

SEX-BASED DIFFERENCES IN MORTALITY BY AGE GROUP AMONG PEDIATRIC PATIENTS WITH TRAUMATIC BRAIN INJURY

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Introduction: Traumatic brain injury (TBI) is a leading cause of pediatric mortality; previous studies of the impact of sex on mortality and functional outcomes have produced mixed results. We investigated sex-based differences in mortality by age group in children with TBI.

Methods: In this cohort analysis of the 2020-2023 ACS TQIP registry, pediatric (age < 18 years) patients with head AIS 1-5 and non-missing data for sex, age, and 30-day mortality were included. The primary outcome was 30-day mortality. Subjects were categorized by age group: 0-4, 5-10, 11-13, and 14-17 years. Multivariable logistic regression with a sex-by-age group interaction adjusting for mechanism, TBI severity, GCS, polytrauma, shock, interfacility transfer, prehospital arrest, prehospital intubation, trauma center level, and year, clustered by facility was performed. Adjusted predicted probabilities of 30-day mortality were estimated.

Results: Overall, 134,857 subjects were included. Subjects were mostly male (65%) with blunt injuries (85%), median [IQR] age 11 [5-15] years, ISS 9 [4-14], and maximum head AIS 2 [1-3]. In the youngest age group, female sex was associated with increased 30-day mortality compared with male sex ($\beta = 0.24$, 95% CI 0.00–0.48; $p = 0.046$), though with minimal difference in adjusted predicted mortality: 2.50% (95% CI 2.29–2.72%) vs 2.54% (95% CI 2.36–2.73%). Among children 5-10 and 11-13 years, there was no statistically significant difference in adjusted odds of 30-day mortality by sex ($p = 0.109$ and $p = 0.362$, respectively). Among adolescents 14-17 years, there was a statistically significant sex-by-age interaction ($\beta = -0.38$, 95% CI -0.67 to -0.09 ; $p = 0.010$), which translated into a clinically meaningful difference in adjusted predicted mortality: 2.74% (95% CI 2.56–2.92%) among females versus 4.65% (95% CI 4.48–4.82%) among males.

Conclusion: In a large national cohort of pediatric TBI subjects, the relationship between sex and 30-day mortality varied significantly by age, with lower mortality for female sex in the oldest age group. The etiology is likely multifactorial, and may include hormonal, behavioral, mechanistic, or care-related factors. Further research should include translational aims to investigate potential etiologies for this association.

EXPEDITED FREE-STANDING EMERGENCY DEPARTMENT-TO-OPERATING ROOM PATHWAY REDUCED TIME TO APPENDECTOMY

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Introduction: Patients diagnosed with acute appendicitis at free-standing emergency departments (FSEDs) require transfer for operative management. Our institution implemented an expedited FSED-to-OR pathway for patients presenting to network FSEDs with image-confirmed acute appendicitis. The purpose of the study was to evaluate whether pathway utilization reduced time from FSED arrival to operating room (OR) start.

Methods: A retrospective review of adult patients presenting with acute appendicitis to two affiliated FSEDs from July 2025 to January 2026, following pathway implementation, was performed. Patients were divided into two cohorts: those with pathway utilization and those without pathway utilization. The pathway involved direct transfer to the Surgical Preoperative Unit (SPU), with pre-arrival operative scheduling and coordinated multidisciplinary communication between FSED, Acute Care Surgery, and OR teams. Demographic, clinical, and time-interval data were analyzed using t-test and chi-square tests where appropriate. Significance was set at $p < 0.05$.

