Poster #19

A PROTOCOL FOR EARLY VTE PROPHYLAXIS IN OPERATIVE ORTHOPEDIC TRAUMA PATIENTS IS SAFE AND EFFECTIVE

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Introduction: Delayed initiation of venous thromboembolism prophylaxis (VTEp) increases VTE risk in trauma patients. VTEp is often held for operative fixation (OF) of extremity orthopedic injuries due to concerns of bleeding. We developed a protocol to initiate VTEp at admission and continue without interruption perioperatively. We hypothesized VTE rates would decrease without any difference in postoperative complications.
Methods: This is a retrospective study of patients age ≥18 years admitted to a level 1 trauma center, 2016-2025, who underwent OF for extremity fractures. Intracranial hemorrhages and spinal epidural hematomas were excluded. Pre-(2016-2019) and post-(2021-2025) implementation (I) outcomes were compared: time from admission to VTEp and OF, VTE rates, transfusions needed in admission, post-OF bleeding, gastrointestinal bleeds (GIB), and mortality. To assess safety, outcomes were assessed for all years and stratified by time from VTEp to OR: <24h pre-OF, <24h post-OF and ≥24h post-OF.
Results: Post-I patients had shorter times to VTEp (23.2h vs. 48.2h, $p<0.001$) and a lower VTE rate (2.6% vs. 4.9%, $p<0.05$; aRR=2.4%, 95% CI: 0.6-4.1%, NNT=42), with no difference in time to OF, need for transfusion, post-OF bleed, or mortality. There were more GIB post-I (6 vs. 0, aRR=0.4%, 95% CI: 0.1-0.7%, NNH=250), but chart review did not find that VTEp was the primary cause of any GIB. Initiating VTEp <24h pre-OF or <24h post-OF had lower VTE rates than initiating ≥24 hours post-OF (2.7% and 2.0% vs. 5.7%, $p<0.001$), with no increased risk of transfusion, post-OF bleed, GIB, or mortality.
Conclusion: Early VTEp in trauma patients undergoing operative fixation of extremity fractures is safe and improves time to initiation of VTEp and VTE rates. Our results should encourage other trauma and orthopedic groups to collaborate on similar VTEp protocols.

Poster #20

RETAINED UNEXPLODED ORDNANCE: A SAFETY ANALYSIS OF DIAGNOSTIC ULTRASOUND ON PIEZOELECTRIC FUZES

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Introduction: Retained unexploded ordnance (UXO) is a rare but high-stakes problem in trauma surgery, and current Joint Trauma System guidelines prohibit diagnostic ultrasonography for UXO evaluation because of a theoretical risk of piezoelectric fuze actuation. This restriction forces reliance on plain radiography and limits real-time assessment of soft tissue and neurovascular structures. We aimed to determine whether diagnostic ultrasound generates voltages sufficient to actuate piezoelectric fuzes in a worst-case experimental model.

Methods: In partnership with an explosive ordnance disposal technology laboratory, we tested seven electrically functional piezoelectric fuze assemblies wired to a continuous-monitoring oscilloscope with a conservative 4-volt safety threshold, far below the approximately 400-volt firing requirement for military-grade fuzes. A Philips EPIQ 7 system with C5-1 and L12-5 transducers was used at maximal gain in B-mode, color Doppler, and harmonic modes under the following conditions: immersion in transmission gel, direct probe contact with exposed piezoelectric elements, varied standoff distances, and a dynamic hand-hold model to introduce tissue heterogeneity. Positive controls using mechanical impact confirmed fuze and oscilloscope functionality between ultrasound iterations.

Results: Across all fuze types, probe frequencies, imaging modes, and standoff distances, no ultrasound-associated voltage exceeded the 4-volt threshold. Observed signals remained below the detection baseline (< 1 volt), including during direct contact with unshielded piezoelectric elements, and small deflections were attributable only to mechanical handling rather than ultrasound energy. Mechanical impact testing consistently produced large voltage spikes, validating that the system would have detected a clinically meaningful acoustoelectric response.

Conclusion: In this experimental model, diagnostic ultrasound did not generate voltages sufficient to actuate tested piezoelectric fuzes. Therefore, diagnostic ultrasound may be reasonably considered as an adjunct for soft-tissue and neurovascular mapping in select retained UXO cases provided careful standoff technique minimizes mechanical manipulation. These data support reconsideration of current trauma system guidelines towards more nuanced, risk-aware use of ultrasound in UXO management.

