FEBRUARY 29-MARCH 2

STCAM 2024

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South Texas Chapter

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EPOSTER ABSTRACTS

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ePoster #1 | Abstract | Abdominal/Laparoscopy

The Learning Curve for Robotic-assisted Transcystic Common Bile Duct Exploration in Acute Care Surgery

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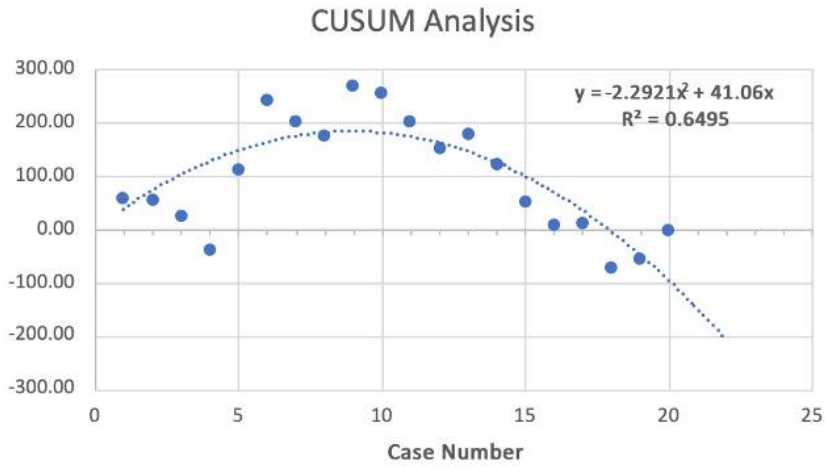
Background: Choledocholithiasis has a prevalence of approximately 10–15% for patients with symptomatic cholelithiasis. While a two-staged approach with ERCP clearance and cholecystectomy has become the standard treatment for choledocholithiasis, the technical skill of common bile duct exploration (CBDE) is an important tool for acute care surgeons to master.

Objective: The aim of this study is to evaluate the learning curve for robotic-assisted transcystic CBDE, surgical outcomes, and the success rate of duct clearance.

Methods: We analyzed 20 consecutive patients who underwent transcystic CBDE during robot-assisted cholecystectomy by the same surgeon. Preoperative and intraoperative variables as well as postoperative outcomes were assessed. A learning curve analysis was performed using cumulative summation of operative times (CUSUM).

Results: The average patient age was 44 years old and average BMI was 31.2. Five patients had biliary pancreatitis and 15 had choledocholithiasis. Average operative time was 203 minutes (range: 127 – 260 minutes). When analyzed in 4 case clusters, mean operative times and ranges improved over time. CUSUM analysis demonstrated an initial 10-case learning phase followed by a refinement phase over the subsequent 10 cases. The average duct clearance rate was 85% (17/20). Total length of stay was 4.6 days and postoperative length of stay was 1.8 days. There were no post-operative complications or 30-day readmissions.

Conclusion: Robotic-assisted transcystic CBDE is a safe and efficacious option for the treatment of choledocholithiasis. We have demonstrated that the acquisition of the necessary skills for this procedure is feasible for acute care surgeons with an acceptable learning curve.



ePoster #2 | Case Review | Abdominal/Laparoscopy

Cecal Bascule, a Case Report

St. David's South Austin Medical Center

Introduction/Objective: - Cecal bascule, the least common subtype of volvulus, involves the upward folding of the
cecum.
- Presentation includes abdominal pain, distension, obstipation, emesis, and a dilated cecum displaced towards the central upper abdomen on imaging.
- Surgical repair involves right hemicolectomy or cecopexy.

Discussion: - Secondary to congenital or acquired mobility of the cecum with risk factors including
cecal displacement, adhesions, and bowel dysfunction and distension.
- Cecopexy has an increased risk of recurrence (8-40%) compared to the negligible recurrence risk with right hemicolectomy.
- Reduced recurrence rate reported with use of peritoneal flap
- Open and laparoscopic approaches have been documented in the literature, but this is the only robot assisted cecopexy for a cecal bascule.

Conclusion: - Cecal bascule should be considered in the differential diagnosis for bowel obstruction as prompt identification and surgical intervention is crucial to avoid complications including ischemia, perforation, sepsis, and mortality.
- While cecopexy has an increased risk of recurrence, it is a safe procedure for management of cecal bascule without the presence of bowel compromise.

Case Presentation: - 44-year-old female with multiple abdominal surgeries who presented with acute RUQ
pain, distension, vomiting, and without peritoneal signs. CT with oral contrast displayed a dilated cecum displaced to the upper abdomen and lack of contrast passage into the ascending colon.
- Informed consent was obtained for robotic cecopexy, including the increased risk of recurrence.
- Extensive adhesiolysis, cecum detorsion, and cecopexy of the cecum to the white line of toldt was performed.
- Patient discharged on post operative day one.

ePoster #3 | Abstract | Abdominal/Laparoscopy

Ventral Hernia Management Update: A Systematic Review of Randomized Controlled Trials

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Background: Ventral Hernia Repair (VHR) management patterns, while remaining heterogenous, have acquired a growing body of Level I Evidence. This study systematically reviews published randomized controlled trials to establish updated best practices for VHR management.

Objective: To update best practices in the management of ventral hernia repair (VHR) on a comprehensive analysis of randomized controlled trials.

Methods: A search of EMBASE, PubMed, Cochrane, ClinicalTrials.gov, and other large databases was performed to obtain reports of randomized controlled trials for each topic. The overall quality of evidence was assessed using Grading of Recommendations Assessment, Development, and Evaluation (GRADE). Data were pooled and analyzed using odds ratios and relative risk when applicable. A systematic review of randomized controlled trials identified the highest level of evidence available for each topic.

Results: Of the 723 titles screened, 128 articles (78 studies) met our inclusion criteria. Articles were grouped and analyzed for clinical VHR recommendations regarding topics including: primary fascial closure, mesh type, mesh location, mesh fixation, analgesia, complex patients, abdominal binder usage and drain placement.

Conclusion: Primary fascial closure reinforced with synthetic mesh in the sublay position is preferred in the setting of clean contaminated, elective repair. Perioperative analgesia and abdominal binder placement may reduce the need for postoperative opiates. Early elective repair of uncomplicated hernias in complex patients is suggested, with little evidence supporting routine drain placement.

ePoster #5 | Abstract | Bariatric/Foregut

Short Term Outcomes for Patients Undergoing Roux-en-Y Gastric Bypass as Salvage Therapy for End-Stage Reflux disease with Preservation of Fundoplication

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Objective: Assess the short-term outcomes after RNYGB with preservation of prior fundoplication in salvage therapy for end-stage GERD.

Methods: We performed a retrospective cohort study of 9 adult patients who underwent minimally invasive salvage RNYGB with preservation of the fundoplication between September 2021 and January 2023. Outcome measures included length of stay (LOS), postoperative complications, 30-day mortality, and patient reported outcomes measures (PROMs) such as the Gastroesophageal Reflux Disease-Health Related Quality of Life (GERD-HRQL) and Laryngopharyngeal Reflux Symptom Index (LPR-RSI).

Results: The majority of patients were male (55.5%) and had 2 prior fundoplications (44%). The median age was 64 and preoperative BMI 27.2. The average LOS was 4+/-1.1 days and 30-day mortality was zero. There were no anastomotic leaks, gastric ischemia, conversion to open procedure, or need for reoperation. A smaller subset of patients (n=4) provided PROMs, which showed significant reductions in symptom scores - GERD-HRQL 84.8% reduction and LPR-RSI 55.5% reduction.

Conclusion: According to our experience, preservation of a previous fundoplication during a salvage RNYGB for refractory GERD appears to be safe. No major complications or mortalities were reported among the participants.

Table 1. Results

Variables	Value
30-Day Mortality	0
LOS (days)	4 +/- 1.1
Complications**	0
GERD-HRQL	
Baseline (N=9)	21.1
90-Day (N=4)	4.3
% Reduction	84.8%
LPR-RSI	
Baseline (N=9)	17.6
90-Day (N=4)	7.8
% Reduction	55.5%

Complications include anastomotic leaks, gastric ischemia, need for reoperation

ePoster #6 | Case Review | Breast

Fibromyxoid Sarcoma of the Breast: An Atypical Presentation of a Rare Mesenchymal Tumor

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Introduction/Objective: Low-grade fibromyxoid sarcoma (LGFMS) is a rare soft-tissue sarcoma with an incidence rate of 0.18 per million, first introduced into the literature by Harry L. Evans in 1987. This tumor of mesenchymal origin has a predilection for young adults and is most commonly found in the upper and lower extremities of deep soft tissues. This is a cancer that is slow-growing with a high incidence of recurrence with a tendency to metastasize. This case study aims to highlight the presentation of primary LGFMS in a unique anatomical location within a demographic not commonly affected by this disease.

Discussion: The diagnosis of LGFMS can be challenging, given its benign appearance on gross examination and histology. Early detection and definitive management are essential to reduce morbidity and mortality in this patient population. This case highlights the importance of considering LGFMS in the differential diagnosis of soft-tissue tumors, even in atypical anatomical locations and demographics not commonly affected by this disease.

Conclusion: LGFMS is a rare and insidious soft-tissue sarcoma with a high incidence of recurrence and metastasis. Its rarity and appearance make it challenging to diagnose and manage effectively. Unfortunately, the rarity and benign appearance of LGFMS can delay diagnosis, potentially affecting the patient's prognosis. Therefore, early detection and definitive management are crucial to improving outcomes for patients with LGFMS. Further research into the pathogenesis of LGFMS is needed to improve early detection, definitive management, and the prognosis of affected patients.

Case Presentation: A 28-year-old Hispanic female presented to the clinic for evaluation of a slow-growing mass present in the left upper chest for the past four years. Before arriving at the clinic, ultrasound displayed a 1.8 x 1.5 x 1 cm solid mass in the upper chest. A recommendation was provided for further follow-up for further management, including an excisional biopsy. Biopsy and subsequent histopathology demonstrated LGFMS positive for MUC-4. According to the Federation of Cancer Centers Sarcoma Group (FNCLCC) grading system, the tumor seen in our patient scored a total of 2 for parameters that determine a tumor's grade.

Clinical Trends in Granulomatous Mastitis Incidence, Prevalence, and Treatment: A Retrospective Study Highlighting Ethnic Disparities in Care

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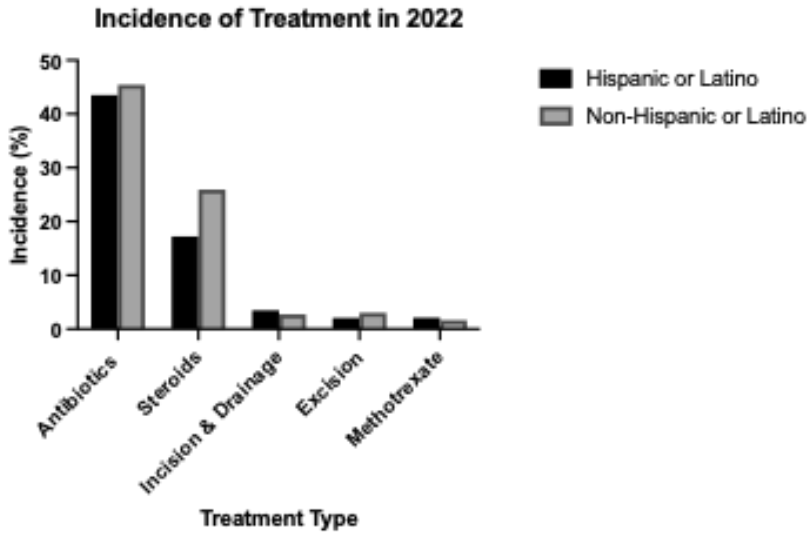
Background: This study focuses on Granulomatous Mastitis (GM), a rare inflammatory condition of the breast that has been increasingly diagnosed over recent years.

Objective: This research attempts to understand the incidence and prevalence of GM and its treatments.

Methods: This is a retrospective study over 7 years (January 2016 - December 2022). We utilized the anonymized data collected by TriNetX Analytic Network, a global federated health research network. The database was queried for patients diagnosed with GM and a total of 1,836 patients were returned. The incidence and prevalence of GM by age, race, and ethnicity were analyzed. The most common treatments for GM (antibiotics, steroids, incision and drainage, breast excision, and methotrexate) were analyzed.