Results: A total of 65 patients presented to our FSEDs with acute appendicitis during the study period. Of these, 24 (36.9%) underwent FSED-to-OR pathway transfer, while 41 (63.1%) did not. Comparison of demographic variables including, age, gender, co-morbidities, and physiologic parameters including, temperature, heart rate, systolic blood pressure, and white blood cell count, was similar between groups (all $p > 0.05$). Utilization of the FSED-to-OR pathway significantly reduced time from FSED arrival to SPU arrival (4.73 ± 1.47 vs 9.85 ± 4.22 hours, $p < 0.001$) and FSED arrival time to OR start time (7.81 ± 3.15 vs 10.54 ± 4.39 hours, $p = 0.0096$). Total length of stay was also significantly shorter in the pathway utilization group (9.25 ± 3.24 vs 12.09 ± 4.76 hours, $p = 0.012$). There were no significant differences in operative duration, postoperative complications, emergency department revisits, or readmissions (all $p > 0.05$).

Conclusion: Implementation of an expedited FSED-to-OR pathway at our institution significantly reduced time to SPU and operative intervention without increasing complications. Standardized transfer protocols with preoperative activation represent an effective systems-based intervention to improve efficiency and timeliness of surgical care for patients requiring interfacility transfer for acute appendicitis.

EVALUATING THE CLINICAL IMPLICATIONS OF VARIABILITY IN TIMING OF ERCP IN CHOLEDOCHOLITHIASIS: A RETROSPECTIVE STUDY USING THE ACS EGS TARGETED DATABASE

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Introduction: Treatment of choledocholithiasis requires clearance of bile duct and cholecystectomy. The current standard, pre-operative ERCP before laparoscopic cholecystectomy (LC), may delay surgery when ERCP access is limited. LC with intraoperative cholangiography (LC+IOC) followed by ERCP offers a potential alternative. We sought to evaluate (1) hospital variability in time to pre-operative ERCP and (2) the safety and efficiency of LC+IOC with post-operative ERCP.

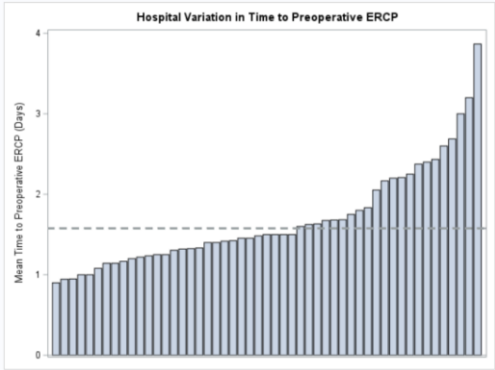
Methods: We performed a retrospective cohort study using ACS NSQIP EGS Targeted database (2022–2024). Adults with choledocholithiasis who underwent LC during the index hospitalization were included and stratified into: (1) pre-operative ERCP before LC or (2) post-operative ERCP within 4 days after LC+IOC. Primary outcomes included complications, mortality, ICU admission, readmission, return to OR, and ED visits.

Secondary outcomes included length of stay (LOS). Hospitals with ≥5 pre-operative ERCP cases were grouped into quartiles by mean time to ERCP and compared using Wilcoxon rank-sum tests. Outcomes were compared using multivariable regression adjusted for patient and hospital factors.

Results: Among 4,290 patients, 1,128 underwent pre-operative ERCP and 282 underwent LC+IOC followed by post-operative ERCP. Complications, mortality, and readmissions were similar between groups (Table 1). Pre-operative ERCP was associated with longer unadjusted LOS. Mean time to pre-operative ERCP was 1.5 days longer in fourth- vs first-quartile hospitals (2.6 vs 1.1 days, p<0.001), demonstrating significant variability in timeliness of ERCP across the 51 included hospitals (Figure 1).

Conclusion: These results demonstrate variability across hospitals in time to pre-operative ERCP for patients with choledocholithiasis. Proceeding with LC+IOC prior to ERCP appears safe and may reduce delays and improve efficiency when timely ERCP access is limited.