Poster #21

ANTI-XA GUIDED ENOXAPARIN DOSING IN TRAUMA ICU PATIENTS: A PRAGMATIC PROSPECTIVE TRIAL

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Introduction: Trauma patients remain at high risk for venous thromboembolism (VTE) despite standard low-molecular-weight heparin (enoxaparin) prophylaxis. Anti-factor Xa guided dosing may improve prophylaxis, but prospective trauma data are limited and predictors of subtherapeutic levels are poorly defined.
Methods: This single-center randomized trial enrolled adult patients at a Level 1 trauma ICU requiring enoxaparin. Patients were randomized to standard care (fixed-dose with predefined weight/BMI adjustments) or an anti-Xa arm in which peak anti-Xa levels were obtained and enoxaparin was subsequently adjusted per protocol. All patients underwent scheduled bilateral lower-extremity ultrasound approximately 5 days after prophylaxis initiation, with additional imaging as clinically indicated. The primary endpoint was VTE. Secondary endpoints included early anti-Xa category (subtherapeutic, therapeutic, supratherapeutic) and need for dose adjustment. Multivariable regression evaluated predictors of subtherapeutic initial anti-Xa level (age, sex, BMI, ISS, ventilator days, and total blood products).
Results: A total of 140 patients were analyzed (66 standard care, 74 anti-Xa). Median age was 56 years, median ISS was 21, and 67% were male; baseline characteristics and transfusion requirements were similar between groups. Enoxaparin was initiated at a median of 36.9 hours (IQR 15.8-50.1) from admission. Initial anti-Xa levels were subtherapeutic in 47%, therapeutic in 48%, and supratherapeutic in 3%, with no difference between groups. In the anti-Xa arm, 29/74 (39%) underwent at least one dose adjustment. Despite 90 screening duplex ultrasounds and clinically indicated imaging, no lower-extremity DVT or pulmonary embolism occurred in either arm; the trial was stopped early for futility with respect to VTE outcomes. In multivariable analysis, higher BMI also increased the odds of having a subtherapeutic initial anti-Xa level (OR 1.06 per BMI unit, 95% CI 1.0-1.13, $p=0.04$), as did male sex (OR 6.1, 95% CI 2.5–14.3, $p<0.001$).
Conclusion: In this randomized trauma ICU trial, anti-Xa guided enoxaparin dosing was feasible but did not demonstrate a difference in clinically evident or screened VTE, as no events occurred in either group. Nearly half of patients were subtherapeutic after standard dosing, and higher BMI and male sex predicted the need for dose escalation. In the setting of a contemporary, risk-adapted prophylaxis protocol, these findings suggest that routine anti-Xa monitoring of unselected trauma patients may have limited clinical yield, and future studies should focus on high-risk subgroups where VTE events are more frequent.

Poster #22

IMPACT OF HYPERBARIC OXYGEN THERAPY ON 30-DAY MORTALITY AND MORBIDITY IN NECROTIZING FASCIITIS: A NATIONAL PROPENSITY MATCHED COHORT STUDY

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Introduction: Necrotizing soft tissue infections (NSTI) remain a surgical emergency with high morbidity and mortality. While hyperbaric oxygen therapy (HBOT) has been proposed for NSTI, limited data exists . We hypothesized that the addition of HBOT to usual care would improve outcomes.

Methods: We conducted a retrospective cohort study using the TriNetX United States Network from 2008–2025, restricting inclusion to academic medical centers (AMCs) given that 90.4% of HBOT for NSTI occurred at AMCs. Adults with first-episode NSTI requiring surgery were stratified by at least one HBOT session within 30 days of debridement. Nearest neighbor 1:1 propensity score matching (PSM) adjusted for age, sex, race, ethnicity, chronic conditions or medications impeding wound healing, , anticoagulation, history of organ failure or cancer, sepsis, mechanical ventilation, severity of illness, and negative pressure wound therapy use. The primary outcome was 90-day mortality (HR [95% CI]).

Results: A total of 28,263 patients met inclusion criteria. Of these, 921 (3.3%) had utilized HBOT within 30 days, with a median time to HBOT of 1 day after initial debridement, and 27,342 (96.7%) had not. Median age of the HBOT cohort was younger (53.7 vs. 55.5 years). After PSM, there were 917 patients in each cohort, with excellent goodness of fit. At 90 days, HBOT was associated with lower mortality 0.71[0.51-0.99], amputation 0.70[0.53-0.94], and need for ICU 0.66[0.54-0.80].

Conclusions: HBOT is associated with significantly better outcomes in patients with NSTI. Prospective studies are needed to confirm its efficacy as adjunctive therapy.

