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Poster #1

PRESERVATION OF CARDIAC FUNCTION AFTER SEVERE BURN VIA INHIBITION OF MITOCHONDRIAL OXIDATIVE STRESS PATHWAYS

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Background

Cardiac dysfunction after major burn injury is a well-documented contributor to mortality in burn patients. Recent evidence has suggested that mitochondrial oxidative stress plays a prominent role in the development of cardiac dysfunction. Inhibition of phosphodiesterase 5 (PDE-5), poly (ADP-ribose) polymerase -1 (PARP-1), and superoxide dismutase (SOD) pathways have all been shown to provide protective effects against mitochondrial oxidative stress.

Objective

In the present study, we hypothesized that inhibition of the PDE-5, PARP-1, and SOD pathways would result in preservation of cardiac function after severe burn.

Methods

Male Sprague Dawley rats underwent sham procedure or 60% total body surface area full-thickness burn. Animals were assigned to either control or therapeutic arms. After burn, control animals received standard resuscitation, while the therapeutic animals received standard resuscitation and therapeutic intervention. Therapeutic interventions included sildenafil, PJ34, and mitoTEMPO. Echocardiograms were performed at 3, 6, and 24 hours after burn. Analysis was performed using VEVO2100 software and GraphPad Prism.

Results

Significant inhibition of cardiac function was seen at 3 hours post-burn. Cardiac output (CO), stroke volume (SV), ejection fraction (EF), and fractional shortening (FS) were all significantly depressed at 3 hours after burn ($P < 0.05$). CO and SV returned to near normal function by 24 hours, while FS and EF remained significantly depressed at 24 hours post-burn ($P < 0.05$). Additionally, left ventricular systolic volume was significantly increased and left ventricular posterior wall thickness was significantly decreased ($P < 0.05$). Treatment with sildenafil resulted in significant improvement in all parameters at 3 hours after burn injury, preserving heart function ($P < 0.05$). Treatment with sildenafil after burn lead to significant improvement in EF, left ventricular systolic volume, FS, and left ventricular posterior wall thickness at 24 hours after burn injury ($P < 0.05$). PARP-1 inhibitor PJ34 and SOD inhibitor mitoTEMPO produced similar results, also preserving heart function up to 24 hours after burn injury.

Conclusion

Inhibition of the PDE-5, SOD, and PARP-1 mitochondrial oxidative stress pathways preserves cardiac function after severe burn injury.

Poster #2

A SAFER PLACEMENT TECHNIQUE FOR PERCUTANEOUS DILATATIONAL TRACHEOSTOMY

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Background

Percutaneous dilatational tracheostomy is a commonly performed procedure in critically ill patients. Traditional descriptions of the procedure involve the positioning of the endotracheal tube (ETT) in the proximal trachea during initial tracheal needle cannulation, which can potentially result in accidental extubation and airway loss. To mitigate this risk, the self-described Advanced Endotracheal tube method involves the advancement of the ETT distally, to the carina, with needle cannulation occurring without direct visualization.

Objective

The purpose of this study was to describe the Advanced Endotracheal tube method in full and review its safety and efficacy in our experience.

Methods

A retrospective chart review of all patients who underwent a percutaneous dilatational tracheostomy using the Advanced Endotracheal tube method from August 2014 to August 2018 was performed. These procedures were all performed by a single surgical intensivist at our university hospital and sister community hospital, within the same network. Immediate (airway loss, pneumothorax, hemorrhage, cannula misplacement, subcutaneous emphysema, cardiopulmonary arrest, mortality), maintenance-related (cannula displacement, delayed bleeding, infection), and post-decannulation (tracheal stenosis, tracheomalacia, delayed closure) complication rates are reported.

Results

A total of 63 patients (71% male) underwent percutaneous dilatational tracheostomy placement using the Advanced Endotracheal tube method. 53 (84%) of these procedures were done in trauma patients, 10 (16%) in non-trauma. No loss of airway or other airway emergencies occurred. The incidence of other immediate complications was: 1 hemorrhage (1.6%) requiring ligation of external jugular vein, 1 subcutaneous emphysema (1.6%) which did not require intervention. The incidence of maintenance-related complications was: 2 cannula displacement (3.2%), 1 site infection (1.6%), 1 delayed hemorrhage (1.6%) requiring bedside hemostatic packing. Following decannulation, 3 patients developed known tracheal stenosis (4.8%), with one patient requiring surgical correction.

Conclusion

The Advanced Endotracheal tube method is a simple variation in technique that can potentially negate the risk of accidental extubation during percutaneous dilatational tracheostomy. Using this technique, no patients suffered from accidental extubation or an airway emergency, while other complications occurred at rates comparable to those published in traditional studies. The Advanced Endotracheal tube method is at least as safe as other percutaneous dilatational tracheostomy techniques.

Poster #3

THE INCIDENCE, RISK FACTORS, AND OUTCOMES OF ATRIAL FIBRILLATION AND ITS TREATMENT IN THE SURGICAL INTENSIVE CARE UNIT

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Background

Atrial fibrillation (AF) is an atrial arrhythmia that can lead to a rapid ventricular response, hypotension, and even death. The incidence, risk factors, and outcomes for AF in the adult trauma patient are not well known. Moreover, there is little to no evidence to suggest which treatment for AF may be most effective.

Objective

We would like to focus on the incidence, risk factors, and outcomes for new onset AF in the adult trauma patient admitted to the surgical intensive care unit. Moreover, we would like to compare treatment options to determine which, if any, is superior.

Methods

We performed a retrospective study (2010-2017) of all adult trauma patients admitted to our Surgical ICU at an urban, academic level I trauma center. Patients with and without AF were compared using univariate and multivariate analysis. Treatment for AF included diltiazem, beta blockers, and amiodarone.

Results

There were 4,214 trauma patients admitted to our trauma center, 73 (2%) of whom developed AF after admission to the hospital. Patients with AF were older, more often male and Caucasian, and more often sustained blunt trauma. Independent risk factors to develop AF included older age (odds ratio=1.1, $p<0.0001$), male gender (odds ratio=2.7, $p=0.001$), and higher GCS (odds ratio=1.1, $p=0.04$). The most common initial treatment for AF included diltiazem (70%, $n=51$), beta blockers (15%, $n=11$), and amiodarone (15%, $n=11$). As an initial single agent, diltiazem was more effective (29%) for rate and rhythm control than beta blockers (9%) and amiodarone (0%), $p=0.02$.

Conclusion

AF occurs in 2% of adult trauma patients admitted to the Surgical ICU. Independent risk factors to develop AF included age, male gender, and GCS. Diltiazem may be the most effective initial treatment for rate and rhythm control of AF in this population.

Poster #4

VALIDATING THRESHOLD VALUES FOR THE DASHBOARD VIEW OF THE COMPENSATORY RESERVE MEASUREMENT

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Background

The Compensatory Reserve Measurement (CRM) assesses human physiologic reserve utilizing novel continuous noninvasive monitoring technology with feature extraction of real time continuous arterial pulse waveforms. The CRM ranges from values of 0-100%, with 100% corresponding to those patients with maximum capacity to compensate for their injuries and 0% corresponding to those patients at risk of imminent decompensation. In previous publications, the threshold values of 30% and 60% had been used to divide the patients into “abnormal CRM” (<60%) and “severe decompensation” (<30%) based on tertiles. However, these threshold values have yet to be statistically verified.

Objective

Our objective was to validate the previously arbitrarily selected CRM threshold values of 30% and 60% associated with a simplified dashboard view available to care providers.

Methods

We performed a prospective observational study of 300 injured patients admitted to a Level I trauma center. CRM was recorded continuously after placement of the device on the patient upon admission. Data collected to complement the analysis included: patient demographics, field and trauma resuscitation unit vital signs, therapeutic interventions and outcomes. Data were analyzed to assess the threshold values of CRM associated with increased predictive capacity for injury severity, life-saving intervention (LSI) and hospital outcomes.

