospitals remained with a lower rate of complications [0.23% (low) vs. 0.8% (high); adjusted OR 0.71; 95%CI 0.61,0.83] and a lower failure-to-rescue rate [adjusted OR 0.53 (high; 95% CI 0.34-0.83) and 1.46 (average; 95% CI 1.04-2.04)]. The most commonly encountered complications were pulmonary embolism (PE) and acute respiratory failure (ARF) with both being seen less frequently in low mortality hospitals [(PE: 0.3% (low) vs. 0.5% (high); adjusted OR 0.55; 95% CI 0.38,0.8) (ARF: 0.07% (low) vs. 0.8% (high); adjusted OR 0.09; 95%CI 0.06,0.15)]. Hypotension, GCS motor score of 1, and penetrating injury on admission were associated with increased failure to rescue rates. There was no correlation between trauma verification level and hospital mortality status based on the model.

Conclusion

For pediatric trauma patients, this study showed that mortality is associated with both major complication rates and failure-to-rescue rates. With this information, it is important to focus efforts to decrease not only the rate of complications, but also develop measures to appropriately treat patients when they arise.

Presentation #33

MATERNAL PERTUSSIS VACCINATION: KNOWLEDGE AND ATTITUDES AFTER DELIVERY

T Parker, D Ferguson, K Anderson, E Garcia, M Bartz-Kurycki, S Lesser, S Wootton, K Tsao
University of Texas HSC - Houston

Background

To prevent pertussis infection in infants, the Centers of Disease Control and Prevention's Advisory Committee on Immunization Practices recommends maternal pertussis (Tdap) vaccination between 27 and 36 weeks gestation. Women who are not vaccinated during pregnancy should receive postpartum immunization. Despite these recommendations, maternal vaccination rates in the United States remain suboptimal with only 51-56% of pregnant women receiving Tdap.

Objective

Our objectives were to elicit barriers and facilitators for immunization among pregnant women and to better understand perceptions of Tdap vaccination among postpartum women.

Methods

We performed a descriptive study using a semi-structured survey. Women who were less than 18 years old, delivered nonviable babies, or did not speak English or Spanish were excluded. Many questions were left open-ended in order to elicit qualitative data. During the interview, Tdap education was provided to those who were interested. Tdap was then offered to eligible, previously unvaccinated patients who had not already received it, and the nurse was notified if the patient accepted. We then reviewed the medical record to determine if women were ultimately vaccinated prior to discharge.

Results

200 postpartum patients were interviewed on the day of anticipated discharge (May-July 2018). Most subjects were English-speaking (92.5%), non-Hispanic (64%), and married or living with a partner (65%). Level of education varied widely: 36% had a 12th grade education or lower, 21% had completed some college, and 40% had an associate's degree or higher. The vaccination rate was similar to previous reports; 50% of women had received Tdap during their pregnancy prior to admission (n=100). Amongst immunized women, common facilitators for vaccination included desire to protect the baby, desire to protect herself and the baby, and recommendation by a doctor. Of patients who did not receive Tdap prior to interview (n=69), the most commonly cited reason was that the vaccine was not offered (50%). Other barriers to vaccination included not wanting the vaccine, belief that it was unnecessary, and perceived risk to the baby. Of patients who were not immunized prior to admission or did not know their status (n=100), 61% received Tdap in the hospital prior to discharge.

Conclusion

Interventions to increase vaccine education and administration in obstetricians' offices may significantly increase maternal vaccination rates. Addressing patient's safety concerns and educating moms on the benefits for the baby could improve final immunization rates.

Presentation #34

PROXIMITY TO OIL REFINERIES AND RISK OF BLADDER CANCER: A POPULATION-BASED ANALYSIS

M Ray-Zack, P Kerr, Y Shan, J Baillargeon, Y Kuo, H Mehta, S Williams
University of Texas Medical Branch - Galveston

Background

Exposures to benzene and aromatic amines are risk factors for bladder cancer. Incidence rates according to proximity to oil refineries are largely unknown.