Poster #23

PRACTICE MANAGEMENT GUIDELINES REDUCE LENGTH OF STAY AND HOSPITAL COSTS FOR NECROTIZING SOFT TISSUE INFECTIONS

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Introduction: Necrotizing soft tissue infections (NSTI) have a high morbidity and healthcare system burden. Length of stay (LOS) is driven by the need for multiple operations and complex wound management. We developed a multidisciplinary practice management guideline (PMG) to streamline evaluation, treatment, and multidisciplinary care team involvement. We hypothesize that PMG implementation would reduce LOS for NSTI.
Methods: As part of the ACS Emergency General Surgery Verification Program, we devised a PMG for patients with suspected NSTI. In parallel, we instituted multidisciplinary care teams to direct inpatient care and discharge planning. We retrospectively reviewed patients with NSTI admitted to our institution between December 2021 and February 2025 and performed a multivariable linear regression to evaluate the effect of PMG implementation on LOS. A cost-savings analysis was performed using institutional and national estimates on cost-per-hospital-day.
Results: Among 285 patients identified (53% male, median age 55 [IQR 43–66], 60% diabetic), with 144 pre-PMG and 141 post-PMG, PMG implementation was associated with a reduced median LOS from 15.4 to 12.5 days ($p<0.05$). After controlling for demographics, comorbidities, and complexity of care, PMG implementation remained significantly associated with a decreased LOS of -4.5 days (95% CI -7.28, -1.72; $p<0.05$). Estimated cost savings ranged from $25,448 to $145,168 per 100,000 persons. In-hospital mortality, discharge disposition, number of operations, and readmission rates were unchanged.
Conclusions: Implementation of a PMG for complex soft tissue infections significantly reduced hospital LOS without increasing complications, demonstrating both clinical and economic benefits. These findings highlight the value of coordinated, guideline-driven care and support broader adoption, as well as future multicenter validation.

Poster #24

LIFE AFTER DRAINAGE: CLINICAL OUTCOMES AFTER PERCUTANEOUS CHOLECYSTOSTOMY FOR ACUTE CALCULOUS CHOLECYSTITIS

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Introduction: Percutaneous cholecystostomy (PC) is a less invasive method for achieving source control in acute calculous cholecystitis when cholecystectomy may be initially prohibitive. Interval cholecystectomy (IC) is definitive management, but not all patients with a PC will undergo IC and the optimal timing for IC remains uncertain. We aim to assess the morbidity associated with PC and to evaluate how the timing of IC after PC impacts surgical outcomes within our healthcare system.
Methods: We retrospectively evaluated all patients undergoing PC for acute cholecystitis between 2024-2025 in our health system. Patients with a history of hepatobiliary malignancy or acalculous cholecystitis were excluded. Outcomes included PC tube related complications, rates of IC, and post-operative complications (reoperation, readmission, image-guided interventions, endoscopic interventions, or death).
Results: Two hundred fifteen patients with a median age of 78 (IQR 69-85) and calculous cholecystitis underwent PC. Almost all (92.6%) had severe comorbidities (Charlson Comorbidity Index > 4), 63.3% presented with sepsis, and 66.0% had severe cholecystitis (AAST grade ≥ III). PC was associated with 30-day mortality in 5.6% of patients (12/215). 197 patients were discharged with PC and 47.2% (93/197) had ≥1 tube-related emergency room visit. The rate of IC was 39.5% (85/215) with median time to surgery of 59 days (IQR 42–96). Multivariate analysis showed DNR status (adjusted OR 0.34, 95% CI 0.18–0.63; p=0.001) and cirrhosis (adjusted OR 0.15, 95% CI 0.04–0.43; p=0.001) are independently associated with lower likelihood of surgery. For patients undergoing IC, subtotal cholecystectomy was performed in 15.3%, 5.9% required conversion to open, and 40.0% had drain placement. The composite post-operative complications rate was 18.8% (16/85). The time interval between PC and IC (0–7, 8–13, and >13 weeks; p=0.33) did not influence postoperative outcomes.
Conclusions: Patients who undergo PC for acute calculous cholecystitis are elderly with significant medical comorbidities and severe cholecystitis. Less than half of patients ultimately undergo IC. Finally, IC is associated with a high postoperative risk, but prolonged waiting for IC may not improve postoperative outcomes.

Poster #25

BREAKING THE WEEKEND BOTTLENECK: DEDICATED EGS COVERAGE REDUCES DELAYS TO CHOLECYSTECTOMY

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Introduction: Prior to 2025, a single attending surgeon covered both trauma and emergency general surgery (EGS) services during weekend days at our institution, resulting in significant resource strain. To address this issue, a dedicated EGS weekend attending was added. We hypothesize that this practice change is associated with decreased hospital length of stay (HLOS) and time to surgery (TTS) for inpatient cholecystectomy.

Methods: We retrospectively analyzed all patients undergoing cholecystectomy following weekend admission (Friday-Sunday) during pre-intervention (2023) and post-intervention (2025) periods. Patients who were pregnant, had gallstone pancreatitis, preoperative ERCP, or postoperative HLOS > 48 hours were excluded. Demographic and clinical characteristics were compared between groups and multivariate regression was performed to assess the independent effect of a dedicated EGS attending on HLOS and TTS.