Results

The study cohort consisted of 285 patients with CRM data available for analysis. The mean age of the population was 46 years and 67% were male. The majority (88%) of injuries were blunt with an average ISS of 9. On admission, 34% of patients had CRM values <60% and 7% had CRM values <30%. Statistical analyses were performed assessing CRM values. A threshold value of 33% was noted to be associated with hemorrhage ($p<0.0001$). A second threshold of 59.52% was noted to be associated with need for LSI ($p<0.0002$).

Conclusion

The CRM has demonstrated significant potential to provide valuable decision support information to prehospital providers and therefore the potential to substantially improve injury outcomes. Based on statistical analysis, the clinical thresholds of 30% and 60% were determined to be valid cut-points. These data validate easily interpretable threshold dashboard values to aid decision support for triage and resuscitation.

Poster #5

A DESCRIPTIVE ANALYSIS OF MOTORIZED WATERCRAFT INJURIES

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Background

Injuries related to motorized watercraft can be devastating. Even so, very little has been written regarding their epidemiology. To our knowledge this is the first paper to describe the demographics and epidemiology of this injury pattern.

Objective

The specific aim of this study was to better understand the patterns and outcomes of motorized watercraft injuries.

Methods

We performed a retrospective study of the 2015 National Trauma Data Bank using ICD-9 codes to identify patients who were injured as a result of motorized watercraft. Patients were subdivided into motorized watercraft occupants (MWO) and non-occupants (MWNO). Variables included patient demographics, injuries, abbreviated injury scores (AIS), injury severity score (ISS), and operations performed. We performed a propensity matched comparison of MWO with motor vehicle collision (MVC) and MWNO with auto versus pedestrian (AVP). The primary outcome was mortality.

Results

There were 1364 motorized watercraft injuries. Patients were 43 years old, 65% male, and 88% Caucasian, with an ISS=10. Injuries included TBI (9%), chest (23%), abdominal (11%), spinal cord (3%), and fractures including spine (22%), , pelvic (7%), upper extremity (13%), and lower extremity (21%). The most common procedures were orthopedic (32%), laparotomy (3%), craniotomy (1%), and thoracotomy (0.15%). Mortality was 1.5%.

Comparing MWO (76%) to MWNO (24%), MWO were older (44 vs. 38, $p=0.003$) to the spine (7% vs 1%, $p=0.002$) and lower extremity (20% vs 13%, $p=0.04$). They also required more orthopedic procedures (38% vs 31%, $p=0.04$). AVP patients sustained more TBI (17% vs 7%, $p=0.0008$) more upper extremity fractures (23% vs. 6%, $p=0.0001$), and more chest injuries (25% vs 13%, $p=0.001$). They also had more severe injuries to the head (18% vs 7%, $p=0.0001$) and chest (21% vs 12%, $p=0.007$). There was no difference in mortality.

Conclusion

Injuries related to motorized watercraft use occur most commonly in middle aged white men. Injury patterns are diverse, can include any body cavity and differ based on the location of the individual as an occupant or non-occupant of the watercraft. When compared to motorized vehicle collisions and auto versus pedestrian collisions, individuals injured by a motorized watercraft tend to be less severely injured but more often sustain life changing injuries such as amputations and spinal cord injuries.

Poster #6

PLATELET DYSFUNCTION IN PEDIATRIC TRAUMA; DOES PLATELET FUNCTION ASSESSMENT LEAD TO CHANGE IN MANAGEMENT?

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Background

Assessing the need to transfuse blood products is of utmost importance in a trauma patient. Of the possible blood products to administer to hemorrhaging patients, platelets are of particular interest due to the ongoing uncertainty regarding the utility of platelet transfusion in correcting platelet dysfunction following trauma. While the mechanism remains unclear, numerous studies have documented platelet dysfunction in trauma patients. To add to the uncertainty, there have been no published studies regarding the utility of platelet function studies in pediatric patients who have suffered a traumatic brain injury (TBI).

Objective

To ascertain the degree of platelet dysfunction in pediatric trauma patients and utility of platelet dysfunction studies in guiding platelet transfusions in such patients.

Methods

Retrospective chart review from the Pediatric Trauma Registry at University Medical Center of El Paso from 01/01/2012 to 12/31/2015. Patients were divided into groups depending on whether platelet function analysis was performed or not. Platelet function was assessed using the Plateletworks® system.

Results

We had a total of 200 patients analyzed, 31 of which received platelet function studies. All these patients sustained blunt trauma. Among the patients that had platelet function analysis, 3 had normal function, 8 had more than 3 abnormal functional values (Figure 1). Among the 31 patients, only one patient received a platelet transfusion, he had 5 out of 6 abnormal platelet function values, and the patient received plasma in addition to platelets. There were 35% females in the platelet function group and 39% females in the no platelet function group. The mean age was 9.6 years in the platelet function group and 7.3 years in the no platelet function group. Mortality was 6.4% in the platelet function group and 2.5% in the no platelet function group. 2 of the patients in the platelet function group had complications of deep vein thrombosis and acute respiratory distress syndrome. Length of PICU stay was 3.4 days and length of hospital stay was 6.4 days in the platelet function group. Length of PICU stay was 2.5 days and length of hospital stay was 3.5 days in the no platelet function group.

Conclusion

To date, no evidence or consensus exists for or against the practice of transfusion of blood products in the pediatric population based on platelet function results. As with transfusing

other blood products, transfusing platelets has inherent risks, including allergic and anaphylactic reactions, Transfusion-Related Acute Lung Injury (TRALI), Transfusion-Associated Circulatory Overload (TACO), alloimmunization, post-transfusion purpura, and infection. In fact, the risk of infection is even higher with platelet transfusion when compared to other blood products owing to the fact that they are stored at room temperature.

Our results indicate that the patients who undergo platelet function analysis usually are patients with a higher injury severity score. The length of PICU and overall hospital stay is longer for the patients that had platelet function analysis performed.

Analysis of the patients undergoing platelet function tests also revealed that 90% of patients had some abnormality on the platelet function tests. This percentage is dramatically higher than the corresponding adult trauma literature which suggests 45-50% of patients present with any platelet function abnormality.

Poster #7

SYSTOLIC BLOOD PRESSURE (SBP) OUTWEIGHS HEART RATE IN THE UTILIZATION OF SHOCK INDEX AS A TRIAGE TOOL AND POTENTIAL NEED FOR LIFE SAVING INTERVENTIONS (LSI)

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Background

The literature suggests a shock Index (SI) of 0.9 or greater is associated with poor patient outcomes. As part of our larger study on whole blood administration in prehospital trauma patients we were tasked with determining transfusion triggers for patients that were significantly injured in South Texas.

Objective

Our objective was to analyze the effects of systolic blood pressure specifically on shock index and the likelihood of needing a life saving intervention (intubation, transfusion, thoracostomy, CPR, etc.).

Methods

We conducted a retrospective analysis of all trauma patients activated at the highest acuity level admitted to a level-one trauma center from January 2013 to December 2017. Prisoners, pregnant patients, and those with insufficient data to calculate SI, were excluded. Data collected included patient demographics, pre- and in-hospital vital signs, LSI, injury severity score (ISS), laboratory, hospital course and mortality.

Results

5,143 patients met our inclusion criteria. Demographics demonstrated the population was 82% adult and 70% male. Of the population, 1,757 (34.2%) required LSI, 1,434 had a SI > 0.9, and mean ISS was 11.5. 4,832 patients had a SBP > 90mmHg; median SI was 0.73 and mean ISS was 11. Only 32% of these patients required a LSI. 311 patients had a SBP <90mmHg; median SI was 1.23, mean ISS was 18. In this subset, 67% required LSI.

