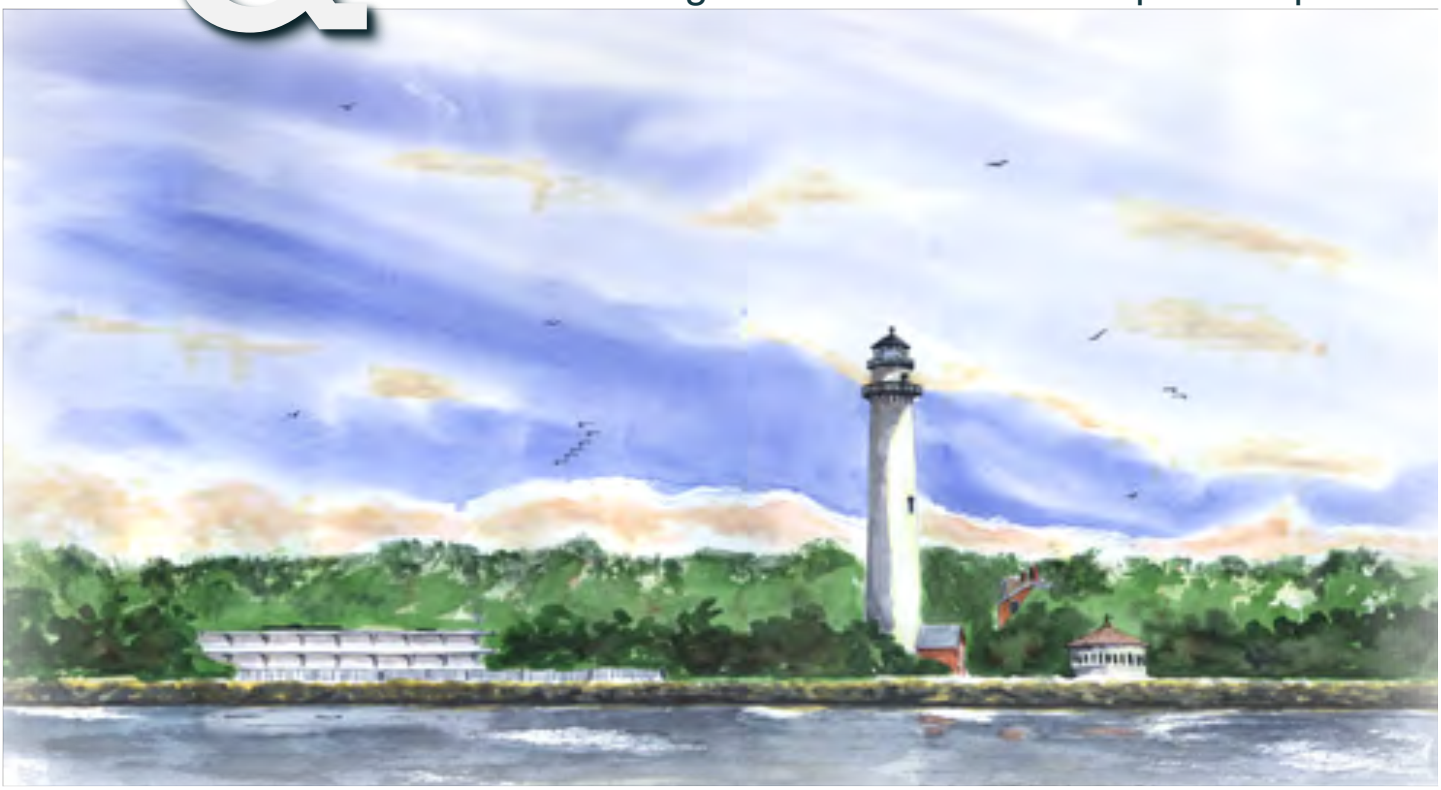
DAY OF TRAUMA

& 7th Annual M. Gage Ochsner Resident Paper Competition



GEORGIA TRAUMA SYSTEM BIANNUAL MEETING
AUGUST 12-15, 2021
THE KING AND PRINCE BEACH & GOLF RESORT
ST. SIMONS ISLAND, GA

DAY OF TRAUMA

&

7th Annual M. Gage Ochsner Resident Paper Competition

GEORGIA TRAUMA SYSTEM BIANNUAL MEETING

GEORGIA QUALITY IMPROVEMENT PROGRAM

GEORGIA TRAUMA COMMISSION

ACS Chapter | Georgia Society of the ACS

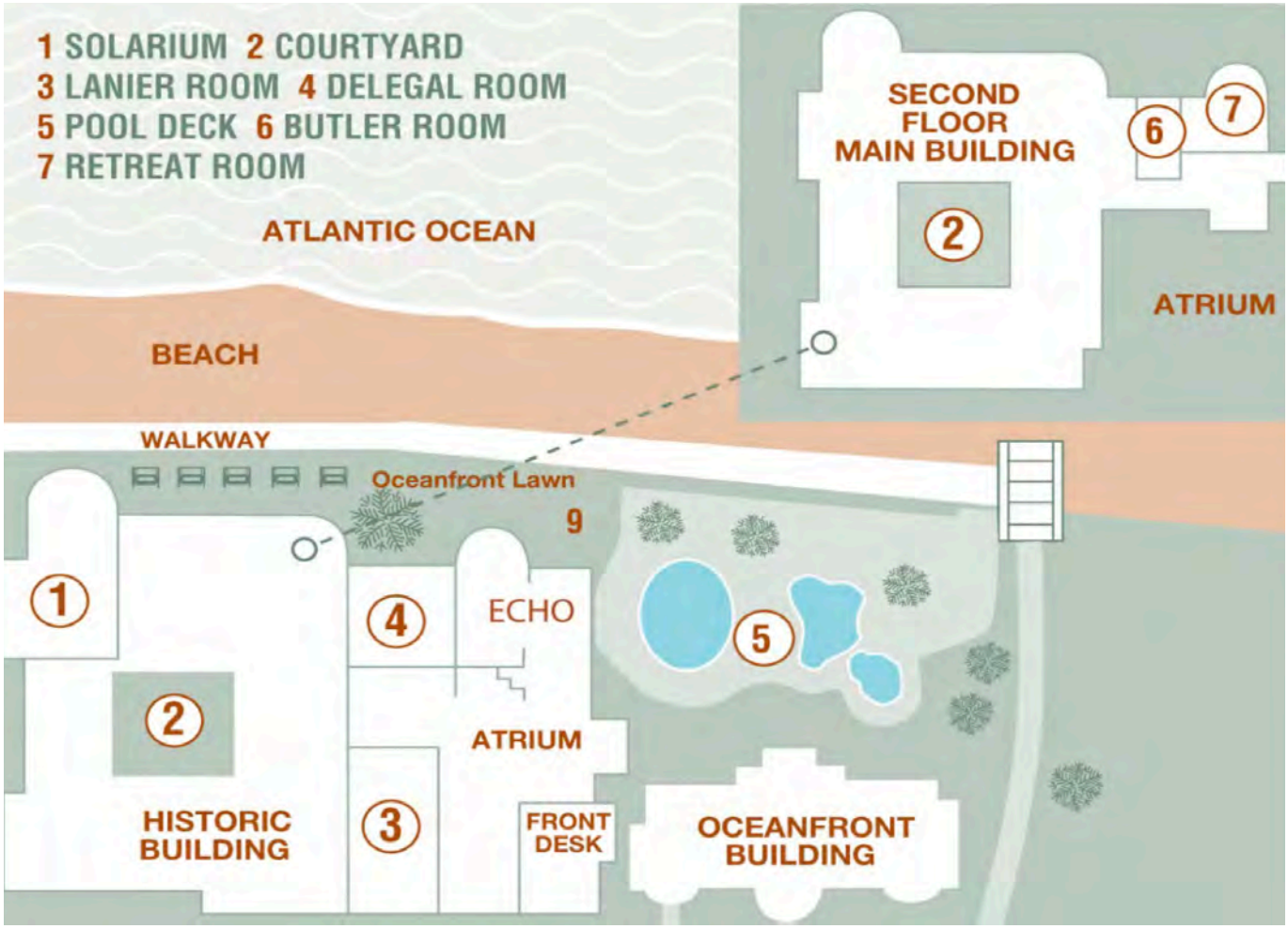
American College of Surgeons
Inspiring Quality: Highest Standards, Better Outcomes

The Committee on Trauma

Thank you for your dedication to the improvement of trauma care in Georgia!

MEETING SPACE LOCATIONS

THE KING AND PRINCE BEACH & GOLF RESORT
201 ARNOLD ROAD
ST. SIMONS ISLAND, GEORGIA 31522



DRESS ATTIRE

Business Casual, Masks Required during meeting sessions.

CME

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME). The American College of Surgeons is accredited by the ACCME to provide continuing medical education for physicians. The American College of Surgeons designates this live activity (Day of Trauma) for a maximum of **3.75 AMA PRA Category 1 credit(s)™ for Trauma**. Physicians should only claim credit commensurate with the extent of their participation in the activity**.**

THE DAY BEFORE

THURSDAY, AUGUST 12TH

7:00p - 9:00p **DAY OF TRAUMA WELCOME RECEPTION**
Atlantic Court
Swing by and join us for a "Practice Round" Welcome Reception! It's been two years, so let's have some fun oceanside! Check-in. Have Dinner. Then meet us on Atlantic Court for a couple of hours of Putterball, snacks, drinks, and wait for it...socializing!

