

POSTER #1

Case Review | Clinical Science | Abdominal/Laparoscopy

APPENDICEAL SPIROCHETOSIS IN A PREGNANT FEMALE

Hirsch A, Nguyen T, Hoof M

Introduction/Objective: Between 0.1 and 0.6% of pregnant women will get appendicitis. Beyond clinical and laboratory findings, ultrasound is commonly used to support the diagnosis of appendicitis in the pregnant female patient. We present a case today in which the clinical and laboratory findings were suggestive of appendicitis, but ultrasound (US) was normal.

Case Presentation: A 19-year-old female gravida one, at 22 weeks current gestation, presented with worsening right lower quadrant (RLQ) abdominal pain for two days, with associated vomiting. She had a recent history of extensive travel in an underdeveloped part of the world. Vital signs were within normal limits. Physical examination revealed tenderness to palpation of the RLQ of the abdomen, with no uterine fundal tenderness. Pertinent laboratory evaluation included a normal white blood cell count, but with a left shift. Ultrasound of her abdomen and pelvis was performed, which did not show an enlarged appendix, pelvic fluid or mass, and no abnormality of the gravid uterus. The patient subsequently underwent a laparoscopic appendectomy. Grossly, the appendix appeared normal. She had no right lower quadrant abdominal pain from the immediate post-operative period through discharge and outpatient follow-up. The histological findings confirmed appendiceal spirochetosis.

Discussion: *Pilosicoli*, a type of spirochete, was found in the appendix of our patient. This organism attaches to the colorectal epithelium in a perpendicular manner, which creates a false blue brush border on histological examination. The organism has been associated with loss of integrity of the mucosal border. There have been numerous case reports of this organism being a possible etiology of appendicitis. The prevalence of intestinal spirochetosis is 1-1.5% in developed regions of the world, and 11.4-64.3% in undeveloped regions of the world. In the case of our patient, her clinical picture and recent extensive travel to an underdeveloped part of the world raised adequate suspicion for appendicitis of possible atypical etiology.

Conclusion: Appendicitis secondary to spirochete invasion of the appendiceal mucosa should be included in the differential diagnosis of a patient with clinical findings suspicious for appendicitis, especially if the history includes recent travel in underdeveloped regions of the world.

POSTER #2

Abstract | Clinical Science | Bariatric Surgery

EVALUATING USE OF VITAMIN PATCHES IN BARIATRIC SURGERY PATIENTS

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Background: Adherence to extensive micronutrient supplementation regimens can be challenging for bariatric surgery patients. Companies have introduced alternative approaches to vitamin supplementation, such as transdermal vitamin patches, to address the significant pill burden associated with traditional oral supplements. While there are marketing campaigns recommending this route; currently, there are not any high quality data demonstrating the efficacy of vitamin patch delivery of micronutrients. We hypothesized that despite limited data, bariatric surgery patients are utilizing vitamin patches as a source of micronutrient supplementation.

Objective: The purpose of this study is to determine the frequency of use of patch vitamins in bariatric surgery patients.

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

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

Conclusion: This survey indicates low utilization rates for vitamin patches amongst bariatric surgery patients. However, this survey also indicates that patients are interested in using patches. Further research is necessary to understand the efficacy of transdermal vitamins, particularly in bariatric patients who may have altered pharmacokinetics and/or transdermal absorption barriers.

POSTER #3

Case Review | Clinical Science | Bariatric Surgery

NOVEL USE OF ENDOSCOPIC FULL-THICKNESS-RESECTION-DEVICE IN PATIENT WITH SUBMUCOSAL GASTRIC LESION UNDERGOING ROUX-EN-Y GASTRIC BYPASS

L Clevenger, AH El Chafic, J Koller Gorham

Introduction/Objective: Current guidelines recommend at least annual endoscopic surveillance for subcentimeter subepithelial lesions (SEL) of the upper GI tract. This surveillance is limited, however, in patients who have undergone roux-en-y gastric bypass (RYBG). The endoscopic full-thickness resection device (FTRD) has been shown to be a safe method for the resection of SELs in the lower GI tract. We report the first use of the FTRD on a gastric SEL in the state of Louisiana in a patient undergoing laparoscopic RYGB.

Case Presentation: Patient is a 53 year-old morbidly obese woman with BMI 49 kg/m² and hypertension, hyperlipidemia, and history of remote laparoscopic adjustable gastric band placement who presented with GERD, esophagitis, and nondysplastic Barrett's esophagus. On preoperative EGD she was found to have a 1-cm firm SEL in the antrum of her stomach; EUS revealed a hypoechoic layer 3 lesion concerning for possible carcinoid. Given her weight regain and esophageal metaplasia, she desired conversion to laparoscopic RYGB. Given the limited ability for endoscopic surveillance following gastric bypass, the Ovesco FTRD was used to resect the SEL as an outpatient procedure. Final pathology was consistent with a lipoma. She successfully underwent laparoscopic removal of LAGB with conversion to RYGB 3 months later.

Discussion: The presence of GERD is relevant when considering bariatric surgery. Although laparoscopic sleeve gastrectomy (LSG) is not an absolute contraindication in patients with Barrett's, RYGB is regarded by many to be the best bariatric surgical option for this population due to the concern that LSG may contribute to a higher incidence of gastroesophageal reflux, with literature citing up to 17% de novo rates of Barrett's after LSG.

This patient was found to have a gastric SEL on preoperative EGD which created a unique situation; current recommendations for gastric SELs less than 2 cm are for annual surveillance, however this would not be possible following conversion from lap band to RYGB. Given its small size and proximity to the pylorus, we were concerned about the efficacy and safety of wedge resection.

The Ovesco FTRD is an endoscopic tool used for full-thickness resection for suitable lesions in the GI tract. Its application includes a cap with a preloaded clip which closes the potential defect around the targeted tissue before a snare is used to cut the specimen, ensuring complete closure of any potential defect. It allows for the endoscopic en-bloc resection of a targeted tissue with all layers including serosa. Originally described for use in the lower GI tract, we safely performed the first use of the Ovesco FTRD on an upper GI SEL in the state of Louisiana.

Conclusion: Endoscopic FTRD is a well-established method of SEL resection in the lower GI tract. This case demonstrates safe application in the upper GI tract in a complex case of surgical decision-making. Further research is needed as new endoscopic full-thickness resection devices designed for upper GI use come onto the market.

POSTER #4

Abstract | Clinical Science | Bariatric Surgery

HOW DO YOU VITAMIN? CURRENT TRENDS IN MICRONUTRIENT SUPPLEMENTATION USE AMONG BARIATRIC SURGERY PATIENTS

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Background: Post-operative bariatric surgery micronutrient supplementation regimens can be cumbersome, inconvenient, and unpalatable, which presents potential barriers to adherence. While there are many studies evaluating the effects of micronutrient deficiencies, there are very few studies evaluating post-operative supplement usage patterns.

Objective: The purpose of this investigation is to describe micronutrient supplementation use among bariatric surgical patients.

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

Results: Preliminary data shows that, of the 480 respondents included in this study 452 (94.2%) were female and the median (interquartile range) age was 49 (41-56). Four hundred thirty four (90.4%) patients said that they take their multivitamin and/or calcium/vitamin D supplements. Of these, 429 (98.8%) take multivitamins; 313 (73.0%) reported taking them daily and 73 (17.0%) reported taking them 4-6 days a week. However, adherence with calcium/vitamin D supplementation was lower with 356 (82.0%) respondents taking them. Of these, 242 (68.0%) reported daily use and 65 (18.3%) reported use 4-6 days per week. Most patients describe taking more than two supplements each day (figure 1). Each month, 135 patients spend less than \$20, 283 (59.0%) spend between \$20-50 and 62 (12.9%) spend more than \$50 to buy their vitamin supplements.

Conclusion: Micronutrient supplementation is important for post-operative bariatric surgical care. It is important to understand the current usage patterns to identify barriers to adherence and improve patient care. Our data indicates moderate adherence to typically recommended supplementation regimens. In order to ensure high quality care, inconsistencies in supplementation patterns should be addressed as part of the typical post-operative course. More research in this area is warranted in order to determine the most effective methods of increasing patient compliance.

POSTER #6

Abstract | Clinical Science | Endocrine

PREDICTIVE FACTORS FOR FAILURE OF THE INITIAL DOSE OF RADIOIODINE THERAPY IN GRAVES' DISEASE: META-ANALYSIS

M Shalaby, D Hadedeya, E Toraih, A Elnahla, K Ibraheem, M Weidenhaft, M Serou, L Grace Lee, E Kandil

Background: Radioactive iodine therapy (^{131}I) is a well-known treatment modality for Graves' disease (GD). Many different factors that may influence its success, and affect the decision for surgical referrals. However, the results of these studies are conflicting.

Objective: This study was carried out to identify factors that could predict failure of ^{131}I therapy which will lead to early referral for surgical resection.

Methods: PubMed, Web of Science, Medline, and Cochrane Controlled Trials Register databases, from 2000 to May 2019 were searched systematically according to PRISMA guidelines. Eligible studies provided sufficient comparative data between succeeded and failed groups after ^{131}I therapy were included and comprehensive Meta-analysis version 3.0 was used.

Results: Eighteen studies; nine retrospective cohort studies, four prospective cohort studies, and five randomized clinical trials, with a total of 4822 GD patients (3591 females and 1231 males) were included in the current meta-analysis. After administration of the initial dose of ^{131}I therapy, 3849 (79.8%) patients were successfully treated. Our results revealed having any of the following factors before ^{131}I therapy were significantly associated with treatment failure; male gender (RR: 1.23, 95% CI: 1.08 to 1.41, $P = 0.002$), high free T4 serum level (OR: 1.49, 95% CI: 1.06 to 2.10, $P = 0.02$), ^{131}I therapy after 6 months of GD diagnosis (RR: 2.10, 95% CI: 1.45 to 3.04, $P =$ Further analysis was done and determined the optimal cutoff values with significant risk ^{131}I therapy failure for thyroid volume at >35.77 ml (OR: 2.54, 95%CI: 1.67 to 3.86, $P = 60.62\%$ (OR: 1.45, 95%CI: 1.18 to 1.79, P

Conclusion: High free T4 level, disease duration for more than six months, history of anti-thyroid drugs usage, high 24-hours radioactive iodine uptake scan, and large thyroid volume are predictors for failure of RAI in patients with Graves' disease. These should alert referring endocrinologists to the higher chances of treatment failure and early referral for surgical resection could be considered.

POSTER #7

Abstract | Clinical Science | Endocrine

IMPACT OF THYROIDECTOMY AND MEDICAL TREATMENT ON CARDIAC MANIFESTATIONS IN GRAVES' DISEASE

A Elnahla, A Attia, H Shalaby, R Munshi, M Akkera, M Shalaby, A Michael, E Kandil

Background: Graves' disease (GD) is well known to have multiple adverse effects on the cardiovascular system. Treatment options are surgical, medical and radioiodine. Though all options are effective, neither is without side effects and there is no consensus as to which is the best treatment.

Objective: We aimed to compare the cardiovascular outcomes with surgical treatment by means of a thyroidectomy versus medical treatment in patients with GD.

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

Results: Of a total of 151 patients with GD with cardiac manifestations, 69 (45.6%) patients underwent thyroidectomy and 82 (54.3%) patients underwent medical treatment. Manifestations were grouped into 3 categories Hypertension, Tachyarrhythmia and congestive heart failure. 44.7% of patients with hypertension resolved in surgical group vs 18% in medical group ($P=0.027$). Additionally, 85.9% of patients in the surgical group and 66% in the medical group presenting with tachyarrhythmia including atrial fibrillation and tachycardia were improved ($p=0.016$). Congestive heart failure in both groups was improved in up to 60% of patients in surgical group and 40% in medical group ($P=0.592$). Overall all cardiac manifestations were improved in 69% of surgical group and 42.6% of medical group ($P=0.0002$) following achievement of euthyroid state.