Conclusion

SBP plays a much greater role in the significance of SI and overall severity of injured patients. Those with SBP 90 and were more than twice as likely to require a LSI. SI > 0.9 with SBP < 90 is a potent triage tool for management of injured patients.

Poster #8

THE EFFECTS OF ALCOHOL AND ILLEGAL DRUGS ON OUTCOMES IN TRAUMATIC BRAIN INJURY PATIENTS

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Background

The sedating effects of alcohol and mind-altering effects of illegal drugs can greatly influence initial assessments of patients suffering from traumatic brain injuries (TBIs). Those severely under the influence of alcohol or drugs tend to be given artificially-lowered GCS scores which can potentially affect management.

Objective

The purpose of this study was to examine the effects of alcohol and illegal drugs on outcomes in patients with moderate and severe TBI.

Methods

Retrospective analysis of our institutional trauma registry from 2010-2017 was performed. Adults with moderate-to-severe TBI (GCS < 13), Head AIS ≥2, and serum alcohol and urine drug toxicology results were included. Alcohol Negative (BAC = 0) and Alcohol Positive (BAC > 0) groups were compared with univariate regression. Groups were sub-divided into Illegal Drug Negative/Positive (amphetamines, barbiturates, cannabis, cocaine, phencyclidine) sub-groups and compared. The primary outcome was mortality. Secondary outcomes were ICU and hospital LOS.

Results

1061 patients were included in the analysis, with 777 (73%) being male. 564 (53%) patients comprised the Alcohol Negative group and 497 (47%) in the Alcohol Positive group. Compared to those with negative alcohol screens, patients in the Alcohol Positive group were younger (37 vs 43, $p < 0.001$) and more likely to be Caucasian (79% vs 68%, $p < 0.001$). Patients in the Alcohol Positive group had an overall lower mortality (20% vs 28%, $p = 0.03$). Hospital and ICU lengths of stay did not differ between those with negative or positive alcohol screens (15 days vs 15 days, $p = 0.40$; 7 days vs 6 days, $p = 0.31$, respectively).

In the sub-group analyses, patients in the Alcohol Negative group did not have a significant increase in mortality if the illegal drug screen was positive (26% vs 29%, $p=0.59$). Similarly, patients in the Alcohol Positive group did not have an increase in mortality if the illegal drug screen was also positive (19% vs 21%, $p=0.47$).

Conclusion

Patients with TBI and positive alcohol screens have lower rates of mortality than those who screen negative for alcohol. In contrast, the presence of drugs on a urine toxicology

screen is not associated with any difference in mortality. Traumatic brain injury patients with either positive alcohol or positive illegal drug screens should not be managed any differently than those with negative screens and should not be expected to have any worse outcomes.

Poster #9

MAXILLOFACIAL TRAUMA IN HOUSTON: A FIVE-YEAR REVIEW OF 3,158 CASES WITH 25,047 INJURIES

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Background

Houston is one of the leading cities in the world in the treatment of trauma patients. Boasting three level 1 trauma centers, there are thousands of patients treated for traumatic injury every year. With trauma being the leading cause of death among people aged 1-45, it is vital to examine its constantly evolving etiology.

Objective

As the use of detailed electronic patient records increases, we sought to examine trends in the patient population seen at the level 1 trauma center at Memorial Herman Hospital (MHH). Our goal was to compare the statistics of trauma patients treated in Houston to the national trends to see where they differed.

Methods

Patient data was collected from the Trauma Registry at MHH in Houston, Texas. 3,158 patients were included in the study, were seen and treated over the past five years spanning from January 1, 2013 to January 1, 2018. All patients included in the study sustained an injury or injuries to the face greater than or equivalent to an Anatomical Injury Score (AIS) of 2. Specific variables were assigned and extracted from their Electronic Health Records (EHRs) and analyzed using Fischer exact test, Mann-Whitney's U test, and chi squared tests. All analyses were performed using R statistical software (R Core Team 2017).

Results

Many key statistics were found at the MHH Trauma Center that differed from national averages. Traffic accidents were the number one cause of injury (41.4%) followed closely by falls (24.2%) which have been on the rise over the past five years. Our gender distribution of 3:1 males:females was strikingly different from the national average of 1.5:1. 34.0% of the trauma patients treated at MHH had ETOH levels above the legal limit (80 mg/dL) compared to the 9.80% nationally. Patients with higher ETOH levels were shown to experience falls and assaults at higher incidences than those with lower ETOH levels ($p < .001$). Patients with higher Injury Severity Scores (ISS) were shown to associated with longer hospital stays (LOS). The survival rate of 6.20% at MHH was significantly lower than the national average of 8.55%.

Conclusion

The etiology of trauma cases treated in Houston trauma centers is very unique when compared to the national trends. This means that regionalized approaches must be taken when making efforts to increase the quality of care in different trauma centers around the world.

Poster #10

NOVEL TECHNIQUE FOR MANAGEMENT OF INADVERTENT SUBCLAVIAN ARTERIAL PLACEMENT OF CENTRAL LINE CATHETER: A CASE REPORT

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Background

Central Venous Catheter insertion is one of the most common invasive procedure in medicine. Different access sites include femoral vein, internal jugular vein and subclavian vein. Subclavian vein access is particularly challenging as ultrasound is rarely use and its anatomic location is particularly difficult to access or compress. Although infrequent inadvertent subclavian artery access can occur, and this can have and compared to jugular or femoral these are more difficult to access potentially devastating consequences. At the same time, compared to IJ or femoral access, subclavian artery injury is of more difficult access for direct compression and surgical approach [1]. Treatments for these iatrogenic injuries include open or endovascular approaches. Among the endovascular approaches that have been utilized include temporary balloon occlusion, graft stent placement, manual pressure under fluoroscopic guidance or even off label use of percutaneous closure devices. All these options have shown to be effective but carry their own risks such as failure, rebleeding, hematoma at the access site, vessel occlusion, thrombosis, stent graft failure among others [2]

Objective

We describe a successful endovascular technique in the management of inadvertent artery cannulation during insertion of an 8 French triple lumen central line catheter that we believe is safer that other methods and equally effective

Methods

We performed a retrospective chart review as well as a literature review on the different endovascular approaches to iatrogenic artery access and particularly on the experience of subclavian artery inadvertent injury. Keywords: Iatrogenic cannulation, Arterial Injury, Subclavian Artery, Central Venous Catheter.

Results

We describe a 72-year-old male with diagnosis of hepatocellular carcinoma who was scheduled for open liver resection. Before the surgery, the anesthesia team placed a left subclavian 8 Fr triple lumen central line but noticed that the central venous pressure monitor showed an arterial waveform and high pressure. Arterial canalization was suspected, and vascular surgeon was consulted immediately. Fluoroscopy confirmation of arterial cannulation was obtained (fig 1). The patient was systemically anticoagulated. We proceeded to exchange the 8 Fr catheter for 6 Fr vascular sheath over a 0.35 guidewire (fig 2). This was followed by manual pressure for 5 minutes. Sheath was then exchanged for a smaller 5 Fr sheath (fig 3) and manual compression was applied for the same amount of time. Finally, the 0.35 wire was exchanged for 0.18 and sheath was removed. Once more we

applied manual compression for 5 minutes. Guidewire was removed, and manual pressure was used one last time. There was no active bleeding or hematoma noticed. At this point the primary hepatobiliary service, after discussion with vascular team, continued with planned liver resection.

Patient progressed well for the first 24 hours after surgery. On post-operative day 2 he went on to develop hypotension associated with hypoxemia. Atrial fibrillation with Rapid Ventricular Response was diagnosed. Patient was transferred to the intensive care unit and started on treatment for his atrial fibrillation. Further evaluation demonstrated massive bilateral pulmonary embolism on Chest CTA with most clot burden in the left pulmonary artery. He was started on heparin gtt but continued hemodynamically unstable. Decision was to take patient to IR suite for directed mechanical thrombectomy of the left pulmonary artery. Patient had a prolonged but satisfactory recovery and was discharged to inpatient rehabilitation two weeks after surgery. During all this time there was no evidence of bleeding from left subclavian arteriotomy.