Objective

We sought to determine proximity of oil refineries and bladder cancer incidence in the State of Texas, which is home to the largest number of oil refineries in the United States.

Methods

We used the Texas Cancer Registry database to identify patients diagnosed with bladder cancer from January 1, 2001 to December 31, 2014. The U.S. census data from 2010 was used to ascertain overall population size, age and sex distributions. Heat maps of the 28 active oil refineries in Texas were developed. Incidence of bladder cancer were compared according to proximity (<10 vs. ≥10 miles) to an oil refinery. Risk ratios (RR) were adjusted using a Poisson regression model.

Results

A total of 45,517 incident bladder cancer cases were identified, of which 5,501 cases were within 10 miles of an oil refinery. In adjusted analyses, bladder cancer risk was significantly greater among males vs. females (RR 3.41, 95% Confidence Interval (CI), 3.33-3.50), and greater among people living within 10 miles from an oil refinery than those living outside a 10-mile radius from an oil refinery (RR 1.19, 95% CI, 1.08-1.31). A heat map demonstrates the locations of oil refineries and the varying incidences of bladder cancer at Texas ZIP codes (Figure 1).

Conclusion

People living within 10 miles from oil refineries were at greater risk for bladder cancer. Further research into exposure to oil refineries and bladder cancer incidence is warranted.

Presentation #35

RESTRICTIVE FLUID RESUSCITATION IN DIEP FLAP BREAST RECONSTRUCTION IS ASSOCIATED WITH IMPROVED FLAP PERFUSION

Efstathios Karamanos, MD; Rachael Walker, MS; Howard Wang, MD; Amita Shah, MD, PhD
University of Texas Medical Center - San Antonio

Background

Aggressive fluid resuscitation during the peri – operative period has been associated higher incidence of complications and pancreatic leaks following pancreaticoduodenectomy. Aggressive fluid resuscitation may result in interstitial edema and venous congestion contributing to the leaks. In DIEP flap breast reconstructions same process could impede perfusion of free flaps and lead to higher incidence of wound complications.

Objective

We hypothesize that a restrictive fluid resuscitation strategy is associated with improved flap perfusion and lower incidence of wound complications in DIEP flap breast reconstruction.

Methods

Patients undergoing DIEP flap breast reconstruction at an academic institution from 2015 – 2018 were retrospectively reviewed. The study population was divided based on their fluid resuscitation strategy. Aggressive fluid resuscitation (AFR) was defined as ≥ 6 ml/kg/h while restrictive fluid resuscitation (RFR) was defined as < 6 ml/kg/h. Patients' characteristics known to be associated with wound healing complications (diabetes, smoking, BMI) were extracted from the database. Operative times, amount of intra - operative fluids, type of fluids given and urine output were included in the study. Mean visible light spectroscopy tissue oximetry (T-Stat) readings of the first 24 hours were recorded. Primary outcome was development of any wound complication. Secondary outcomes were mean T-Stat readings within the first 24 hours, length of stay and development of acute kidney injury.

Results

A total of 44 patients were identified. The mean age was 52, while the mean BMI was 38. A total of 17 patients underwent aggressive fluid resuscitation. The two groups did not differ in the incidence of diabetes, smoking or neo – adjuvant chemotherapy. The majority of the flaps were done in a delayed fashion (70%), while 10% underwent immediate reconstruction after prophylactic mastectomy. The mean fluid received for the RFR group was 3.8 ml/kg/h versus 8.7 ml/kg/h for the AFR group ($p < 0.001$). AFR resulted in a significantly higher incidence of wound complications (39% versus 19%, $p < 0.001$). The mean t – stat readings within 24 hours were significantly lower for the AFR group (48% versus 59%, $p < 0.001$). Urine output intra - operatively and within the first 24 hours did not differ significantly between the AFR and RFR groups (1,080 ml versus 960 ml, $p = 0.644$ and 2,050 ml versus 2,210 ml, $p = 0.880$). Length of stay was longer for the AFR group but not significantly so (9.3 days versus 6.6 days, $p = 0.092$). Patients within the AFR group received a significantly higher amount of albumin (500 ml versus 125 ml, $p < 0.001$). Estimated blood loss was similar between the two groups (200 ml versus 176 ml, $p = 0.326$). None of the patients developed acute kidney injury in the post- operative period.