Conclusion: Surgical treatment offers a significant and rapid clinical improvement of the cardiac manifestations in GD patients including hypertension and tachyarrhythmia. Surgery should always be considered in GD patients especially with cardiac manifestations.

POSTER #8

Abstract | Clinical Science | Endocrine

HISTOPATHOLOGICAL CHARACTERISTICS OF FINE NEEDLE ASPIRATION BIOPSIED INDETERMINATE THYROID NODULES THAT ARE DESIGNATED BENIGN BY THE AFIRMA GENE EXPRESSION CLASSIFIER

Shaeer, Mohammad ; Alameer, Ehab ; Al-Qurayshi, Zaid ; Ranganath, Rohit ; Shalaby, Mahmoud ; Sisson, Caitlin ; Russell, Jonathon ; Tufano, Ralph P ; Kandil, Emad

Background: The Afirma gene expression classifier (GEC) is proposed as a rule-out malignancy test that could improve the diagnostic performance of fine needle aspiration biopsy (FNA) in patients with indeterminate behavior thyroid nodules. We hypothesize that tumors with false negative GEC testing are low risk tumors. The current study aims to examine the histopathological features of tumors in relation to GEC results that suggest benign pathology.

Objective: Examine the histopathological features of thyroid tumors in relation to GEC results that suggests benign pathology by calculating sensitivity, specificity, positive predictive value, and negative predictive value.

Methods: A retrospective biinstitutional cohort study was performed. We included only patients who underwent surgical resections for thyroid nodules that were classified as either Bethesda III or IV by FNA and underwent GEC testing.

Results: A total of 691 thyroid nodules were included. The mean age of the study population was 54.21 ± 15.33 and 74.67% were women. The average nodule size was 2.39 ± 1.45 cm. GEC testing demonstrated benign findings in 162 (23.44%) patients, and of this population 122 patients underwent surgical resection and the histopathology demonstrated malignant findings in 21 (17.21%) patients.

The risk of advanced histopathological features of those cancers with a benign GEC result was not significantly different from those tumors with a suspicious GEC result [invasion: 23.53% vs. 26.79%, $p > 0.99$; positive surgical margins: 11.76% vs. 4.6%, $p = 0.22$]. Additionally, the risk of harboring multifocal disease was not different (60.0% vs. 46.1%, $p = 0.42$), and there was no significant difference in terms of the histopathological subtype (follicular vs. papillary) ($p = 0.32$). In this study, the GEC sensitivity, specificity, positive predictive value, and negative predictive value were 91.03%, 27.45%, 44.38%, and 82.79%, respectively.

Conclusion: There is no difference in pathological subtypes and aggressiveness in tumors with false negative GEC compared to true positive tumors. Patients who don't elect surgery for a benign GEC result should be counseled about this possible risk and encouraged to undergo active surveillance.

POSTER #9

Abstract | Clinical Science | Endocrine

A SINGLE SURGEON'S TEN-YEAR EXPERIENCE IN REMOTE ACCESS THYROID & PARATHYROID SURGERY

M Akkera, H Shalaby, B Duran, R Munshi, M Shalaby, A Elnahla, G Lee, E Kandil

Background: Remote access thyroid and parathyroid surgery has gained immense popularity in recent years due to its clear benefit of avoiding visible neck scars. As more endocrine surgeons shift over to these procedures, a reflection into the lessons learned from the experience of more senior surgeons, may provide some valuable insight into the learning curves of these procedures.

Objective: We aim to analyze the experience of a single surgeon in remote access surgery and provide information which may aid in structuring a safe and effective learning period for endocrine surgeons seeking to venture into this modality of treatment. Additionally, we hypothesize that our results may provide some information regarding an ideal patient for each procedure and the expected complications, risks and benefits.

Methods: This is a retrospective cohort study with a ten-year study period from January 2009 to May 2019. All patients who underwent thyroid or parathyroid procedures by a transaxillary, retroauricular or transoral approach, aged 18 to 85 years, by a single surgeon at a North-American Institute were included. To maintain uniformity, procedures were divided by laterality and as those with additional procedures such as neck dissection. Furthermore, they were divided by their approach. The cumulative sum (CUSUM) was used to analyze the learning curve based on intraoperative blood loss and total operative times in unilateral transaxillary and retroauricular procedures and learning phases were divided accordingly.

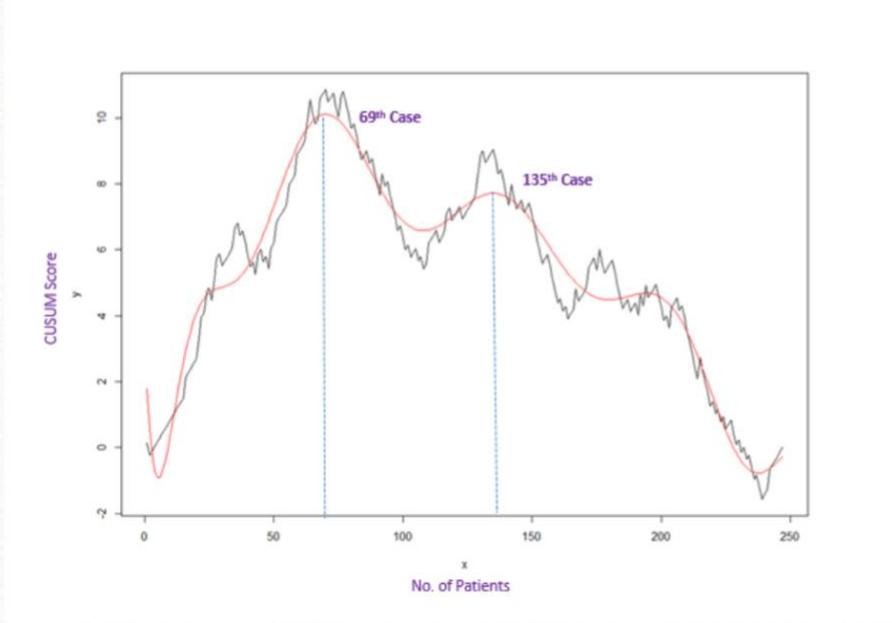
Results: 343 patients underwent 372 remote-access thyroid and parathyroid procedures. According to the CUSUM, the learning curve of the unilateral transaxillary was divided into three phases: phase 1 [the initial learning period (1st–69th case), n = 69], phase 2 [the competent period (70th–134th case), n = 65], and phase 3 [the challenging period (135th–248th case), n = 114]. Total operative time reduced from the first to the third phase. Likewise, similar analysis was done for retroauricular procedures, which were divided into 2 phases: phase 1 [1st-21st case, n=21], phase 2 [22nd-39th case, n=18]. Similar reduction in total operative time was seen from the first to second phase. Transient hypocalcemia (3.49%) was the most common complication, followed by seroma (2.96%), transient hoarseness (2.96%), infection (1.08%) and tracheoesophageal injury (0.54%). In the transaxillary procedures, only one case (0.27%) of brachial plexus injury occurred prior to the routine use of somatosensory evoked potential monitoring.

Conclusion: Once the steep learning curve is sufficiently overcome, remote-access thyroid and parathyroid surgeries may be performed safely with minimal complications. Understanding of indications, contraindications, advantages and disadvantages of remote-

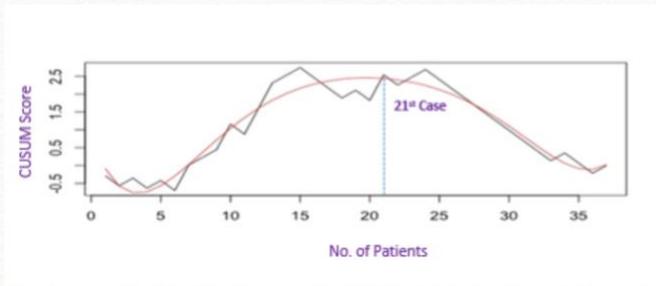
access approaches will ensure optimal patient selection and successful outcome for the patients.

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CUSUM- Analysis Generated Learning Curve for Unilateral Transaxillary Procedures from 2009-2019



CUSUM- Analysis Generated Learning Curve for Unilateral Retroauricular Procedures from 2009-2019



POSTER #10

Abstract | Clinical Science | Endocrine

THE EFFECT OF PATIENT POSITIONING ON INTRAOPERATIVE NEUROMONITORING DURING THYROID AND PARATHYROID SURGERY

Munshi, R., Shalaby, M., Akkera, M., Shalaby, H., Elnahla, A., Lee, G., Kandil, E

Background: Intraoperative neuromonitoring (IONM) is a helpful tool in detecting anatomic nerve variants, ascertaining impending compromise in neural function, and confirming the presence of a nerve injury. Recently, thyroid and parathyroid surgeries are performed using various approaches that differ in patient positioning; however, the effect of different patient positioning on IONM is not well-known. We evaluated IONM signals during transaxillary vs. cervical approaches in thyroid and parathyroid surgery patients.

Objective:

To assess the nerve latency and amplitude of the recurrent laryngeal and vagus nerve during surgical positioning of the arm done to perform transaxillary thyroid and parathyroid thyroidectomies and parathyroidectomies.

Methods: We retrospectively evaluated 502 patients, who underwent a thyroid or a parathyroid surgery with IONM at a high-volume center in the U.S. 389 patients underwent an anterior cervical approach with arms tucked by their sides. 113 patients underwent a transaxillary approach, which requires an arm to be abducted and positioned above the head, to allow a robot-assistance. We analyzed latency and amplitude measurements of evoked vagal and recurrent laryngeal nerve electromyography waveforms during these procedures. Ultrasound measurements of the distance of the vagus nerve from trachea were also recorded in transaxillary procedures.

Results: When compared to conventional cervical approach, evoked vagus nerve latencies (mean 2.66 ± 0.72 ms) of transaxillary approach on the right were noted to be significantly shorter (mean 3.0 ± 0.71 ms, $p < 0.001$) than cervical approach. No significant difference was detected with evoked recurrent laryngeal nerve latency and amplitude. No significant difference was seen on the left side between the two approaches. Additionally, a statistically significant change in ultrasound measurement of distance between vagus and trachea pre- and post-positioning was noted on the right (from 2.53 ± 0.46 cm to 2.3 ± 0.6 cm, $p = 0.0004$) and left (from 2.45 ± 0.62 cm to 2.20 ± 0.64 cm, $p < 0.0001$).

Conclusion: As surgeons utilize various surgical approaches to thyroid and parathyroid procedures, it is crucial to understand the implication of procedural specific variables, such as patient positioning and laterality, may have on IONM parameters. A better understanding of IONM parameters in the proper surgical context will help surgeons correctly utilize IONM to minimize nerve injury complications.

POSTER #11

Abstract | Clinical Science | General Surgery

INCISIONAL HERNIA PREVENTION IN HIGH RISK PATIENTS USING DEHYDRATED AMNIOTIC MEMBRANE

Mike Tran, Michael Cook, Ian Hodgdon, Frank Lau

Background: Surgical meshes are invaluable in hernia repair to improve outcomes and reduce costs. The associated mesh complications, however, limits its use as incisional hernia (IH) prophylaxis. Dehydrated amniotic/chorionic membrane has been shown to prevent IH on murine models and provides the clinical basis for studies in human subjects.

Objective: Prospective Cohort Study in high-risk human subjects to evaluate the safety and efficacy of using dehydrated amniotic membrane sheet in preventing IH.

Methods: In a multi-site, multi-surgeon, quality improvement study, 8 subjects undergoing 11 abdominal incisions who were at high-risk for IH were prophylactically treated with onlay dHACM sheets following routine suture closure of their fascial incisions. Preoperative risk factors were and expected hernia rates were calculated using the Penn Hernia Risk Calculator. Subjects were followed for a minimum of 4 months for the development of IH.