DAY OF TRAUMA AGENDA

FRIDAY, AUGUST 13TH

7:00a - 8:30a **NETWORKING BREAKFAST** | REGISTRATION OPEN

TRAUMA CENTER ADMINISTRATORS SUB-COMMITTEE OF THE GEORGIA TRAUMA COMMISSION MEETING
Solarium

8:50a - 9:00a **WELCOME**
Lori Mabry | *Georgia Trauma Foundation*
Kathy Browning | *Georgia Society of the American College of Surgeons*
Lanier Room

9:00a - 9:10a **GEORGIA QUALITY IMPROVEMENT PROGRAM (GQIP) MEETING**
Christopher Dente MD, FACS
Gina Solomon MHA BSN RN CCRN TCRN
Lanier Room

REVIEW OF SPRING 2021 TQIP COLLABORATIVE REPORT
Christopher Dente MD, FACS

9:10a - 9:20a **LEVEL III TQIP REPORT CONTENT REVIEW**
Greg Patterson MD, FACS | *J.D. Archbold Memorial Hospital*
Kelli Vaughn RN, MSN, CEN | *J.D. Archbold Memorial Hospital*

9:20a - 9:30a **PEDIATRIC TQIP REPORT REVIEW**
Amina Bhatia MD, MS, FAAP, FACS | *Children's Healthcare of Atlanta, Egleston*

9:30a - 10:00a **TBI DRILL DOWN PROJECT AND WORKGROUP REPORT**
Elizabeth Benjamin MD, PhD, FACS | *Grady Memorial Hospital*

10:00a - 10:15a **REFRESHMENT BREAK |** EXHIBITORS OPEN

DAY OF TRAUMA AGENDA

FRIDAY, AUGUST 13TH

10:15a - 11:00a **GQIP WORKGROUP PRESENTATIONS**
Lanier Room

AKI
Tracy Johns MSN, RN-BC, CPHQ | *Atrium Health Navicent*

OPIOID
Dennis Ashley MD, FACS | *Atrium Health Navicent*

LEVEL III/IV
Greg Patterson MD, FACS | *J.D. Archbold Memorial Hospital*
Alicia Register MD | *Crisp Regional Hospital*

PEDIATRIC
Amina Bhatia MD, MS, FAAP, FACS | *Children's Healthcare of Atlanta, Egleston*

11:00a - 12:50p **GRAB & GO LUNCH**

WORKGROUP MEETINGS

- TBI | *Ballroom* **11:15a - 12:00p**
- AKI | *Ballroom* **11:15a - 12:00p**
- LEVEL III/IV | *Solarium* **11:15a - 12:30p**
- OPIOID | *Ballroom* **12:00p - 12:45p**
- PEDIATRIC | *Ballroom* **12:00p - 12:45p**

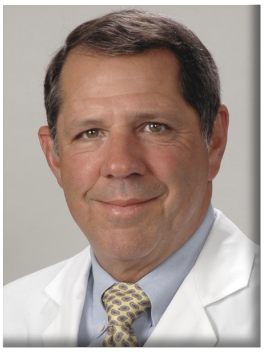
1:00p - 2:15p **ARBORMETRIX: ADVANCING TRAUMA OUTCOMES THROUGH DATA SCIENCE**
Bradley Moore, MPH | *Arbormetrix*
Lanier Room

2:15p - 2:30p **NSQIP REPORT**
Jyotirmay Sharma MD, FACS, FACE | *Emory University*
Lanier Room

2:30p - 3:00p **REFRESHMENT BREAK** | EXHIBITORS OPEN

3:00p - 5:00p **M. GAGE OCHSNER RESIDENT PAPER COMPETITION**
American College of Surgeons, Committee on Trauma – Georgia Chapter
Lanier Room

M. GAGE OSCHNER RESIDENT PAPER COMPETITION



MIMS GAGE OCHSNER, JR. was born in New Orleans, Louisiana to his urologist father M. Gage Ochsner and mother Paddy Ochsner on May 10, 1953. He was named for the best friend and colleague of his grandfather Dr. Alton Ochsner, who was one of the founders of the Ochsner Clinic. Gage attended Southern Methodist University in Dallas, Texas and then was graduated from Tulane University School of Medicine in 1979. During his medical school years, he was awarded the United States Naval Reserve Health Professions Scholarship. He completed a surgical internship at the National Naval Medical Center in Bethesda, Md. He completed his residency in surgery at the Naval Regional Medical Center in San Diego, Ca. In 1985, Dr. Ochsner then became the Chief of General Surgery and Director of Intensive Care at the Naval Hospital at Subic Bay, Philippines. From 1988-1990, he completed a fellowship in Trauma Critical Care at the Washington Hospital Center under the tutelage of his longtime friend and colleague Dr. Howard Champion. Following his fellowship training, he stayed on there to become an attending surgeon in trauma critical care and an Associate Professor of Surgery.