Conclusion

Restrictive fluid resuscitation in DIEP flap breast reconstruction is associated with increased flap perfusion as documented by the T-Stat readings and lower incidence of wound related complications than aggressive fluid resuscitation. Limited fluid resuscitation should be considered whenever possible. Further research is warranted.

Presentation #36

CORRELATION BETWEEN RESPONSE AND HLA TYPE IN A RANDOMIZED PHASE IIB TRIAL OF NEUVAX+ TRASTUZUMAB IN HER2 LOW-EXPRESSING BREAST CANCER PATIENTS TO PREVENT RECURRENCE

A Hickerson, G Clifton, T Brown, J Myers, J Cindass, K Peace, J Litton, R Murthy, T Vreeland, D Hale, G Herbert, J Lukas, N Sarlis, J Holmes, E Mittendorf, G Peoples

Background

MHC class I peptide vaccines are HLA-restricted but may bind to multiple HLA-types. HLA types have been associated with response to multiple immunotherapies to include checkpoint inhibitors. The relationships between HLA-type, predicted peptide binding potential, and clinical response have implications for the design and development of active immunotherapy. We are currently conducting a randomized phase IIB trial of the MHC class I peptide, E75 (HER2 369-377) + GM-CSF (NeuVax) + trastuzumab versus GM-CSF + trastuzumab to prevent recurrences in node positive and/or ER-/PR- negative, HER2 low-expressing breast cancer patients. In a planned interim analysis, we demonstrated a significant disease-free survival benefit specifically in triple negative breast cancer patients to NeuVax + trastuzumab.

Objective

The objective of this analysis is to determine the effect of HLA-type on trial outcomes.

Methods

Clinically disease-free, HER2 low-expressing (IHC1+/2+, FISH nonamplified), node positive (AJCC N1, N2, or N3) and/or triple negative breast cancer patients after standard therapy were tested for the presence of the A2, A3, A24, and A26 alleles by flow cytometry. HLA-A2, A3, A24, and/or A26+ patients were randomized to receive trastuzumab + NeuVax (vaccine group) or trastuzumab + GM-CSF (control group). All patients received one year of trastuzumab per standard of care. NeuVax or GM-CSF was given every three weeks x 6 starting with the third trastuzumab dose, and then boosted every six months x 4. The pre-specified interim analysis was triggered six months after last patient enrollment. The primary endpoint was disease free survival evaluated by log rank. The MHC Class I binding predictions were made using the IEDB Analysis Resource Consensus tool.

Results

275 patients were randomized in the study (VG n=136, CG n=139). 146 were HLA-A2+ (71 in VG, 75 in CG), 133 HLA-A24+ (71 in VG, 61 in CG), 88 HLA-A3+ (VG=44, CG=44), and 19 HLA-A26+ (VG=10, CG=9). Median follow up was 18.8 months. There were no significant clinicopathologic difference between the vaccine group and control group as a whole or within HLA-allele subgroups, except that fewer HLA-A24+ vaccine group patients received radiation therapy (p=0.02). In triple negative patients, active treatment benefited all HLA-types, especially HLA-A24+ patients (p=0.003). HLA-A24+ VG patients also showed a trend toward improved disease free survival study-wide (p=0.07). HLA-A24+ has the lowest predicted binding affinity of the four HLA alleles.

Conclusion

HLA-A24+ triple negative breast cancer patients had a significant improvement in disease free survival despite the lowest predicted binding potential between E75 and this HLA-

type. This suggests that lower-affinity peptides may generate a favorable immunologic response possibly due to decreased exposure and tolerance to these epitopes.