Results: Incisions were grouped into high-risk (n=5) or extremely high-risk (n=6) based on preoperative risk factors (Table 1). Overall, 1 IH developed (9.1%) in an extremely high-risk subject whose risk factors included advanced age, emergency surgery for perforated colon, open surgery, active infection, and active smoking. The IH formed following a necrotizing infection that required abdominal wall debridement. The expected number of IH was 2.26 (20.58%) yielding a relative risk reduction 55.8%.

Conclusion: These preliminary data suggest that dHACM's efficacy in preventing IH is on par with synthetic mesh. Unlike mesh, there are no complications related to its implementation, which makes its application suitable in the prophylactic setting

Risk Classification	Expected No. of IH	No. of IH	Length of Follow up (Mo)
High (N=5)	0.55 (10.96%)	0	4.88 ± 3.07
Extremely High (N=6)	1.72 (28.6%)	1 (1.67%)	7.25 ± 2.87
Total (N=11)	2.26 (20.58%)	1 (9.1%)	6.06 ± 3.03
		RR 0.44	

Table 1. Risk stratification, expected number of IH, and observed number of IH in a cohort of 11 high-risk abdominal incisions.

POSTER #12

Abstract | Clinical Science | General Surgery

DIFFERENT APPROACHES TO MANAGEMENT OF COMMON DUCT STONE (CBDS) IN PATIENTS WHO HAD ROUX-EN-Y GASTRIC BYPASS (RYGB)

A Marsala, R Zibari, S Ahmadzadeh, H Shokouh-Amiri, Q Chu, D Dies, G Zibari

Background: Symptomatic common bile duct stones (CBDS) are commonly diagnosed in obese patients after a roux-en-Y gastric bypass (RYGB). Management can be challenging due to the altered gastrointestinal anatomy, and various techniques are available to address this challenge. We present a cohort of patients who were safely managed with three different approaches to remove CBDS.

Objective: Understand the different techniques of managing symptomatic common bile duct stones after a roux-en-Y gastric bypass

Methods: A retrospective chart review of patients who had symptomatic CBDS after RYGB was performed. Patients underwent (1) percutaneous trans-hepatic CBDS removal (2) laparoscopic assisted trans-gastric/ ERCP, and (3) robotic CBD exploration & choledochoduodenostomy/choledochojejunostomy.

Results: From April 2011 to June 2019, a total of 24 patients (93.3% Caucasian; 70% female; age ranges from 38-90 years) were successfully managed with PTC, balloon sphincteroplasty and stone forced down to the duodenum (#18), laparoscopic trans gastric ERCP (#3), and robotic CBD exploration & CBD bypass & cholecystectomy. There were four complications, two hemobilia, one bile leak and one enterotomy, and no mortality.

Conclusion: We presented three different safe approaches to manage CBDS in patients with previous roux-en-Y gastric bypass with low morbidity and no mortality.

POSTER #13

Abstract | Clinical Science | General Surgery

URGENT INPATIENT COLECTOMY CARRIES A HIGHER MORBIDITY AND MORTALITY THAN ELECTIVE SURGERY: AN ANALYSIS OF THE ACS NSQIP

L Hajirawala, G Orangio, K Davis, J Barton

Background: Emergency colorectal surgery confers a higher risk of adverse outcomes compared to elective surgery. Few studies have examined the outcomes after urgent colectomies, however.

Objective: The aim of the current study is to evaluate the risks of adverse outcomes following urgent colorectal surgery.

Methods: ACS-NSQIP general and colectomy specific databases were queried between 2013 and 2017. Patients were grouped into elective, urgent and emergency colectomies. Urgent colectomy was defined as non-emergency, non-elective surgery as categorized in the NSQIP dataset. Baseline characteristics and 30-day outcomes were compared using univariable and multivariable analyses.

Results: 104,486 patients underwent elective colorectal resection. 23,179 underwent urgent and 22,241 had emergency resections.

Patients undergoing emergency colectomies had the highest mortality rate of 17.2% (AOR 8.7 (7.7 – 9.7)). Patients who underwent urgent colectomy had a mortality of 7.1% (AOR 3.2 (2.8 – 3.7)), followed by elective (2.3%). The risk of anastomotic leak was elevated for both urgent (AOR 1.3 (1.2-1.4)) and emergency (AOR 1.2 (1.1-1.3)) groups. The rate of urinary tract infection was higher for patients undergoing urgent colectomies than either elective or emergency procedures (Table 1).

Conclusion: Urgent colectomies confer a much greater risk of adverse outcomes compared to elective surgery. This group of patients remains inadequately studied. Risk stratification of these patients could better characterize this patient population and possibly ameliorate the risk of adverse events.

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Table 1. The Risk of 30-Day Outcomes Following Elective, Urgent and Emergency Colectomies

	Elective (n= 104,486)		Urgent (n=23,179)		Emergency (n=22,241)	
	%	AOR (95% CI)	%	AOR (95% CI)	%	AOR (95% CI)
Death	2.3	Ref	7.1	3.2 (2.8 - 3.7)	17.2	8.7 (7.7 - 9.7)
Return to Operating Room	8	Ref	11.8	1.5 (1.4 - 1.6)	13.8	1.8 (1.7 - 2)
Anastomotic Leak	5.1	Ref	6.4	1.3 (1.2 - 1.4)	6	1.2 (1.1 - 1.3)
Need for Blood Transfusion	24.4	Ref	45.2	2.6 (2.4 - 2.7)	44.8	2.5 (2.4 - 2.6)
Systemic Sepsis	2.6	Ref	8.2	5.9 (5.6 - 6.2)	12.5	3.4 (3.2 - 3.6)
Septic Shock	3.2	Ref	9.1	3.1 (2.8 - 3.4)	27	11.3 (10.4 - 12.2)
Ileus	18.4	Ref	32.7	2.2 (2.1 - 2.2)	40.9	3.1 (3 - 3.2)
Pneumonia	3.1	Ref	6.9	2.3 (2.1 - 2.5)	11.2	3.9 (3.6 - 4.2)
Renal Failure	0.4	Ref	0.8	1.9 (1.7 - 2.4)	1.7	4.1 (3.5 - 4.8)
Cerebrovascular Accident	0.04	Ref	0.07	1.5 (1.2 - 2)	0.1	2.6 (2 - 3.3)
Myocardial Infarction	0.5	Ref	0.7	1.4 (1.2 - 1.7)	1.2	2.4 (2 - 2.7)
Cardiac Arrest	1.4	Ref	2.5	1.8 (1.5 - 2.1)	5	3.8 (3.2 - 4.4)
Reintubation	2.7	Ref	5.9	2.2 (2 - 2.4)	9.5	3.7 (3.4 - 4.1)
Wound Dehiscence	0.9	Ref	2.1	2.2 (1.9 - 2.5)	3.1	3.4 (3 - 3.9)
Superficial Surgical Site Infection	4.3	Ref	6.7	1.6 (1.5 - 1.7)	7.5	1.8 (1.7 - 1.9)
Deep Surgical Site Infection	0.9	Ref	1.8	1.8 (1.6 - 2.1)	1.9	1.9 (1.7 - 2.2)
Organ Space Infection	4.9	Ref	8.9	1.9 (1.8 - 2)	11.3	2.5 (2.3 - 2.6)
Deep Venous Thrombosis	1	Ref	2.3	2.3 (2.1 - 2.6)	2.7	2.8 (2.5 - 3.1)
Pulmonary Embolism	0.3	Ref	0.8	2.3 (1.9 - 2.7)	0.9	2.7 (2.3 - 3.1)
Urinary Tract Infection	2.4	Ref	3.2	1.4 (1.3 - 1.5)	2.3	1 (0.9 - 1.1)
Prolonged stay	1.5	Ref	3.9	2.7 (2.4 - 3.1)	6.6	4.8 (4.2 - 5.4)

POSTER #14

Abstract | Clinical Science | Plastic Surgery

USE OF PROPHYLACTIC RADIATION THERAPY TO PREVENT KELOID FORMATION AFTER THYROID SURGERIES

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Background: Keloid or hypertrophic scar following thyroid surgery can cause substantial patient distress with diminished quality of life and poses a significant challenge to treat.

Objective: Here we examined the efficacy of prophylactic external-beam radiation therapy (EBR) for prevention of keloid formation in high-risk patients who underwent thyroid surgeries in comparison to the other preventative measures for keloids.

Methods: We reviewed our medical records from January 2013 and February 2019 to identify the patients with previous history of keloids who underwent thyroid surgeries at our institution. All the pertinent data on patients' demographics, primary diagnoses, surgical procedures, radiation dosage, and outpatient follow-ups were collected.

Results: Ten patients with history of keloid formation received external beam radiation therapy for keloid prophylaxis following thyroid surgeries during the study period. There mean age was 46.40 ± 15.63 years with BMI of 31.5 ± 5.5 . Radiation was initiated within 6 hours after surgeries. Average radiation dose per session was 5.7 ± 1.7 Gray (Gy). The average amount of radiation in total was 17.4 ± 4.2 Gy. All patients underwent one neck procedure and therefore had three EBR sessions except one patient who underwent two neck procedures 4 years apart and she had EBR sessions after both surgeries. Patients were followed for an average of 12.9 ± 6.967 months. Only one patient who underwent concomitant lateral neck dissection in addition to thyroid surgery developed keloid in less than 10% of her scar. In the remaining nine cases (90%), no post-surgical keloid formation was observed, and patients had satisfactory cosmesis.

Conclusion: To our knowledge, this is the first study to investigate the rule of prophylactic radiation therapy in high-risk patients undergoing thyroid surgery. Prophylactic radiation therapy for prevention of keloid formation following thyroid surgeries is feasible and effective method in high-risk patients. Further randomized prospective studies are warranted with longer follow up period.

MESENCHYMAL EXOSOMES FOR COMPLETE CLOSURE OF A RECURRENT ISCHIAL ULCER

R Tiongco, F Lau

Introduction/Objective: Pressure ulcers (PUs) affect 2.5 million patients annually. Advanced PUs that are refractory to conservative management require surgical debridement and reconstruction. However, even for successfully reconstructed PUs, the 1-year recurrence rate is approximately 50%. New strategies are needed. Mesenchymal stem cell (MSC) exosomes are putatively the primary mechanism whereby MSCs induce tissue regeneration. Exosomes are 30-150 micron-diameter microvesicles, are cell-free, and contain mRNA, miRNA, and proteins that upregulate cell-signaling pathways that mediate cell growth, migration, and angiogenesis. Here, we report the first use of exosomes for successful closure of a recurrent Stage IV ischial PU.

Case Presentation: A 38-year old paraplegic male presented with a Stage IV right ischial ulcer that had not improved after nine months of conservative management. Relevant history included cerebral palsy and multiple prior PUs requiring over 50 surgeries leaving few locoregional options for reconstruction. The patient underwent debridement and reconstruction with a large posterior thigh flap. The ulcer recurred, the flap was re-advanced, and the ulcer recurred again with exposed periosteum at its base (Stage IV). After discussion, the patient agreed to trial exosome injections into the peri-ulcer tissues. Following two treatments, the ulcer was reduced to Stage III (Fig. 1B). A total of six injections were administered over eight weeks and the PU healed with no sinus tracts or signs of infection (Fig. 1 A-F).

Discussion: PUs arise from unrelieved localized pressure that results in poor tissue perfusion and subsequent ischemia. The most common PU locations are the sacrum, heel, and ischium. PUs are staged from I-IV; I & II are managed conservatively while III & IV require surgical intervention. Here, we demonstrate successful closure of a recurrent Stage IV PU with exosomes. Of note, the primary endpoint for most studies of non-surgical PU therapies is not closure of the ulcer, but a 50% reduction in wound diameter.

Exosomes possess the regenerative capabilities that were originally credited to stem cells. MSC exosomes promote re-epithelialization of cutaneous wounds by not only inducing epithelial cell proliferation and angiogenesis, but also activating fibroblast secretion of collagen and elastin. Animal studies showed significantly activated PI3K/AKT and MAPK/ERK pathways, which function in cell proliferation, migration, and angiogenesis.