Results: Hispanic and Latinos have a sixfold increased likelihood in developing GM than compared to their Non-Hispanic and Latino counterparts (0.006% compared to 0.001%). Treatment approaches reveal that antibiotics are the primary choice, while methotrexate is less commonly employed. Antibiotics showed increased prevalence in Non-Hispanics and Latinos ($p<0.05$). Steroids showed an increased incidence and prevalence in Non-Hispanics and Latinos ($p<0.05$). No significant differences were found between incision and drainage and breast excision. Methotrexate showed a higher incidence of usage amongst Non-Hispanics and Latinos ($p<0.05$).

Conclusion: Granulomatous mastitis has the highest prevalence and incidence amongst Hispanic and Latinos. Despite that, the treatments do not directly reflect these differences which underscores the need for personalized treatment strategies, particularly among Hispanic or Latino populations, and underscores the importance of further research to elucidate contributing factors to these disparities.



ePoster #7a | Case Review | Surgical Oncology

Adieu to the Pheochromocytoma: An Epic Case

University of Texas Medical Center - San Antonio

Introduction/Objective: Pheochromocytomas are neuroendocrine, catecholamine-secreting tumors arising from chromaffin cells of the adrenal gland. Embryologically, they derived from neural crest cells1. The estimated incidence of pheochromocytoma is approximately 2-8 cases per 1 million people per year.2 They typically present in patients between ages 30 to 50 years with a relatively equal gender distribution.2-3 Classic symptoms of presentation include headaches, palpitations, and diaphoresis associated with (secondary) hypertension. Additional symptoms include abdominal pain, pallor, back pain and nausea. An elevated level of urinary catecholamines or plasma metanephrines, normetanephrines are diagnostic. Functional imaging consists of Computed Tomography (CT) and Magnetic Resonance Imaging(MRI). Importantly, around 8% of pheochromocytomas are asymptomatic and diagnosed as an incidental adrenal mass (incidentaloma) on sectional imaging, and then, confirmed with laboratory values.2 About 10% of pheochromocytomas are malignant. 4 Pheochromocytomas can be either sporadic or hereditary. Approximately 25% of pheochromocytomas are associated with genetic syndromes, with the average age of presentation at 25 years in patients with hereditary genetic disorders vs 45 years in sporadic cases.3 Hereditary syndromes include: neurofibromatosis (NF), Multiple Endocrine Neoplasia (MEN 1 and 2), von Hippel–Lindau (VHL), and familial paraganglioma syndromes1. Radical surgical resection is the treatment of choice for these tumors.

Discussion: Macroscopic examination of the specimen reported a pheochromocytoma of 21.5 cm in maximum dimension with cystic degeneration and dystrophic calcification. Margins of resection were negative for tumor. (Figure 3A). Microscopically tumor cells are arranged in Zellballen architecture with fibrotic stroma and abundant amphophilic cytoplasm. Very large, atypical-appearing nuclei are inconsistent with malignant pheochromocytoma (Figure 3B)

Conclusion: Giant Pheochromocytomas over 20 cm in diameter are extremely rare, with less than 20 cases reported in literature. A multidisciplinary approach provides an optimal preoperative diagnostic work up and preoperative optimization to minimize operative morbidity and mortality. (Of note: UTHealth San Antonio recognized as Pheo Para Center of Excellence since June 2022) Resolution of saddle symptoms like irritability and anxiety can be recognized in the postoperative period upon cessation of the hormonal imbalance associated with pheochromocytoma.

Case Presentation: Case Presentation

A 46-year-old male with no significant past medical history presented to the local Emergency Department for evaluation of back pain in November 2022. He endorsed a right flank discomfort for approximately 6 months, dull in nature and worsening with prolonged sitting position. Vital signs showed borderline hypertension and normal heart rate. On physical exam, the patient appeared in mild discomfort, the abdominal exam was not significant except for obesity. The Emergency Department work up included a CT scan of the abdomen and pelvis demonstrating a 17cm x16 cm x15cm right periadrenal incidentaloma. The mass was predominantly cystic, centered about the right adrenal gland with peripheral and internal calcified septation. The mass effect was significant (Figure 1). Initial outpatient functional work up of the incidentaloma showed borderline

catecholamine levels, with mildly elevated serum metanephrines –1.5x upper limit of normal – and mildly elevated urine metanephrines -1.4x upper limit of normal. Serum aldosterone, renin ratio, 24-hr urine cortisol, DHEA-S chemistry and urine analysis were all within normal range. Repeat testing of serum and urine adrenal hormones two weeks after initial presentation confirmed the biochemical diagnosis of pheochromocytoma, with 24–hr urine metanephrines level of 1633 ug/d (ref range 114 – 865 ug/d). CT scan of the chest for staging purpose did not demonstrate any metastatic disease. He reported no family history of cancer. A 77 genes tested were negative for any mutation, or variant.

Preoperative and Perioperative Optimization

With a diagnosis of pheochromocytoma a preoperative optimization with the participation of the endocrine service and the anesthesiology service was planned.

To prevent intraoperative hemodynamically instability, a non-selective α blockade with doxazosin was orally administered and titrated to 12 mg per day to achieve orthostatic hypotension.

To prevent intravascular depletion secondary to α blockade high sodium diet was adopted. Preoperative admission allowed optimization of fluid status with intravenous normal saline therapy at high rate and periodic vital signs measurement.

Finally, pre-general anesthesia induction, arterial catheterization and central venous access were established by the anesthesia team for close monitoring and treatment.

Surgical Treatment and Postoperative Course

The patient underwent en bloc right adrenalectomy and nephrectomy through a modified Makuuchi incision – a combination of a midline laparotomy with a right flank transverse extension – allowing an excellent exposure of the right upper quadrant and the large mass. The right colon was mobilized medially. The mass appeared to have a thick capsule densely adherent to the second and third portion of the duodenum, the suprarenal and infrarenal vena and the inferior capsule of the right liver posteriorly with no frank invasion. (Figure 2). The duodenum was mobilized off the mass by isolating and dividing numerous peri-duodenal tributary vessels to the adrenal mass.

The right kidney was significantly displaced inferiorly, there were several venous tributary to the right renal vein, exposure of the renal artery was obstructed by the mass. A right nephrectomy was completed by the urology team. Finally, an oversized right adrenal vein off the vena cava was isolated and divided allowing surgical extirpation of the mass. The operation last 315 minutes with an estimated blood loss of 2000cc. The patient remained hemodynamically stable and was transferred to the surgical intensive care unit for postoperative monitoring and fluid resuscitation. He was discharged on postoperative day 5.

On follow up, 2 weeks after surgery, the patient reported feeling well with an unexpected resolution of irritability and anxiety undetected during preoperative evaluation. His blood pressure was within normal range without medication

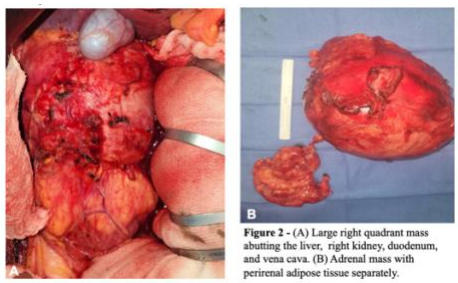


Figure 2 - (A) Large right quadrant mass abutting the liver, right kidney, duodenum, and vena cava. (B) Adrenal mass with perirenal adipose tissue separately.

ePoster #8 | Case Review | Colon and Rectal Surgery

The Utilization of Hyperbaric Oxygen Therapy for Mitigating Complications in Post-Surgical Colorectal Resections: A Case Report

University of the Incarnate Word School of Osteopathic Medicine

Introduction/Objective: Anastomotic leaks following colorectal surgeries are one of the major complications of colorectal resections. It is associated with a high mortality.3 Low anastomotic sites and neoadjuvant radiation for rectal cancers have been proposed risk factors for the increased incidence of complications.4 Adjuvant hyperbaric oxygen treatment (HBOT) could lead to the reduction of anastomotic leaks and management of complications involved with wound healing.1,2 This case report aims to accentuate the advantage of HBOT resulting in enhanced patient outcomes.

Case Presentations: A 50-year-old male with a history of rectosigmoid cancer was treated with a low anterior colon resection after undergoing neoadjuvant chemoradiation. This was complicated with a posterior anastomotic leak for which a colostomy was placed. Further complications included pelvic abscess and colovesical fistula. Patient had a drain placed by Interventional Radiologist (IR) and reported chronic pelvic pain .He was scheduled for HBOT to expedite healing of the anastomotic leak and address the tissue necrosis that resulted from chemoradiation. CT imaging revealed improvement in the anastomotic leak with HBOT.

Discussion: HBOT is emerging as a minimally invasive treatment for intricate complications resulting from colorectal resections.1 The benefits of HBOT include improved oxygenation of the radiation-induced soft tissue necrosis, stimulation of angiogenesis, and increased anastomotic healing.1,2

Conclusion: Utilization of HBOT in our patient allowed for a significant reduction in pain levels and resolution of complications prior to the completion of all HBOT sessions. While HBOT has potential for further studies, it has demonstrated promising patient prognosis with improvement in colorectal resection complexities.

ePoster #9 | Abstract | Colon and Rectal Surgery

Barriers to Offering Organ Preservation for Rectal Cancer in a Predominantly Hispanic Safety Net Hospital

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Background: Studies have shown organ preservation via a watch-and-wait (WW) approach following total neoadjuvant therapy (TNT) is a safe and viable option for patients with locally advanced rectal cancer. Despite interest at our institution, we have not had any patients enroll in WW.

Objective: Analyze TNT outcomes and investigate barriers to instituting WW at a safety net hospital caring for a predominantly Hispanic population in South Texas.

Methods: Patients with rectal adenocarcinoma for whom a multidisciplinary tumor board recommended TNT were enrolled in our IRB-approved observational study. Demographic and clinical data were collected. A survey of institutional surgeons, oncologists, and radiation oncologists was performed to identify perceived barriers to WW.

Results: Between 2018 and 2023, 41 patients were enrolled. 75% were male, 70.7% Hispanic, with median age 54 years. At presentation 58.5% had T4 tumors and 63.4% were N2. 25 (61%) underwent resection based on exam and imaging findings of residual tumor, of which 6 (24%) had pathologic complete response (pCR). The stakeholder survey identified concerns including lack of standardized MRI report protocol, lack of endoscopy capability in clinic, medical literacy concerns, and financial factors affecting ability to comply with surveillance.

Conclusion: Despite advanced disease at presentation, we demonstrated a pCR rate of 24% in our cohort at a predominantly Hispanic safety net hospital in South Texas, comparable with results from international trials. We identified institutional- and patient-level barriers to instituting WW.

ePoster #10 | Abstract | Colon and Rectal Surgery

The Association Between Visceral Fat Area and Body Mass Index on Surgical Outcomes in Patients undergoing Colectomy

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Background: Obesity plays a striking role in many human diseases, contributing to morbidity and mortality. Body mass index (BMI) remains a useful metric for objectively indexing obesity. However, it negates to account for frailty, frame size, and muscle mass, all of which may confound BMI accuracy. Therefore, other metrics are in dire need to accurately quantify body habitus, such as visceral fat area (VFA) measurements obtained from pre-operative CT scans.

Objective: This study assessed the durability of VFA compared to BMI as a predictor of surgical outcomes for colectomies.

Methods: A single-center retrospective review of 328 patients consented for elective colectomy performed between 1/1/2014 and 12/31/2021. Obesity was determined using two body habitus metrics: Body Mass Index (>30kg/m2) and Visceral Fat Area (>130cm2). Inter-rater VFA reliability was determined using Interclass and Spearman correlation and Lin concordance.

Results: Results include 129 (39.3%) obese patients under the BMI classification and 217 (66.1%) obese patients using the VFA classification. Regardless of metric, obese patients had more estimated blood loss and longer operation times compared to non-obese patients. Patients classified as obese using VFA had a significantly higher incidence of cardiovascular complications (4.15 percent vs. 0.0 percent; P = 0.03) compared to their non-obese counterparts, with no significant difference using BMI.

Conclusion: Visceral fat area is a reliable indicator of intraoperative complications associated with obesity, such as estimated blood loss and length of operation. Furthermore, VFA may shed light into possible postoperative cardiac complications in patients undergoing a colectomy, but further studies are needed.

