

Anticoagulant Use and Postoperative Hematoma Formation for Lower Extremity Fracture Fixation

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Disclosures: Saqib Rehman has received royalties from Globus Medical and is a paid consultant for both Depuy Synthes and Globus Medical. Additionally, he is on the editorial board for Orthopedics Today.

INTRODUCTION: Postoperative hematoma formation along with its complications such as sepsis and infection are significant concerns when considering thromboprophylaxis for fracture fixations. Prophylaxis for a venous thromboembolism (VTE) is more frequently studied for certain lower extremity procedures such as hip and knee arthroplasties or hip fractures due to higher prevalence in orthopedics and their increased VTE risk. However, thromboprophylaxis regimens and thus postoperative hematoma risks of more distal lower extremity fractures are relatively understudied. As such, limited data are available concerning rates of postoperative hematoma formation, much less for comparing the rates for specific thromboprophylactic agents.

METHODS: A retrospective cohort study implementing a national database, TriNetX, was done on patients who received enoxaparin, aspirin, apixaban, or rivaroxaban within one day after an internal fracture fixation in the area below the hip and above the ankle. Cohorts were one-to-one propensity score matched based on age, sex, ethnicity based on World Health Organization classification, and medical comorbidities. The primary outcome of interest was the formation of a postoperative hematoma within 35 days of thromboprophylactic treatment.

RESULTS SECTION: When comparing the enoxaparin and aspirin groups (each with 17,931 patients), the enoxaparin group showed significantly higher rates for 35-day postoperative hematoma formation (RR: 2.750, 95% CI: 1.202 to 3.497, P-value = 0.0071). Rates for the apixaban and rivaroxaban groups showed no statistically significant differences, likely due to limited sample sizes.

DISCUSSION: This study showed a significant decrease in rates of postoperative hematomas for patients using aspirin when compared to patients using enoxaparin to prevent VTE formation. Smaller patient population numbers for both the apixaban and rivaroxaban groups limited comparisons involving either cohort. However, the study of when comparing enoxaparin versus aspirin is one of the largest done to investigate differences in thromboprophylaxis for orthopedic surgery.

SIGNIFICANCE/CLINICAL RELEVANCE: (1-2 sentences): Our results show significant differences in complications for antithrombotic medications. Future research could assess differences in VTE formation in conjunction with our assessment to create a more comprehensive analysis for the overall most effective anticoagulant. With such additional research, guidelines for anticoagulant therapy can be formed regarding lower extremity fracture fixations.

IMAGES AND TABLES:

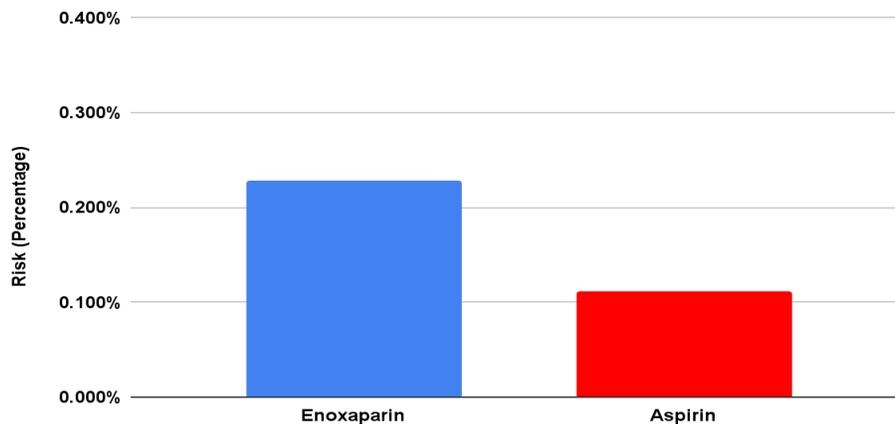


Figure 1: Column chart demonstrating differences in risk of postoperative hematoma formation based on type of thromboprophylaxis. Y-axis displays the percentage of propensity matched patients who developed a postoperative hematoma. Blue represents the enoxaparin group; red represents the aspirin group.