Complications		Number of Cases (%) Average	P-value	Unadjusted OR(95% CI)		P-value	Adjusted OR(95% CI)*		Adjusted OR(95% CI)* with Hospital-Level Clustering		P-value
				Pre-Op	Ref		Pre-Op	Ref	Pre-Op	Ref	
Mortality	Pre-Op ERCP + Lap Chole	35 (2.8%)	0.53	REF	REF	REF	REF	REF	REF	REF	REF
	Lap Chole + IOC-Post-Op ERCP	10 (0.8%)		1.38 (0.87-2.20)	2.00 (0.98-7.14)		3.23 (1.7-6.88)	4.82			
ICU Admission	Pre-Op ERCP + Lap Chole	45 (4.2%)	0.94	REF	REF	REF	REF	REF	REF	REF	REF
	Lap Chole + IOC-Post-Op ERCP	41 (4.7%)		0.89 (0.70-1.07)	0.84 (0.64-1.09)		0.98 (0.75-1.30)	4.82			
Readmission	Pre-Op ERCP + Lap Chole	51 (8.5%)	0.95	REF	REF	REF	REF	REF	REF	REF	REF
	Lap Chole + IOC-Post-Op ERCP	19 (4.6%)		1.02 (0.55-1.90)	1.30 (0.43-4.48)		1.26 (0.57-2.76)	0.57			
Return to OR	Pre-Op ERCP + Lap Chole	9 (0.8%)	0.86	REF	REF	REF	REF	REF	REF	REF	REF
	Lap Chole + IOC-Post-Op ERCP	3 (1.7%)		1.34 (0.36-4.97)	45.01 (<0.01-1089.0)		0.67 (0.04-6.37)	4.82			
ED Visit	Pre-Op ERCP + Lap Chole	111 (8.8%)	0.57	REF	REF	REF	REF	REF	REF	REF	REF
	Lap Chole + IOC-Post-Op ERCP	31 (1.8%)		1.15 (0.74-1.73)	0.57 (0.36-0.92)		0.93 (0.68-1.28)	4.82			
LOS (in days) (Mean ± SD)	Pre-Op ERCP + Lap Chole	111.1 ± 79.5	0.80	REF	REF	REF	REF	REF	REF	REF	REF
	Lap Chole + IOC-Post-Op ERCP	91.5 ± 49.3		0.86 (0.50-1.08)	0.80 (0.50-1.13)		0.74 (0.35-1.41)	0.35			
LOS (in days) (Mean ± SD)	Pre-Op ERCP + Lap Chole	4.9 ± 3.3	0.80	REF	REF	REF	REF	REF	REF	REF	REF
	Lap Chole + IOC-Post-Op ERCP	4.1 ± 2.1		0.85 (0.40-1.38)	0.80 (0.30-1.13)		0.72 (0.30-1.41)	0.1			
Time to OR (in days) (Mean ± SD)	Pre-Op ERCP + Lap Chole	36.4 ± 49.3	<0.001	REF	REF	REF	REF	REF	REF	REF	REF
	Lap Chole + IOC-Post-Op ERCP	30.4 ± 30.7		0.14 (0.07-0.25)	0.10 (0.07-0.25)		0.14 (0.07-0.25)	<0.001			
Time to OR (in days) (Mean ± SD)	Pre-Op ERCP + Lap Chole	3.3 ± 2.1	<0.001	REF	REF	REF	REF	REF	REF	REF	REF
	Lap Chole + IOC-Post-Op ERCP	1.4 ± 1.3		0.18 (0.11-0.29)	0.10 (0.06-0.47)		0.07 (0.10-0.46)	<0.001			
Time to ERCP (in days) (Mean ± SD)	Pre-Op ERCP + Lap Chole	1.5 ± 1.9	<0.001	REF	REF	REF	REF	REF	REF	REF	REF
	Lap Chole + IOC-Post-Op ERCP	2.9 ± 1.7		4.57 (3.45-6.08)	5.97 (3.35-10.64)		7.26 (4.20-12.54)	<0.001			
Time to Post-Procedure (in days) (Mean ± SD)	Pre-Op ERCP + Lap Chole	1.5 ± 1.9	0.98	REF	REF	REF	REF	REF	REF	REF	REF
	Lap Chole + IOC-Post-Op ERCP	1.4 ± 1.3		0.96 (0.68-1.39)	1.29 (0.88-2.55)		0.46 (0.07-7.35)	4.82			