Table 1. Intraoperative and Postoperative Complications and Overall Complication Rate

*Intraoperative Complications Variables**	*BMI Non-Obese n = 199, (%)*	*BMI Obese n = 129, (%)*	*p-value*	*VFA Non-Obese n = 111, (%)*	*VFA Obese n = 217, (%)*	*P-value*
Estimated Blood Loss (mL)	130.5 (0-2000)	225.3 (0-3000)	0.003	126.9 (0-1000)	188.6 (0-3000)	0.028
Duration of Surgery (min)	286.8 (65-510)	310.4 (110-910)	0.041	285.3 (106-910)	301.6 (65-542)	0.047
Length of Stay (days)	4.21 (0-40)	4.72 (1-43)	0.419	4.05 (1-40)	4.59 (0-43)	0.535
Conversion to Laparotomy	17 (8.5)	16 (12.31)	0.265	9 (7.96)	24 (11.1)	0.44
Postoperative Complications Variables	*BMI Non-Obese n = 199, (%)*	*BMI Obese n = 129, (%)*	*p-value*	*VFA Non-Obese n = 111, (%)*	*VFA Obese n = 217, (%)*	*P-value*
Wound Infection	3 (1.5)	6 (4.7)	0.16	1 (0.9)	8 (3.6)	0.28
Anastomotic Leak	3 (1.5)	4 (3.1)	0.44	1 (0.9)	6 (2.7)	0.43
Ileus	23 (11.6)	10 (7.8)	0.35	8 (7.2)	25 (11.5)	0.25
DVT/PE	1 (0.5)	1 (0.8)	1.00	-	2 (0.9)	0.55
Cardiac	6 (3.0)	3 (2.3)	1.00	-	9 (4.15)	0.03
ICU Admission	1 (0.5)	1 (0.8)	1.00	-	2 (0.9)	0.55
90-day Readmission	29 (14.6)	26 (20.2)	0.227	15 (13.5)	41(18.9)	0.22
Death	-	2 (1.5)	0.15	-	2 (0.9)	0.55
Other	10 (5.0)	6 (4.7)	1.00	5 (4.5)	11 (5.1)	1.00
Overall Complications	51 (25.6)	33 (25.6)	1.00	21 (18.9)	63 (29.0)	0.61

BMI = Body Mass Index, VFA = Visceral Fat Area. BMI Non-Obese (<30kg/m^2), BMI Obese (>30kg/m^2) and VFA Non-Obese (<130cm^2), VFA Obese (>130cm^2). *Data are means with ranges in the parenthesis.

ePoster #11 | Abstract | Education

Effects of a Deductive Structure of Oral Case Presentations on Listener Comprehension

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Background: Oral patient presentations are often presented in an inductive structure, providing a diagnostic anchor at the end. Prior surgical education literature suggested that a deductive structure contributes to an effective oral case presentation by providing the diagnostic anchor early to define the relevancy of subsequent information.

Objective: This experimental study tests if a deductive structure of presentation improves listener comprehension.

Methods: Senior (n=25) and junior (n=32) general surgery residents watched videos of two clinical case presentations differing in structure (deductive or inductive) and anchor veracity (diagnosis given is true or misleading). Subsequently, participants provided oral case retellings including only relevant details and their own diagnosis. Listener comprehension was measured by diagnostic accuracy and reported relevant elements.

Results: Scenario A: 67% of residents diagnosed the case correctly. Participants were more likely to report the correct diagnosis when presented with a true diagnosis (p=.001). Junior residents were more likely to report an incorrect diagnosis when given a misleading diagnosis (p=.009).

Scenario B: 32% of residents diagnosed the case correctly. Presentation structure and anchor had no independent impact on diagnostic accuracy. However, a deductive presentation structure reduced the inclusion of relevant elements specific to the correct diagnosis (p=.044). Junior residents who provided an incorrect diagnosis with a deductive structure were more confident in their response (p=.001).

Conclusion: Listener comprehension is not improved in a deductive structure of oral presentation, as previously proposed. For the more difficult scenario, deductive structure was associated with poorer listener comprehension. Junior residents may be more susceptible to anchoring bias in certain conditions.

ePoster #12 | Abstract | Education

USMLE Step 1 Transition to Pass/Fail and its Potential Implications for Diversity in Surgical Residency Programs

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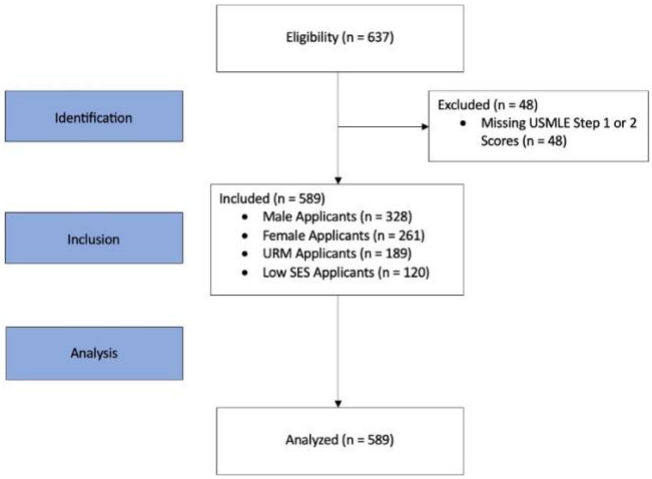
Background: In 2022, the USMLE Step 1 exam converted to pass/fail scoring. This change aimed to improve diversity and equity across residencies. Females, underrepresented minority (URM) applicants, and low socioeconomic status (SES) individuals were underrepresented in surgical residency programs.

Objective: This study aimed to assess the potential impact of a pass/fail scoring system on surgical residency diversity.

Methods: A retrospective study assessed how using Step 2 as a primary screening measure could impact diversity. Data was extracted from ERAS 2021-2022 for categorical surgical position applicants at a single academic center. Sex was self-reported and URM status was determined by AAMC definitions. SES was determined by matching applicants' zip codes with median household income data from the U.S Census Bureau 2021 American Community Survey and defined by 2022 tax brackets. Univariate analysis was performed.

Results: From 637 applicants, 589 met inclusion criteria. 261 (44.4%) were female, 189 (32.1%) as URM, and 120 (20.4%) were low-SES applicants. There were no significant differences between the average male applicant Step 2 score (237.6±13.0) and the average female applicant score (238.0±13.2). Non-URM applicants scored significantly higher (239.0±13.0,$p<0.001$) than URM applicants (234.1±13.2,$p<0.001$). There was no significant difference between low-SES applicants (237.3±13.1) and all others (237.2±12.9) but applicants from the bottom tax bracket had the lowest average score (231.8±11.0).

Conclusion: Making USMLE Step 1 pass/fail may benefit female applicants while adversely impacting URM applicants and those low SES backgrounds. As the holistic review process evolves, impacts on historically underrepresented individuals must be carefully evaluated to achieve equitable representation in surgical residency programs.



ePoster #13 | Case Review | General Surgery

Case Review: Gallstone ileus over 50 years after cholecystectomy and choledochoduodenostomy

St. David's South Austin Medical Center

Introduction/Objective: The prevalence of gallstone ileus has been estimated to be 0.3-0.5% and is considered to be one of the rarest causes of bowel obstruction. The clinical presentation of gallstone ileus has been well described in surgical texts, but despite this, it is still commonly misdiagnosed and has a high mortality complication ranging from 12-27%. Historically, gallstone ileus has been diagnosed in patients who still have an intact gallbladder.

Discussion: There are many options for surgical management of gallstone ileus, from which usually involve enterolithotomy, cholecystectomy, and fistula closure. In our case, an open enterolithotomy was planned due to the absence of a gallbladder or cholecystoduodenal fistula. On initial handling of the distal ileum, the gallstone advanced to the cecum and required extraction with an intraoperative colonoscopy.

Conclusion: This case highlights a rare case of gallstone ileus in the absence of a gallbladder. It is unique because of the patient's presentation of gallstone ileus and the multidisciplinary approach required to understand the patient's anatomy, obtain the diagnosis, and execute subsequent treatment.

Case Presentation: Our patient is an 82-year-old Hispanic female who presented with gallstone ileus in the setting of an absent gallbladder. Further evaluation and work-up revealed that the patient not only had a cholecystectomy over 50 years prior but also had evidence of a choledochoduodenostomy found on esophagogastroduodenoscopy. For definitive treatment, the patient underwent open advancement of the gallstone into the colon and intraoperative colonoscopy by gastroenterology to evacuate the gallstone fragments from the colon.

Enhancing Surgical Documentation in Ventral Hernia Repairs: Expert Insights

Jonathan S. Lall, Said Maldonado, Nicole B. Lyons, Brendan M. Rosamond, J Scott Zimmerle, Kayla Nguyen, Gina Adrales, Karla Bernardi, Anne P. Ehlers, Hobart Harris, Julie Holihan, William Hope, Jeffrey E. Janis, Michele Loor, Clayton Petro, Luke Putnam, Caroline E. Reinke, John Scott Roth, Christopher Senkowski, Kendell Sowards, Shirin Towfigh, D. Dante Yeh, Zuhair Ali, Mike K. Liang
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Background: Ventral hernia repair (VHR) is one of the most commonly performed procedures by surgeons, however there remains a lack of consensus for key components of operative reporting. Prior literature has identified several key details that are recommended for inclusion in VHR operative reports (e.g. size, type).

Objective: This study sought to determine if experts agree upon what factors make a VHR operative note high-quality.

Methods: A prospective exploratory sequential survey-based mixed-methods design was utilized for Round 1. Conclusions via thematic analysis from survey responses were utilized to establish themes/subthemes to be included in a high-quality VHR operative note. Round 2 utilized a convergent design and sought to evaluate the importance of these identified themes/subthemes.

Results: Twenty-four surgeons were approached, 16 of whom completed both rounds. Nine themes and three subthemes were identified as important to include in a high-quality VHR operative note. Round 2 identified the following five as the most important themes: Accurate/Adequate/Pertinent Details, Clear, Detailed/Specific/Comprehensive in General, Objective, and Justification/Rationale for Decisions.

Conclusion: Based on expert consensus, the findings from this study suggest that inclusion of details alone do not make for a high-quality operative note. Instead, high-quality operative notes require not only details, but also qualities from the nine different themes identified in this study.

Trends in the Utilization of Neoadjuvant Therapy and its Impact on Vascular Resection Among Patients Undergoing Resection for Pancreatic Adenocarcinoma

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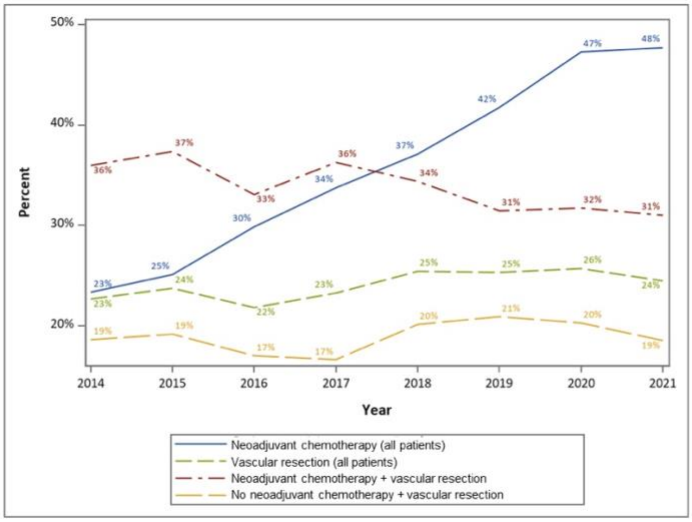
Background: Vascular involvement of pancreatic adenocarcinoma (PDAC) impacts resectability and whether neoadjuvant therapy (NAT) is utilized, though correlation between NAT and vascular resection rates has not been studied.

Objective: This study examines trends in utilization of NAT and vascular resection rates among patients undergoing resection for PDAC.

Methods: Retrospective review of the American College of Surgeons (ACS) National Surgical Quality Improvement Program (NSQIP), merged with ACS-NSQIP Targeted Pancreatectomy data from 2014-2021 was performed. Patients with incomplete data or M1 disease were excluded. Association between NAT and likelihood of venous and/or arterial resection was assessed using linear regression.

Results: Of the 17,486 patients included, 6,431 patients (37%) received NAT and 4,227 (24%) underwent vascular resection. The use of NAT was associated with an increased likelihood of vascular resection (OR:2.12, 95%CI:1.95-2.32, p<.001) and lower pathologic T- and N-stage (T1/2; OR:1.34, 95%CI:1.22-1.47, p<.001; N0; OR: 1.21, 95%CI:1.12-1.32, p<.001). During the study period, use of NAT increased by 18% per year (OR:1.18, 95%CI:1.17-1.20, p<.0001), while number of vascular resections increased by 2% per year (OR:1.02, 95%CI:1.01-1.04, p=0.0036). Within the NAT cohort, vascular resection rates decreased by 4% per year (OR:0.96, 95%CI:0.94-0.99, p=0.0018), while there was non-significant increase in vascular resection rate in the non-NAT cohort (OR:1.02, 95%CI:0.99-1.04, p=0.13).