In 1994, Dr. Ochsner left the military and moved to Savannah, Georgia to become Chief of Trauma and Surgical Critical Care at Memorial Health University Hospital. He became a full Professor of Surgery and was then appointed as Academic Chairman of the Mercer University School of Medicine Department of Surgery in 2011.

Dr. Ochsner served on numerous surgical society boards of directors and played a leadership role in many national surgical organizations. He was the president of the Ambrose Pare Society, the president of the Western Trauma Association, the president of the Georgia Surgical Society, the vice president of The American Association for the Surgery of Trauma, the vice president of the Southeastern Surgical Congress, and the Secretary-Treasurer of the Georgia Surgical Society. M. Gage Ochsner, Jr. authored more than 50 peer reviewed scientific publications and contributed eleven book chapters in major texts on trauma surgery. He was the principal investigator on four grant-funded studies at Memorial Health and directed fifteen separate educational courses in Savannah.

During his tenure at Memorial University Medical Center, Dr. Ochsner grew the Trauma Service from 900 admissions per year to 2,700 admissions per year, developed a respected and admired surgical critical care service, developed an Orthopedic Trauma Service, and expanded the full time Trauma Faculty from 3 to 9 surgeons. He played a major role in the development of the statewide Georgia Trauma System.

Dr. Ochsner received many awards and accolades, including the Memorial Health Lifetime Achievement Award and the Georgia Medical Society Health Hero Award. A $300,000 gift was donated in his name to start the M. Gage Ochsner, M.D. Institute for Injury Research & Prevention.

Always the professor, Gage was a commanding presence on rounds, in the operating room, or running a meeting. His patients appreciated his skill and bedside manner; the medical students adored him and always asked him to be part of their graduation ceremony. His residents hung on his every word, and their great fear was that they would disappoint his expectations.

Some men make a difference in this world and M. Gage Ochsner, Jr., M.D. was certainly one of them. M. Gage Ochsner Jr., M.D. had a major impact on Memorial University Medical Center, the trauma/critical care service, and the surgical residency training program as well as the lives of all those he touched. He will remain in our hearts and minds for many, many years to come.

M. GAGE OSCHNER RESIDENT PAPER COMPETITION

Daniel Chester, MD
Morehouse School of Medicine, Grady Memorial Hospital

Utilization of the Modified Trauma-Specific Frailty Index for Triaging Adult Trauma Patients Leads to Lower Readmission Rates Compared to Traditional Emergency Severity Index

Background: The triage system most frequently utilized in the United States (US) is the Emergency Severity Index (ESI). Despite its widespread use, the ESI has significant drawbacks when used for trauma patient triage. The modified Trauma-Specific Frailty Index (mTSFI) previously demonstrated improved triage accuracy in adults ≥ 50 years compared to ESI. However, the post-discharge readmission rates using mTSFI compared to ESI are unknown. We hypothesized that adult trauma patients triaged using the mTSFI to direct location of hospital admission would have lower readmission rates at the 30-day, 60-day, 1-year, and 2-year periods based on prior investigation.

Methods: A retrospective review of the cohort from our previous study was performed in trauma patients ≥ 50 years old admitted to a level-1 trauma center between April and July 2019. The study group was divided into two cohorts: mTSFI-concordant and ESI-concordant. Data regarding rates of hospital readmissions were extracted. Analysis was performed using the chi-squared test and a p-value of < 0.05 was considered statistically significant.

Results: Thirty-four patients were triaged using mTSFI and 66 via ESI. The mean ages for mTSFI-group and ESI-group were 65.2±10.77 and 63.8±10.57 years, respectively. The 30-day readmission was 0% in mTSFI-group versus 12% in ESI-group (p-value = 0.05), and 26.5% versus 51.5% at two-years (p-value = 0.09). See **Table 1** for the interval readmission rates.

Conclusion: Triage using mTSFI showed a trend towards lower readmission rates versus ESI for adult trauma patients at all time intervals. The mTSFI was most effective in preventing 30-day readmissions compared to ESI.

Key Words: Readmission rates, Trauma-Specific Frailty Index, Frailty, Emergency Severity Index, Adult Trauma Patient Triage

Time Interval	mTSFI N (%)	ESI N (%)	p-Value
30-day	0 (0%)	8 (12%)	p = 0.05
60-day	3 (8.8%)	15 (22.7%)	p = 0.12
1-year	6 (17.6%)	19 (28.8%)	p = 0.29
2-year	9 (26.5%)	34 (51.5%)	p = 0.09

Table 1 Readmission rates for various time intervals for trauma patients triaged using mTSFI vs ESI.