PRACTICE VARIATION IN THE MANAGEMENT OF CHOLEDOCHOLITHIASIS: IMPLICATIONS FOR EMERGENCY GENERAL SURGERY

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Introduction: 20% of patients undergoing cholecystectomy have concomitant choledocholithiasis requiring multidisciplinary collaboration between surgeons and gastroenterologists. The American Society of Gastroenterology (ASGE) offers pragmatic guidelines for the work-up and treatment of choledocholithiasis based on risk. Despite this shared guidance, care is often driven by local expertise and procedural availability, resulting in non-guideline-directed care (NGDC). This study aims to understand contributors to NGDC for patients undergoing treatment for choledocholithiasis.

Methods: 272 patients were identified using ICD-10 and CPT codes as being treated for choledocholithiasis using endoscopic and/or surgical intervention from 2019 to 2023 at a single institution. Patients were stratified based on presence of care consistent with the 2019 ASGE Guidelines for the Treatment of Choledocholithiasis. Groups were compared across key clinical characteristics and outcomes. A multivariate model was developed to assess independent predictors of NGDC.

Results: Of the 272 patients included, 133 (51.5%) and 124 (45.6%) were categorized as being at high and moderate risk of choledocholithiasis at time of presentation, respectively. 63 (23.2%) patients received NGDC. No significant differences in age, sex, race, primary insurer, day of admission, admitting team, or initial laboratory studies were seen between patients receiving NGDC and GDC. Patients receiving NGDC were significantly more likely to have CT (75.0% vs. 60.8%, $p=0.043$) or MRCP (71.0% vs. 22.4%, $p<0.001$) imaging as part of their work-up, more likely to be high risk at time of presentation (66.1% vs. 46.5%, $p=0.031$), and more likely to have undergone only surgical treatment (28.6% vs. 6.2%). Multivariate analysis identified high risk class (aOR 10.6, CI 4.4-28.5), utilization of MRCP (aOR 24.7, CI 10.5-64.5), and isolated surgical treatment (aOR 58.4, CI 15.6-249.8) as independent predictors of NGDC.

Conclusions: The use of guideline-directed care (GDC) is critical to ensure timely risk stratification and appropriate use of treatment modalities for patients with choledocholithiasis. This study identified the use of MRCP and isolated surgical treatment as potential targets for quality improvement measures to improve rates of GDC in this patient population.

LEVERAGING ARTIFICIAL INTELLIGENCE TO AUGMENT REGISTRY ABSTRACTION IN EMERGENCY GENERAL SURGERY

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Introduction: A key challenge in establishing an Emergency General Surgery (EGS) registry is the time and cost needed to track patient data and outcomes. Artificial intelligence (AI) could address this gap through data abstraction from clinical notes and reduce registrars' workload. Brim is an AI platform designed to assist with chart abstraction using a large language model to extract variables from unstructured data with a focus on using human-in-the-loop approach. Here, we evaluated the performance of Brim in abstracting variables for an EGS registry as a proof-of-concept study.

Methods: We conducted our study on a random sample of 500 EGS patients admitted to an academic level 1 trauma center in 2025. The variables evaluated were chronic obstructive pulmonary disease (COPD), cirrhosis, congestive heart failure (CHF), hypertension (HTN), acute kidney injury (AKI), delirium, and unplanned return to operating room (RTOR). We selected these variables because they are common pre-existing conditions and hospital events that are important for most registries. Results were compared to manual chart review to obtain sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV).