Conclusion: We demonstrated that exosomes can effectively and nonsurgically close a recurrent Stage IV ischial PU. Larger trials of this promising new therapy are needed.

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Fig. 1 | Progressive healing of a recurrent Stage IV ischial ulcer following MSC exosome treatments. Photos A-C and E document the state of the ulcer at 1 week following: A) first injection, B) second injection, C) third injection, D) fourth injection, E) fifth injection, and F) sixth injection. Photos D and F were taken 2 weeks following a treatment.

POSTER #16

Abstract | Clinical Science | Plastic Surgery

PREVALENCE OF ANATOMICAL VARIATIONS OF THE RADIAL ARTERY ENCOUNTERED DURING RADIAL FOREARM FLAP HARVEST: A SYSTEMATIC REVIEW AND META-ANALYSIS

Ryan D. Hoffman, Denise M. Danos, Samuel J. Lin, Peter S. Kim, Frank H. Lau

Background: The radial forearm flaps (RFF) is the most popular fasciocutaneous flaps for head and neck reconstruction, and has more recently gained popularity for phalloplasty. Its popularity stems from its versatility, pliability, relative hairlessness, reliable blood supply, and long pedicle length. Standard pre-operative assessment prior to RFF harvest includes the Allen test to ensure adequate ulnar perfusion of the hand; however, radial artery anatomical variations can yield a false normal Allen test.

Objective: Motivated by the intra-operative discovery of an anomalous branch of the radial artery during RFF harvest, the purpose of this study was to systematically review the literature regarding anatomical abnormalities of the radial artery that can affect flap harvest and perform a meta-analysis to estimate the prevalence of such abnormalities.

Methods: A systematic review of the literature was conducted to identify all instances of radial artery anatomical variations. Abstracts were reviewed and categorized into either cohort studies of anatomical variations identified by angiogram or case reports specifically mentioning accessory branches of the radial artery. Data from the large cohort studies were included in a random effects meta-analysis to estimate the prevalence of such variations. Case reports were reviewed and summarized.

Results: Eighteen angiogram cohort studies containing a total of 18,115 patients were included in the meta-analysis. Accessory branches were the most uncommon anatomical variant reported, with an estimated average prevalence of 0.5%. Prevalence estimates for radial artery tortuosity, hypoplasia, loops, abnormal origin, and stenosis were also calculated. Thirteen case reports were reviewed, seven of which involved accessory branches encountered during RFF harvest with no incidence of flap loss.

Conclusion: Radial artery accessory branches are exceedingly rare, but the prevalence of anatomical variations that can affect harvest of the RFF warrant consideration. We recommend surgeons comprehensively screen prior to RFF harvest to avoid intra-operative discovery of anatomical variants and suggest a low threshold for repeat perfusion testing intra-operatively if radial artery accessory branches are encountered.

POSTER #17

Abstract | Clinical Science | Surgical Infections

THE IMPACT OF A COLORECTAL CARE BUNDLE ON SURGICAL SITE INFECTION AT AN ACADEMIC DISPROPORTIONATE SHARE HOSPITAL

L Hajirawala, M Miller, S Tiu, A DeKerlegand, T Legare, J Barton, K Davis, G Orangio

Background: Colorectal Care Bundles for Surgical Site Infections (CRCB-SSI) have been shown to reduce post-operative SSI rates for elective colorectal surgery (CRS). Academic Disproportionate Share Hospitals (ADSH) render care to a higher risk patient population. These patients have more comorbidities and less access to health care. There is limited data evaluating the effect of CRCB-SSI at ADSH with high rates of urgent, emergent and trauma surgery.

Objective: This study aims to evaluate the impact of a CRCB-SSI at an ADSH.

Methods: The CRCB-SSI was implemented in April 2016. This consisted of mechanical and oral antibiotic bowel preparation, optimal intravenous antibiotic administration, glycemic and temperature control, fascial wound protector use, separate closing tray and glove changes prior to wound closure. We reviewed the medical records of all patients undergoing colon resections between August 2015 and December 2017. Patients were divided into pre implementation (August 2015 - March 2016) and post implementation (August 2016 - December 2017) groups. The primary outcome of interest was the rate of post-operative SSI. Univariable and multivariable analyses were used to compare the groups. Subset analysis was performed for elective colorectal cases.

Results: Four hundred and ten patients were included in the analysis. Of these, 115 (28%) patients were in the pre implementation group, and 295 (72%) were in the post implementation group. The rate of SSI decreased from 30.1% in the pre implementation group to 15.9% in the post implementation group ($p=0.0012$). After adjusting for the statistically significant baseline differences, there was a strong trend towards reduction of post-operative SSI, though the reduction did not attain statistical significance (RR (95% CI) = 0.65 (0.41, 1.02), $p = 0.0585$). Two hundred and fifteen patients were elective surgical cases. Of these, 56 (26%) and 159 (74%) patients were in the pre and post implementation groups, respectively. The rate of SSI decreased from 25% to 10.5% in the post implementation group ($p=0.0012$). The CRCB-SSI was associated with statistically significant reduction in SSI in the elective group after multivariable analysis (RR (95% CI) = 0.41 (0.19-0.88), $p=0.021$).

Conclusion: The implementation of CRCB-SSI was effective in decreasing the post-operative SSI rate for elective colon and rectal surgical cases. Due to the significant number of nonelective cases in the ADSH population, its effect on the overall patient cohort did not reach statistical significance. Further studies are needed to evaluate ways to reduce SSI in patients requiring urgent, emergent or trauma CRS.

Table 1. Rates of Post-Operative SSI Before and After the Implementation of CRCB-SSI

	Pre-Implementation SSI Rate (%)	Post Implementation SSI Rate (%)	Odds Ratio (95% CI)*	P value*
All Cases	30.1	15.9	0.65 (0.41 - 1.02)	0.058
Elective Cases Only	25	10.5	0.41 (0.19 - 0.88)	0.021

* multivariable analysis adjusting for statistically significant differences in demographics and baseline characteristics

POSTER #18

Abstract | Clinical Science | Surgical Oncology

DISTANCE FROM THE TREATMENT CENTER AFFECTS THE RATE OF RADIATION THERAPY FOLLOWING LUMPECTOMY FOR BREAST CANCER

J Arrieta, W Chriss, P Kilgore, M Trutschl, U Cvek, T Lairmore, J Sugar

Background: Disparity in cancer treatment and outcomes due to geographic or socioeconomic variables is an increasingly recognized problem. Several previous studies have demonstrated a relationship between distance from a radiation therapy center and breast cancer treatment and quality.

Objective: We sought to evaluate the effect the distance patients live from the primary treatment center has on the rates of receiving or omitting radiation therapy (RT) following lumpectomy for cancer, using data from a large cancer outcomes database.

Methods: We utilized the National Cancer Institute Surveillance, Epidemiology and End Results (SEER) cancer outcomes database for the study. We selected the data for all breast cancer patients undergoing partial mastectomy procedures from 2007 to 2016. We utilized the county code of residence and the health service area (HSA) of treatment center to characterize locality, establishing two groups: those patients living in a county code covered by their treatment center's HSA, versus those patients who live in a different county code outside of their treatment HSA. The rate of patients undergoing RT versus omitting RT following lumpectomy were then determined for each group; a chi-squared test was used to determine significance.

Results: There were 291,352 patients in the SEER database treated with partial mastectomy during the study period. For patients close to the treatment center (within the same HSA), 176,478 (77%) had lumpectomy with RT versus 52,485 who had lumpectomy without RT. For patients reporting a county code different from their treatment center, 42,350 (68%) had lumpectomy with RT versus 20,039 who had lumpectomy without RT. Patients living in a different county code from their treatment center were statistically less likely to undergo RT following lumpectomy ($p < 0.0001$; Chi square test).

Conclusion: Locality respecting the treatment center is negatively correlated with the rate of completing radiation following partial mastectomy. Therefore, access to radiation oncology, along with other potential socioeconomic variables, may affect disparity in treatment choices and outcomes for patients with breast cancer. We plan to further investigate these variables and employ health informatics to address these identified barriers.

POSTER #19

Abstract | Clinical Science | Surgical Oncology

RURAL RESIDENCE DOES NOT PREDICT OUTCOME FOR RESECTED PANCREATIC ADENOCARCINOMA

Q Chu, M Hsieh, G Zibari, H Shokouh-Amiri, J Gibbs, T Tan, X Wu

Background: Studies are equivocal on the role of rural residence in cancer outcome. Whether rural residence has an influence on outcome following resection for pancreatic cancer is not clear. We hypothesize that rather than being an independent predictor of survival, rural residence serves as a proxy for other socioeconomic determinants.

Objective: Understand that although rural patients with resected pancreatic cancer have lower overall survival than urban patients, rural residency alone was not an independent predictor of outcome

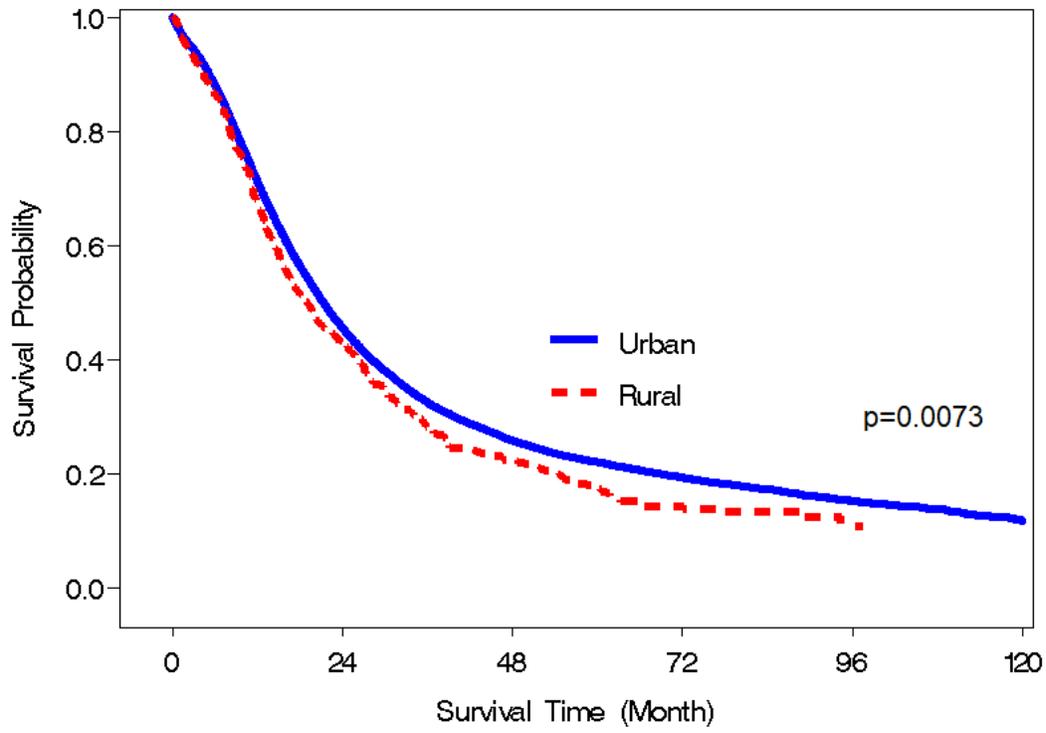
Methods: A cohort of 32,319 patients with Stage I-III pancreatic adenocarcinoma diagnosed from 2003-2011 who underwent resection were evaluated from the National Cancer Database. Sociodemographic, clinico-pathological, and treatment variables were compared between rural and urban residences. The 5-year overall survival (OS) was calculated using the Kaplan-Meier method. Cox regression model was used to assess factors associated with OS. P-value ≤ 0.05 was considered significant.