Presentation #37

POPULATION-BASED OUTCOMES COMPARING RADICAL CYSTECTOMY WITH TRIMODAL THERAPY FOR PATIENTS DIAGNOSED WITH LOCALIZED MUSCLE-INVASIVE BLADDER CANCER

M Ray-Zack, Y Shan, P Kerr, C Kosarek, H Hudgins, U Jazzar, S Kaul, A Kamat, D Tyler, T Swanson, H Mehta, S Williams
University of Texas Medical Branch - Galveston

Background

Treatment guidelines for muscle-invasive bladder cancer recommend radical cystectomy (RC). However, use of trimodal therapy (TMT) has increased in recent years with conflicting survival outcomes.

Objective

The aim of this study was to compare RC and TMT in terms of survival outcomes and cost of treatment.

Methods

Patients aged 66 years or older diagnosed with clinical stage T2-4a bladder cancer from January 1, 2002- December 31, 2011 were included from the Surveillance, Epidemiology, and End Results (SEER)-Medicare database. Outcomes included cancer-specific survival, overall survival, and 6-month costs. Cox proportional hazards regression, propensity score matching (PSM) and inverse probability of treatment weighting (IPTW) were used to control for baseline differences between patients undergoing RC vs. TMT, and to determine predictors for overall and cancer-specific survival.

Results

A total of 2,963 patients were included: 728 (24.6%) who underwent TMT were compared to 2,235 (75.4%) who underwent RC. In all adjusted analyses (Table 1), patients who underwent TMT had significantly decreased cancer-specific survival (Cox regression: Hazard Ratio (HR) 1.51, 95% Confidence Interval (CI) 1.40-1.63; PSM: HR 1.55, 95% CI 1.32-1.83; IPTW: HR 1.51, 95% CI 1.40-1.63) and overall survival (Cox regression: HR 1.54, 95% CI 1.39-1.71; PSM: HR 1.49, 95% CI 1.31-1.69; IPTW: HR 1.54, 95% CI 1.39-1.71). However, median total costs over six months period were significantly higher with TMT than RC (\$171,401 vs. \$99,890, $p < 0.001$).

Conclusion

TMT therapy was associated with decreased cancer-specific and overall survival at increased costs compared to RC. In the absence of data from randomized controlled trials, this observational study provides further evidence to suggest the superiority of RC over TMT in patients with muscle-invasive bladder cancer.

Presentation #38

IMPLEMENTATION OF STANDARDIZED SURGICAL PROTOCOL IMPROVES SHORT-TERM OUTCOMES AND COST IN COLORECTAL ROBOTIC SURGERY

O Nunez Lopez, K Hancock, L Rashidi
University of Texas Medical Branch - Galveston

Background

Robotic surgery leads to comparable or improved clinical outcomes in colorectal surgery. However, the adoption of this technology has been limited by concerns in terms of resource utilization. We sought to evaluate the impact of the implementation of a standardized surgical protocol (SSP) on outcomes in a single institution.

Objective

We sought to evaluate the impact of the implementation of a standardized surgical protocol (SSP) on short-term clinical outcomes and costs in a single institution.

Methods

Subjects who underwent robotic colorectal surgery from January 2013 to January 2018 were included. Robotic colorectal surgery was first performed in our institution in 2010, and the early years were excluded due to learning curve concerns. Clinical and cost data were extracted. Subjects were classified in two groups (prior to and after protocol implementation). The SSP consisted of a dedicated OR team, breakdown of sequential operative steps, and participation of two surgeons during the operation when warranted. Short term clinical outcomes and cost were analyzed.

Results

We identified 98 cases, 27 prior to and 71 after protocol implementation. Demographic characteristics were similar between groups (Table 1). Diverticulitis cases were more common (37 vs Short-term 4%, p

Conclusion

The implementation of a SSP leads to better clinical outcomes and optimizes healthcare resource utilization in robotic colorectal surgery. This program could be applied more widely to validate these findings.