M. GAGE OSCHNER RESIDENT PAPER COMPETITION

Deena B. Chihade, MD
Emory University School of Medicine, Grady Memorial Hospital

Adolescent Lower Extremity Vascular Injuries at an Urban Adult ACS-Verified Level 1 Trauma Center

Background: Adolescent peripheral vascular injuries are relatively uncommon, with the potential for lifelong disability. The objective of this study is to evaluate injury patterns and management of adolescent lower extremity vascular injuries (ALEVI) in a busy adult urban Level-I trauma center.

Methods: Our single-institution trauma registry was queried (1/2009-12/20) for all patients with noniatrogenic lower extremity vascular injuries in patients less then 18 years of age. Demographics, mechanism of injury, injury severity score (ISS), injury type, operative intervention, limb salvage, concomitant injuries and outcomes were analyzed.

Results: 32 patients met inclusion criteria. In this cohort, 45 vessels were injured and 27 operative interventions performed. Mean age was 15.5 ± 2.6 (range, 12-17), majority male (n=30, 93.8%) and predominantly from penetrating mechanisms (n=28, 87.5%). Overall, penetrating injuries had lower ISS (14 vs. 22, p = 0.06) and the majority were black (100% vs 60%, p=0.04). All arterial injuries above knee required intervention (n=20). Nearly half of all patients had concomitant arterial-venous injuries (n=14, 44%) and orthopedic (n=15, 47%) fractures. Below knee, shank vessel (n=8, 17%) injuries were less common with the majority requiring ligation (62%) during orthopedic fixation. All above the knee vascular injuries were performed by adult surgeons [8 (40%) trauma surgery, 11 (55%) vascular surgery]. Two patients required unplanned revascularization due to thrombosis. Overall limb salvage was 93% and no deaths occurred during the study period.

	Number (N)		Percentage (%)	
Patient Demographics	**N=32**			
Age, mean ± SD (range)	15.5 ± 2.6 (12-17)			
Sex				
Male	30		93.8	
Mechanism				
Penetrating	28		87.5	
ISS, mean ± SD (range)	14.4 ± 10.1 (1-41)			
Hospital stay, mean ± SD (range)	13.4 ± 13.8 (1-54)			
ICU stay, mean ± SD (range)				
Vessel Injuries	**artery N=45**	**vein**	**artery (%)**	**vein**
Vessels				
Common femoral	2	1	4.4	2.2
Superficial femoral	11	9	24.4	20
Deep femoral vessels	2		4.4	
Popliteal	5	4	11.1	8.9
Anterior tibial vessels	3		6.7	
Posterior tibial vessels	5		11.1	
Peroneal vessels	3		6.7	
Concomitant arterial-venous	14		41.9	
Types				
Transection	31			
Pseudoaneurysm	1			
Intimal disruption	1			
Contusion with thrombosis	1			
Surgical Procedures	Artery	Vein		
Primary repair	2	3		
Interposition grafting				
Autogenous saphenous vein	12			
PTFE	1	3		
Ligation	5	12		
Temporary Shunt	4	0		
Coil Embolization	1	0		
Catheter Embolectomy	7			
Fasciotomy	14			

Conclusions: ALEVIs are relatively rare and commonly result from firearms. These injuries can be safely managed at adult trauma centers by experienced surgeons with high rates of limb salvage and successful revascularization following surgical intervention.

M. GAGE OSCHNER RESIDENT PAPER COMPETITION

Brant Clatterback, MD
Emory University School of Medicine, Grady Memorial Hospital

Through the Ages: Thoracoabdominal Trauma and Blunt Traumatic Diaphragm Rupture

Background: Traumatic diaphragmatic ruptures (TDR) are a relatively uncommon diagnosis that generally/typically result from high-impact blunt mechanisms. We hypothesized that in patients with TDR, difficulty in diagnosis may result in increased respiratory complications.

Methods: The trauma registry of a busy urban level I trauma center was queried (1/2010-12/2020) for adult patients with blunt thoracoabdominal trauma. Demographics, mechanism of injury, ISS, AIS, injury pattern, time to OR, length of stay (LOS) and outcomes were analyzed. Patients were stratified based on age (young adults [18-35 yrs]; middle age [36-60 yrs]; older adults [>60 yrs]). Univariate analysis was performed using Chi-square or Fisher Exact test. Multivariate analysis was performed using logistic regression. Any *p-value* <0.05 was considered significant.

Results: Overall 44,434 trauma patients were admitted over the study period, of which 98 (0.22%) had a TDR. TDR was more common on the left (62 left vs. 23 right). Patients with TDR were more likely to have associated injuries (90%) and were injured during an MVC (n=81, 83%). Patients were more commonly male (n=59, 60%) with a median age of 41.5 yrs (interquartile range [IQR], 28-53) and a median ISS of 33 (IQR, 26-40). Patients with the largest TDR defect had a higher ISS ($p \leq 0.05$), and a higher mortality rate. Time to OR was delayed (delay in diagnosis) in 12 patients, a median of 120 hours (35.5-323) On multivariate analysis, increased time to OR was associated with increased pneumonia $p \leq 0.03$, ventilator days ($p \leq 0.0386$), ICU ($p \leq 0.022$) and hospital LOS ($p \leq 0.02$). On subgroup analysis, middle age patients were most likely to have larger size TDR ($p \leq 0.001$) while older patients were more likely to have chronic respiratory failure based on tracheostomy rates ($p \leq 0.002$) and were more likely to need skilled care on discharge ($p \leq 0.02$). In our cohort, overall mortality was 20%.