Conclusion

Inadvertent arterial puncture during central venous catheter placement can result in significant morbidity and mortality. This occurs 2.7 % of subclavian approaches [2]. Complications described include hematoma, arteriovenous fistulas, pseudoaneurysms, dissection, hemothorax, strokes, limb ischemia and death with an overall incidence of 0.2-0.5%. [3-10]. Several techniques are described in the literature to repair these injuries, but evidence is limited to case series with small number of patients. One option is removing line and applying manual pressure, but this carries high morbidity 47% and mortality 12% [11]. Direct pressure under fluoroscopic guidance [12] and Balloon occlusion [13] have been described to repair subclavian arteriotomies with good results but they both need radial or femoral arterial access which carries its own risks. Covered stent grafts have been used to repair subclavian arteriotomies successfully but these should be use with caution due to the close relationship of the vertebral artery and carotid and potential risk for stroke. [14-16]

There are multiple series that describe the use of percutaneous closure devices with good results. [17-18] The use of these devices on the subclavian artery is not only off label but also not recommended by the manufacturer. These devices carry their own risk for complications such as failure to close the arteriotomy, bleeding, occlusion of the

artery, thrombosis or pseudoaneurysm formation. It's important to recognize that the subclavian artery is more delicate than the femoral artery, so these devices could potentially rupture it with catastrophic consequences. We report an approach that has not been described before in the reviewed literature which entails progressively making the arteriotomy smaller through a series of vascular sheaths and guidewires without losing subclavian artery access. In our patient, there was no evidence of bleeding even when he had to be fully anticoagulated within 24 hours due to a bilateral massive pulmonary embolism.

In conclusion our technique seems to be an adequate initial approach to subclavian artery injury as it provides a more controlled removal of arterial catheters, eliminates the need for additional arterial punctures or use of closure devices that are not approved with this indication and since there is no loss of vascular access it would be easier to regain control in case of failure with the possibility of using one of the other technique described. There is need for more studies to establish the efficacy and safety of this method.

Poster #11

CONVERSION FROM LAPAROSCOPY TO LAPAROTOMY IN PATIENTS UNDERGOING SURGERY FOR SMALL BOWEL OBSTRUCTION: DOES PRIOR HISTORY OF SBO OR PREVIOUS ABDOMINAL SURGERY MATTER?

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Background

Laparoscopic adhesiolysis can be used for small bowel obstruction (SBO); however, conversion to laparotomy is frequent. The likelihood for conversion to laparotomy is multifactorial and must be considered by surgeons, but which patient factors have a strong association with conversion from laparoscopy to laparotomy remain unknown. This complicates the process of selecting the appropriate SBO patients who should be offered a laparoscopy initially versus proceeding to a laparotomy.

Objective

In this study, we aimed to determine whether patient factors such as prior SBO or abdominal surgery were associated with an increased likelihood of conversion from laparoscopy (LS) to laparotomy (LT) in patients with SBO.

Methods

We performed a post-hoc analysis of the EAST SBO database and included patients who initially underwent a laparoscopic approach. Patient history, admission physiology, laboratory data, and operative details were reviewed and compared between patients whose operations remained LS and those whose operations converted to LT. Descriptive statistics were calculated, and comparisons between groups were performed using Chi-squared test, Fisher's exact test, and t test.

Results

Of the SBO patients (n=1322), 464 patients required surgery (35%). LS was initially attempted in 100 cases (21%). Of those, 56% required LT. Between groups, there were no differences in admission physiology or laboratory values. The rates of prior SBO admission or abdominal surgery were not significantly different between groups (p-values >0.05; Fig.1). More LT patients required small bowel resections (59% vs. 14%, p<0.001), anastomoses (54% vs. 14%, p<0.001), and had operative findings of perforation (9% vs. 0%, p=0.014) compared to LS patients. There were more nontherapeutic explorations in the LS group (p-value=0.04).

Conclusion

More than half of patients undergoing laparoscopy for SBO require conversion to laparotomy. No pre-operative patient factors, including prior hospitalization for SBO or previous abdominal surgery, were predictive of increased likelihood of conversion. Approach to a successful therapeutic laparoscopic intervention for small bowel adhesiolysis may not depend on the patient's pre-operative history but more on intraoperative findings.

Poster #12

THE INTERSECTION OF GENDER, VENTRAL HERNIA REPAIR, AND ABDOMINAL WALL QUALITY OF LIFE

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Background

Ventral hernias drastically affect a patient's abdominal wall quality of life (AW-QOL). Previous studies showed that women without ventral hernias have a lower mean baseline AW-QOL by 7% compared to men. Also, other studies suggested that women may have worse outcomes after surgery.

Objective

The aim of this study was to determine the effects of gender in AW-QOL after ventral hernia repair (VHR).

Methods

Patients from a specialty hernia clinic at a single safety-net academic institution eligible for VHR were enrolled. All patients completed a validated, hernia-specific, modified activity assessment scale (mAAS) survey before surgery and two years after VHR. 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 the patient factors independently correlated with AWL-QOL; these were identified using multivariable analysis. Secondary outcomes included the difference in baseline, post-operative, and the change in QOL scores were compared by gender using t-test.

Results

A total of 276 patients scheduled for a ventral hernia repair were enrolled, 67% were females. The average baseline AW-QOL score was lower in women when compared to men (32.5 ± 3.2 versus 40.1 ± 2.1 , $p=0.041$). At two year follow-up, the scores were equivalent for both gender groups (66.6 ± 2.3 versus 66.7 ± 3.1 , $p=1.00$); however, improvement in AW-QOL score was higher in females compared to males (34.1 ± 2.6 versus 26.6 ± 3.0 , $p=0.051$). On multivariable analysis multiple factors were identified as influencing change in AW-QOL, including, age (0.23), body mass index (BMI) (-3.12), gender (15.14), hernia type (incisional, 11.16), and hernia area on CT-scan (0.39).

Conclusion

Although women with a ventral hernia have lower AW-QOL score at baseline, they experience a greater improvement in their AW-QOL after VHR. Despite former studies showing that women may experience worse outcomes after VHR differences in baseline AW-QOL may not have been accounted for.

Poster #13

DETERMINING STUDENT VALUES IN THE SURGERY CLERKSHIP

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Background

We hypothesize that our students will have more intrinsic motivators beyond just learning measurable procedural skills expected of them by clerkship directors.

Objective

The objective of this prospective study is to determine student values in the surgery clerkship.

Methods

Students were surveyed at the beginning of each clerkship to elicit what outcomes of the clerkship were most important to them. We analyzed what outcomes the students identified as important by grouping each into the following categories: Technical Skills, Autonomy, Clinical Knowledge, Clinical Skills, Career Exploration, Personal Qualities and Development, Patient Care and Interaction, and Shelf Performance.

Results

Of the 95 stated outcomes valued by students, 19 were around developing technical skills, 20 involved acquisition of clinical knowledge, 16 alluded to developing clinical skills, 3 were related to autonomy of specific tasks, 5 were around the development of personal qualities, 5 discussed career exploration, 8 specified significant patient interaction and continuity of care, and only 1 referenced shelf exam performance.

Conclusion

Students participating in the surgery clerkship desire outcomes and have values beyond just measurable procedural skills including the development of clinical knowledge and skills, autonomy, patient care responsibilities, and personal qualities. This study can evaluate other classes to see how these values evolve over time.

Poster #14

NATIONAL STOP THE BLEED DAY: THE IMPACT OF A SOCIAL MEDIA CAMPAIGN ON THE STOP THE BLEED PROGRAM

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Background

National Stop-the-Bleed Day (NSTBD) was created to increase public awareness of the official Stop-the-Bleed® initiative and the Bleeding Control Basic course. The goal was to develop and employ an effective national social media strategy that would encourage and support efforts already in place to train the public in basic bleeding control techniques.