Presentation #39

PREOPERATIVE FRAILTY CORRELATES WITH SURGICAL OUTCOMES ACROSS DIVERSE SURGICAL SUBSPECIALTIES IN A LARGE HEALTHCARE SYSTEM

M Mrdutt, H Papaconstantinou, B Robinson, E Bird, C Isbell
Texas A&M Scott and White

Background

Frailty is an emerging risk factor for surgical outcomes, however its application across large populations is not well-defined. We hypothesize frailty impacts postoperative outcomes in a large healthcare system.

Objective

Frailty was prospectively measured in elective surgery patients (1/2016-6/2017) in a healthcare system (4 hospitals/901 beds). Frailty classifications—low (0), intermediate (1-2), high (3-5)—was assigned based on the modified Hopkins score. Operations were classified as inpatient versus outpatient. Outcomes measured (30 day) included major morbidity, discharge location, Emergency Department (ED) visit, readmission, length of stay, mortality and direct-cost/patient.

Methods

Frailty was prospectively measured in elective surgery patients (1/2016-6/2017) in a healthcare system (4 hospitals/901 beds). Frailty classifications—low (0), intermediate (1-2), high (3-5)—was assigned based on the modified Hopkins score. Operations were classified as inpatient versus outpatient. Outcomes measured (30 day) included major morbidity, discharge location, Emergency Department (ED) visit, readmission, length of stay, mortality and direct-cost/patient.

Results

14,530 patients (68.1% outpatient, 31.9% inpatient) were preoperatively assessed in elective surgical cases (cardiothoracic 4%, colorectal 4%, general 29%, oral maxillofacial 2%, otolaryngology 8%, plastic surgery 13%, podiatry 6%, surgical oncology 5%, transplant 3%, urology 24%, vascular 2%). High frailty was found in 3.4% of patients (5.3% inpatient, 2.5% outpatient). Incidence of major morbidity, readmission and mortality correlated with frailty classification in all patients, along with discharge to facility in inpatient cohort and ED visit in outpatient cohort (Figure, all $p < 0.05$). For the inpatient cohort, length of stay in days increased with frailty (low 1.6, intermediate 2.3, high 4.1; $p < 0.0001$). Frailty was also associated with increased direct-cost in the inpatient cohort (low-\$7045; intermediate-\$7995; high-\$8599; $p < 0.05$).

Conclusion

Frailty impacts morbidity, mortality and healthcare resource utilization in both inpatient and outpatient operations. Additionally, inpatient cost increased with frailty. The broad applicability of frailty (across surgical specialties) represents an opportunity for risk stratification and patient optimization across a large healthcare system.

Presentation #40

IMPACT OF A DEDICATED TRAUMA HYBRID OPERATING ROOM ON SPLENIC INJURY MANAGEMENT AND SALVAGE RATES

M Wampler, E Scherer, M Muir, L Liao, R Stewart, D Jenkins, A Agarwal, J Walker, G Kroma, R Suri, J Lopera, S DeMoor, B Eastridge

University of Texas Medical Center - San Antonio

Background

Transcatheter arterial embolization facilitates minimally invasive control of solid visceral bleeding after injury. Appropriate selection of patients with blunt splenic injury is associated with success of non-operative management. Code Angio (CA) guidelines were established at our institution in 2014 and procedures are conducted in a hybrid operating suite, capable of converting to open operations when necessary. These guidelines have streamlined the process of coordinating surgical staff and interventional radiology personnel, but the result on patient outcomes of this process have not yet been analyzed.

Objective

The objective of this study was to determine the impact of a dedicated hybrid operating room on the process of splenic injury management and splenic salvage.

Methods

We conducted a retrospective analysis of adult trauma patients at a Level 1 Trauma Center with splenic injury between 01/01/11-4/13/14 before hybrid OR (PRE) and 04/14/14-12/31/17 after hybrid OR implementation (POST). Data collected included: demographics, vitals, laboratory values, angiography results and time, open surgical procedures, transfusions, organ injury grade, and mortality.