Conclusions: TDR is an uncommon diagnosis however when present is associated with a high injury burden and mortality. A high index of suspicion for TDR is critical as patients with increased time to surgical intervention were more likely to develop pneumonia with an increase in ICU and hospital LOS. When comparing age, while middle age patients were more likely to have a higher ISS and a larger rupture, elderly patients required more care and interventions during their hospital stay.

	15-35 years n= 13	36-60 years n= 46	> 61 n= 39
BMI	27.34 ± 8.6	32.6 ± 12.46	28.48 ± 8.4
ISS	33.05 ± 14.46	33.79 ± 9.54	31.69 ± 13.75
AIS (chest)	3.75 ± 0.69	3.91 ± 0.42	3.69 ± 0.63
AIS (abdomen)	3.03 ± 1.14	3 ± 1.2	3.33 ± 1
Diaphragm injury size (cm)	8.38 ± 4.76	12.46 ± 19.2	8.13 ± 5.39
Time to OR (hours)	50.5 ± 143	8.32 ± 19.17	84.19 ± 172.36
Ventilator days	9.52 ± 12.95	13.49 ± 13.99	14.23 ± 15.73
Hospital length of stay	23.41 ± 18.55	24.59 ± 24.01	21.15 ± 23.28
ICU length of stay	12.86 ± 15.67	17.72 ± 20.85	20.08 ± 21.62
Mortality	15.38%	19.57%	38.46%

American Association for the Surgery of Trauma (AAST) classification of diaphrag injuries.
Grade II: <2 cm laceration, Grade III: 2-10 cm Laceration, Grade IV: Laceration of >10 cm - ≤ 25 cm. Grade V: Laceration with tissue >25cm^2.

M. GAGE OSCHNER RESIDENT PAPER COMPETITION

Eric Forney, MD
Mercer University School of Medicine, Atrium Health Navicent

Do all isolated traumatic subarachnoid hemorrhages need to be transferred to a level 1 trauma center?

Background: Isolated traumatic subarachnoid hemorrhage (itSAH) is identified on approximately 82% of computer-assisted tomography (CT) images in the patient with mild traumatic brain injury. The aim of this study was to evaluate treatment and outcomes of patients with itSAH to determine if transfer to a Level 1 trauma center for neurosurgical care was necessary.

Methods: A retrospective review of the trauma registry was conducted from Jan 2015-Dec 2020. Patients with itSAH on initial CT imaging and a Glasgow Coma Scale (GCS) score >13 were included. This population included transfers and ED admissions.

Results: There were 120 patients identified with a mean age of 63 years, and 44% were male. Mean injury severity score was 4.7 with 48% on chronic anticoagulation/antiplatelet therapy. Mean hospital LOS was 4 days. No patient required acute neurosurgical intervention, and all were discharged alive. On follow-up imaging while in the hospital, 118/120 (98.3%) of itSAH showed improvement or no change. Only 2/120 (1.7%) patients showed increased SAH, both without clinical significance. However, 39/120 (32%) required sub-specialty medical consultation with 27 (23%) of these requiring medical treatment. When patients on chronic anticoagulation/antiplatelet therapy were compared to those without, the population was significantly older, more likely to have a fall as a mechanism of injury, had more co-morbidities, and stayed longer in the hospital. However, there was no difference in neurosurgical intervention or increased SAH on subsequent imaging. At 3-6 week follow-up, 1 patient required a SEPS Drain and 1 patient required a craniotomy, both for a newly developed subdural hematoma without neurologic sequelae (both patients had chronic antiplatelet therapy).

Conclusion: Patients with itSAH do not require transfer to a Level 1 trauma center for acute neurosurgical intervention. However, a significant number of patients will require sub-specialty medical evaluation and treatment.

M. GAGE OSCHNER RESIDENT PAPER COMPETITION

Will Hudson, MD
Wellstar Atlanta Medical Center

Reduction of Opioid Utilization in Trauma: A Multimodal Approach

Background: In the United States, the opioid epidemic remains a prominent public health concern. With dramatically increased opioid prescribing, the misuse of and addiction to opioid medication is an urgent national crisis. According to the CDC, trauma accounts for 42 million visits to the Emergency Department and two million inpatient admissions each year. In such a large patient population dealing with mostly acute and newly onset pain, adequate control can be challenging, although this also presents an opportunity. The limitations of opioid-based analgesia, combined with increased understanding of pain physiology, have led the way to alternative pain management approaches, collectively known as multimodal analgesia.