Conclusion: NAT is increasingly being utilized in patients undergoing resection for PDAC. Although the rates of vascular resection have increased slightly overall, the use in patients receiving NAT has decreased over time. This finding is potentially secondary to effective downstaging by NAT, although additional studies are warranted to determine causation.



Exploring Molecular Drivers for Alcohol-Associated Acute Pancreatitis in Aging Mice via Spatial Transcriptomics

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Background: The aging population is consuming more alcohol leading to alcohol-associated acute pancreatitis (AAP) with high mortality and undefined mechanisms.

Objective: This study used Spatial transcriptomics in an AAP mouse model to explore molecular mechanisms in aging.

Methods: AAP was induced in aging (18 mo) and young (3 mo) male C57BL/6 mice by Lieber-DeCarli liquid diet feeding with 5% alcohol (2 wks) combined with cerulein injection (50 ug/kg, 3 hrly, ip, n=4-6/group). Mice were euthanized 16 hrs after the injection. Blood and pancreatic tissue were harvested for amylase measurement and AP score. Visium spatial transcriptomics was performed on the pancreatic sections. Differentially expressed genes (DEGs) were identified and validated by qPCR.

Results: Aging mice exhibited more severe AAP with 5.0-fold increase of AP score and 2.4-fold increase of amylase compared to young ($p < 0.05$). Spatial transcriptomics revealed distinct tissue clusters: five acinar, two stromal, and one islet. Over 1,300 DEGs were identified in aging compared to young; the top 5 DEGs are Mmp8, Ppbp, Cxcl13, Hamp, and Fga. Of note, Hamp, which encodes hepcidin, a regulator of iron metabolism, was upregulated in one acinar cluster and the islet cluster. Fga, which encodes α chain of coagulation factor 1 fibrinogen, was upregulated in three acinar clusters.

Conclusion: This study elucidates spatial heterogeneity of inflammatory processes in aging mouse AAP pancreas tissue. Identification of Hamp and Fga provides novel insights into potential molecular drivers in AP pathogenesis as hepcidin and fibrinogen are reportedly associated with severe AP in humans.

ePoster #17 | Abstract | Pediatric Surgery

Characteristics and Outcomes of Fetal Pleural Effusion Patients at a Single Tertiary Referral Fetal Center

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Baylor College of Medicine | Texas Children's Hospital

Purpose: Fetal pleural effusions are rare and there is limited data available to support approaches to management. In this study, we evaluated the diagnosis and management of fetal patients diagnosed with pleural effusions. Our aim was to describe clinical outcomes to enrich our understanding of the natural history of this rare condition.

Methods: We retrospectively reviewed patients diagnosed with fetal pleural effusions between January 2018 and July 2023 at a tertiary children's hospital. Demographic and clinical data, pre- and postnatal imaging, fetal interventions, delivery information and clinical outcomes were collected and descriptively analyzed.

Results: We identified 63 patients with a prenatal imaging diagnosis of fetal pleural effusion. Nineteen (30%) patients were lost to follow-up. Of the remaining 44 patients, 24 (55%) patients received fetal interventions to manage the pleural effusion while 20 (45%) patients did not receive fetal interventions. Based on available clinical outcomes data, ten neonates (n=10/24, 42%) who received fetal intervention died while three patients (n=3/20, 15%) without fetal intervention died. Eighteen (n=18/44) patients had thoraco-amniotic shunts placed: six (33%) patients received one shunt, seven (39%) patients received two shunts, four (22%) patients received three shunts, and one (6%) patient had four shunts placed. Overall, a majority of patients (n=35/44, 80%) were inborn. Among the inborn, a total of 12 (34%) newborns died, with 10 newborns dying within 30 days of birth.

Conclusion: We find there is a high mortality rate for newborns diagnosed with fetal pleural effusions. Additionally, most fetal patients have multiple thoraco-amniotic shunts placed to manage their pleural effusions.

Unraveling Opioid Prescription Patterns in Pediatric Surgery

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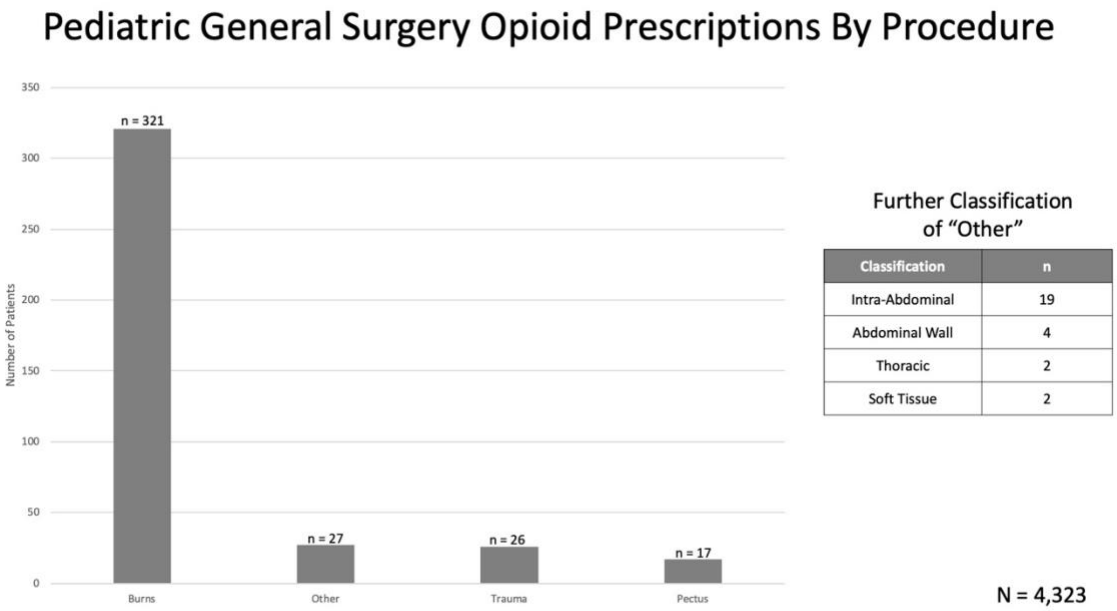
Objective: We aimed to identify prescribing patterns of pediatric general surgeons and what conditions opioids are being prescribed for.

Methods: A retrospective chart review of all pediatric patients (≤18 years) who underwent general surgery procedures at a tertiary hospital between July 01, 2021, and July 01, 2023, was conducted. Patient demographics, procedures, and discharge opioid prescription details were collected from the medical record. Descriptive statistics were performed.

Results: Of 4,323 patients, 9.0% (391) received opioid prescriptions at discharge. Most were for burns (82.1%), followed by trauma (6.6%), and pectus excavatum surgery (4.3%). Common pediatric operations such as appendectomy, inguinal hernia repair, circumcision, and umbilical hernia repair did not receive narcotics (Figure 1). 82.6% of patients who received opioid prescriptions also received prescriptions for non-narcotic analgesics. The mean narcotic number of prescribed doses was 12.4 (±9.0) for burns, 14.0 (±12.3) for trauma, and 12.4 (±4.9) for pectus excavatum surgery. The average total MME for the three groups was 41.9 (±35.6). 99.5% of the prescriptions were for oxycodone.

Conclusion: Overall, a small proportion of pediatric general surgery patients receive opioid prescriptions at the time of discharge. Post-discharge opioid prescriptions are limited to a few conditions (burns, trauma, and pectus excavatum surgery). Future research should focus on understanding patient needs and utilization of prescribed narcotics.



Characteristics and Outcomes of Infants Admitted in Texas by Facility Children's Surgery Verification Status

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Baylor College of Medicine

Methods: We retrospectively reviewed a state-wide hospital inpatient discharge database (2013-2021). All patients <1 year of age were included. Patients transferred to an outside hospital were excluded to avoid double-counting. Descriptive statistics and chi-square were performed.

Results: We analyzed 3,617,173 patients, with 211,278 (6%) treated at CSV centers. CSV centers admitted less Hispanic patients (33% vs 39%) or patients from a rural county (4% vs 9%) along the Mexican border (1% vs 13%), and 94% were from public health regions containing a CSV center. CSV centers admitted more African Americans (21% vs 11%) and patients with insurance (97% vs 94%). CSV admissions were less likely to be inborn (46% vs 93%) and more likely to be transfers (16% vs 1%). Likewise, CSV centers had sicker patients (32% vs 13% extreme illness severity), higher mortality rates (2% vs 0%), longer length of stay (9±22 vs 4±9) and higher operative intervention rates (33% vs 20%). However, mortality was lower at CSV centers when matched for illness severity (Table 1).

Conclusion: Patients with high illness severity have better outcomes when treated at CSV centers. However, disparities in access to CSV centers exist with proportionately fewer Hispanic patients and patients living in rural counties or along the Mexican border.

Table 1: Characteristics and Outcomes of CSV vs non-CSV Centers Stratified by Highest and Lowest Illness Severity Scores

	Non-CSV		CSV	
	Illness Severity Score		Illness Severity Score	
	Low (n=2452226)	Extreme (n=29225)	Low (n=97257)	Extreme (n=21242)
Emergent Admit, n (%)	48074 (2%)	3741 (13%)	22823 (23%)	6769 (32%)
Transfer from Outside Hospital, n (%)	2834 (0%)	6487 (22%)	6885 (7%)	9286 (44%)
OR, n (%)	478049 (19%)	15410 (53%)	27586 (28%)	14038 (66%)
Length of Stay [days], mean (SD)	2 (2)	45 (46)	3 (3)	40 (50)
Mortality, n (%)	1657 (0%)	5776 (20%)	107 (0%)	2714 (13%)

Does the hernia sac matter? Association between defect size, presence of a sac, and survival in congenital diaphragmatic hernia

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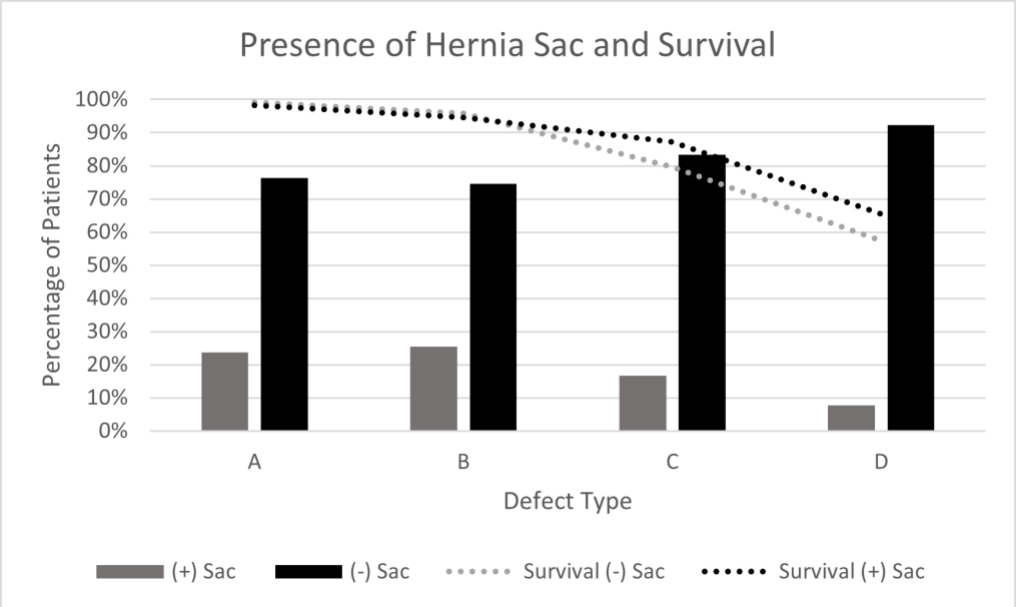
Background: In congenital diaphragmatic hernia (CDH), larger defect size is associated with increased mortality, while the presence of a hernia sac has traditionally been associated with decreased mortality. The interplay between a hernia sac, defect size, and outcome is not well described.

Objective: Our objective was to investigate the relationship between a hernia sac, diaphragm defect size, and survival.

Methods: We performed a retrospective analysis of CDH Study Group (CDHSG, 2007-2023) data. Demographics, surgical details including defect size (CDHSG stage, A-D) and presence of hernia sac, and outcome were analyzed. A sub-analysis by defect size and relationship between defect size and sac was performed. Wilcoxson Rank Sum Test was used to compare survival in sac versus no sac. Statistical significance was set at <.05.

Results: 7,519 operative CDH patients were identified. 989 (13.15%) had a type A (smallest) defect, 2940 (39.10%) type B defect, 2573 (34.22%) type C defect, and 1017 (13.43%) type D defect. For type A defect 23.66% had a hernia sac, 25.41% in type B, 16.60% in type C, and 7.67% in type D. There was no statistically significant difference in survival between sac and no sac groups for type A (p= .3201), type B (p= .1425), or type D (p= .1701) (Figure 1). There was a statistically significant difference for type C defects (p= <.001).