Results

Chart and trauma registry review demonstrated 924 patients with spleen injury (423 PRE and 501 POST). Of the population, 159 patients underwent emergent angiography (81 PRE and 78 POST). Median time from activation to endovascular intervention decreased from 118 minutes PRE to 42 minutes POST (P0.9 compared to the respective PRE groups values of 31/81 (38.2%) and 14/39 (35.9%). The post embolization splenic salvage rate grade (IV/V) injuries was not statistically different.

Conclusion

Access to a dedicated hybrid OR suite decreased the time to endovascular control of hemorrhage from 118 to 42 minutes allowing the potential to manage a more hemodynamically compromised splenic injury population nonoperatively. This study highlights the value of dedicated interventional radiology resources to extend the spectrum of non-operative management of solid organ injuries.

Presentation #41

A PROSPECTIVE PILOT TRIAL OF POSTOPERATIVE TELEMEDICINE VISITS TO A PATIENT'S HOME AFTER ROUTINE PEDIATRIC SURGICAL PROCEDURES

Celia D. Flores, Annalyn S. DeMello, Larry H. Hollier, Jr., Edward Reece, David E. Wesson, Charles D. Fraser, Jr., Jed G. Nuchtern, Sohail R. Shah
Texas Childrens

Background

Telemedicine is a general term that includes the use of various communication technologies to establish patient care. Postoperative visits are the 4th leading reason for office visits in the U.S., and account for 26,581,000 office visits annually. Outpatient clinic visits are clearly associated with significant out-of-pocket expenses for some families.

Objective

The primary objective of this study was to evaluate the feasibility of postoperative telemedicine visits to a patient's home after routine pediatric surgical procedures. We hypothesized that these postoperative visits could be successfully completed to a patient's home using real-time two-way audio/visual telemedicine technology while maintaining patient and provider satisfaction.

Methods

A prospective pilot trial from 2/15/17 – 11/15/17 was conducted where patients undergoing routine pediatric surgery were offered an option for postoperative follow-up via telemedicine to their home. The provider conducting the visit was randomized between the operating surgeon and a surgical physician assistant (PA). Following the telemedicine visit providers and patient guardians were asked to participate in satisfaction surveys. Patient characteristics, technical barriers, survey results, clinical outcomes, and clinic/emergency department (ED) utilization were collected and analyzed.

Results

After surgery 114 patient families were offered telemedicine postoperative follow-up to their home. Six families declined to consent. Of the remaining 108 families, 30 could not be contacted and 16 declined to schedule the telemedicine appointment. The remaining 62 families scheduled a telemedicine visit. Eight of these were "no shows", 6 had technical difficulties, and 48 were completed successfully. After telemedicine follow-up was completed one patient (2%) returned to clinic and two patients (4%) returned to the ED within 30 days. Providers and patient guardians expressed over 90% satisfaction with the telemedicine visit to the home. There was no significant difference based on the provider conducting the visit (surgeon vs. PA).

Conclusion

Postoperative telemedicine visits to a patient's home is an alternative option for follow-up after routine pediatric surgery. This pilot trial demonstrates a novel alternative for greater patient engagement that may further enhance patient experience.

Presentation #42

OUTCOMES OF AND RISK FACTORS FOR TRACHEOSTOMY IN PATIENTS WITH CONGENITAL DIAPHRAGMATIC HERNIA

Candace C. Style MD, Mariatu A. Verla MD, Timothy C. Lee, MD, Sarah Fallon, MD, Hamsini Srirani, MS, Caraciolo J. Fernandes MD, Sundeep G. Keswani, MD, Adam E. Vogel, MD, Oluyinka O. Olutoye MD PhD
Baylor College of Medicine

Background

Numerous advances in pre- and postnatal management of critically-ill CDH patients have improved long term survival and outcomes, but a small percentage of patients continue to require tracheostomy.

Objective

The purpose of this study was to define the characteristics and associated risk factors for tracheostomy in the CDH population.