Objective: To evaluate the effectiveness of a multimodal pain management protocol in reducing inpatient and discharge opioid use.

Methods: Following IRB approval, a retrospective review was performed at a single urban Level 1 trauma center. Patients 18 years and older admitted directly to the trauma floor service following significant traumatic fractures (specifically spinal, thoracic, pelvic, and long bone) were included. Patients with isolated fractures of the face, single rib fracture and fractures of the extremities distal to the ankles and wrists were excluded. The multimodal pain management protocol utilized NSAIDs, gabapentinoids, skeletal muscle relaxants, acetaminophen, and tramadol. The protocol focuses on the daily escalation of these medications with concurrent attenuation of traditional opioids. The goal of these augmentations is complete opioid cessation within 24 hours of discharge while maintaining adequate pain management. Opioid utilization in the inpatient settings and administration of opioid prescriptions at discharge were compared between historical controls and patients admitted following the introduction of the protocol. All opioid medications administered during the patient's admission were tabulated in oral morphine equivalents.

Results: Overall, 561 trauma patients were included in the study with 162 in the pre-intervention group and 399 in the intervention group. The study was comprised of 59% males and 41% females. The overall average age was 47. The average BMI was 27.8. For morphine equivalents administered during their inpatient stay, the pre-intervention group received a mean of 43.7 (SD 48.6) mg/day compared with 14.5 (SD 19.8) mg/day in the multimodal pain regimen (MMPR) group ($p<0.04$). A significant decrease in pain scores was observed with patients reporting average pain levels within 48 hours prior to discharge of 5.2 (SD 1.84) in the pre-intervention group vs 4.5 (SD 2.09) in the post-intervention group ($p<0.04$). In the pre-intervention group, approximately 79.1% were discharged with opioid pain medications, as compared to 24.4% in the post-intervention group. Length of stay was actually longer in the post-intervention group (108 hrs) vs the pre-intervention group (90 hrs).

Conclusion: This multimodal pain management strategy was effective at reducing the amount of opioid used by patients admitted to the trauma floor service while decreasing the overall pain scores. The regimen also led to a reduction in the percentage of patients receiving a prescription for opioid pain medication at discharge. Implementing a multimodal pain management pathway in a trauma setting is both feasible and effective while providing proper analgesia.

M. GAGE OSCHNER RESIDENT PAPER COMPETITION

Jonathan Mckenzie, MD, MBA
Medical College of Georgia, Augusta University

Evaluation of Treatment Length for Ventilator-Associated Pneumonia in Georgia's Level One Trauma Centers

Background: Ventilator-associated pneumonia (VAP) is a diagnosis associated with high mortality, as well as increased cost of care. VAP is defined as pneumonia occurring more than 48 hours after intubation and is treated with various lengths of antibiotics. Antibiotics are not harmless, and proper antibiotic stewardship is essential to prevent resistance and patient harm. Standard antibiotic treatment length for pneumonia is typically seven days. The timing is increased to fourteen days for more opportunistic pathogens. Guiding principles were developed at the state level to improve prevention and management of VAP.

Objective: This quality improvement initiative had the goal to assess optimal treatment length for Ventilated Associated Pneumonia. Specifically, the initiative sought to address whether a shorter treatment length demonstrated a difference in VAP recurrence, mortality, length of stay (total and ICU) and ventilator days.

Methods: This is a retrospective chart review involving five institutions. Trauma patients identified as having VAP during calendar year 2018-2019 were included in this study. Various data points were collected, but notably demographic data, trauma characteristics (Including injury severity score and mechanism), length of stay (Total and ICU) and ventilator-days were collected. In addition, we specifically collected data on organism cultured, colony count, treatment (length and antibiotic) and presence of recurrence. Data analysis was done using Pearson Chi-squared (nominal variables) and ANOVA/tukey (continuous variables), with significance defined as $p<0.05$.

Results: A total of 222 patients were identified with ventilator associated pneumonia during the study period. In comparing institutions, there was a significant difference in treatment length. Grady had a significantly shorter treatment length than Memorial, AMC and AU ($p<0.05$). Grady and AMC had statistically significant greater total LOS than Memorial and AU. Recurrence rates and % discharged alive were not significantly different between institutions. ($p=0.052$ and 0.13, respectfully)
Cohorts among all institutions were compared, grouping by treatment length. Recurrence rates were similar and not significantly different among all categories except long (13d+). There is no significant difference in % discharged alive, total LOS, ventilator days, and ICU LOS by treatment categories.

Conclusion: Among level one trauma centers in Georgia, shorter treatment length does not appear to have a significant effect on recurrence rates, mortality, length of stay and ventilator days.