Conclusion: Hernia sacs are more common in smaller defects. Additional information and analysis are needed to investigate the presence of the hernia sac as an independent predictor of survival separate from defect size and related comorbidities.



Correlation of Clot Burst Pressure in Level One Trauma Patients to Clinical Data

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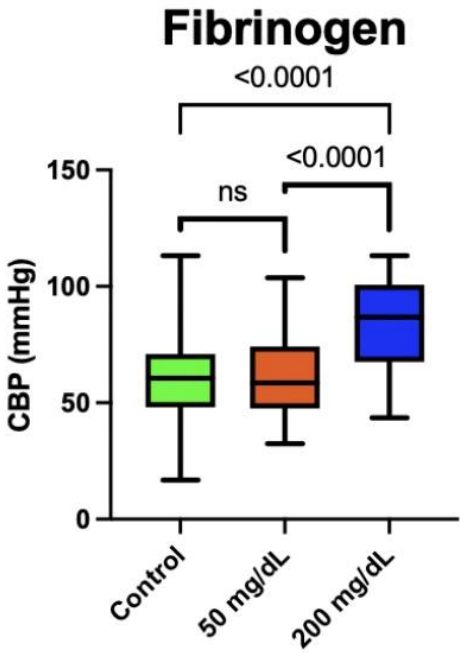
Background: Due to rapid turnover of clotting factors in trauma, newly formed clots are generated in a hypo-coagulable and hyper-fibrinolytic state.

Objective: Our clot burst pressure (CBP) device allows us to recapitulate the compressive forces exerted on formed clots and report data in a clinical parameter, mmHg. An improved understanding of clot integrity could better guide resuscitation strategies.

Methods: We performed a translational study using blood collected from level 1 trauma patients (L1TP) (n = 68) and healthy subjects (n = 15). Samples from L1TP were used within eight hours from the time of blood draw. CBP was measured by pipetting re-calcified blood over a hole, incubating for 35 minutes, and recording the maximum pressure when the clot bursts. Baseline CBP measurement was performed in sextuplicate, while CBP of conditioned blood was performed in triplicate. Blood was conditioned with: 50 mg/dL, 200 mg/dL of fibrinogen, 10 mg/L, 20 mg/L of TXA, and a 1%, 2% of platelets. Non-parametric analysis and correlation matrices were generated in Prism.

Results: Our data demonstrates that CBP significantly increases with 200 mg/dL fibrinogen in L1TPs. There is a significant increase in CBPs when comparing increasing age groups (0-18, 19-44, 45-65, 65+). CBP is significantly correlated with the following TEG parameters: K-time, a-angle, maximum amplitude, and G-value.

Conclusion: Blood from L1TP was tested for CBP and EMR data was used for data analysis and TEG correlation. Positive correlations in TEG data with the CBP data validates the efficacy of the device to aid in guiding trauma resuscitation strategies.



Serum Biomarkers to Predict ICP Therapeutic Intensity After Severe TBI

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Background: Current treatment of severe traumatic brain (TBI) injury is based on preventing/reducing cerebral edema and resultant intracranial hypertension. Syndecan-1, an endothelial glycocalyx component, shedding is correlated with colloid osmotic pressure (COP). As syndecan-1 levels rise, plasma COP and total protein often decrease. While patients may have similar hemodynamics, lab values, and injury severity on arrival, those whose plasma COP decreases have a higher mortality rate.

Objective: The goal of this study is to determine if serum biomarkers are predictive of a malignant intracranial pressure (ICP) phenotype requiring higher therapeutic intensity as measured by PILOT score.

Methods: 25 trauma patients with severe TBI (GCS <9) underwent continuous ICP monitoring. Serum biomarkers of acute phase reactants (including serum albumin and total protein) and syndecan-1 were obtained on admission and serially after ICP monitor placement. Modified PILOT scale quantified therapeutic intensity.

Results: Multiple regression modeling demonstrated that higher initial acute phase reactants correlated with greater area under the curve (AUC) PILOT scores. Syndecan-1 release greater than 40 predicted higher PILOT AUC.

Conclusion: Higher release of acute phase reactant proteins and syndecan-1 is associated with increased PILOT scores, demonstrating a relationship between serum biomarkers and higher therapeutic intensity. Thus, serum protein biomarkers can predict more severe ICP profiles to identify high risk patients.

Table 1. Multiple regression model including baseline predictors to predict AUC of PILOT Scores (std=standardized)

Predictor	Beta	95% CI[1]	p-value
Osmolality (std)	4.0	-0.6, 8.7	0.086
Albumin (std)	11.0	6.0, 16.1	<0.001
Syndecan 1 >40	10.1	0.5, 19.6	0.039
No. Obs.	24		
Adjusted R^2	0.534		

[1]CI = Confidence Interval

Interpretation of Table 1: An increase in baseline osmolality of 16 units (1 SD) leads to an increase of 4 in the AUC of Pilot scores. Similarly, an increase of 7.3 (1 SD) in baseline albumin leads to an increase of 11 in the AUC.

ePoster #24 | Abstract | Trauma/Burn/Critical Care

Activating Early, Activating Often, and Delivering Blood Quicker: The Impact of Massive Transfusion Activation Volumes on Time to Delivery of the First Cooler

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University of Texas HSC - Houston

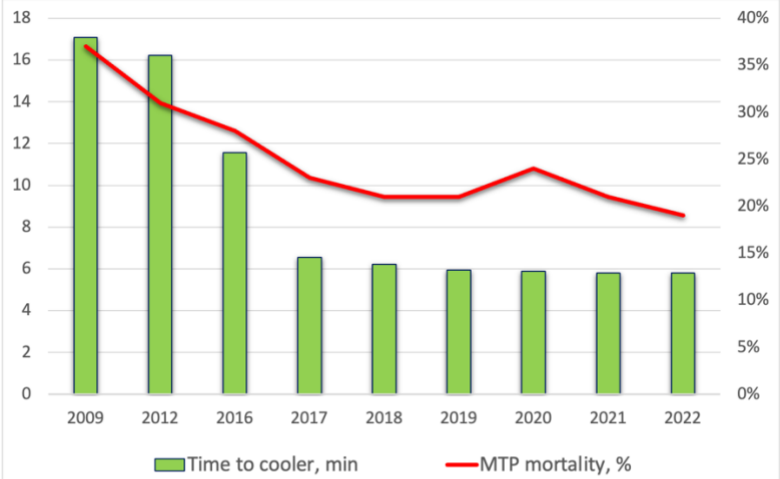
Background: In 2013, Trauma Quality Improvement (TQIP) guidelines for massive transfusion protocols (MTP) recommended delivery of the first blood product cooler within 15 minutes of activation. A subsequent study found that every 60 second delay in arrival of cooler from time of activation was associated with a 5% increase in the odds of mortality.

Objective: To assess the impact and sustainability of quality improvement (QI) interventions on time to the delivery of the first MTP cooler.

Methods: In 2009, a QI process was initiated at our hospital to improve MTP activation and delivery of blood (QI #1). In 2012, TQIP MTP Guidelines were fully implemented at our facility (QI #2). In 2016, we began activating MTP based off prehospital ABC score>1 or any prehospital blood transfusion (QI #3). To evaluate the sustainability of these historical QI interventions, all patients with MTP activated between 01/2017 and 12/2022 were evaluated. Primary outcome was time from MTP activation to first cooler prepared.

Results: 42,964 trauma patients were admitted during the study period, with 4,313 MTP trauma activations. With each historical QI intervention, MTP activations were more frequent, while time to cooler and mortality decreased (FIGURE), with no increase in product wastage. Outcomes associated with QI interventions were sustained over the study period.

Conclusion: Our study found that with increased activations, the delivery of the first cooler was faster and survival improved. Furthermore, no increase in product wastage was noted. The findings support previous work that increased volume improves system efficiency and correlates with improved outcomes.



	2009	2012	2016	2017	2018	2019	2020	2021	2022
Trauma admits	5703	6128	7305	7734	7265	7092	8944	10404	10889
Total MTP activations	109	127	240	425	441	607	866	1034	940
Time to cooler, min	17.08	16.21	11.58	6.54	6.23	5.93	5.89	5.80	5.81
Injury Severity Score	22	23	19	22	25	27	28	27	26
MTP mortality	37%	31%	28%	23%	21%	21%	24%	21%	19%

ePoster #25 | Abstract | Trauma/Burn/Critical Care

Incidence of Substance Use and Psychiatric Illness in Post-Traumatic Extremity Fractures - A Quality Improvement Proposal

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Objective: To demonstrate the incidence of substance use and new psychiatric illness in post-traumatic extremity fracture patients and introduce a method to improve follow-up care.

Methods: De-identified information was gathered via the TriNetX database and ICD-10 codes for extremity fractures were used to identify patients. Group 1 consisted of patients treated with opioid analgesics and Group 2 consisted of patients not administered opioids. Cohorts were matched by sex, age, race, ethnicity, BMI, and pain severity score. 15 outcomes were analyzed on the day of and 90 days post-index event via measures of association analyses.

Results: 209,108 patients were included in the study after matching. Patients treated with opioids demonstrated a significant ($p<0.01$) risk for opioid-related substance use and psychiatric disorders.

Conclusion: Patients treated with opioid analgesics were at a significantly higher risk for opioid-related disorders and psychiatric disorders. This raises concern as to whether these findings could have been prevented with frequent follow-up psychiatric and pain management visits. We propose a quality improvement project aimed at establishing a dedicated follow-up system in order to help these patients through their recovery process.

Table 1: Results of Measures of Association Analyses for Psychiatric Events

	Patients Treated With Opioids	Patients Treated Without Opioids	Odds Ratio (95% CI)	P-Value
Self-Harm	60	69	0.868 (0.614, 1.228)	0.4240
Psychological Trauma	10	10	1 (0.416,2.403)	1
PTSD	237	184	**1.287 (1.062, 1.561)**	**0.0100**
Mood Disorders	1648	1237	**1.339 (1.244, 1.442)**	**<0.01**
Anxiety Disorders	2174	1495	**1.465 (1.371, 1.565)**	**<0.01**
Opioid-Related Disorders	212	91	**2.34 (1.831, 2.992)**	**<0.01**
Encounter for Issue of Repeat Prescription	191	142	**1.346 (1.083, 1.673)**	**<0.01**
Drug Abuse Counseling and Surveillance	0	10	-	-
Mental and Behavioral Issues Due to Substance Use	1252	657	**1.947 (1.771, 2.14)**	**<0.01**

ePoster #26 | Abstract | Trauma/Burn/Critical Care

Relationship between the HS3ST1 Genotype and Outcomes in Hemorrhagic Shock

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Background: Vascular endothelium regulates coagulation and inflammation during trauma and hemorrhagic shock (HS). Binding of antithrombin (AT) to proteoglycan 3-OS heparan sulfate (3-OS-HS) on endothelial cells (EC) is a molecular off-switch for inflammation during trauma/HS. The HS3ST1 gene controls EC expression of 3-OS-HS. Past research identified a variant in a regulatory region of HS3ST1, rs16881446, for which individuals with G/G genotype have reduced EC expression of 3-OS-HS.

Objective: We aimed to determine the association between rs16881446 genotype and outcomes following major trauma/HS.

Methods: This retrospective review included consenting patients from a biorepository of blood mononuclear cells, ≥18 years old, with HS in a Level 1 trauma center. Quantitative Polymerase Chain Reaction determined genotype (A/A, A/G, or G/G). Patient demographics and outcomes were obtained from the trauma registry. Chi-square test compared outcomes between genotypes. Multivariable logistic regression measured the association between genotype and outcomes, controlling for age, sex, and injury severity.

Results: Of 472 total patients, 251 (53%) were A/A, 190 (40%) were A/G, and 31 (7%) were G/G. G/G patients had fewer ventilator-free days (p=0.05) and ICU-free days (p=0.09). Mortality was increased among patients with A/G and G/G compared to A/A (p=0.02). GG patients had higher rates of sepsis (p=0.001) and AKI (p=0.005). Genotype was an independent predictor of mortality (OR 2.03, 95% CI 1.26, 3.27; p=0.004).

Conclusion: Our findings implicate a key role for HS3ST1 genotype in regulating organ injury after trauma and HS. Importantly, HS3ST1 genotype may be a screening tool to identify patients at high risk of developing severe complications after trauma/HS.