Results: Brim had high sensitivity across all 7 variables – 86% to 100%, and specificity – 83% to 98% (see chart below). It had 100% sensitivity and NPV for COPD and RTOR. Completing this task required 29 minutes and cost \$390 USD. In comparison, manual chart review required 16 hours.

Conclusion: We show that AI can abstract unstructured variables with high sensitivity and NPV. This could minimize the need for registrars to review all negative cases and be a cost-effective tool for building an EGS registry.

	Sensitivity	Specificity	PPV	NPV
COPD	100% (59/59)	92% (404/441)	61% (59/96)	100% (404/404)
Cirrhosis	96% (22/23)	98% (415/424)	71% (22/31)	99% (415/416)
CHF	96% (73/76)	96% (407/424)	81% (73/90)	99% (407/410)
HTN	96% (289/302)	93% (184/198)	95% (289/303)	93% (184/297)
AKI	86% (83/96)	91% (366/404)	69% (83/121)	97% (366/379)
Delirium	93% (27/29)	96% (451/471)	57% (27/47)	99% (451/453)
RTOR	100% (14/14)	83% (407/486)	15% (14/93)	100% (407/407)

IMMEDIATE (LESS THAN 24 HOURS) VERSUS EARLY (25-72 HOURS) LAPAROSCOPIC CHOLECYSTECTOMY: A META-ANALYSIS OF OPERATIVE DIFFICULTY AND RESOURCE UTILIZATION

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Introduction: Early laparoscopic cholecystectomy (LC) is recommended for acute cholecystitis; however, whether surgery performed within 24 hours of presentation confers additional benefit over delayed early intervention (25–72 hours) remains unclear. We hypothesized that immediate LC reduces operative difficulty and resource utilization without increasing morbidity.

Methods: A systematic review and meta-analysis was performed of comparative studies evaluating immediate (<24h) versus early (25–72h) LC in adult patients with acute cholecystitis. The primary outcome was conversion to open surgery. Secondary outcomes included abdominal drain utilization, overall complications, and postoperative hospital length of stay (LOS). Pooled odds ratios (OR) and mean differences (MD) were calculated using fixed-effects modeling. Heterogeneity was assessed using I^2 statistics.

Results: Three comparative studies comprising 753 patients (Immediate: 285; Early: 468) were included. Immediate LC was associated with significantly lower conversion to open surgery (OR 0.41, 95% CI 0.22–0.79; $p=0.007$; $I^2=0\%$). Abdominal drain placement was significantly reduced in the immediate group (OR 0.41, 95% CI 0.28–0.61; $p<0.0001$; $I^2=70\%$). Overall complications were also lower with immediate LC (OR 0.31, 95% CI 0.13–0.74; $p=0.008$; $I^2=0\%$). Importantly, postoperative LOS was reduced by 1.33 days in the immediate cohort (MD -1.33 days, 95% CI -1.54 to -1.12; $p<0.00001$), despite substantial heterogeneity ($I^2=98\%$).

Conclusions: Laparoscopic cholecystectomy performed within 24 hours of presentation is associated with reduced

conversion to open surgery, decreased drain utilization, lower complication rates, and shorter postoperative LOS compared with surgery performed between 25–72 hours. These findings suggest that operative delay even within traditionally accepted “early” windows may increase inflammatory progression and operative complexity. Institutional protocols prioritizing immediate operative intervention may improve both surgical outcomes and resource utilization.

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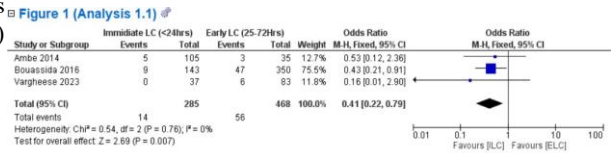
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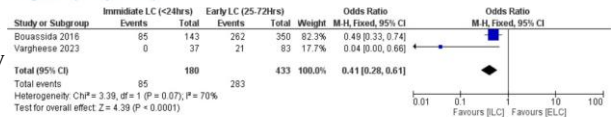
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Caption

Forest plot of comparison: 1 Conversion to open, outcome: 1.1 Conversion to Open Surgery.