Objective

The goals of NSTBD were aimed at leveraging social media to establish a network of coordinators and raise general public awareness of B-Con courses to increase bystander education and hemorrhage control intervention. The date of March 31, 2018 was chosen to allow for planning and to increase awareness and interest. As the initiative progressed, it became apparent that Saturday, March 31, 2018 was less than ideal due to religious observance and college sporting events. Additionally, as time progressed the size and scale became too large to contain all efforts to a single day, and therefore the “day” grew to one week before and after the original date. To accomplish this effort, social media presence sought to cultivate the already-growing interest STB efforts that manifested after the Las Vegas shooting incident in order to attract instructors and students. A supporting relationship with the ACS helped validate these efforts.

Methods

March 31, 2018 was designated as NSTBD. Analysis focused on a two-week window centered on NSTBD. The number of courses offered, number of instructors registered and total number of students trained overall during this period was derived from the American College of Surgeons (ACS) website bleedingcontrol.org. Courses not registered with the ACS were not included. Data on overall website activity was also included for analysis.

Results

43 states and 18 countries actively participated in NSTBD. 1,884 courses were registered on the bleedingcontrol.org website and 34,699 students were trained during the study period. In addition, 576 new B-Con instructors were certified during this time window. Additionally, international coordinators reported 1,500 students were trained during the study period. During this time, the ACS reported a significant rise in website activity. This included 10,530 new visitors, 12,772 visitors overall and 35,342 page views recorded during the study period.

Conclusion

The NSTBD effort was successful in generating widespread interest for the Stop-the-Bleed® initiative. The use of a targeted social media campaign in this context was successful in driving people to available training opportunities while also increasing awareness of the overall effort. While only in its early stages, the NSTBD concept is a good one and should be developed further in coming years.

Poster #15

RESIDENT TRAINING EXPERIENCE WITH ROBOTIC ASSISTED TRANSABDOMINAL PREPERITONEAL INGUINAL HERNIA REPAIR

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Background

General surgery is the fastest growing field in the adoption of robotic assisted laparoscopic surgery, presenting challenges to measuring trainees' progress toward achieving proficiency. Here, we present the results of one institution's experience in training surgical residents in robotic assisted transabdominal preperitoneal repairs.

Objective

Quantify resident learning experience in robotic assisted transabdominal preperitoneal inguinal hernia repairs by comparing reported case volume to proficiency scores and autonomy.

Methods

From March 2017 through August 2018, data were prospectively collected on patients of two attending general surgeons undergoing unilateral or bilateral robotic assisted laparoscopic inguinal hernia repair with surgical trainees. In cases of bilateral inguinal hernias, the attending surgeon did one side, and the resident surgeon did the contralateral side either to completion or until attending takeover. Data points included patient age, gender, complications, hernia difficulty, resident technical competency as measured by the Global Evaluative Assessment of Robotic Skills (GEARS), Zwisch scores, operative time, and the number of robotic console cases self-reported by residents as primary surgeon.

Results

Twenty-six residents participated in the study. Residents performed 64 operations; attending surgeons performed 36. Mean operative times for residents were significantly longer than attendings (53.9 vs 30.5 minutes, $p < .001$). Operation difficulty did not differ between residents and attending surgeons in the case of bilateral hernias. Residents who completed 10 or fewer total robotic console cases achieved significantly lower mean GEARS and Zwisch scores than those who had completed 11 or more ($p < .001$). Attending surgeons completed parts of the case significantly more frequently when residents recorded lower GEARS and Zwisch scores ($p < .001$) or when residents logged fewer cases ($p < .05$). Case difficulty did not predict attending take over.

Conclusion

As robotic assisted surgery becomes more common, surgery residency programs face the challenge of educating trainees in open, laparoscopic and robotic assisted techniques. Here, we have shown that experienced staff surgeons have shorter operative times compared to surgical trainees, as is expected. Proficiency and autonomy scores increase significantly as surgical trainees gain experience operating with the robot. Accordingly, attending surgeons grant more autonomy to residents with higher proficiency scores.

Poster #16

STRIKING A BALANCE: USING HONORS CRITERIA TO INCENTIVIZE DESIRED BEHAVIORS IN SURGERY CLERKSHIP STUDENTS

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Background

The honors criteria in the surgery clerkship requires students to work together on activities related to patient care and clerkship learning objectives, and do not include a target score on the Surgery Shelf. We hypothesize that students will prioritize patient care over excessive shelf-directed study.

Objective

The objective of this prospective study is to determine the effects of an innovative surgery clerkship honors criteria on student time allocation and prioritization.

Methods

End-of-clerkship surveys asked students to specify the amount of hours per week spent on self-directed patient learning, scheduled clerkship activities, shelf study, and personal time. Mid-year focus groups were held, and we analyzed transcripts for themes related to time allocation and impact of honors criteria on students' priorities. Shelf scores were obtained from NBME reports.

Results

The average weekly hours spent by 59 students on each category were: clerkship activities, 66, personal time, 62, clerkship assigned readings, 11, self-directed patient care, 11, and shelf-specific studying, 8. A total of six students did not pass the shelf on first attempt. Students identified honors projects as meaningful learning experiences and prioritized activities related to patient care and their own learning interests.

Conclusion

Using patient care-related activities as part of honors criteria may influence how students prioritize surgery clerkship time, with our students prioritizing self-directed patient care over shelf-specific studying. NBME practice exam scores can identify students at risk for failing the shelf, which helps with prioritizing study.

Poster #17

SURGERY RESIDENT CASE VOLUME IN A ONE WEEK GLOBAL SURGERY EXPERIENCE

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Background

The ACGME allows international rotations of 2 weeks duration to count for credit toward Surgery training requirements. However, the ABS requires international rotations of at least 4 weeks duration. Previous studies have highlighted difficulty in establishing international electives secondary to cost and provision of adequate supervision.

Objective

The purpose of this study was to demonstrate that even a one week international surgical experience provided significant resident training opportunities.

Methods

The surgical mission trip organized through HELPS International to Huehuetenango, Guatemala was conducted from July 21-August 1, 2018, of which there were 5 operating days. The surgical team consisted of two faculty general surgeons, 1 plastic surgeon, and three general surgery residents (two PGY-2 and one PGY-4) from the same residency program. A retrospective review of ACGME case logs was conducted of the three resident participants. The case logs were then compared to the cases completed during the mission trip.

Results

A total of 93 operations were performed in Guatemala over the course of 5 days, with each resident paired with a faculty surgeon. Of these, 76 cases were general surgery (GS) and 17 were plastic surgery (PS) operations. General Surgery cases included: 9 mass excisions, 16 laparoscopic cholecystectomies, 3 hydrocele repairs in pediatric patients, and open hernia repairs (6 ventral, 4 umbilical, 3 femoral and 35 inguinal, of which 5 were bilateral and 9 were pediatric patients). In Guatemala, a mean of 6.2 cases/day (GS and PS) and 5.1 cases/day (GS) or 25.3 cases/week (GS) per resident were performed. Analyzing the prior year's ACGME case logs, the PGY-4 logged a mean of 6.2 cases/week for GS rotations. The PGY-2s had logged a mean of 2.7 cases/week.

Conclusion

Our data demonstrate the value of short-term international experiences or electives. The volume of cases logged in one week per resident in Guatemala was equivalent to or exceeded the mean volume of cases logged by the residents in a month of training at our ACGME accredited institution. The trip provided a unique opportunity to develop resident autonomy and confidence in routine general surgery procedures under a mentorship model with our own faculty. While future studies are needed, the ABS should consider allowing these procedures to be counted towards training requirements. The ability to log cases would encourage resident contribution to medically underserved countries and provide invaluable exposure to performing standard general surgery operations in an austere environment with limited resources.