	A/A (N=251)	A/G (N=190)	GG (N=31)	p-value
Age (years)	38 (26, 55)	41 (29, 57)	43 (30, 62)	0.28
Male (n, %)	188 (74.9%)	143 (75.3%)	20 (64.5%)	0.43
Race				0.75
White Non-Hispanic (n, %)	122 (48.6%)	90 (47.4%)	18 (58.1%)	
Hispanic/Latino (n, %)	80 (31.9%)	56 (29.5%)	6 (19.4%)	
Black (n, %)	46 (18.3%)	41 (21.6%)	6 (19.4%)	
Asian (n, %)	3 (1.2%)	3 (1.6%)	1 (3.2%)	
Other (n, %)				
Admission Vitals				
SBP (mmHg)	104 (82, 128)	100 (88, 120)	115 (90, 128)	0.50
DBP (mmHg)	64 (50, 79)	62 (52, 78)	69 (55, 82)	0.50
HR (bpm)	114 (90, 133)	111 (93, 128)	106 (88, 125)	0.28
Base Deficit (mmol/L)	-8 (-10, -6)	-8 (-11, -5)	-7 (-9, -6)	0.44
Injury Mechanism and Severity				
Blunt (n, %)	193 (76.9%)	137 (72.1%)	23 (74.1%)	0.48
Glasgow Coma Scale	3 (3, 15)	11 (3, 15)	3 (3, 15)	0.29
Injury Severity Score	27 (17, 38)	26 (16, 35)	29 (17, 43)	0.60
Patient Outcomes				
Ventilator-free days	27 (15, 30)	27 (0, 30)	18 (0, 27)	0.05
ICU-free days	21 (8, 26)	22 (0, 27)	11 (0, 25)	0.09
Hospital-free days	11 (0, 22)	9 (0, 20)	7 (0, 17)	0.43
Overall Mortality (n, %)	39 (15.5%)	50 (26.3%)	8 (25.8%)	0.02

ePoster #27 | Abstract | Trauma/Burn/Critical Care

Socioeconomic Disparities Based on Shooting Intent in Pediatric Firearm Injury

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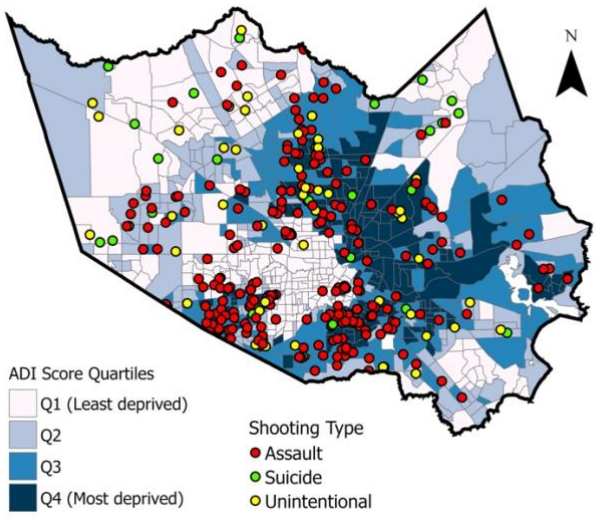
Background: Pediatric firearm injury is associated with socioeconomic disadvantage, though most studies only include fatal injuries and do not differentiate by intention.

Objective: We hypothesized that differences in neighborhood socioeconomic disadvantage would be observed among shooting intentions of fatal and nonfatal cases.

Methods: A linked integrated database of pediatric firearm injuries was developed from trauma center and medical examiner records in an urban Texas county (2018-2020). Shooting intent was determined by 2-3 independent reviewers. Geospatial analysis was utilized to map victim residences, stratified by shooting intent. Area Deprivation Index (ADI), a measure of neighborhood (census tract) socioeconomic disadvantage, was linked to shooting intent. Per ADI median split, differences in high (more deprived) versus low ADI among the shooting intents were assessed using chi-square tests.

Results: We identified 324 pediatric firearm injuries, of which 28% were fatal. 77% were classified as community violence (assault, bystander, unclear, other), 15% unintentional, and 8% suicide/self-harm. Differences in shooting intent across highest and lowest ADI quartiles were noted (p=.001). 73% of community violence and 62% of unintentional injuries were in the highest ADI quartiles; only 38% of suicide/self-harm were in the highest ADI quartiles (Figure 1).

Conclusion: Our results suggest pediatric firearm violence affects neighborhoods differently. Youth living in socioeconomically disadvantaged neighborhoods are more commonly affected by community violence and unintentional injuries compared to suicide/self-harm. Resources should be dedicated to improving concentrated neighborhood disadvantage. Furthermore, firearm suicide/self-harm injuries occur among children in less disadvantaged neighborhoods. Identifying these neighborhood-level disparities can inform development of streamlined injury prevention interventions by shooting intention.



ePoster #28 | Abstract | Trauma/Burn/Critical Care

Amphiregulin secretion is ameliorated by Notch Receptors and Cytokines in T-cells

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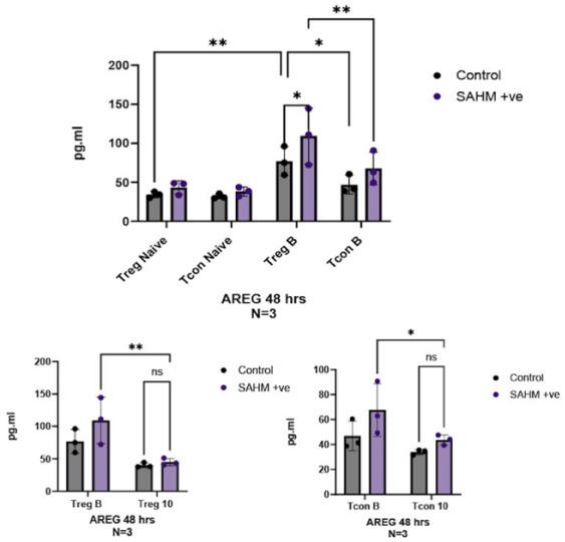
Background: Amphiregulin (AREG) is a pivotal regulator of immune responses, cell proliferation, and tissue repair. It can be potential a therapeutic target to regulate immune responses and facilitate wound healing and tissue regeneration in trauma patients. AREG has been implicated in shaping T-regulatory cells (Tregs) and T-conventional cell (T-con) functions; thus, it is important to identify pathways involved in AREG production.

Objective: NOTCH is a transmembrane protein family has been linked as a potential regulator of AREG production. Additionally, AREG production may be influenced by cytokines, such as IL-6, and IL-10. This study aims to investigate and compare the impact of NOTCH and cytokines on AREG production in peripheral Tregulatory and T-conventional cells.

Methods: In an in vitro setting, peripheral Tregs and T-con cells were isolated and expanded from 3 donors. To study cytokine effect on AREG production, the following were added: IL-6, and IL-10, with and without addition of SAHM1 (NOTCH inhibition). Culture supernant and cells were collected at 48 hours, AREG ELISA and Notch receptors 1-3 expression was also determined using flow cytometry.

Results: Notch inhibition increased AREG production over a 48-hour period in stimulated T-reg and T-con. Additionally, AREG secreted by stimulated T-regulatory was significantly higher when compared to T-con regardless of NOTCH inhibition. The addition of IL-10 and IL-6 decreases AREG production and Notch receptor expression on T-reg and T-cons. Results: The results indicate that IL-10 and IL-6 may decrease AREG production; as a cytokine produced by Tcells, this may serve as a negative feedback loop. Our data suggest that IL-10 and IL-6 cytokine may decrease AREG expression through modifying Notch receptor expression on T-cells.



Is Poor Oral Health Associated with Social Vulnerability in Critically Ill Trauma Patients?

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Background: Poor oral health has been associated with worse health outcomes, especially as there is no universal oral health coverage in the United States.

Objective: We hypothesized that poor oral health assessed by the Oral Health Risk Assessment Value Index (OHRAVI) is associated with social drivers of health and social vulnerability as measured by the Social Vulnerability Index (SVI) in a severely injured population.

Methods: Dentulous critically ill trauma patients were prospectively assigned an OHRAVI score, a bedside assessment tool for non-dentists. Unhealthy score was defined as greater than 1 (range 0 to 3). Patient demographics, comorbidities, and social drivers were collected. SVI was calculated using the CDC's database assessing vulnerability based on census-tract data. Bayesian regression analyses were performed, adjusting for age and comorbidities.

Results: Among the 170 patients, the median OHRAVI score was 1.13 (IQR 0.86-1.43) and 54% of patients had poor oral health. The median age was 42 years (IQR 28-57), and the median SVI was 0.7 (0.5-0.9). English was not the preferred language in 22% of patients, 7% lacked social support, 4% experienced housing instability, and 10% were divorced. Multiple social factors were associated with poor oral health (Table).

Conclusion: Low SVI, lack of social support, and housing insecurity are associated with poor oral health, assessed by the OHRAVI score, in critically ill patients. OHRAVI may be a quick, objective, bedside assessment to help identify socially vulnerable patients.

Factors Associated with an Unhealthy Oral Health Status in a Critically Ill Trauma Population

	OR (95% CrI)	PP OR>1
Lack of Social Support	1.66 (1.14-2.11)	0.99
Housing Insecurity	1.71 (1.14-2.14)	0.99
Social Vulnerability Index (per point)	1.88 (1.03-3.29)	0.98
Divorced	1.25 (0.83-1.70)	0.87
Non-English Language	1.20 (0.85-1.58)	0.86
Poor Health Literacy	1.10 (0.41-1.73)	0.60
Never Married	0.77 (0.55-1.03)	0.04

ePoster #30 | Case Review | Trauma/Burn/Critical Care

Rib Fracture with Incarcerated Lung Tissue: A Rare Case of Traumatic Lung Hernia

Texas Tech University HSC - El Paso

Introduction/Objective: Pulmonary contusions and associated rib fractures are common following blunt thoracic trauma. Complex injuries can result from traumatic lung hernia formation through defects in the thoracic wall, although rare. Here, we present the case of traumatic lung hernia through a rib fracture, which remains unreported in the literature.

Discussion: Traumatic lung hernias are rare and thought to arise by a sudden increase in intrathoracic pressure by forceful impact. Damage to intercostal muscles with associated rib fractures can cause weakness in the thoracic cavity that can lead to herniation of lung tissue. Operative repair is generally recommended secondary to risk of the thoracic wall defect and damaged lung tissue resulting in tension pneumothorax, hemoptysis, or strangulation of parenchyma. To our knowledge, our case is unique in that there have been no reported cases of lung tissue trapped within a rib fracture.

Conclusion: We believe that the best recommendation for this rare encounter, a traumatic lung hernia within a rib fracture, is operative repair as pulmonary complications associated with this injury may be increased.

Case Presentation: A 27-year old male presented as a pediatrician struck by a motor vehicle, sustaining a sixth rib fracture. CT thorax demonstrated anterior displacement of the fracture, parenchymal incarceration of lung tissue within the fracture line, and pneumothorax (Image 1). The patient was admitted for pulmonary optimization and surgical fixation. The patient underwent open reduction internal fixation of the rib fracture and wedge resection of incarcerated lung tissue.