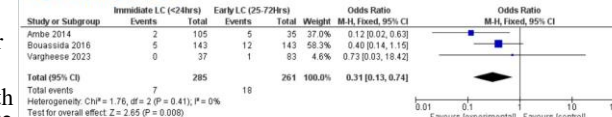
Figure 2 (Analysis 1.2)



Caption

Forest plot of comparison: 1 Conversion to open, outcome: 1.2 Abdominal Drainage.

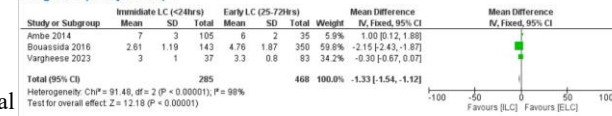
Figure 3 (Analysis 1.3)



Caption

Forest plot of comparison: 1 Conversion to open, outcome: 1.3 Overall Complication.

Figure 4 (Analysis 1.4)



Caption

Forest plot of comparison: 1 Conversion to open, outcome: 1.4 Postoperative Hospital Stay.

THE APPLICATION OF A 10-FACTOR GERIATRIC TRAUMA FRAILTY INDEX TO A NATIONAL DATABASE OF INJURED ELDERLY PATIENTS

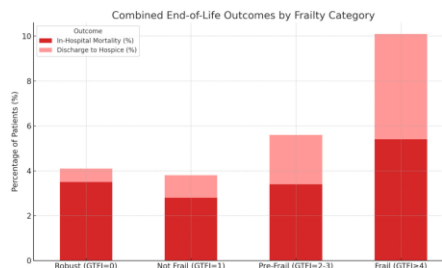
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Introduction: Most validated frailty indices require patient participation or data that may be unreliable or unobtainable from elderly patients with advanced medical diseases or severe injuries. A 10-variable Geriatric Trauma Frailty Index (GTFI-10) provides a comorbidity-based approach to stratifying patient frailty, but its effectiveness has not been evaluated in a large national trauma cohort. Herein, we evaluate the association between GTFI-10 frailty stratification and clinical outcomes of injured elderly patients using a national trauma database.

Methods: A retrospective cohort study was conducted using the American College of Surgeons TQIP Participant Use File data from 2017–2023. Adults aged ≥ 65 years admitted with blunt or penetrating injuries were included. Frailty was stratified using the GTFI-10 adapted from the modified frailty index (mFI-5) with additional comorbidities (myocardial infarction, stroke, dementia, bleeding disorder, and admission do-not-resuscitate status). Each variable was binary coded (present = 1, absent = 0), producing a cumulative frailty score from 0 to 10. Frailty was categorized as baseline (score 0), not frail (1), pre-frail (2–3), and frail (≥ 4). Primary outcomes included in-hospital mortality.

Results: Among 1,897,058 patients, 9.4% were baseline, 30.9% not frail, 41.8% pre-frail, and 8.4% frail. Mortality increased stepwise with frailty: unadjusted mortality (baseline 4.3%, not frail 3.7%, pre-frail 5.6%, frail 10.2%) and adjusted mortality (pre-frail OR 1.31 [95% CI 1.26–1.35]; frail OR 2.28 [2.18–2.38]; $p < .001$).

Conclusions: Comorbidity-based GTFI-10 frailty stratification strongly and independently correlated with mortality, complications, and undesirable discharge disposition of injured elderly patients. GTFI-10 may enable early identification of vulnerable injured elderly patients, allowing for multidisciplinary interventions to improve elderly patient outcomes. The low implementation burden of GTFI-10 allows for broad utilization.



