set of 150 randomly selected hospitals and tested in the remaining hospitals using R’s SuperLearner package. We assessed model performance using area under the receiver operating characteristic curve (AUC) and absolute classification measures.

**RESULTS:** 77/537 (14.3%) centers were identified as TCs. In univariate regression modelling, number and percentage of trauma patients and numbers of trauma transfers in and out were associated with TC designation. Using a weighted combination of multivariable logistic regression modelling and random forest machine learning, we correctly classified 362/387 (94%) of hospitals in the test set (model AUC 0.96).

**CONCLUSION:** Using center-level patient population characteristics, we successfully identified trauma centers in the SID. These efforts may facilitate trauma systems research in nationally representative datasets.

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**An Eastern Association for the Surgery of Trauma Multicenter Trial of Prehospital Procedures in Penetrating Trauma: A Propensity Matched Analysis of Police Transport**

**Introduction:** Police transport (PT) of penetrating trauma patients in urban locations has become routine in certain metropolitan areas; however, whether it results in improved outcomes over prehospital Advanced Life Support (ALS) transport has not been determined in a multicenter study. We hypothesized that PT would result in improved outcomes.

**Methods:** This was a multicenter, prospective, observational study of adults (18+ years) with penetrating trauma to the torso and/or proximal extremity presenting at 25 urban trauma centers. PT and ALS patients were allocated via nearest neighbor, propensity matching. Transport mode also examined by Cox regression.

**Results:** Of 2284 total patients, there were 108 (4.8%) PHT. 22 (20.4%) had arterial injuries, 8 (7.4%) had venous injuries, and 92 (85.1%) had no vascular injuries. Of the PHT placed, 86 (73.5%) were done on scene and 24.8% (24.8%) in transport. Of 2284 total patients, there were 108 (4.8%) PHT. 22 (20.4%) had arterial injuries, 8 (7.4%) had venous injuries, and 92 (85.1%) had no vascular injuries. Of the PHT placed, 86 (73.5%) were done on scene and 24.8% (24.8%) in transport. Admission systolic blood pressure (SBP) was not different (0.56 vs. 0.28, p=0.06). Mean units of PRBC did not differ (0.56 vs. 0.56, p=0.32). Cox regression analysis revealed PHT was not associated with survival. After propensity matching, there were 234 patients remaining. The patients were primarily males (n = 199, 85.0%) with median (IQR) age 30 years (22 - 40) and New Injury Severity Score 9 (3 - 17). Overall mortality was not different between cohorts (6.0% vs. 6.8%; p=0.79). Propensity matched comparison of only patients with isolated arterial injuries showed no benefit with PHT (3.4% vs. 0.0%, p=0.60).

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**An Eastern Association for the Surgery of Trauma Multicenter Trial of Prehospital Procedures in Penetrating Trauma: Are Tourniquets Justified?**

**Introduction:** Pre-hospital tourniquet (PHT) use has become widespread. However, whether it improves outcomes in urban penetrating trauma after proximal extremity injury remains in question. We hypothesized that PHT would improve outcomes.

**Methods:** We performed a multicenter, prospective, observational study of adults (18+ years) with penetrating trauma to the torso and/or proximal extremity presenting at 25 urban trauma centers. Subjects were allocated via nearest neighbor, propensity matching to compare PHT use to similarly injured patients without PHT.

**Results:** Of 2284 total patients, there were 108 (4.8%) PHT. 22 (20.4%) had arterial injuries, 8 (7.4%) had venous injuries, and 92 (85.1%) had no vascular injuries. Of the PHT placed, 86 (73.5%) were done on scene and 24.8% (24.8%) in transport. Admission systolic blood pressure (SBP) was not different between groups (p=0.45). Mean units of PRBC did not differ (0.56 vs. 0.28, p=0.06). Regression analysis revealed PHT was not associated with survival. After propensity matching, there were 234 patients remaining. The patients were primarily males (n = 199, 85.0%) with median (IQR) age 30 years (22 - 40) and New Injury Severity Score 9 (3 - 17). Overall mortality was not different between cohorts (6.0% vs. 6.8%; p=0.79). Propensity matched comparison of only patients with isolated arterial injuries showed no benefit with PHT (3.4% vs. 0.0%, p=0.60).
**CONCLUSION:** PHT in urban, penetrating trauma was not associated with improved outcomes. Further studies are needed to determine if PHT should be foregone in favor of immediate transportation in this patient population.