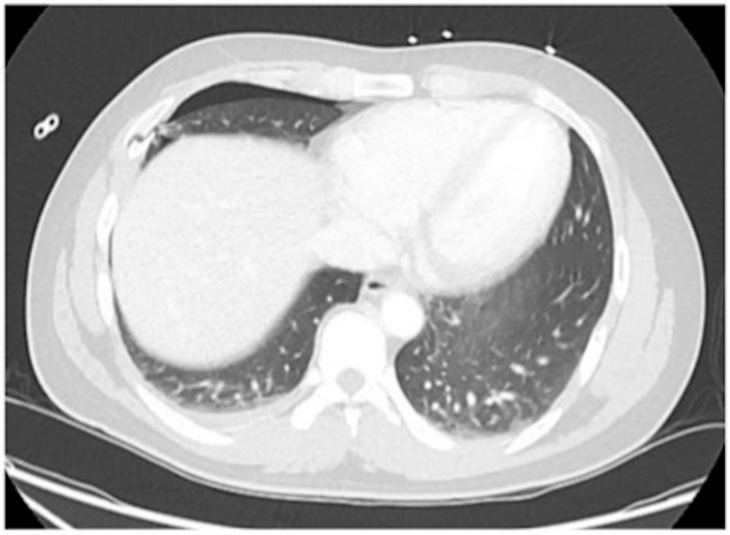


Image 1. CT demonstrates right pneumothorax, displaced right sixth rib fracture with right middle lobe trapped within rib fracture.

ePoster #31 | Case Review | Trauma/Burn/Critical Care

SMA syndrome following blunt trauma, an unexpected diagnosis

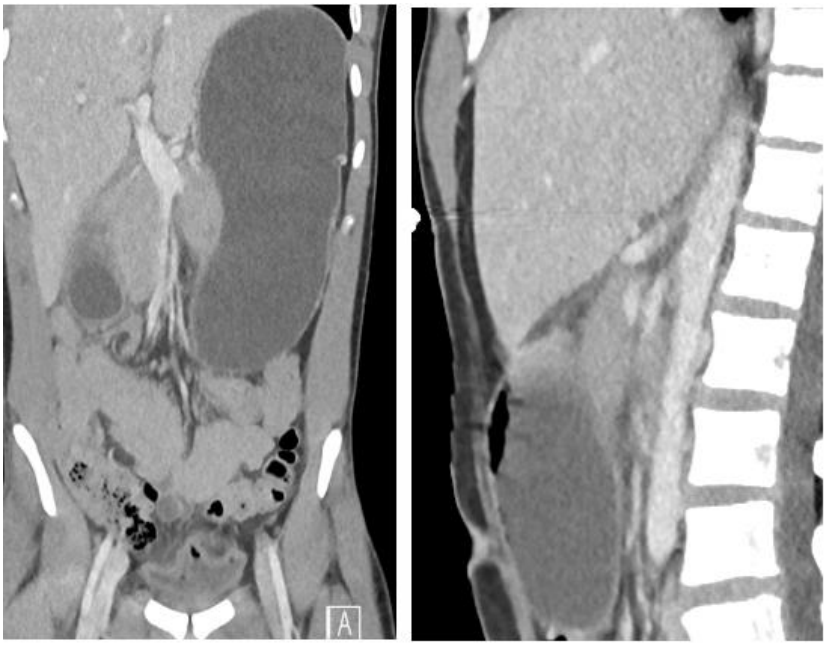
Texas Tech University HSC - El Paso

Introduction/Objective: Superior mesenteric artery (SMA) syndrome is a rare cause of intestinal obstruction. It is due to weight loss resulting narrowing of the aortomesenteric angle compressing the 3rd portion of the duodenum. This case highlights severe polytrauma causing rapid weight loss leading to SMA syndrome.

Discussion: The severe catabolic state of the poly-trauma patient cannot be overemphasized. The balance between keeping the patient NPO for procedures while ensuring adequate nutrition is difficult. This can result in severe weight loss and rarely SMA syndrome. Management was traditionally surgical however, it is now focused on adequate nutrition to increase the fat pad widening the aortomesenteric angle.

Conclusion: SMA syndrome must be kept as a differential for upper intestinal obstruction in the polytrauma population. Adequate nutrition is essential to prevent this and other complications.

Case Presentation: 28 year old male presented following a vehicular accident. Injuries included bilateral subdural hemorrhages, stable thoracic vertebral fractures, grade 3 liver, grade 3 right kidney injury, bilateral lower extremity fractures. Feeding was initiated hospital day 1, however this was interrupted as the patient had surgical fixation for his extremity injuries which occurred over the course of several days. On hospital day 9, he had recurrent episodes of vomiting, CT imaging revealing a distended stomach, narrowed aortomesenteric angle consistent with SMA syndrome. Following NGT decompression, the patient had a PEG tube with jejunal extension for feeding. He was discharged on tube feeds. On 6 week follow up, he was tolerating a regular diet and gaining weight without tube feeds.



ePoster #32 | Case Review | Trauma/Burn/Critical Care

Catheter Decompression of Abdominal Compartment Syndrome: Two Cases in Acute Burn Surgery

University of Texas Medical Branch - Galveston

Introduction/Objective: Abdominal compartment syndrome (ACS) is a life-threatening complication when organ dysfunction results from intra-abdominal hypertension (IAH). There are several risk factors for IAH/ACS that overlap with the pathophysiology of burn injury and acute burn management. The World Society of the Abdominal Compartment Syndrome (WSACS) updated their clinical practice guidelines to include the use of percutaneous catheter drainage (PCD) in patients where intraperitoneal fluid is seen

Discussion: Both cases demonstrated successful management of ACS via PCD. Burn patients are at risk for the development of ACS from both the pathophysiology of their burn injury and the volume resuscitation they receive.

Conclusion: In patients with ACS secondary to intraperitoneal fluid accumulation, PCD can provide adequate decompression with less morbidity than a laparotomy. This therapeutic option should be considered for patients with burns and other conditions like pancreatitis, where IAH causes ACS.

Case Presentation: Two cases of ACS managed at our children's hospital were selected for review. Patient A had 68% TBSA partial and full thickness burns and developed ACS following her acute burn resuscitation. Management was ultrasound-guided PCD, removing a liter of intraperitoneal fluid with normalization of abdominal pressures as well as improvement in both hemodynamics and ventilatory requirements. Patient B had 71% TBSA partial and full thickness burns and developed ACS further along in her hospital course following her first excision and grafting and treatment of parasitic gastrointestinal infection. PCD was performed with rapid improvement in her condition.

Opioid Exposure in Smokers: A Secondary Analysis of a Randomized Clinical Trial

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Background: The Multi-Modal Analgesic Strategy for Trauma (MAST) trial randomized patients to our original institutional multi-modal pain regimen (MMPR) or the MAST MMPR comprised of generic medications and no scheduled opioids.

Objective: We hypothesized that smokers would have higher opioid exposure, which would be reduced with the MAST MMPR.

Methods: This was a secondary analysis of the MAST trial. Patients without a recorded smoking history were excluded. Univariate analyses were used to compare baseline characteristics, and Bayesian multivariate linear and logistic models were developed to compare morphine milligram equivalents per day (MME/d), total MME, rate of opioid prescription at discharge (OP%), and pain scores.

Results: A total of 1504 (96.3%) patients were included for analysis and 460 (30.6%) were smokers. Smokers were younger, male, and had increased rates of previous opioid or alcohol use. Despite similar injury severity scores (ISS) and operative rates, smokers had an absolute and relative increase in MME/d, total MME, OP%, and pain scores with high probability (Table 1).
Smokers randomized to the MAST MMPR had an absolute reduction of 10 MME/d with a relative risk reduction of 12% with 93.5% probability of benefit and a 2.7 decrease in OP% with 80.3% probability of benefit; however, there was an only 64.9% probability of benefit for reduction of total MME.

Conclusion: Traumatically injured smokers have increased inpatient opioid exposure despite similar ISS and operative rates to non-smokers. The MAST MMPR reduced MME/d and OP% but only modestly reduced total MME. Additional non-opioid pain management strategies could be beneficial among this high-risk group.

Table 1: Opioid Exposure in Smokers versus Non-smokers

	Smokers (n=460)	Non-smokers (n=1044)	Relative Risk (95% Credible Interval)	Posterior Probability RR > 1
MME per Day	52 [27, 79]	36 [15, 62]	1.21 (1.07 – 1.37)	99.9%
Total MME	259 [110, 609]	167 [61, 386]	1.22 (1.06 – 1.41)	99.7%
Opioid Prescription at Discharge	312 (67.8%)	674 (64.6%)	1.08 (0.85 – 1.37) [OR]	74.4%
Average NRS Pain score	3.9 [2.4, 5.1]	3.1 [1.7, 4.5]	1.17 (1.09 – 1.25)	100%

**Models controlled for by sex, MAST arm, unit of admission, mechanism of injury, injury severity score, and if the patient received regional anesthesia*
**Models utilized neutral prior of 1, 95% credible interval (0.25, 4)*
Continuous data presented as: median [interquartile range]
Categorical data presented as: number (percentage)

ePoster #34 | Abstract | Trauma/Burn/Critical Care

Outcomes of Resuscitative Thoracotomy with Aortic Cross Clamping for Cardiac Injuries

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University of Texas at Austin Dell

Background: Despite advances in modern trauma care, survival following resuscitative thoracotomy in the Emergency Department (EDT) continues to be observed primarily in patients with injuries able to be addressed at the time of thoracotomy. Historically, survival is higher for cardiac stab wounds compared to gunshot wounds, and in isolated right heart injuries.

Objective: We hypothesize that contemporary outcomes following EDT for cardiac injuries have remained unchanged and are largely dependent on mechanism and chamber of injury.

Methods: The AAST AORTA database was utilized to identify patients with diagnosed cardiac injuries at the time of EDT with resuscitative aortic occlusion from 2015 to 2022. ISS, AIS, demographics, cardiac chamber involvement, and mechanism of injury were evaluated.

Results: Of 152 patients who met criteria, the rate of survival after penetrating cardiac injury was 9.2%, vs 0% in blunt injuries. Among penetrating injuries, the survival rate of stab wounds was significantly higher than that of gunshot wounds (18.8% vs. 4.7%, $p = .015$). Survival rates were higher among repairs of isolated injuries to left atrium (12.5%) and left ventricle (12.1%), when compared with right ventricle (8.3%) and right atrium (5.0%). Multi-chamber injury was identified in 32 patients with a survival of 3.1%.

Conclusion: Patients with cardiac stab wounds had increased survival compared to gunshot wounds. However, there was a higher survival rate among isolated left compared to right heart wounds. All patients underwent aortic cross-clamping, thus this may be an independent predictor of outcomes following isolated cardiac chamber injuries.

Are Inflammatory Biomarkers Associated with Organ Space Surgical Site Infections in Massively Transfused Patients?

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University of Texas HSC - Houston

Background: Elevated inflammatory biomarkers (IB) are associated with surgical site infections (SSI) after elective surgery, but it is unknown how stress such as trauma and massive transfusion (MT) affect this relationship.

Objective: To assess the association of IB and organ space SSI (OS-SSI) after emergency laparotomy (EL) in MT trauma patients.

Methods: Post-hoc, single-center analysis of the Pragmatic, Randomized Optimal Platelet and Plasma Ratios (PROPPR), which randomized severely injured trauma patients in hemorrhagic shock expected to receive a MT. Blood samples of EL patients surviving ≥ 48 hours were analyzed for IL6, IL8, G-CSF, MCP-1, neutrophil to lymphocyte ratio (NLR), and platelet to lymphocyte ratio (PLR) levels. Analyses used the Wilcoxon rank-sum test.

Results: Of 74 eligible patients, 80% were male, 68% sustained blunt trauma, and the median Injury Severity Score was 32.7 (IQR 24.0-41.0). Sixteen patients (21.6%) developed an OS-SSI, of which 14 underwent damage control laparotomy (DCL). The median time to EL was 0.7 hours (IQR 0.5-0.9), to hemostasis 2.7 hours (IQR 2.1-3.4), and to first take-back for patients undergoing DCL was 27.0 hours (IQR 21.0-35.0). The median levels of IL-6, IL-8, and MCP-1 were significantly higher in patients with an OS-SSI as compared to levels in those without an OS-SSI, especially at 24 hours. G-CSF, NLR, and PLR levels were not associated with an OS-SSI.

Conclusion: Specific IB were elevated in MT injured trauma patients who developed an OS-SSI after EL and may be useful in predicting patients at high risk for an OS-SSI.

Marker	Median Level OS-SSI (ng/ml)	Median Level No SSI (ng/ml)	P-value
IL6_12	1599	520	0.047
IL6_24	1701	254	0.012
IL8_12	420	99	0.009
IL8_24	192	53	0.004
MCP-1_12	879	427	0.070
MCP-1_24	545	234	0.048

ePoster #36 | Abstract | Trauma/Burn/Critical Care

Central Texas Snakebites: A Retrospective Review of 11 Years of Institutional Data

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Texas A&M Scott and White

Background: Bites from Crotalid snakes (e.g., rattlesnakes, copperheads, water moccasins) are relatively common in Central Texas. Though mortality is rare, morbidity related to pain, debility, and coagulopathy can be significant.

Objective: This study aimed to review data from all snakebitten patients over an 11-year period at one institution to determine their characteristics as a population. This data was used to examine relationships between demographic and clinical metrics.

Methods: All snakebitten adult patients between 2012-2022 (n=229) were retrospectively reviewed at a single institution. Each patient's characteristics and circumstances (e.g., gender, bite location, antivenom type, etc.) were collected. The statistical significance of relationships between these characteristics was determined using chi square or t-test analysis.

Results: 229 patients sustained snakebite injuries during the study period, including 134 males and 95 females. Median age was 48 years with median BMI 27. 125 patients (54.59%) were bitten by rattlesnakes. Overall distribution of bite location (upper vs lower extremity) was nearly equivalent (49.34% vs 50.66%). 165 patients (72.05%) were admitted to an intensive care setting per institutional protocol. Furthermore, 165 patients (72.05%) received Crofab for antivenom. 87 males (64.92%) were bitten on the upper extremity compared to 26 females (27.36%) ($p<0.0001$). 17 males and 18 females were readmitted for coagulopathy (12.69% and 18.95%, respectively).