Poster #18

DOES HALLUX VALGUS CORRECTION REDUCE THE WIDTH OF THE FOREFOOT?

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Background

Hallux valgus has been associated with a widened forefoot. Conservative measures to manage hallux valgus deformity involve use of shoes that are wider in the forefoot. Success after hallux valgus surgery is correlated with relief of pain in conventional shoes and improvement in the appearance of the foot.

Objective

It is not known if the width of the forefoot is reduced following correction of the hallux valgus deformity. Our objective was to determine if the forefoot is reduced following surgery and, if so, if reduced forefoot width correlates with changes in traditional angular measurements of hallux valgus severity.

Methods

Pre- and postoperative radiographs of 52 patients who underwent correction of hallux valgus with a distal chevron osteotomy and Akin osteotomy were evaluated by four observers. The hallux valgus angle (HVA), the intermetatarsal 1st and 2nd angle (IMA), and the metatarsal span (MS) were measured. The data were assessed with analysis of variance to establish interobserver reliability.

Results

Preoperative HVA ranged from 14 degrees to 48 degrees, IMA ranged from 6 degrees to 25 degrees, and MS ranged from 74.2mm to 110.6mm. The average HVA improvement was 19.4 degrees, IMA improvement was 6.7 degrees, and MS reduction was 8.7mm. No correlation was identified with regards to correction of the HVA or IMA to MS. Interobserver reliability was 0.95 for the HVA (CI 0.92-0.97), 0.9 for the IMA (CI 0.85-0.94), and 0.98 for the MS (CI 0.97-0.99)

Conclusion

Hallux valgus correction reduces the forefoot width. There is no correlation between angular correction and reduction of forefoot width. Digital radiographic linear measurements have similar reliability to angular measurements.

Poster #19

THE SAFETY OF FOOT AND ANKLE SURGICAL PROCEDURES AT AN AMBULATORY SURGERY CENTER

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Background

Objective

Methods

Results

Conclusion

Poster #20

LE FORT FRACTURES IN THE PEDIATRIC POPULATION: A LEVEL 1 TRAUMA CENTER REVIEW

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Background

Pediatric facial fractures are a unique subset of facial fractures due to the difference in pediatric anatomy and social factors. Le Fort fractures represent a small proportion of these fractures, but require more intervention to manage the patient and stabilize the floating midface.

Objective

Our objective was to identify associated factors for patients with Le Fort fractures.

Methods

An IRB-approved retrospective chart analysis of all pediatric patients age ≤ 18 years diagnosed with facial fractures at our level one trauma center over a 10-year period (January 2006 to December 2015) was performed. Demographics, fracture location, mechanism of injury, and hospital course were abstracted. Statistical analysis was then performed comparing facial fracture patients with Le Fort fractures and facial fracture patients without Le Fort fractures.

Results

1274 pediatric patients (age ≤ 18) presented to our level one trauma center with at least one facial fracture. Of these, 69 (5.4%) presented with Le Fort fractures. Factors associated with Le Fort fractures included motor vehicle accidents ($p < 0.001$), increased age ($p < 0.001$), and traumatic brain injury ($p < 0.04$). Patients with Le Fort fractures were more likely to be admitted to the intensive care unit ($p < 0.001$), receive surgical management for their fractures ($p < 0.001$), require transfusions ($p < 0.001$), have a longer length of stay ($p < 0.001$), and need a second surgery for their facial fractures ($p < 0.001$).

Conclusion

Le Fort fractures represent a small portion of pediatric facial fractures, but require critical management. Careful evaluation of patients following motor vehicle accidents for midface stability will allow for proper planning and patient management.

Poster #21

ACCIDENTAL FIREARM INJURIES IN CHILDREN: IDENTIFYING OPPORTUNITIES FOR INJURY PREVENTION

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Background

Pediatric firearm injuries are increasing in incidence with 1.7 million children in the United States living in a home with an unlocked and loaded gun. Texas is an open-carry state where loaded firearms are prevalent.

Objective

Our purpose was to review the incidence of accidental firearm injuries in children to identify opportunities for injury prevention.

Methods

Retrospective chart review of children 0-17 years old treated at a Level 1 trauma center of a free-standing children's hospital for firearm injuries between 2012-2018. Pellet, flare, or BB gun injuries were excluded. Accidental injuries were defined as those that occurred from a visible firearm, as opposed to stray bullets.

Results

Of 88 firearm injuries, 29 (33%) were accidental, 17 (19%) from stray bullets, 2 (2%) from suicide attempts, and the rest 40 (46%) were from assault. Each year, our center saw median 4 accidental injuries (range 1-6). The median age for accidental injuries was 14 (range 1-17); 48% in elementary school aged children < age 10. 19/29 (65%) of the accidental injuries were self-inflicted and 35% were shot by others (8/10 by another child and 1/10 by an adult family member). 25/29 (86%) of the accidental injuries occurred at home or home of a family member/friend, and 3/39 (10%) occurred in the family car. All except 2 accidental injuries in teenagers were self-inflicted injuries from cleaning or handling their own firearm. Two teenagers attempted suicide with a gun found at home. The youngest child to pull a trigger was 22 months old. There were 5 deaths total (6%) – 1 suicide, 3 accidental from self-inflicted shots to the head, and 1 from assault. There was a clinically significant age difference in children shot accidentally vs assaulted (11 vs 15; $p = 0.015$).

Conclusion

A significant proportion of firearm injuries in children are accidental, and therefore preventable. Injury prevention efforts should be focused on safe gun storage at home and in the car, inquiring about guns at homes children visit, and educating teenagers on safe methods of handling firearms.

Poster #22

DOES FOLLOWING A MANAGEMENT ALGORITHM FOR ADHESIVE SMALL BOWEL OBSTRUCTION DECREASE THE INCIDENCE OF BOWEL LOSS?

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Background

Adhesive small bowel obstruction (ASBO) is common, and children are at increased risk of bowel loss when operation is delayed. A standard management strategy for ASBO in the pediatric population has not yet been determined.

Objective

Our aim was to test the effectiveness of a proposed management algorithm for adhesive small bowel obstruction in the pediatric population.

Methods

Retrospective, IRB approved, chart review of children treated for ASBO between 2011-2015 at a single center. A management algorithm was developed and clinical data, imaging, and outcomes were reviewed to determine whether adherence would have led to improved outcomes. Descriptive statistics, chi-square, and non-parametric tests were used for analysis.

Results

Of 207 patients who met criteria for ASBO (median age 7), 47% were managed operatively and 53% non-operatively. 15% (31/207) were identified as requiring urgent operation and the rest were initially managed non-operatively (Figure 1). 37% of initial radiographs had unclear/atypical evidence of ASBO; however, only 45% received further imaging for clarification. 67% (14/21) of these patients were taken to operation per the algorithm, while operation was delayed in 33% (7/21). Incidence of bowel resection between these two groups was the same (4 (19%) vs. 4 (19%), $p = 0.2$). Of the non-operative trial group, 24 hours after admission, 40% (40) met criteria for operation per the algorithm, but only 33% (13/40) underwent operation at this point. Incidence of bowel resection was significantly lower in this group that followed the algorithm compared to delayed operation (10% vs. 23%, $p = 0.007$). Excluding those requiring urgent operation, had the algorithm been followed, need for bowel resection would have been lower and bowel length loss higher (12% vs. 25%, $p=0.009$ and 19 cm vs. 12 cm, $p=0.003$).

Conclusion

For children admitted with adhesive small bowel obstruction, following the proposed management algorithm may aid in identifying need for timely operative management and lead to less bowel loss. A prospective trial is necessary to confirm these findings.

Poster #23

EPIDEMIOLOGY OF NON-ACCIDENTAL TRAUMA IN PEDIATRIC PATIENTS

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Background

Non-accidental trauma (NAT) is a significant cause of morbidity and mortality in the pediatric population. Despite this, there are few interventions aimed at decreasing the incidence of NAT.