Results: In univariable analysis, rural residence was a predictor of OS; rural (N=634) had significantly lower OS than urban (N=31,688). The 5-yr OS for rural and urban was 17.2% and 22.0%, respectively and the median survival time (months) was 18.8 and 21.3, respectively (P<0.007). In multivariable analysis, residence was not a significant predictor of OS (P=0.63). Independent predictors of worse OS were male (P <0.0001), old age (P<0.0001), high comorbidity index (P<0.0001), low income (P<0.0001), low education level (P<0.00001), community cancer program (P<0.0001), advanced stage (P<0.0001), high grade (P<0.0001), great circle distance ≥ 50 miles (P=0.003), and lack of receipt of chemotherapy (P<0.0001).

Conclusion: Rural residence was not associated with worse outcome for resected pancreatic adenocarcinoma. Socioeconomic and tumor factors were independent determinants of pancreatic cancer outcomes.

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Overall Survival



POSTER #20

PALLIATIVE CARE SERVICES REDUCE ER VISITS AND INPATIENT HOSPITAL DAYS AMONG PATIENTS WITH ADVANCED GI MALIGNANCIES

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Background: Palliative care services (PCS) have improved quality of life for seriously ill patients across various cancer subtypes. Minimal data exists, however, regarding the effect of PCS exclusively within metastatic GI malignancies.

Objective: We sought to assess the impact of PCS on ER visits and hospital admissions among patients with advanced GI malignancies.

Methods: We identified all patients with metastatic GI malignancies referred to outpatient PCS between 2014 and 2016. A subset of referred patients did not make their appointment with the outpatient palliative care clinic and therefore were not seen. Using the not seen group as a control, we compared end of life indicators between those seen versus those not seen.

Results: A total of 94 patients with metastatic HPB or GI malignancies were referred to outpatient PCS between 2014 and 2016. Most patients (58%) had either metastatic colorectal cancer or pancreas cancer. Of those patients referred, 55 (58%) were seen while 39 (42%) were not seen. No difference was noted in age, marital status, race, cancer type between seen and unseen patients. The percent of uninsured patients that were seen and unseen was similar (22% vs. 17%). No significant difference was noted in hospital admissions between seen and unseen patients. However, the number of ED visits per patient (0.95 vs. 1.6; $p = 0.044$) and total inpatient days per patient (2.9 vs. 7.6; $p = 0.0019$) were less amongst seen patients. Patients seen were more likely to be alive with disease at last follow up (54% vs. 33%; $p = 0.0275$).

Conclusion: Among patients with GI malignancies, outpatient PCS is associated with fewer ER visits, fewer inpatient days, and improved overall survival.

POSTER #21

Case Review | Clinical Science | Transplant

FUSED DUPLICATED RIGHT KIDNEY DISCOVERED INTRAOPERATIVELY DURING TRANSPLANTATION

Volk, AS., Biow, S., Zurawin J., Thomas R., Paramesh, AS.

Introduction/Objective: A fused duplicated kidney was discovered in a donor organ upon reperfusion during renal transplantation. There is a paucity of literature regarding this anomaly and its management in renal transplant recipients.

Case Presentation: Back table preparation of a right deceased donor kidney revealed a duplicated renal artery and ureter. Complex reconstruction of the vasculature was performed avoiding extensive hilar dissection. Following anastomosis of the renal vasculature to the recipient's iliac vessels, reperfusion revealed a suspicious lower pole renal mass effect.

Frozen section biopsies of the irregular mass were consistent with normal renal parenchyma. Urology was consulted intraoperatively and confirmed the mass to be a duplicated renal collecting system with thin parenchyma and hydronephrosis.

A partial nephrectomy of the lower pole moiety was performed due to the severe hydronephrosis. This was a poorly functioning lower moiety portion of the kidney with the potential to cause complications post-transplant.

Discussion: Congenital renal anomalies are not rare, although they typically occur with associated urogenital malformations (1). There are reports of fused supranumerary kidneys, however, literature of intraoperative discovery and decision making is lacking.

Accessory kidneys are usually asymptomatic and incidentally discovered on imaging (2, 3, 4). The embryologic cause is posited to be an abnormal division of the nephrogenic cord into two metanephric blastemas (5). Accessory kidneys can develop their own vessels, collecting system, and encapsulating tissue. These kidneys either present as separate structures or are fused to the primary kidney with loose areolar connective tissue (5, 6).

Accessory kidneys with duplicated urinary collecting system typically occur on the left kidney and are found cranially if a separate ureter is present (5). Nephrectomy of the accessory kidney is usually reserved for cases of incontinence due to ectopic drainage, urinary stasis, infection, calculi, malignancy, and associated symptoms (5). This unique case presented caudally on the right donor kidney. Its intraoperative discovery resulted in partial nephrectomy due to severe hydronephrosis and minimum parenchyma.

Conclusion: Although there is limited literature regarding the discovery of accessory kidneys intraoperatively, this is not a rare anomaly and special consideration during renal transplantation is required. A careful evaluation must be performed when considering

resection of abnormalities in order to avoid later complications, with caution that resection may compromise renal function.

- (1) Janda G.M., Nepple K.G., Cooper C.S., Austin J.C. The supernumerary kidney in a child with OEIS complex. *Urology*. 2009;74(2):305–307.
- (2) Kumar M, Kumar G, Barwal K, Raina P. Right supernumerary kidney: A rare entity. *Urol Case Rep*. 2019;23:97–98.
- (3) Suresh J, Gnanasekaran N, Dev B. Fused supernumerary kidney. *Radiol Case Rep*. 2015;6(4):552.
- (4) Conrad R.G., Loes D.J. Ectopic supernumerary kidney functional assessment using radionuclide imaging. *Clin Nuc Med*. 1987;4:253–257.
- (5) N'Guessan G., Stephens F.D. Supernumerary kidney. *J Urol*. 1983;130:649–653.
- (6) Tada Y., Kokado Y., Hashinaka Y. Free supernumerary kidney: a case report and review. *J Urol*. 1981;126:231–232.

POSTER #22

Abstract | Clinical Science | Trauma

RIB PLATING IMPROVES SURVIVAL BUT INCREASES RISK OF ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS)

Sharven Taghavi, Ayman Ali, Erik Green, Olan Jackson-Weaver, Danielle Tatum, Charles Harris, Chrissy Guidry, Patrick McGrew, Rebecca Schroll, Jay Kolls, Juan Duchesne

Background: The use of rib plating in patients with traumatic rib fractures remains controversial. How rib plating affects the development of acute respiratory distress syndrome (ARDS) and impacts survival has yet to be determined in a large, national database. We hypothesized that rib plating would not impact survival or incidence of ARDS.

Objective: To determine how rib plating influences survival and development of ARDS.

Methods: We queried the National Trauma Data Bank for all patients with rib fractures in 2016. Patients were divided into groups with single rib fractures, multiple rib fractures, and flail chest. Logistic regression was carried out to examine variables associated with mortality and ARDS.

Results: There were 114,972 total rib fractures patients, with 5,106 (4.4%) having flail chest (FC), 24,726 (21.5%) having a single rib fracture (SR), and 85,140 (74.1%) having multiple rib fractures (MR). Patients with MR were oldest, while those with FC were most severely injured. Those with FC were most likely to get rib plating (table). On logistic regression, rib plating 1-2 ribs (OR: 0.17 95%CI: 0.10-0.29) or 3+ ribs (OR: 0.18, 95%CI: 0.11-0.30) was associated with survival. Variables associated with mortality included increasing age, male gender, black race, increasing ISS, hypotension on admission, and decreasing GCS. Rib plating 1-2 ribs (OR: 2.06, 95%CI: 1.22-3.27) or 3+ ribs (OR: 2.52, 95%CI: 1.67-3.67) was associated with ARDS. On subset analysis, blood transfusion in rib fracture patients was associated with ARDS (OR: 3.32 95%CI: 2.92-3.79).

Conclusion: While rib plating resulted in improved survival, it increased the risk of ARDS. Patients with rib fractures receiving blood transfusion are also at increased risk.

	Flail Chest (FC)	Multiple Rib Fractures (MF)	Single Rib Fracture (SR)	p-Value
Median Age (IQR)	57.0 (22.0)	56.0 (28.0)	50.0 (33.0)	<0.001
Female	1,270 (24.9%)	27,473 (32.3%)	7,719 (31.2%)	<0.001
Rib Plating 1-2 Ribs	354 (6.9%)	378 (0.4%)	14 (0.1)	<0.001
Rib Plating 3+ ribs	459 (9.0%)	446 (0.5%)	15 (0.1%)	<0.001
Median Injury Severity Score (IQR)	22.0 (14.0%)	14.0 (11.0%)	9.0 (12.0%)	<0.001
ARDS	151 (3.0%)	815 (1.0%)	166 (0.7%)	<0.001
Mortality	814 (15.9%)	5,838 (6.9%)	1,154 (4.7%)	<0.001

POSTER #23

Abstract | Clinical Science | Trauma

CLOSURE OF COMPLEX WOUNDS WITH EXPOSED CRITICAL STRUCTURES USING NOVEL AUTOLOGOUS HOMOLOGOUS SKIN CONSTRUCT SKIN IN PEDIATRIC PATIENTS

GS Munding, K Isbester, C Wee, A Kumar

Background: Traumatic wounds with avascular beds, exposed bone, tendon, cartilage and open joints require vascularized tissue transfer, which may be pedicled or free. Although vascularized free flaps are safe and reliable in children, in one major series 50% of the trauma cases required wound revision (Organek, et al 2006). Tissue-engineered skin substitutes have been unable to reproduce full-thickness skin, and none contain a functional vascular plexus. A novel autologous homologous skin construct (AHSC), that employs a small full-thickness donor specimen from the patient's own skin, was developed to treat a full spectrum of cutaneous defects (Granick, et al 2019).

Objective: To improve treatment options for soft tissue loss, innate regenerative cellular populations from healthy full-thickness skin harvests are processed and activated during manufacturing; the use of autologous cells processed in this manner results in a composition capable of regenerating functionally polarized skin with important components and appendages of skin being regenerated in the patient's wound bed in vivo. This case series reports the results of our initial clinical experience with AHSC in closing lower extremity complex wounds in a pediatric cohort.

Methods: A retrospective study of pediatric patients who received AHSC as therapy for soft-tissue defects over the last two years was conducted. Two medical centers participated in this analysis, and application of AHSC was performed by two different surgeons. A small elliptical full-thickness skin harvest was taken from the patient's groin, thigh or abdomen in the operating room, and the donor site was primarily closed. The donor tissue was shipped to an FDA-regulated biomedical facility to manufacture AHSC using the entire donor harvest. Without ex-vivo culturing or expansion, the AHSC was shipped back in a syringe. The wounds were sharply debrided in the OR to remove all devitalized tissue. AHSC was applied evenly across the entire wound surfaces, and secured with an occlusive, non-adherent, non-absorbent silicone dressing. Patients attended weekly follow-up appointments during which time the silicon cover dressing was exchanged, and wound healing progress was noted.

Results: Eight pediatric patients who sustained soft tissue avulsion injuries to their feet and ankles were treated with AHSC. Four patients were female; patient ages ranged between 7–18 y/o. Average wound surface area at time of AHSC application was 147 cm² (range: 80 cm² to 425 cm²). All avulsion injuries involved the dorsum of the foot and one injury additionally involved the calf and heel. Two of the patients sustained crush injuries as well. Muscle and tendon were exposed in three of the wounds, in addition to bone and joint in one of the wounds. All eight wounds closed with a single application of AHSC. All donor sites healed

uneventfully. There were no complications and no further procedures were required during follow-up for any of the patients.

Conclusion: AHSC successfully closed complex lower extremity wounds with exposed critical structures. While these early results are encouraging, limitations of this study include the lack of case controls and its retrospective nature. Additional controlled studies are needed to determine the barrier function, longevity, and long-term cosmetic outcomes.