Methods

We performed an IRB approved (H-26176) retrospective review of all infants evaluated for CDH at a single tertiary institution from March 2004 to April 2018. Data analyzed included maternal and fetal demographics, prenatal imaging data, and postnatal clinical outcomes. Primary outcomes assessed were indication for and duration of t

Results

Of 273 CDH patients treated, 10% (n=26) underwent a tracheostomy prior to 2 years of life (median age of 4 [3 – 8], months). Of these 26 patients, 65% (n=17) had a left-sided CDH and 76% (19) were male. Indications for tracheostomy were persistent pulmonary hypertension in the setting of severe pulmonary hypoplasia (31%, n=8), tracheomalacia (27%, n=7), bronchopulmonary dysplasia (27%, n=7), upper airway obstruction/structural defect (11%, n=3), and vocal cord paralysis (4%, n=1). Only two patients underwent tracheostomy after discharge from their initial inpatient hospitalization; both were eventual recipients of lung transplants. Prenatally, although lungs volumes were similar to the non-tracheostomy cohort, percent liver herniation was significantly higher in the tracheostomy group (27% ± 18, p<0.01). Additionally, 79% (p=0.009) had an associated structural, genetic, and/or cardiac anomaly, which was a strong risk factor for tracheostomy (OR 4.991, CI: 1.25 – 20.3) in this cohort. At birth, prematurity and low birthweight also significantly correlated to need for tracheostomy (p<0.05, table 1). Incidence of ECMO was similar to the non-tracheostomy cohort (39% vs 31%, p=0.44) as was the overall survival (62% vs 74%, p=0.171). Non-survivors with a tracheostomy were, however, significantly older at time of death. Of the surviving tracheostomy patients (n=16), median length of hospital stay was prolonged 259 [187, 299] days (p<0.05) with a median time from tracheostomy to discharge of 98 [78, 172] days. Length of outpatient follow-up was 3 [0.5 – 9] years during which time 38% of survivors were decannulated at a median of 2.3 (28 days to 3.5) years after tracheostomy.

Conclusion

CDH patients born prematurely and/or those with associated anomalies are at increased risk for tracheostomy. This is associated with prolonged hospitalization and median tracheostomy time of 2.3 years..... These results may be useful for perinatal counseling.

Presentation #43

PEDIATRIC INTESTINAL FAILURE AND THE ACHIEVEMENT OF ENTERAL AUTONOMY: IDENTIFYING PREDICTORS

G Yan, KT Anderson, JK Chica, DM Ferguson, GE Hatton, JC Chapman, A Kawaguchi, EM Imseis, AL Speer
University of Texas HSC - Houston

Background

Although achievement of enteral autonomy (EA) after pediatric intestinal failure (IF) is known to improve survival, the reported rates of and contributing factors to EA are highly variable in the literature.

Objective

The aim of our study was to determine the incidence and predictors of EA in pediatric IF patients treated in a tertiary referral intestinal rehabilitation program.

Methods

We conducted a single-center retrospective cohort study of pediatric (<18 years) IF patients (2013-2018). IF was defined as either a bowel resection or gastrointestinal motility disorder diagnosed at <1 year old requiring parenteral nutrition (PN) for ≥ 60 of 74 consecutive days. EA was defined as discontinuation of PN for >3 consecutive months with maintenance of growth variables. Demographics, clinical characteristics, and operative details were collected. Descriptive statistics, Wilcoxon-rank sum, chi², and multiple logistic regression were used for analysis.