Objective

The purpose of this study is to characterize the epidemiology, outcomes, and trends of NAT in a national database in order to better guide research and injury prevention efforts.

Methods

Retrospective chart review of patients in the National Trauma Databank (NTDB) research databanks between 2007-2014. Children < 15 years of age were included. Data was collected on patient demographics, injuries, complications, and mortality. Clinical and outcome data were analyzed using descriptive statistics, chi-square and logistic regression.

Results

Of 678,503 children, 3% (19,149) presented with NAT. 91% (18,184) were <5 years of age and 71% (13,529) were <1 year of age. 59% were male and 55% were Caucasian. The median injury severity score (ISS) was 10 (IQR: 5-19). All regions of the United States have seen a steady increase in NAT incidence over the seven years evaluated with the Midwest region having the highest incidence. 91% of NAT patients were < 5 years of age and 71% were less than 1 year of age. Overall mortality rate was 9%. NAT accounted for 7% of trauma admissions in children < 5, but accounted for 31% of trauma deaths. Similarly, NAT accounted for 13% of trauma admissions in children < 1, but 43% of trauma deaths. Traumatic brain injury (TBI) was the most commonly encountered diagnosis (50%), followed by extremity fractures (35%). Intra-abdominal injuries accounted for 9% of injuries. Polytrauma was common after NAT with intra-thoracic injuries most commonly associated with five or more injuries (Figure-1). 6% required an urgent operation and 4% were transferred. 43% were admitted to the ICU. The median hospital length of stay was 4 (IQR: 2- 8) days. Predictors of mortality were age, increasing ISS, TBI, thoracic injury and hollow viscus injury (Figure-1).

Conclusion

Non-accidental trauma is a significant cause of trauma related injury with its incidence increasing across the United States. Polytrauma is common in children presenting after NAT therefore surgical evaluation is important. Age, ISS, TBI, thoracic injury and hollow viscus injuries predict mortality. This information can be used to target the evaluation of children presenting after NAT and to develop interventions aimed at decreasing the incidence of NAT.

Poster #24

HYDROXYUREA THERAPY DELAYS AGE AT SURGICAL SPLENECTOMY IN SICKLE CELL DISEASE PATIENTS

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Background

Sickle cell disease (SCD) is typically associated with auto-splenectomy from splenic infarction. Surgical splenectomy is performed on those with sequestration crises or hypersplenism. Hydroxyurea therapy decreases the frequency and severity of sickle cell crises and thus the auto-splenectomy associated with sickle cell disease.

Objective

The purpose of this study was to determine if hydroxyurea therapy is associated with 1) an increase in the incidence of surgical splenectomy and 2) a later age at surgical splenectomy.

Methods

We performed a retrospective review of children with SCD who underwent a surgical splenectomy at our children's hospital between January 1990 and December 2017. Patient demographics, type of SCD, hydroxyurea use, and peri-operative data were collected. Patients were further stratified into two groups, pre-2005 and post-2005, based on the year when hydroxyurea use steadily increased at our institution. Data were analyzed using chi-square analysis and two-way multivariate analysis of variance. A p-value < 0.05 was considered statistically significant.

Results

Over the 27-year period, a total of 2,910 patients with SCD were identified and 125 children had a splenectomy. Of these, 20% (n=21) received hydroxyurea for at least 6 months prior to surgical splenectomy. Splenic sequestration and hypersplenism were the most common indications (96%) for splenectomy at a median age of 5 years (IQR: 2.6 – 9.9). The cumulative incidence of splenectomy was 4.9% pre-2005 versus 3.5% post-2005. Ninety-four children (78%) had HbSS, of whom 18 had hydroxyurea therapy for at least 6 months. Those who had a long-term history of hydroxyurea therapy had a splenectomy at a median age of 6 years (IQR: 3.4–8.9) versus 3 years (IQR: 2.2–6.4) for those who did not have a long-term history of hydroxyurea use (p=0.03, Figure 1). Regardless of the pre- or post-2005 stratification, all HbSS patients on hydroxyurea therapy had their splenectomy at a later age.

Conclusion

Although the incidence of surgical splenectomy does not appear to have increased with the introduction of hydroxyurea therapy, patients receiving hydroxyurea long-term are undergoing surgical splenectomy at an older age.

Poster #25

PARENT ENGAGEMENT ASSOCIATED WITH IMPROVED PEDIATRIC PRE-INDUCTION CHECKLIST ADHERENCE

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Background

The surgical safety checklist (SCC) is a 3-phase tool introduced by the World Health Organization (WHO) to reduce preventable errors in surgery. The pre-induction portion is meant to facilitate exchange of critical information before surgery. The WHO recommends including parents of pediatric patients in the pre-induction SSC. At our hospital, including parents in the pre-induction SCC is voluntary but strongly recommended.

Objective

We hypothesized that better pre-induction checklist adherence occurs when parents are engaged in SSC performance.

Methods

An observational study of pre-induction checklist adherence for non-emergent pediatric operations was performed (2016-2017) during 2 separate 8-week periods. Adherence was defined as verbalization of checkpoints by staff, with or without parent confirmation. Only checkpoints relevant to parental knowledge (patient identification, procedure, site marking, weight, allergies and NPO status) were evaluated. Trained observers assessed parent engagement based on positive body language, eye contact, lack of distractions and understanding of checkpoints. Chi-square and linear regression were used for analysis.

Results

A total of 484 pre-induction SSCs were observed with an interrater reliability >0.7. Partial checklist completion occurred in 55% of cases; only 41% of checklists were fully completed. Parents were present for 81% of checklists, and a higher median number of checkpoints were performed when parents were present (5, IQR 4-6) vs. absent (2, IQR 1-3, $p<0.001$). Increased pre-induction adherence was associated with increased parent engagement on linear regression (1.20, 95%CI 1.05-1.33, Figure). Staff confirmed more checkpoints with engaged parents (28-78%) vs. not-engaged (1-9%, $p<0.001$ for all checkpoints).

Conclusion

Pre-induction SSC performance remains a challenge (less than half fully completed), however, checklist adherence improved with parental presence and engagement. Creating a parent-centered pre-induction checklist may increase compliance and improve patient safety.

Poster #26

SURGICAL SAFETY CHECKLIST ADHERENCE ASSOCIATED WITH IMPROVED OUTCOMES IN PEDIATRIC PATIENTS

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Background

The surgical safety checklist (SSC) is a 3-phase tool created to reduce morbidity and mortality. Adult studies have demonstrated improved outcomes associated with SSC utilization. However, the pediatric surgical population has very low morbidity and mortality, therefore the association between SSC adherence and outcomes has been difficult to establish.

Objective

The purpose of this study was to evaluate whether SSC compliance was associated with improved 30-day post-operative outcomes in pediatric surgical patients.

Methods

An observational study of non-emergent pediatric surgical cases in a children's hospital was performed by trained observers (2017-2018). Degree of adherence (verbalization and confirmation by 2 or more parties) was defined by the proportion of checklist items completed. Pre-induction, pre-incision and debriefing phases were observed. Total adherence score was the proportion of items completed from all 3 phases combined. Thirty-day outcomes were determined by retrospective chart review and included surgical site infection, wound dehiscence, readmission, emergency department (ED) visits, unplanned reoperations, pneumonia, and urinary tract infection. The primary outcome was a composite of any complication. Logistic regression was used for analysis.