POSTER #24

Abstract | Clinical Science | Trauma

IMPACT OF TRAUMA CENTER VOLUME ON MAJOR VASCULAR INJURY: AN ANALYSIS OF THE NATIONAL TRAUMA DATA BANK (NTDB)

Sharven Taghavi, Glenn Jones, Juan Duchesne, Patrick McGrew, Chrissy Guidry, Rebecca Schroll, Charlie Harris MD, Reginald Nkansah MS, Tomas Jacome MD, Danielle Tatum PhD

Background: The association of procedure volume and improved outcomes has been established with infrequent, elective operations. However, effect of trauma center volume on outcomes in emergency surgery has not been defined. We hypothesized that high volume centers (HVC) would provide better outcomes for operative major vascular injuries (MVI) than low volume centers (LVC).

Objective: TO determine the effect of procedure volume on outcomes for major, traumatic vascular injuries.

Methods: The NTDB was queried from 2010-2014. Patients with MVI were identified and HVC were compared to LVC. HVC were defined as >480 patients per year with ISS \geq 15

Results: There were 37,125 patients with MVI, with 16,461 (44.3%) managed operatively. Of these, 15,965 (97%) underwent surgery at HVC and 496 (3%) at LVC. There was no difference in shunt utilization, however, HVC were more likely to utilize endovascular repair (table). Rates of death, amputation, and compartment syndrome were similar. HVC were more likely to develop pneumonia or sepsis. On logistic regression, HVC was not associated with survival (OR: 0.90, 95%CI: 0.60-1.34, p=0.60). Variables associated with mortality for HVC and LVC included thoracic arterial injury (OR: 1.57, 95%CI: 1.27-1.94, p<0.001), penetrating mechanism (OR:1.84, 95%CI: 1.57-2.15, p<0.001), and open repair (OR: 1.95, 95%CI: 1.69-2.26, p<0.001). Lower ISS (OR: 0.29, 95%CI: 0.24-0.34, p<0.001) and higher presenting blood pressure (OR: 0.99, 95%CI: 0.99-1.00, p<0.001) were associated with survival.

Conclusion: Although LVC may have less proficiency with endovascular techniques, trauma center volume does not influence survival in emergency surgery for MVI.

Logistic Regression Examining Variables Associated with Mortality			
	Odds Ratio	95% Confidence Interval	p Value
Subset Analysis of Females Only			
Age	0.99	0.96-1.03	0.59
Injury Severity Score	1.04	0.99-1.08	0.06
Presenting Systolic BP	1.01	0.98-1.04	0.55
Presenting Shock Index	2.35	0.36-15.20	0.37
GCS	0.85	0.76-0.96	0.01
Each Unit pRBC	1.02	0.99-1.01	0.24
Subset Analysis of Males Only			
Age	1.02	1.01-1.04	0.004
Injury Severity Score	1.07	1.05-1.10	<0.001
Presenting Systolic BP	0.99	0.99-1.01	0.62
Presenting Shock Index	0.65	0.32-1.30	0.22
GCS	0.84	0.80-0.88	<0.001
Each Unit pRBC	1.02	1.01-1.04	0.004

POSTER #25

Abstract | Clinical Science | Trauma

PEDIATRIC PELVIC FRACTURE OUTCOMES IN PEDIATRIC VERSUS ADULT TRAUMA CENTERS

A Ali, D Tatum, G Jones, C Guidry, P McGrew, R Schroll, C Harris, J Duchesne, S Taghavi

Background: Pediatric pelvic fractures are a significant source of morbidity for children in the United States. In the era of specialized care, the relationship between trauma center designation and outcomes remains unknown. We hypothesized that there would be no difference in patient outcomes when treated at adult (ATC), pediatric (PTC), or dual (DTC) trauma centers.

Objective: Our objective was to study differences in outcomes of pediatric patients suffering pelvic fractures when treated at adult (ATC), pediatric (PTC), or dual (DTC) trauma centers.

Methods: We utilized the National Trauma Data Bank (NTDB) to identify pediatric (≤ 17 years) patients suffering pelvic fractures in 2013 – 2015. Trauma centers with level I or II American College of Surgeons (ACS) or state designations were included in our analysis. DTCs were defined as centers with level I or II designation for both pediatric and adult care.

Results: There were 8,946 patients that met study criteria. Of these, 3,556 (40%) were treated at ATCs, 1,695 (19%) at PTCs, and 3,695 (41%) at DTCs. Patients treated at PTCs were significantly younger (median 11.0 years vs. 14.0 [DTC] and 16.0 [ATC], $p < 0.001$), less likely to be white (61.6% vs. 62.7% [DTC] and 64.1% [ATC], $p = 0.001$), and more likely to have private insurance (37.2% vs. 34.0% [DTC] and 31.9% [ATC], $p < 0.001$) or Medicare / Medicaid (39.0% vs. 32.1% [DTC] and 28.6% [ATC], $p < 0.001$). In addition, PTC patients had a shorter length of stay (mean 6.7 days vs. 7.4 [DTC] or 7.0 [ATC], $p < 0.001$) and ICU days (mean 2.3 vs. 3.0 [DTC] and 2.7 [ATC], $p < 0.001$) and were less likely to receive a CT scan (25% vs. 28% at DTCs and 36% at ATCs, $p < 0.001$). On multivariate analysis, treatment at PTCs or DTCs was not associated with survival (see table). Variables associated with survival included higher injury severity score (OR 1.05: 95% CI 1.04-1.06, $p < 0.001$), being uninsured (OR 2.79: 95% CI 1.73 – 4.50, $p < 0.001$), higher systolic blood pressure (OR 0.98: 95% CI 0.97-0.98, $p < 0.001$), and higher Glasgow coma scale (OR 0.74: 95% CI 0.72 – 0.77, $p < 0.001$). Age, gender, and other types of payer status were not associated with survival. On multivariate analysis using the same covariates, DTC and PTC were associated with fewer overall complications and decreased CT utilization (see Table). On subset analysis, level II trauma centers were not associated with higher mortality (OR 1.13: 95% CI 0.81-1.57, $p = 0.48$). Increasing use of CT scan was not associated with less hospital mortality (OR 1.17: 95% CI 0.88 – 1.56, $p = 0.29$).

Conclusion: For pediatric pelvic fractures, centers with pediatric trauma designation (PTC and DTC) appear to have better outcomes despite less use of CT scans. Higher rates of CT scan utilization did not improve outcomes. Further studies are needed to determine how to optimize treatment of pediatric pelvic fractures while minimizing ionizing radiation.

Graph on next page

Outcome	Reference: Adult Trauma Centers Odds Ratio (95% CI, p-value)	
	Dual Trauma Centers	Pediatric Trauma Centers
Complications	0.71 (0.63-0.80, p<0.001)	0.68 (0.57-0.80, p<0.001)
Mortality	1.15 (0.85-1.54, p=0.37)	0.93 (0.62-1.40, p=0.74)
Imaging		
Head	0.68 (0.61-0.75, p<0.001)	0.61 (0.53-0.70, p<0.001)
Thoracic	0.59 (0.53-0.66, p<0.001)	0.21 (0.17-0.26, p<0.001)
Abdomen	0.67 (0.61-0.74, p<0.001)	0.62 (0.55-0.71, p<0.001)
Whole Body	0.62 (0.55-0.70, p<0.001)	0.22 (0.17-0.27, p<0.001)
Injury Patterns		
Vaginal Lacerations	1.20 (0.67-2.14, p=0.53)	0.99 (0.49-2.02, p=0.98)
Vulvar Lacerations	1.15 (0.50-2.67, p=0.74)	0.89 (0.29-2.76, p=0.84)
Femoral Neck Fracture	1.42 (0.95-2.12, p=0.08)	2.53 (1.59-4.02, p<0.001)
Lumbar Spine Injury	0.90 (0.78-1.04, p=0.16)	0.97 (0.79-1.19, p=0.77)
Sacral Spine Injury	0.98 (0.88-1.09, p=0.70)	1.02 (0.88-1.17, p=0.83)
Bladder/Urethral Injury	1.09 (0.86-1.39, p=0.46)	1.18 (0.86-1.62, p=0.30)

POSTER #26

Abstract | Clinical Science | Trauma

DID THE AFFORDABLE CARE ACT REACH PENETRATING TRAUMA PATIENTS?

Sharven Taghavi, Sudesh Srivastav, Danielle Tatum, Alison Smith, Chrissy Guidry, Patrick McGrew, Charles Harris, Rebecca Schroll, Juan Duchesne

Background: The benefits of the Affordable Care Act (ACA) for trauma patients has been well-established. However, the ACA's impact on penetrating trauma patients (PTP), a population that is historically young and uninsured, has not been defined. We hypothesized that PTP in the post-ACA era would have better outcomes.

Objective: To determine how the affordable care act affected the penetrating trauma population.

Methods: The National Trauma Data Bank (NTDB) was queried for all PTP from 2009 (pre-ACA) and 2011-2014 (post-ACA). Subset analysis was performed in patients aged 19-25, as this group was eligible for the ACA's Dependent Coverage Provision (DCP).

Results: There were 9,714,471 patients in the study, with 2,053,501 (21.1%) pre-ACA and 7,660,970 (78.9%) post-ACA. When compared to pre-ACA, patients in the post-ACA cohort were more likely to have commercial/private insurance, less likely to have Medicaid, and more likely to be uninsured. On logistic regression, the pre-ACA era was associated with mortality (HR: 1.02, 95%CI: 1.01-1.04, $p=0.004$). Being uninsured was associated with mortality (HR: 1.89, 95%CI: 1.87-1.92, $p<0.001$). On subset analysis of the DCP age group, post ACA patients were more likely to be uninsured (24.1% vs. 17.6%; $p<0.001$). In addition, for the DCP age group, pre-ACA era was not associated with mortality (HR: 1.03, 95%CI: 0.99-1.06, $p=0.20$).

Conclusion: While the ACA provided a survival benefit to PTP overall, it did not increase insurance coverage for this population. In addition, the DCP of the ACA did not improve insurance access for PTP in the eligible age group. Further efforts are needed to extend insurance access to this population.

Baseline Characteristics of Pre-ACA and Post-ACA Cohorts				
	Total cohort (n = 9,714,471)	Pre-ACA (n = 2,053,501)	Post-ACA (n = 7,660,970)	P value
Age [†]	39.4 ± 16	39.6 ± 14	39.3 ± 14	< 0.001
Female	27.5 (2663800)	27.6 (566843)	27.4 (2096957)	< 0.001
White	66.1 (6419548)	67.1 (1377790)	65.8 (5041758)	< 0.001
Black	16.7 (1625106)	17.4 (358038)	16.5 (1267068)	< 0.001
Asian	1.6 (159312)	1.8 (37308)	1.6 (122004)	< 0.001
Hispanic	12.4 (1,200,335)	12.8 (263,044)	12.2 (937,291)	< 0.001
Injury Severity Score	13 ± 12	13 ± 12	13 ± 12	0.015
Private Insurance	51.2 (3,725,961)	50.9 (809,656)	51.3 (2,916,305)	< 0.001
Medicaid	16.2 (1,176,997)	20.1 (329,485)	14.9 (847,512)	< 0.001
Medicare	6.5 (474,633)	6.7 (106,644)	6.5 (367,989)	< 0.001
Self-pay	20.7 (2,006,425)	15.6 (361,150)	21.5 (1,645,275)	< 0.001
LOS [‡]	7.5 ± 11.6	7.4 ± 11.4	7.5 ± 11.7	< 0.001
ICU LOS [‡]	7.2 ± 9.6	7.2 ± 9.3	7.2 ± 9.6	0.160
Vent days	7.5 ± 10	7.4 ± 9.9	7.5 ± 10.2	< 0.001
Discharge to Rehab	11.4 (1,111,810)	10.6 (217,199)	11.7 (894,612)	< 0.001
Mortality	4.02 (392,949)	4.02 (82498)	4.05 (310451)	< 0.001

POSTER #27

Case Review | Education Science | Trauma

PANCREATICOGASTROSTOMY REPAIR OF TRAUMATIC PANCREATIC NECK TRANSECTION

Housein Shokouh Amiri, MD FACS, Katrina Castille, MD PGY4

Introduction/Objective: Blunt pancreatic trauma occurs in 5% of cases of blunt abdominal trauma with an overall complication rate of ~30-40%. This is mostly attributed to the location of the pancreas within the retroperitoneum overlying the vertebral column. The objective of this case review is to explore the types of pancreatic injury during blunt abdominal trauma and the various techniques employed to repair these injuries with limited morbidity and mortality to the patient.