INTEGRATING FRAILTY AND SARCOPENIA FOR RISK STRATIFICATION IN GERIATRIC TRAUMA: A SINGLE-CENTER PILOT STUDY

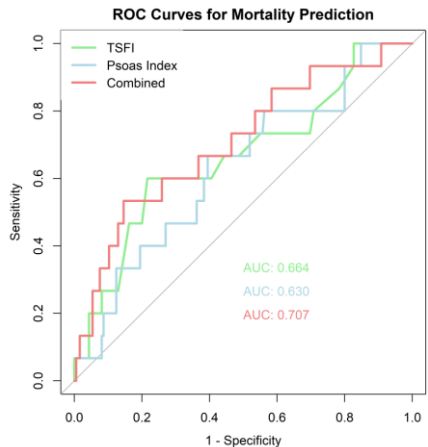
Riddhi Mehta, MD; Kartik Prabhakaran, MD; Anna Jose, MD;
 Vishmita Kannichamy, MD; Maral Peisepar, MD;
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Introduction: Sarcopenia and frailty are established predictors of poor outcomes in older trauma patients, but their comparative and combined utility remain debated. We aimed to assess the predictive performance of the Trauma-Specific Frailty Index (TSFI), the Psoas Index (PI), and a combined model (CM) incorporating both metrics to identify mortality risk.

Method: We conducted a retrospective analysis of geriatric (≥ 65 years) blunt trauma patients at a single academic center. Frailty was assessed using the TSFI, and sarcopenia was measured with PI on admission CT scans. Inverse PI was used to align directionality and correlation was assessed using Spearman's coefficient. Predictive performance of TSFI, PI and CM for in-hospital mortality was evaluated using area under the curve (AUC) and DeLong's test. Optimal cutoffs were determined using Youden's Index, and model calibration was checked using Hosmer-Lemeshow goodness-of-fit test and bootstrap confidence intervals.

Result: 200 patients were included (median age: 80, males: 55%, falls: 67%). Overall in-hospital mortality was 7.5%. There was a weak, non-significant correlation between TSFI and Inverse PI (Spearman's $\rho=0.08$, $p=0.24$) suggesting that they capture distinct aspects of vulnerability. AUCs were 0.664 for TSFI, 0.630 for Inverse PI, and 0.707 for CM. DeLong's test showed no statistically significant difference. CM demonstrated good calibration between predicted and observed mortality ($p=0.93$; mean absolute error=0.011) and stable performance (bootstrap 95% CI: 0.566–0.845). At optimal cutoffs, CM showed improved specificity (85%), compared to TSFI (78%) and PI (61%).

Conclusion: TSFI and PI measure different but complementary domains of physiologic reserve. While CM did not significantly outperform individual scores in discrimination, its superior specificity and calibration make it particularly valuable for informed decisions involving resource allocation and goals-of-care discussions. These findings support integrating a combination of frailty and sarcopenia assessment in trauma care and warrant validation in larger, multicenter studies.



POSTOPERATIVE BLEEDING AFTER FRACTURE FIXATION: THE ROLE OF SEX AND CHRONIC ASPIRIN THERAPY

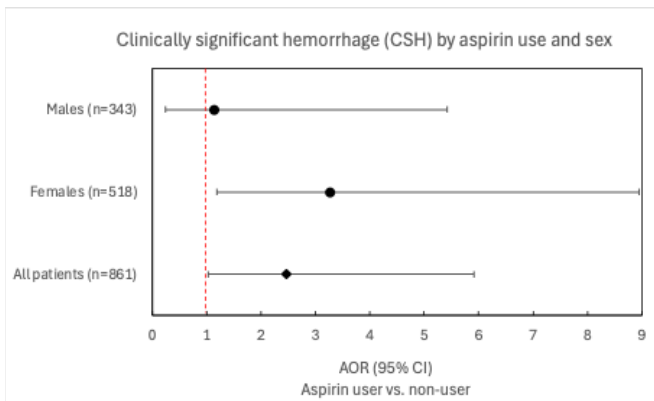
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Introduction: Aspirin irreversibly inhibits platelet cyclooxygenase-1 (COX-1) and thromboxane A₂ production, increasing bleeding risk. This powered study examined whether the association between chronic aspirin use and postoperative clinically significant hemorrhage (CSH) differs by sex for trauma patients undergoing operative fracture fixation.