M. GAGE OSCHNER RESIDENT PAPER COMPETITION

Ilya Sakharuk, MD
Medical College of Georgia, Augusta University

Factors associated with development of pneumonia in patients with acute traumatic spinal cord injury

Background: Spinal cord injury (SCI) has been linked to chronic immune dysfunction, common in lesions T6 and above, related to the impact of autonomic dysfunction on lymphatic systems and alterations in cytokines. Acute immune dysfunction is less well studied. Given that this has implications for outcomes including mortality, we sought to identify trends in injury characteristics, leukocyte patterns, and management to better understand factors associated with the development of pneumonia (PNA) in SCI.

Objectives: The prevalence of spinal cord injury in trauma patients is substantial. Spinal cord injuries are linked to significant morbidity and mortality. In our review, we aim to identify trends in injury characteristics, patient demographics, and leukocyte patterns in an attempt to determine factors associated with the development of pneumonia in patients with spinal cord injuries.

Methods: A retrospective chart review was performed for patients age 18+ who presented to our Level 1 trauma center with traumatic SCI from 2015-2020. Demographics, SCI level, presence of complete SCI, vasopressor use, and complete blood count results for hospital days (HD) 0-7 were queried, along with occurrence and timing of infectious complications. Statistical analysis, including chi-squared tests and Wilcoxon rank-sum tests, were performed comparing these factors and complication rates. Significance was defined as $p < 0.05$.

Results: 118 patients were included in the study, with complete injury seen in 36 patients and vasopressors used in 78. Patients with SCI at/above T6 were found to have lower leukocyte counts on admission than those with injuries below T6 (11.9 vs 15.1, p=0.001); however, no significant difference was seen on subsequent days.

Patients who developed PNA had higher WBC (HD4-7 $p<0.05$) and double the length of stay of those who did not (34 vs 15 days, $p<0.001$). Level of SCI had minimal bearing on the overall rate of PNA or length of stay, which instead correlated better with presence of complete vs incomplete injury (38.9% vs 19.5%, p=0.046; 30 vs 16 days, p=0.0002). Vasopressor use was also associated with the development of PNA (35% vs 7.5%, p=0.002). Looking specifically at PNA occurring within HD0-7, there was no longer a difference for complete injuries (p=0.82); however, exposure to vasopressors was still associated with a higher rate of PNA (27% vs 2.5%, p=0.001).

Conclusion: SCI at/above T6 was associated with reduced leukocytosis as compared to below T6. This was found to have minimal impact on rates of PNA; instead, completeness of SCI and vasopressor use were associated with the development of PNA. The latter may be from alterations in cytokines and has implications for use of MAP augmentation. Further studies are needed to confirm causation of these findings.

M. GAGE OSCHNER RESIDENT PAPER COMPETITION

Jesse Seilern und Aspang, MD
Emory University School of Medicine, Grady Memorial Hospital

Integration of Life Care Specialists into Orthopaedic Trauma Care: A Pilot Study

Introduction: Orthopaedic trauma patients are frequently prescribed opioids, leaving them at risk for ongoing opioid use and opioid use disorder. To date, post-trauma pain management has placed little emphasis on individualized risk assessment and non-pharmacologic approaches. Therefore, we assessed the feasibility of integrating a Life Care Specialist (LCS) into orthopaedic trauma care.

Methods: The LCS is a hybrid between a behavior-based "pain coach" and substance use disorder counselor, offering evidenced-pain management education, opioid risk assessment, coordinated care management and harm-reduction strategies. Selected patients (≥18 years) received supplemental care by an LCS at a level 1 trauma center. The Opioid Risk Tool, Patient Health Questionnaire 2-item, and social determinants of health and substance use survey were completed prior to LCS intervention. Daily morphine milligram equivalents (MME) during hospitalization, opioid use at 2-weeks postoperatively and patient satisfaction were recorded. T-test compared mean MME in the pilot to the general orthopaedic trauma patient population's mean dosage at discharge. Generalized linear models assessed pain scores over time.

Results: 121 patients (57.5% male, mean age: 38.8 ± 15) were enrolled. Approximately a quarter of participants met criteria for moderate to severe risk of opioid misuse (22.5%) during initial hospitalization. On average, 2.8 LCS pain management interventions were utilized per participant, most frequently progressive muscle relaxation (80%) and sound therapy (48%). The mean inpatient MME/day was 40.5± 35.19 among participants, which was significantly lower than the general population's mean of 49.7 MME ($p<.001$). Despite the decrease in MME, pain scores improved over time from admission to discharge and out to 2-weeks postoperatively ($p<.001$). 99% of patients agreed that the LCS was helpful in managing pain.

Conclusions: The findings indicate feasibility of integrating an LCS into orthopaedic trauma care. Future randomized controlled trials are needed to cultivate this patient-centered care approach to pain management and opioid-related risk mitigation.

NOTES