Case Presentation: The case involves a 29 year old female status post motor vehicle rollover, with a diagnosis of a Grade III traumatic pancreatic injury. Surgical repair involved primary oversewing of the pancreatic head, and creation of pancreaticogastric with preservation of the distal pancreas and the spleen. Patient's post operative course was uneventful with close monitoring of blood glucose levels which stayed within normal limits throughout her hospital stay.

Discussion: Blunt pancreatic injury in the traumatic setting are rare with primary diagnosis made by CT scan. Injuries involving transection of the distal pancreas or the pancreatic duct warrant surgical repair. With distal pancreatectomy with splenectomy frequently employed as the repair of choice, alternatives may be considered when preserving pancreatic function is a part of the decision making algorithm.

Conclusion: Early identification and proper management of blunt pancreatic injuries is essential in limiting patient morbidity and mortality. For Grade III lesions with healthy distal pancreatic tissue, repair with a pancreaticogastric anastomosis is a safe and effective option.



POSTER #28

Abstract | Clinical Science | Trauma

DOES PAYER STATUS INFLUENCE INJURY PATTERN IN PEDIATRIC BICYCLE INJURIES?

A Ali, J Friedman, D Tatum, G Jones, C Guidry, P McGrew, R Schroll, C Harris, J Duchesne, S Taghavi

Background: Bicycle injuries continue to cause significant morbidity in the United States. How insurance status effects outcomes in children with bicycle injuries has not been defined. We hypothesized that payer status would not impact injury patterns in pediatric bicycle-related accidents.

Objective: Our objective was to study relationships between payer status and injury patterns following pediatric bicycle injuries.

Methods: We utilized the National Trauma Data Bank (NTDB) to identify pediatric (≤ 18 years) patients involved in bicycle-related crashes in 2016. A multivariate logistic model was used to determine if payer status was associated with injury patterns and outcome.

Results: There were 5,619 patients that met study criteria. Of these, 321 (5.7%) were uninsured. Compared to patients with insurance, uninsured patients were older, more likely to be from the South, less likely to be white, or use a helmet, and had higher rates mortality (Table 1). On multivariate analysis, being uninsured was associated with traumatic brain injury (TBI) (OR 1.27; 95% CI: 1.00-1.61, $p=0.048$) and mortality (OR 3.45; 95% CI: 1.12 – 10.67, $p = 0.03$), but not with complications or fractures of the face, neck, rib/sternum, pelvis, thorax, or upper or lower extremities. In subgroup analysis, relative to private insurance, neither Medicare/Medicaid or Government insurance was associated with mortality or TBI.

Conclusion: Uninsured children may be more likely to have a TBI or fatal injury after a bicycle crash. Further research is needed to determine the factors that lead to this disparity. Public health interventions should target uninsured children to decrease morbidity and mortality from bicycle injuries.

Variable	Inured	Uninured	p
Patient Characteristics			
Age (Mean, SD)	11.3 (4.0)	11.8 (4.4)	0.04
Systolic Blood Pressure (Mean, SD)	123.6 (17.5)	123.8 (20.8)	0.34
Pulse (Mean, SD)	96.2 (20.0)	95.1 (22.9)	0.35
Temperature (Mean, SD)	36.8 (0.5)	36.8 (1.2)	0.58
Supplemental Oxygen (n, missing)	407 (579)	35 (26)	0.05
Respiration Rate (Mean, SD)	20.5 (5.1)	20.4 (6.0)	0.41
Injury Severity Score (Mean, SD)	7.3 (6.9)	7.5 (8.9)	0.10
Glasgow Coma Scale (Mean, SD)	14.4 (2.2)	14.2 (2.6)	0.36
Female (n, %)	1108 (21.6)	68 (21.2)	0.85
Helmets (n, %)	1273 (24.8)	55 (17.1)	0.002
Race (n, %)			
White	3377 (65.9)	186 (57.9)	
Black	784 (15.3)	60 (18.7)	
American Indian	53 (1.0)	1 (0.3)	
Native Hawaiian or Pacific Islander	18 (0.4)	1 (0.3)	
Asian	108 (2.1)	7 (2.2)	
Other	615 (12.0)	53 (16.5)	
Missing	169 (3.3)	13 (4.0)	
Ethnicity (n, %)			
Hispanic	797 (15.6)	73 (22.7)	<0.001
Missing	397 (7.7)	17 (5.3)	
Facility Region (n, %)			
Northeast	977 (19.1)	40 (12.5)	
Midwest	1273 (24.8)	81 (25.2)	
South	1592 (31.1)	147 (45.8)	
West	1270 (24.8)	53 (16.5)	
Missing	12 (0.2)	0 (0.0)	
Facility Teaching Status (n, %)			
University	2641 (51.5)	158 (49.2)	0.053
Community	1829 (35.7)	107 (33.3)	
Non-teaching	654 (12.8)	56 (17.4)	

POSTER #29

Case Review | Clinical Science | Trauma

A RARE CASE OF NEISSERIA MENINGITIDIS PNEUMONIA IN A POLYTRAUMA PATIENT

Centanni, AV, Taghavi, S

Introduction/Objective: In the past two decades, there have been 3 case reports of Neisseria meningitidis pneumonia in the United States, none of which were in trauma patients. Risk factors for N. meningitidis includes splenic injury, immunocompromised state, diabetes, and housing in close quarters.

Case Presentation: We report a 41 year old male bicyclist that presented as level 1 trauma after being struck by an automobile. The vehicle was traveling approximately 50 miles per hour and dragged the patient several yards, before throwing him into a ditch. Upon arrival of first responders, the patient was noted to be a GCS of 7 and underwent rapid sequence intubation. The patient was hemodynamically stable in the trauma bay and a L sided chest tube was placed due to a hemothorax. CT scans demonstrated multiple intracranial hemorrhages, 9 left sided rib fractures, a grade 2 splenic laceration without extravasation, comminuted left scapula fracture, right acetabulum fracture, and fractures of transverse processes of L2-L4. Initial labs were unremarkable and toxicology screen was positive for amphetamines. The patient's risk factors for N. meningitidis were unknown. The patient was admitted to the trauma intensive care unit (ICU) and successfully extubated on hospital day 2 after a spontaneous breathing trial. However, the next day, the patient was noted to be persistently agitated and confused. This was thought to be due to alcohol withdrawals. Despite treatment with lorazepam, the patient required reintubation on hospital day 3. Over the next several days the patient remained stable on the ventilator. On hospital day 7, the

patient was febrile to 101.7 and his morning chest x-ray demonstrated a new left lung opacity. Bronchoalveolar lavage was performed from the left lower lobe and cultures were sent and empiric antibiotics started. The patient continued to have persistent fevers and leukocytosis. On hospital day 9, the final results of the BAL demonstrated *Neisseria meningitidis* with >100,000 CFU/mL. The patient's antibiotics were deescalated to Ceftriaxone. Blood cultures were negative. The patient was extubated hospital day 11 and discharged to rehab hospital day 26. After culture results were obtained, employee health was alerted and all personnel that were in direct contact with the patient were contacted for prophylactic antibiotic treatment.

Discussion: This case highlights the need for early recognition of a bacteria that rarely causes ventilator associated pneumonia in trauma patients. While this patient's risk factors for *N. meningitidis* were unknown, his splenic injury may have made him more susceptible to the disease.

Conclusion: *Neisseria meningitidis* can be a rare cause of ventilator associated pneumonia in trauma patients. Further studies are needed to determine if patients with recent splenic injury are more susceptible to this rare cause of ventilator associated pneumonia.

POSTER #30

Abstract | Clinical Science | Trauma

TETANUS SHOT ADMINISTRATION IN QUALIFYING TRAUMA PATIENTS

K.Castille, MD, N.Samra, MD, FACS

Background: Since the introduction of tetanus vaccination into the routine childhood vaccination series in the 1940s, tetanus infection rates have dropped by 98% in the United States. Despite the success of the vaccination series, recent studies have shown that the elderly, newly immigrated, and those within vulnerable socioeconomic populations are still at risk for this devastating disease. When members of these populations are involved in a trauma, there are protocols in place to ensure that their vaccination status is assessed and the proper immunizations are administered.

Objective: The purpose of this study was to determine the effect of obligatory immunization documentation in the tertiary survey progress note on the rates of compliance of tetanus prophylaxis among qualifying patients in a level 1 trauma center.

Methods: A retrospective chart analysis of the rate of tetanus prophylaxis administration for patients over the age of 18 who presented to a single level 1 trauma center as a resuscitation (1), emergent (2), or urgent (3) acuity level trauma was conducted between January 2017 and August 2018. A chi-squared analysis was used to determine whether a statistically significant difference existed between rates of tetanus prophylaxis compliance before and after the implementation of the modification.

Results: Of the resuscitation acuity level traumas, primarily handled by the surgical trauma team, a modest yet not statistically significant increase from 64.9% to 71.3% ($p = 0.113$) was demonstrated. Rates within urgent acuity level traumas remained relatively stable from 31.4% to 37.9% ($p = 0.5$). A statistically significant difference was observed in the compliance rates in emergent acuity traumas, of which are initially managed by the emergency department staff, with a rate decreasing from 70.1% to 59.8% ($p = 0.03$).

Conclusion: In conclusion, the addition of tertiary survey documentation of immunization status did not significantly improve the compliance rates of tetanus prophylaxis administration. The results suggest that alternative methods of immunization status assessment need to be explored in order to increase overall compliance by emergency department staff and trauma surgery staff.

Results

Records reviewed = 2,136

Records included = 945

	Mean age in years	Tetanus administration BEFORE required documentation (n=520)	Tetanus administration AFTER required documentation (n=425)	P value
Tier 1	37.0	64.9%	71.0%	0.11
Tier 2	44.5	70.1%	59.8%	0.03
Tier 3	40.9	31.4%	37.9%	0.5