Methods: This multicenter retrospective cohort study included adult trauma admissions with hip, femur, or pelvic fractures; patients with penetrating injury, chronic anticoagulant use, bleeding disorders, or severe head/neck injury were excluded. The primary outcome was CSH within 48 hours postoperatively based on consensus definition. Multivariable logistic regression with Firth correction assessed the association between aspirin use and bleeding, including sex-stratified analyses and interaction testing.

Results: Among 861 patients (60% female; median age 76 years; 70% hip fracture), 22% were chronic aspirin users. Overall rate of CSH was 3.5%; 13 of 30 CSHs required a second intervention. After adjustment, aspirin use was associated with increased odds of CSH (AOR: 2.5 [1.0-5.9]), but a significant sex interaction was observed. In females, aspirin use was associated with CSH (AOR: 3.3 [1.2-9.0]) but not in males (AOR: 1.1 [0.2-5.4]).

Conclusions: These findings suggest that perioperative antiplatelet risk assessment should incorporate biological sex. This association has broad clinical relevance due to prevalence of chronic aspirin therapy in this population.



PRECISION VTE PROPHYLAXIS IN HIGH-RISK TRAUMATIC BRAIN INJURY: WEIGHT-BASED DOSING WITH ANTI-XA MONITORING

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Introduction: VTE prophylaxis (VTEp) schemes in traumatic brain injury (TBI) patients require careful precision to balance the high risk of VTE with a need to avoid devastating bleeding complications. Weight-based dosing of enoxaparin VTEp is associated with superior VTE prevention compared to standard dosing, but its use is controversial in TBI patients. Our study evaluates the safety of a weight-based enoxaparin VTEp scheme with dose adjustments to meet goal anti-Xa levels in this patient population.

Methods: Our institutional registry was queried for all patients admitted to the trauma service with TBI from July 1, 2023 to December 31, 2024 who received at least 48hrs of enoxaparin VTEp. 220 patients with complete data were included for analysis. All patients received 0.5mg/kg weight-based enoxaparin dosing on a twice-daily schedule, with anti-Xa levels monitored for dosing adjustment. Patients were stratified by modified Parkland Protocol (MPP) severity and by initial Xa level into goal or sub-/supra-therapeutic.

Results: Of the 220 TBI patients, 148 (67.3%) were classified as high and 72 (33.7%) as low MPP. VTEp was started at a median time of 48 and 60 hours for high and low MPP, respectively. Weight based dosing achieved goal anti-Xa in 73.0% of patients with 7.6% having a supratherapeutic level. Goal anti-Xa was achieved on 96.8% of patients within one dose adjustment. Newly diagnosed VTE occurred in 0.9% of patients. Although 17 (11.5%) high-risk patients exhibited radiologic progression of their TBI after VTEp initiation, only 2 (1.4%) of these patients required procedural intervention. There was no significant association between initial Xa level and radiologic TBI progression ($p=0.135$), need for procedural intervention ($p=0.463$), new VTE ($p=1.000$), or in-hospital mortality ($p=0.9461$).

Conclusions: Goal Xa was achieved initially in 73.0% of patients, and in 96.8% of patients after one dose adjustment. Use of weight-based enoxaparin VTEp with dose adjustments to meet goal anti-Xa levels appears safe, even in a high-risk TBI patient population. This dosing scheme could offer improved protection from VTEp with no additional bleeding risks. Future work should focus on multi-institutional efforts to further delineate the clinical implications of weight-based enoxaparin dosing in this high-risk population.