Results

510 cases were observed for SSC adherence. Patients had a median age of 4.1 years (IQR 1.1-9.8 years). Most observed cases were performed by Pediatric General Surgery (26.9%), Otorhinolaryngology (24.9%), or Urology (21.6%). Cases had a median operative time of 33.9 minutes (IQR 19.7-68.8 minutes). Median total adherence score was 86.2 (IQR 66.7-96.0). SSC adherence differed by phase: pre-incision phase was highest at 100% (96-100), followed by debriefing at 90.9% (IQR 72.7- 100), then pre-induction at 84.6% (IQR 53.8-100). Complications occurred in 11.2% (n=57) of patients; ED visits were most common (64.9%), followed by readmission (38.6%), and surgical site infection (19.3%). Case length and age were not associated with presence of a post-operative complication. However, surgical specialty, higher pre-induction adherence, and higher total adherence were associated with reduced likelihood of any complication on univariate regression. After adjusting for age, case length, specialty and total adherence to the SSC, only higher total adherence remained associated with decreased post-operative complications ($p < 0.02$, table), with pre-induction as the only significant phase.

Conclusion

This is the first study to demonstrate that increased SCC compliance is associated with improved patient outcomes in pediatric surgery. These data suggest that improving pre-induction checklist adherence may prevent patient harm.

Poster #27

BREAST CANCER IN THE YOUNG: AN INSTITUTIONAL DATABASE OF ALL WOMAN DIAGNOSED WITH BREAST CANCER UNDER THE AGE OF 50 AT TEXAS TECH PHYSICIANS OF EL PASO BREAST CARE CENTER BETWEEN 2012-2016

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Background

Little is known about the presentation of breast cancer in the young women of El Paso. A diagnosis of breast cancer is associated with emotional and physical trauma to the patient, and this is exaggerated when the diagnosis is given to a patient who is young. They are faced with treatment decisions that affect their current and future relationships, overall health, family planning, and fertility. This study will seek to document the patient population between the ages of 20-50 who are diagnosed with breast cancer at TTUHSC El Paso; a single institution with a predominantly Hispanic population in the border city of El Paso, Texas. We will seek to document their age at diagnosis, stage at diagnosis, surgical treatment, medical treatment, adjuvant treatments, recurrence rate, and genetic testing results if performed. It is our hope that through this study we can document the characteristics and biology of the cancers diagnosed at our institution in those individuals as well as tracking the genetic predispositions to cancer in our patient population.

Objective

The purpose of this study is to document the patient population between the ages of 20-50 who are diagnosed with breast cancer at TTUHSC El Paso; a single institution with a predominantly Hispanic population in the border city of El Paso, Texas. We will seek to document their age at diagnosis, stage at diagnosis, surgical treatment, medical treatment, adjuvant treatments, recurrence rate, and genetic testing results if performed.

Methods

This study was a retrospective review of all TTUHSC El Paso patients diagnosed with breast cancer between the ages of 20-50 from 1/1/2012-12/31/2016. Variables such as age at diagnosis, stage at diagnosis, surgical treatment, adjuvant treatments, and genetic testing were documented as able. The data collected at our institution was then compared to that of national numbers as documented by the CDC from 2012-2015 as a control group.

Only patients who were 50 or younger were used in the analysis. Patient characteristics were summarized using frequency and percentages. First overall distribution of the variables was obtained and then the distribution by the data group (CDC vs TTUHSC) was obtained. Distribution of variables between CDC data and TTUHSC data was compared using Fisher's exact test.

Results

There was no statistically significant difference of age distribution between CDC and TTTUHSC data. Only PR status and Best AJCC Stage were significantly different between CDC and TTTUHSC data (P-values 0.022 and <.001)

Conclusion

When comparing all patients who presented with a new cancer diagnosis at 50 years of age or younger there was no statistically significant difference noted in the age distribution at Texas Tech Physicians of El Paso Breast Care Center when compared to the numbers documented from the CDC. There was a statistically significant increase in patients under the age of 50 presenting with stage III and stage IV breast cancer at Texas Tech Physicians of El Paso Breast Care Center noted; 25.4% presenting with stage III breast cancer at TTTUHSC El Paso as compared to 16.4%, 13% presenting with stage IV breast cancer as compared to 5.2%.

Poster #28

IDENTIFYING FACTORS ASSOCIATED WITH DELAYED DIAGNOSIS OF COLORECTAL CANCER IN BEXAR COUNTY COMMUNITY

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Background

Colorectal adenocarcinoma is the fourth most common malignancy in the U.S. and its incidence has been decreasing likely due to increased screening rates in the U.S. Earlier detection is paramount to improved survival and decreased morbidity. Residents of Bexar County, however, are diagnosed with colorectal cancer at later stages than the national averages.

Objective

Our study's aim was to identify factors associated with later stage diagnosis of colorectal cancer in the Bexar County community.

Methods

A retrospective chart review was performed on 644 colorectal cancer patients treated at University Hospital in San Antonio between 2010 and 2015. Patient demographics, distance from hospital, primary care provider (PCP) and insurance status, and presence of symptoms were recorded. Univariate and multivariate logistic regression analysis was performed. Two outcome groups (stage 1/2 and stage 3/4) were compared to identify factors associated with patients presenting with advanced colorectal adenocarcinoma.

Results

58.1% of the 644 patients analyzed were male. Univariate analysis revealed that lack of insurance (p-value 0.009), lack of PCP and presence of symptoms (p-value of <0.001) were associated with increased likelihood of later stage of diagnosis. The presence of symptoms and lack of PCP remained significant on multivariate analysis with an odds ratio of 0.53 (CI 0.33-0.85).

Conclusion

Increasing access to primary care may increase the likelihood of screening and earlier detection of colorectal cancer. Outreach efforts within Bexar County to encourage both insurance enrollment and PCP establishment could also contribute to earlier diagnosis. Lastly, patient education and awareness on the importance of screening colonoscopy and the potential curability of early stage colorectal cancer could decrease later stage diagnosis in the Bexar county community.

Poster #29

SURGICAL ONCOLOGY FELLOWSHIP WEBSITE CONTENT: ARE APPLICANTS RECEIVING ENOUGH INFORMATION?

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Background

Surgical oncology fellowship programs are highly competitive, with only 75% of applicants in the 2018 cycle matching into fellowship positions. General surgery residents applying to fellowship programs rely on online information to compare and evaluate training programs. Applicants utilize surgical oncology fellowship websites to access important information such as program descriptions, selection criteria, rotation schedules, curricula, salary, research requirements, and contact information. While a wealth of data is accessible through forums, discussion boards, and social media, fellowship program websites remain central to providing applicants with key details about surgical oncology program-specific recruitment and education information.

Objective

An evaluation of surgical oncology fellowship program websites is warranted to determine if applicants are receiving adequate information to meet their needs.

Methods

Using the Society of Surgical Oncology (SSO) website, the authors identified 26 surgical oncology fellowship programs accredited by the Accreditation Council for Graduate Medical Education (ACGME). Canadian programs not accredited by ACGME were excluded from the study. Two independent reviewers evaluated these 26 accredited surgical oncology fellowship websites for 16 pre-identified variables based on published literature.

Results

All but one of the 26 surgical oncology fellowship websites had a functioning website. 92.3% of websites included a program description and 80.8% of websites had contact information; however, other recruitment and education information offered to applicants was limited. With regard to recruitment information, 38.5% of websites mentioned selection criteria, 19.2% listed interview information, and 30.8% included fellow salary. Fellow and faculty listings were featured on 42.3% and 76.9% of websites, respectively. With regard to education information, 73.1% of websites had information on clinical rotations and 38.5% of websites had information on didactics curricula. Research requirements were mentioned on 65.4% of websites. Only 34.6% of websites highlighted academic conferences and 19.2% mentioned journal club participation. Overall, the mean number of pre-identified variables present on a fellowship website was 8.57 ± 3.59 ($53.6\% \pm 22.44\%$).

Conclusion

General surgery residents turn to program websites when evaluating surgical oncology fellowships. Although these program websites do contain adequate information on several of the variables evaluated in the study, information on areas such as selection criteria, interview information, salary, curricula, and academic conferences was limited. By including more information that is important to applicants on websites, surgical oncology fellowship programs may attract applicants who are stronger matches for their programs and lead to an overall better-informed applicant pool.