POSTER #31

A CASE STUDY: MONITORING WEB SEARCHES TO ACCELERATE TRAUMA ACTIVATION TIMES

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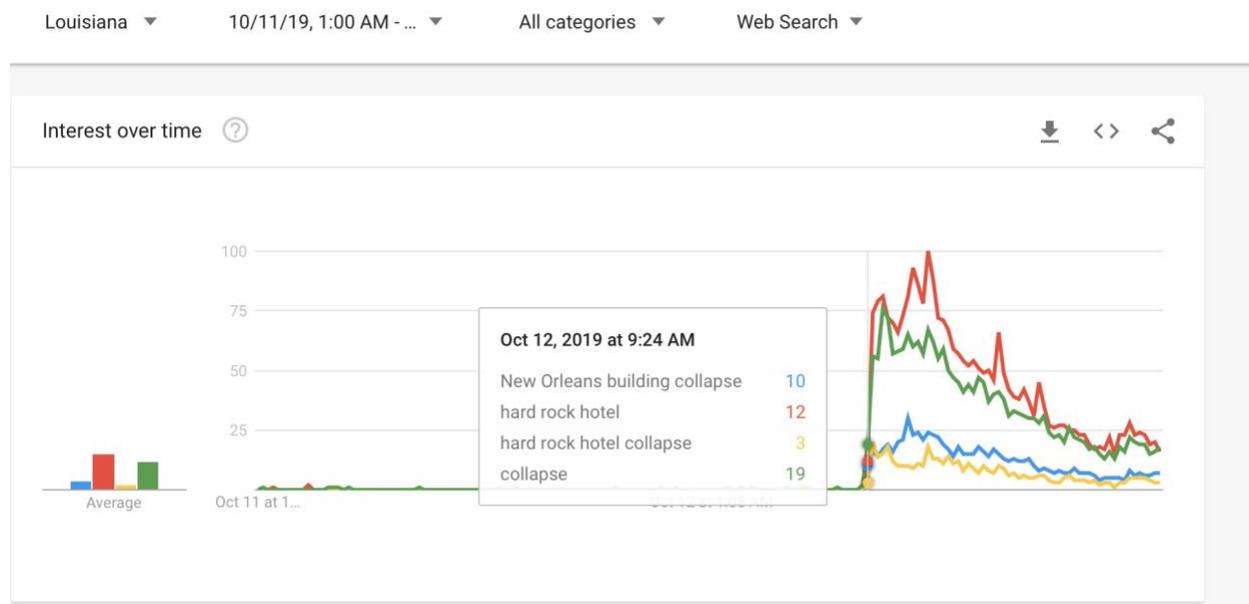
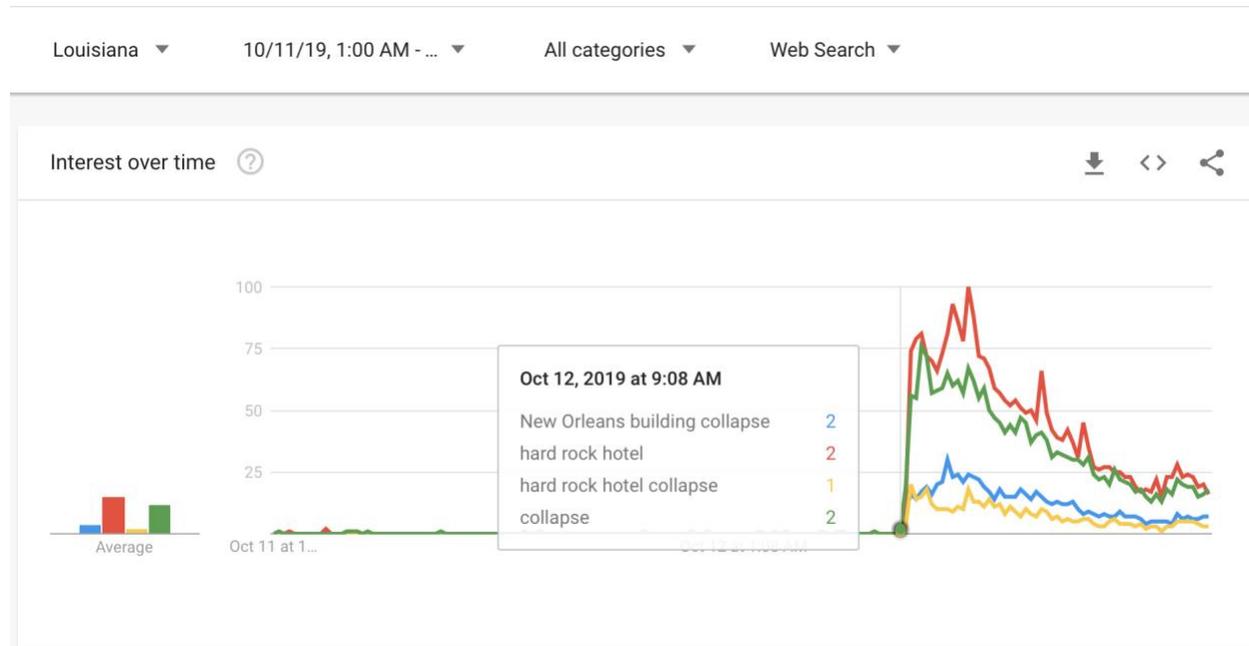
Background: The delay in alert time from the occurrence of a mass casualty incident to the time of the official trauma activation results in the loss of valuable time that could be used by hospitals to better prepare for patient arrival. The recent collapse of the Hard Rock Hotel construction site in downtown New Orleans resulted in at least 18 injuries and 3 fatalities. A recent study evaluated real-time Twitter data and proposed the utilization of spikes in social media activity surpassing a certain threshold to more rapidly alert hospitals of incoming MCIs, helping to mitigate the limitations of hospital resources and readiness. (Callcut et al., 2017) In this retrospective study we hypothesize that monitoring web searches of trigger words can directly alert hospitals and aid in more rapid trauma activation with improved outcomes in MCIs.

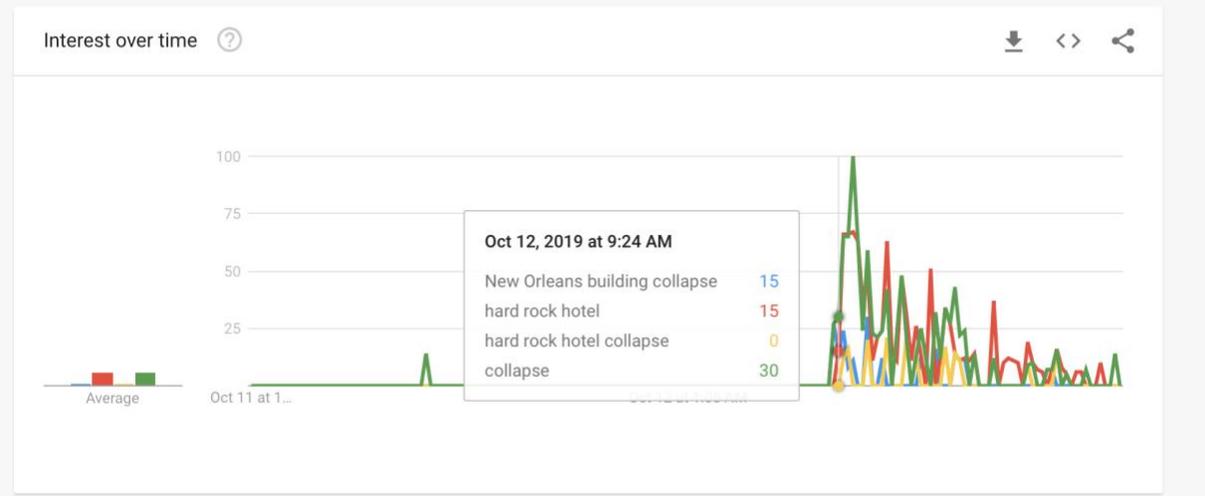
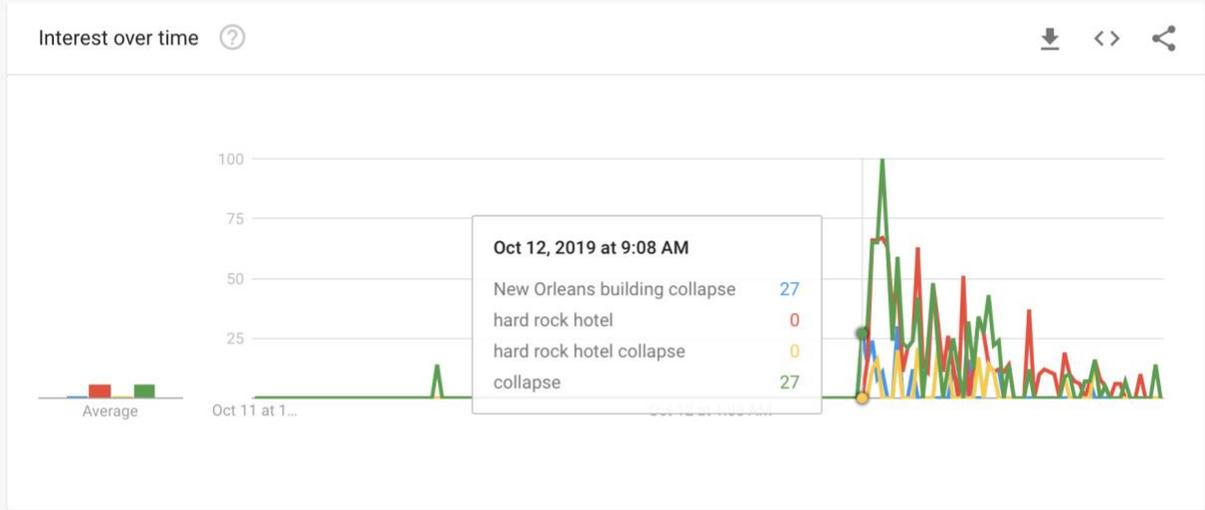
Methods: Searches for the phrases 'New Orleans building collapse,' 'hard rock hotel,' 'hard rock hotel collapse,' and 'collapse' in Louisiana around the time of the collapse were analyzed using the trend function on Google. The time at which specific web searches began uptrending was associated with the activation time at the local trauma center.

Results: Sixty searches including the word 'collapse' were performed in Louisiana prior to 9:08 am. The official trauma activation time at University Medical Center was at 9:22 am. Between 9:08 and 9:24, two minutes after the trauma center had been activated, over 100 searches about the incident had occurred. Timing of online trend spikes were found to be 14 minutes sooner than the official activation at 9:22am.

Conclusion: With the incident occurring less than a mile from the hospital, transit time was relatively quick, so accelerating the activation time at the trauma center would increase the center's ability to prepare for the incoming MCI. A more direct and rapid alert system that monitors trending trigger

words searched within the trauma center's coverage radius may have given the trauma center up to 14 more minutes of preparation time and improve overall patient outcomes. Further studies are needed to interrogate practical applications, such as how to determine the threshold for these alerts to optimize sensitivity and specificity and the logistics of a program such as a cell phone application for physicians.





2019-10-12T08:52:00-05:00	0	0	0	<1
2019-10-12T09:08:00-05:00	2	2	1	2
2019-10-12T09:24:00-05:00	10	12	3	19
2019-10-12T09:40:00-05:00	16	74	20	56
2019-10-12T09:56:00-05:00	14	79	14	55

Web searches for

New Orleans building collapse: (Louisiana)	hard rock hotel: (Louisiana)	hard rock hotel collapse: (Louisiana)	collapse: (Louisiana)
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2019-10-12T08:36:00-05:00	0	0	0	0
2019-10-12T08:52:00-05:00	0	0	0	0
2019-10-12T09:08:00-05:00	27	0	0	27
2019-10-12T09:24:00-05:00	15	15	0	30
2019-10-12T09:40:00-05:00	24	66	12	65
2019-10-12T09:56:00-05:00	8	66	16	65

News Searches for

New Orleans building collapse: (Louisiana)	hard rock hotel: (Louisiana)	hard rock hotel collapse: (Louisiana)	collapse: (Louisiana)
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POSTER #32

ONSET OF RESPIRATORY COMPLICATIONS IN ICU PATIENTS WITH THREE OR MORE RIB FRACTURES

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Background- Patients with multiple rib fractures are at higher risk for respiratory complications and mortality. Current recommendations are admission with close observation for patients at high risk for significant respiratory complications (SRC); namely over sixty-five years of age concurrent with four or more rib fractures. However, the duration of close monitoring is not clear and often patients are transferred out of critical care setting after a brief period. We hypothesize that SRC arise beyond seventy-two hours from time of hospital admission.

Methods- Retrospective chart review of adult patients admitted to Level 1 Trauma Center from 2015 to 2018 with three or more rib fractures who were initially breathing spontaneously and developed SRC. Demographic and clinical data were analyzed and date of onset of SRC was noted. SRC were defined as respiratory failure or respiratory distress requiring intubation or noninvasive ventilatory support. Data were analyzed using standard statistical methods.

Results- 1058 patients met inclusion criteria, of which 343 (32%) developed a complication. Of these, twenty two patients developed a rib-fracture-related SRC and were included in the final analysis. All were admitted to the Trauma ICU for close observation. Nine patients (40%) were transferred out of the TICU after this initial observation period (3.5 days avg.) and developed SRC thereafter. One of these patients died. Onset of SRC in this group was 7.4 days following admission. On average, patients with 3 or more rib fractures were transferred from the ICU 7.6 days after admission, and developed SRC 6 days after admission.

Conclusion- Significant respiratory complications are uncommon amongst patients with rib fractures admitted to our trauma center. When they did occur, they commonly developed after their initial period of close observation in the ICU. Therefore strategies to prevent SRC should include daily reassessment of respiratory risk and be sustained.