**Comparison of Nebulized Ketamine at 3 Different Dosing Regimens for Treating Acute and Chronic Painful Conditions: A Prospective, Randomized, Double-blind Clinical Trial**
Maimonides Medical Center, Brooklyn, NY
WITHDRAWN

**Early Video-Assisted Thoracoscopic Surgery for Retained Hemothorax Is Associated with Higher Mortality in the Most Severely Injured Patients**
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**INTRODUCTION:** Early video-assisted thoracoscopic surgery (VATS) is recommended to treat retained traumatic hemothorax and improve outcomes. We explored the association between VATS timing and outcomes when stratified by injury severity.

**METHODS:** The 2017 ACS Trauma Quality Improvement Program (TQIP) database was queried for adults who underwent VATs for hemothorax evacuation. Subjects were assigned to groups based on time-to-VATS: Early (< 5 days) and Late (≥ 5 days) then stratified by Injury Severity Score (ISS) into mild/moderate (≤ 15), severe (16-24), and very severe (≥ 25). Conversion to thoracotomy, intensive care unit (ICU) and hospital length of stay (LOS), and mortality were compared between the groups. P-values ≤ 0.05 were statistically significant.

**RESULTS:** Of 1,229 subjects, there were 664 (54%) in Early and 565 (46%) in Late. In mild/moderate injury, Early compared to Late had shorter ICU (4 vs. 7 days, p < .001) and hospital LOS (7 vs. 15 days, p < .001) with no significant difference in mortality. In severe injury, Early compared to Late had shorter ICU (5 vs. 8 days, p < .001) and hospital LOS (9 vs. 17 days, p < .001) with no significant difference in mortality. In very severe injury, Early compared to Late had shorter ICU (7 vs. 14 days, p < .001) and hospital LOS (12 vs. 25 days, p < .001); however, mortality rate was significantly higher in Early (19.5% vs. 1.3%, p < .001). Conversion to thoracotomy was rare (≤ 2%).

**CONCLUSION:** Using this nationwide database, we confirm that Early VATS was associated with shorter ICU and hospital LOS compared to Late for all injury severities. However, in the most severely injured patients, Early VATS was associated with higher mortality.

**Estrogen Prevents Reactive Oxygen Species (ROS) Mediated Damage of the Endothelial Glycocalyx in Hemorrhagic Shock and Resuscitation**
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**INTRODUCTION:** Pre-menopausal women show reduced coagulopathy after trauma. Endothelial glycocalyx (EGX) damage is likely an important driver of the coagulopathy of shock and trauma. The effect of estrogen (EG) on the EGX is unexplored. We hypothesize that estrogen prevents ROS mediated damage of the endothelial EGX in hemorrhagic shock and resuscitation (H/R).

**METHODS:** Male (M) and female (F) rats were compared in a pressure-controlled HS model followed by resuscitation with lactated ringer’s solution for 30 minutes. Syndecan-1 levels in the plasma were quantified using ELISA to identify EGX damage. HUVECs, treated with or without β estradiol at 1 ng/mL dose for 4 days, were subjected to hypoxia and reoxygenation (Hy/Re) and stained with anti-syndecan 1 antibody. Syndecan-1 immunofluorescence was measured. Dimethyl succinate (DMS, 0.1% or 0.5% by volume) was used to induce ROS in HUVECs. ROS was measured using mitoSOX staining.

**RESULTS:** In vivo studies in F rats showed reduced syndecan-1 shedding compared to the M rats 30 minutes after resuscitation (9.50 ng/ml in M vs 4.03 ng/ml in F). β estradiol treated HUVECs showed preserved glycocalyx after Hy/Re (68.44) vs. control cells (51.50); estradiol reduced the mitoROS after H/R (29.10) vs. control (35.14). Treatment with β estradiol did not prevent ROS generation by DMS (18.60 at 0.1%, 20.92 at 0.5% in control, 18.60 at 0.1%, 20.10 at 0.5% in estrogen treated cells).

**CONCLUSION:** Our results show that estrogen is protective for the endothelial glycocalyx and reduces mitoROS in cultured cells. Estrogen doesn’t prevent DMS induced ROS, suggesting that estrogen modifies ROS-inducing metabolic pathways.