Results: In 111 patients, 51 (46%) were in the pre-intervention group. The cohort was 73.9% female with a median age of 40 years. There were no differences between groups in sex, age, presenting vital signs, or leukocytosis (all p>0.25). The post-intervention group had shorter but non-significant median HLOS (58.0 hours vs. 65.4 hours, p = 0.093) and median TTS (30.8 hours vs. 38.6 hours, p = 0.100). After controlling for confounders, the addition of a dedicated EGS attending was independently associated with shorter HLOS (Table 1, p = 0.048) and TTS (p = 0.045).

Conclusion: Implementation of a dedicated weekend EGS attending was associated with decreased HLOS and decreased TTS for patients admitted at our institution. This operational model may enhance care efficiency and reduce hospital resource utilization and costs.

Table 1: Linear Regression Results

Covariate	Unstandardized B for HLOS (95% CI)	Unstandardized B for TTS (95% CI)
Post-Intervention	-8.8 (-17.43 to -0.1)*	-7.8 (-15.5 to -0.2)*
Age at Surgery	0.2 (-0.1 to 0.5)	0.1 (-0.2 to 0.4)
SBP	-0.03 (-0.2 to 0.2)	-0.1 (-0.2 to 0.1)
HR	0.2 (-0.1 to 0.6)	0.2 (-0.1 to 0.4)
Female Sex	-5.9 (-15.9 to 4.0)	-5.8 (-14.6 to 3.0)
Total Bilirubin	3.1 (-5.3 to 11.4)	4.8 (-2.6 to 12.1)
Leukocytosis	0.5 (-8.4 to 9.4)	1.2 (-6.6 to 9.0)
ALT	0.02 (-0.02 to 0.06)	0.02 (-0.01 to 0.06)

CI: confidence interval; SBP: systolic blood pressure; HR: heart rate; ALT: alanine aminotransferase

Poster #26

PERIOPERATIVE OUTCOMES FOLLOWING ADOPTION OF ROBOTIC CHOLECYSTECTOMY BY AN ACUTE CARE SURGERY SERVICE

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Introduction: Robotic cholecystectomy (RC) is increasingly utilized for benign gallbladder disease; however, its role within Acute Care Surgery (ACS) remains incompletely defined. We evaluated the adoption of RC in an ACS practice and compared perioperative outcomes with traditional laparoscopic cholecystectomy (LC).

Methods: All patients undergoing cholecystectomy performed by ACS surgeons at a Level I trauma center between Jan 2024 and Dec 2025 were retrospectively reviewed. Demographics, operative indication, operative approach (RC vs. LC), conversion to open, operative time, hospital length of stay (LOS), postop complications, and 30-day readmission were abstracted from the medical record. Continuous variables were compared using Mann–Whitney U testing and categorical variables using Fisher's exact test.

Results: A total of 778 cholecystectomies were performed: 271 RC (34.8%) and 507 LC (65.2%). There were no differences in age or sex between groups; however, RC patients had a higher median BMI (31.7 vs. 30.7 kg/m², p=0.003). LC was more frequently performed for acute cholecystitis (37.9% vs. 29.5%, p=0.022), whereas RC was more commonly utilized for symptomatic cholelithiasis (39.1% vs. 26.6%, p<0.001). RC was associated with a lower rate of conversion to open cholecystectomy (0.7% vs. 3.6%, p=0.017) and shorter LOS (median 2 vs. 3 days, p<0.001). There were no significant differences in operative time (75 vs. 79 minutes, p=0.257), overall complication rate (6.3% vs. 9.7%, p=0.137), or 30-day readmission (5.9% vs. 8.5%, p=0.255). Rates of biliary leak, common bile duct injury, retained stone, and postoperative hemorrhage were similar between cohorts.

Conclusion: Early adoption of RC by an ACS practice demonstrated safe perioperative outcomes, lower open conversion, and reduced LOS without an increased in operative time, complications, or readmissions. RC presents a viable option for ACS services managing benign gallbladder pathology. Further investigation should assess cost-effectiveness and long-term value.

Table 1: Comparison of Robotic vs. Laparoscopic Cholecystectomy

	Operation length (mins)	LOS (days)	Acute Cholecystitis	Symptomatic Cholelithiasis	Open Conversion	Complications
RC	75.0(57–100)	2.0 (1–4)	80 (29.5%)	106 (39.1%)	2 (0.7%)	17 (6.3%)
LC	79.0(59–108)	3.0 (2–4)	192 (37.9%)	135 (26.6%)	18 (3.6%)	49 (9.7%)
p value	0.2571	<0.001*	0.0221*	<0.001*	0.0169*	0.1367