Results

Forty-one patients met inclusion criteria. The majority were male (56%), other race (51%), non-Hispanic (58%), and Medicaid funded (85%). Median age at study inclusion was 85 days (IQR 76-102). Median gestational age was 30 weeks (IQR 25-34) and birth weight was 1170 grams (IQR 725-2140). The most common cause of IF was necrotizing enterocolitis (63%). EA was achieved in 27 patients (66%) at a median of 123 days (IQR 101-184). Of the 14 (34%) that did not achieve EA, 8 (20%) remained PN dependent, 4 (10%) died, and 2 (5%) weaned off PN but did not meet EA criteria. No patient underwent intestinal transplant (Figure). The median follow-up was 20 months (IQR 11-30). On univariate analysis, EA was associated with a preserved ileocecal valve (ICV) (85 vs 36%, $p=0.001$), longer residual small bowel length (SBL) (60 vs 33 cm, $p=0.01$), and higher percent expected SBL (42 vs 17%, $p=0.01$). Additionally, these potentially contributing variables were identified on univariate analysis and used in our multiple logistic regression model: lower direct bilirubin (2.6 vs 3.9, $p=0.14$), lower aspartate aminotransferase to platelet ratio index (1.0 vs 1.7, $p=0.08$), decreased cholestasis (59 vs 86%, $p=0.08$) and increased restoration of intestinal continuity (71 vs 70%, $p=0.14$). Residual SBL was omitted on multiple logistic regression analysis, due to incomplete data ($n=21$). Only a preserved ICV predicted achievement of EA (OR 5.65, CI 1.06-30.21).

Conclusion

An EA rate of 66% was comparable to prior studies and was best predicted by ICV preservation. Efforts to preserve the ICV and SBL are paramount to the achievement of EA and, ultimately, to the survival of this vulnerable patient population.

Presentation #44

DIRECT INPATIENT ADMISSION OF CHILDREN WITH OUTSIDE INSTITUTION CT SCANS DIAGNOSTIC OF APPENDICITIS IS SAFE AND FEASIBLE

Celia D. Flores, Binita Patel, Jennifer Bee, Julie McManemy, Deborah D'Ambrosio, Mona McPherson, Michelle Lyn, Sohail R. Shah
Texas Childrens

Background

Prior studies at our own institution and others have shown that 35 – 50% of appendicitis patients seen at tertiary-care children's hospitals are diagnosed at an outside hospital (OSH) by computed tomography (CT) scan. With the high sensitivity and specificity of CT for diagnosing appendicitis in children we recently initiated a workflow for direct inpatient admission of these patients to prevent a second emergency department (ED) evaluation.

Objective

The primary objective of this study was to conduct an early evaluation of the feasibility and outcomes of our direct admission process for appendicitis.

Methods

A prospective pilot trial of the direct admission process was conducted from 05/13/18 – 08/15/18 at a tertiary-care children's hospital. Criteria for direct admission included patients that were \geq four years-old, stable for acute care admission, and had an OSH CT demonstrating appendicitis. Transfer center calls were handled by an ED physician that accepted eligible patients as a direct admission to the surgical service. The transfer center then set up the admission and handled notifications. Upon arrival, vital signs were collected in ED triage and patients stable for acute care admission were directly admitted to the inpatient floor under the surgical service. Patient characteristics, clinical outcomes, delays in care, escalation of care, and pathway compliance were collected and analyzed.

Results

During the study period there were 53 patients transferred from an OSH for suspected appendicitis and 33 (62%) of them had a CT demonstrating appendicitis. There were 27 (51%) patients that underwent direct admission [25 with CT and 2 with magnetic resonance imaging (MRI) that demonstrated appendicitis]. Of note, MRI was not included as part of our initial algorithm. Of the 25 admitted with a CT, 24 (96%) underwent an appendectomy and one patient was discharged upon further evaluation. Both patients admitted with an MRI underwent appendectomies. Acute appendicitis was confirmed by pathology on all patients who had an appendectomy. None of these patients required escalation in care and no significant delays were identified during their hospital course. Of the 26 patients that did not undergo direct admission, there were 8 patients that had an OSH CT demonstrating appendicitis. One patient was appropriately held for resuscitation based on unstable vital signs in ED triage. This patient ultimately underwent an appendectomy, where appendicitis was confirmed by pathology. The remaining 7 patients were deviations from our new workflow and would have been eligible for direct admission. All seven of these patients eventually underwent appendectomies and had confirmed appendicitis on pathology.

Conclusion

Our data demonstrate that direct inpatient admission of children diagnosed with appendicitis by an outside institution CT is safe and feasible at a tertiary-care children's hospital. Next steps include increasing compliance with our direct admission workflow for eligible patients, and considering the inclusion of outside institution MRIs diagnostic of appendicitis.