Conclusion: Males were statistically more likely to be bitten on the upper extremity than females. No other statistically significant associations were found, though an understanding of this retrospective data may be clinically significant for the care of future snakebitten patients.

Current State of Intraoperative Resuscitation

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University of Texas at Austin Dell

Objective: To investigate how intraoperative resuscitation compares to balanced resuscitation utilized in preoperative settings.

Methods: We performed a retrospective study (2017-2022) of bleeding trauma patients (MTP activated and received at least three units of blood) taken for an emergent (directly from ER to OR) hemorrhage control operation (laparotomy, thoracotomy, sternotomy, or open vascular procedure). Anesthetic record was reviewed for each patient to document intraoperative management.

Results: 262 patients met inclusion criteria. 43% sustained penetrating trauma with an average ISS of 29. 84% of patients were male with average age of 39 years. Average time from ER to OR was 39 minutes. Intraoperative resuscitation averaged 2,700 cc crystalloid, 1.5 units whole blood, 7.7 units pRBCs, 7.3 units plasma, and 10.1 units platelets. Adjuncts to resuscitation included vasopressors (79%), calcium (90%), and bicarbonate (56%). Intraoperative physiology (Table 1) improved during the operation. Overall mortality was 27%. After logistic regression controlling for confounding variables, age [1.1 (1.05-1.2), p=0.001], ISS [1.2 (1.1-1.3), p=0.0007], hypotension [0.04 (0.004-0.39), p=0.005), end of OR lactate [1.5 (1.1-2.1), p=0.02], and minimum OR temperature [0.5 (0.3-0.9), p=0.02] were independently associated with increased mortality.

Conclusion: Intraoperative resuscitation of bleeding trauma patients adheres to balanced resuscitation. Adjuncts to resuscitation are common, and patients display an improved physiology through the index operation. Intraoperative factors of persistent lactic acidosis and hypothermia are independently associated with mortality.

Table 1: Intraoperative physiology correction

Physiologic Variable	Beginning of Case	End of Case
Heart Rate	105 bpm	87 bpm
Systolic Blood Pressure	109 mm Hg	118 mm Hg
pH	7.16	7.27
Lactate	6.4 mmol/L	5.3 mmol/L
Hemoglobin	12.4 g/dL	11.4 g/dL
INR	1.20	1.24

ePoster #38 | Abstract | Trauma/Burn/Critical Care

Intraoperative Factors Associated with Unplanned Return to the Operating Room After Emergent Hemorrhage Control Surgery

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University of Texas Austin - Dell Medical School

Objective: The objective of this study was to identify intraoperative factors associated with uROR after emergent hemorrhage control procedures in bleeding trauma patients.

Methods: We utilized anesthetic record of intraoperative management to perform a retrospective study (2017-2022) of bleeding trauma patients who were taken for an emergent hemorrhage control operation.

Results: 227 patients met inclusion criteria, 46 (20%) had uROR and 181 (80%) did not. While there was no difference in demographics, mechanism, admission physiology, or time from ER to OR, the uROR patients had a higher ISS (32 vs. 27, p=0.04). During the index operation, uROR patients received more packed cells (10u vs. 6u, p=0.004) and plasma (9u vs. 6u, p=0.02), but there was no difference in crystalloid (3,095cc vs. 2550cc, p=0.23). Damage control surgery (DCS) was more common in uROR patients (78% vs. 45%, p<0.0001). After logistic regression, >/= 10u of packed cells in the OR [4.3(1.5-12.8), p=0.009], crystalloid [1.0 (1.0-1.001), p=0.009], INR [7.6 (1.3-45.7), p=0.03], and DCS [5.7 (1.7-19.1, p=0.005] were independently associated with uROR.

Conclusion: Massive transfusion, crystalloid resuscitation, persistent coagulopathy, and DCS are the most significant risk factors for uROR. During hemorrhage control surgery in bleeding trauma patients who receive >/= 10 units of blood, providers must maintain a keen focus on minimizing crystalloid and correcting coagulopathy prior to leaving the operating room, particularly after damage control procedures.

ePoster #39 | Abstract | Trauma/Burn/Critical Care

Efficacy of Whole Blood in Non-traumatic Hemorrhage: evaluation of Gastrointestinal Bleed and Cardiothoracic Surgery resuscitation

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Introduction: Whole blood (WB) transfusion is associated with improved clinical outcomes compared to component therapy (CT) in patients with traumatic injury[1], but the utility of WB in non-traumatic hemorrhage has not been extensively studied. This retrospective case-control study compared outcomes of patients with hemorrhage from gastrointestinal bleeding (GIB) and cardiothoracic surgery (CTS) who underwent resuscitation with CT, WB, or both (WB+CT).

Hypothesis: We hypothesized noninferiority of utilizing WB in GIB & CTS resuscitation compared to CT.

Methods: A retrospective review was conducted of patients transfused for GIB or CTS who received CT and/or WB from February 2018 to July 2022 at a single academic institution. Demographics, etiology, and outcome data were reviewed. The primary outcome was in-hospital mortality, and secondary outcomes included total units transfused and hospital length of stay (LOS).

Results: A total of 159 patients (103 GIB, 56 CTS) were included. In both GIB and CTS, patients resuscitated with WB-only received fewer total units than those receiving CT or WB+CT, and showed no difference in mortality compared to CT. Both GIB and CTS WB+CT groups used more total units and had longer LOS. A higher mortality rate was seen in CTS WB+CT.

Discussion: This retrospective study investigated outcomes of utilizing WB in patients transfused for GIB and CTS. The WB-only groups showed no difference in mortality or LOS but utilized fewer total blood products compared to standard of care CT. Both GIB and CTS WB+CT groups used more total units and had longer LOS. The CTS WB+CT group demonstrated higher mortality. Investigation into this group showed that patients who died were transfused with a greater number of total units as well as far more units of CT prior to receiving WB than patients who survived. This indicates higher clinical acuity. Further studies with higher power are needed, but our data suggests utilizing WB is safe and effective in these resuscitation efforts and demonstrates the potential to expand its use to a broader patient population.

Reference: 1. Hazelton JP et al. Stored Whole Blood is Associated With Improved Mortality in Hemostatic Resuscitation of Major Bleeding: A Multicenter Study. Ann Surg. 2022 Oct 1;276(4):579-588.

	GASTROINTESTINAL BLEED		CARDIOTHORACIC SURGERY	
	CT only	WB+CT/ WB only	CT only	WB+CT/ WB only
n	13	42/ 26	14	24/ 4
Male	8 (62)	28 (66.7)/ 16 (61.5)	8 (57.1)	13 (54.2)/ 2 (50)
Age in years, median (range)	65 (50-77)	59.8 (34.2-72.2)/ 56.4 (23.9-89.4)	55.5 (39-77)	57.7 (0.01-82.9)/ 53.9 (0.4-78.6)
Total units blood products, average, median (range) [p-value]	7.3, 4 (3-24)	19.5, 12 (2-139) [0.08]/ 3.4, 2 (1-11) [<0.05]	5.9, 4.5 (3-14)	30.6, 11.5 (2.4-195) [0.05]/ 1.5, 1.5 (1-2) [<0.05]
Mortality, n (%) [p-value, RR, 95% CI]	4 (30.8)	20 (47.6) [0.3, 2.2, 0.8-6.4]/ 8 (30.8) [0.3, 1, 0.4-2.7]	3 (21.4)	11 (42.9) [0.1, 2, 0.5-6.4]/ 1 (25) [0.9, 1.2, 0.2-8.4]
Length of stay in days, median (range) [p-value]	4 (2-12)	7.9 (0.3-56.9) [<0.05]/ 3.8 (0.02-13.2) [0.7]	16 (2-48)	13.9 (0.1-213.9) [0.36]/ 4.8 (0.2-11.2) [0.1]

Advanced Prehospital Interventions are Not Associated with Improved Outcomes in Hypotensive Trauma Patients

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Objective: To compare outcomes for hypotensive trauma patients treated with and without API.

Methods: Retrospective review of adult trauma patients with initial systolic blood pressure <90mmHg (January 2014-April 2021). Patients were categorized as API (airway, pleural decompression, pelvic stabilization, tourniquet) or No API and by mechanism of injury. Groups were compared via univariate and multivariate analysis. Primary outcomes were emergency department (ED) and in-hospital mortality. Secondary outcomes included ED normotension, massive transfusion protocol (MTP), and hemorrhage control procedures.

Results: 330 patients met inclusion criteria. Dispatch (12min vs. 9min, p=0.003), scene (15min vs. 13min, p=0.04) and total prehospital time (42min vs. 36min, p=0.02) were longer for API patients. On multivariate logistic regression, API was independently associated with MTP (Adjusted OR [95% CI] 2.03 [1.17-3.53] p=0.01). API was not associated with ED mortality (Adjusted OR [95% CI] 1.29 [0.23-7.11] p=0.77), in-hospital mortality (Adjusted OR [95% CI] 1.51 [0.64-3.60] p=0.35), ED normotension (Adjusted OR [95% CI] 0.65 [0.38-1.12] p=0.12), or hemorrhage control procedures (Adjusted OR [95% CI] 1.36 [0.77-2.41] p=0.29). 229 patients (69%) sustained blunt trauma. For this subgroup, API was not independently associated with any outcomes. 101 patients (31%) had penetrating trauma. We were unable to run a regression for this subgroup due to limited sample size.

Conclusion: API increased scene and total prehospital time and was independently associated with an increased need for MTP. Rapid transport to trauma centers should be prioritized for hypotensive trauma patients.

ePoster #41 | Abstract | Trauma/Burn/Critical Care

From Blunt to Penetrating: Evaluating Trauma Changes in the Wake of COVID-19

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Background: The implementation of public health measures aimed at curbing COVID-19 altered trauma injury patterns across the US, notably showing an increased prevalence of penetrating trauma incidents. We investigated the rate and nature of traumatic injuries as well as associated mortality before and after the pandemic at a safety-net Level 1 Trauma Center in Houston, TX.

Objective: To examine the impact of COVID-19 on trauma injury patterns and outcomes at a Level 1 Trauma Center in Houston.

Methods: A retrospective analysis of trauma registry data was conducted to compare injury patterns, patient demographics, injury severity, and outcomes between the pre-COVID-19 (January 2017 to February 2020) and post-COVID-19 (March 2020 to December 2022) periods. Descriptive statistics, chi-square, fisher's exact and student t-tests were employed to assess differences and associations.

Results: The study included a total of 7757 participants with a median age of 39 years (28, 55) and approximately 20% being female (Table 1). The cohort was divided into pre-COVID-19 (n = 3645) and post-COVID-19 (n = 4112) groups. Notably, a statistically significant increase in penetrating trauma incidents was observed in the post-COVID-19 period (29.7% vs. 31.3%, p=0.002), accompanied by a significant decrease in blunt trauma cases (71.1% vs. 69%, p=0.001). Fewer patients were admitted to the hospital post-COVID-19 (91.4 % vs 88.1%, p <0.001), with no overall significant differences in mortality, length of stay, or ICU admission. Subgroup analysis of prehospital arrest participants revealed a significant increase in penetrating trauma rates post-COVID-19 (54% vs 69%, p=0.008). An overall increase in mortality was also noted among patients who presented with penetrating trauma (14.7% vs. 19.1%, p=0.007).

Conclusion: There is a noteworthy shift in post-COVID-19 trauma patterns characterized by increased penetrating trauma rates and associated higher mortality. These findings necessitate targeted public health interventions in order to improve trauma outcomes in the post-pandemic landscape.

Table 1. Comparisons between Pre and Post COVID-19 groups.

	All Patients			
	Total (n=7757)	PRE-COVID-19 (n=3645)	POST-COVID-19 (n=4112)	P-value
Admissions (%)	6812 (89.6%)	3243 (91.4%)	3569 (88.1%)	<0.001
Mortality (%)	735 (9.5%)	323 (8.9%)	412 (10%)	0.091
Trauma Type				
Blunt	5370 (69%)	2591 (71.1%)	2779 (67.6%)	0.001
Penetrating	2305 (29.7%)	1019 (27.9%)	1286 (31.3%)	0.002
Other	70 (1%)	30 (0.8%)	40 (1%)	
	Penetrating Trauma Cohort			
	Total (n = 2305)	PRE-COVID-19 (n=1019)	POST-COVID-19 (n=1286)	P-value
Admissions (%)	2006 (88.2%)	911 (90.8%)	1095 (86.1%)	<0.001
Mortality (%)	395 (17.1%)	150 (14.7%)	245 (19.1%)	0.007