

Postoperative Enoxaparin vs. Aspirin in Tibial Nailing of Closed Tibial Fracture: Equivalent Effects in Preventing Deep Vein Thrombosis

Sydney R Laxson, Spencer James Smith, Dane Jensen Brodke, Graham John Dekeyser, Jung U Yoo, Darin M Friess

INTRODUCTION: To compare the efficacy of post-operative enoxaparin versus aspirin in the prevention of postoperative deep vein thrombosis and pulmonary embolism in patients treated with tibial intramedullary nailing of closed tibia fractures.

METHODS:

Design: Retrospective cohort analysis.

Setting: Data were sourced from the Epic Cosmos national database.

Patient Selection Criteria: Patients were identified through the Epic Cosmos national database by using Current Procedural Terminology and International Classification of Diseases (ICD-10) codes. Included cohort was patients who had undergone intramedullary nailing for closed tibia fractures between 2016 and 2023. Patients with a past medical history of deep vein thrombosis (DVT) and/or pulmonary embolism (PE) were excluded from the study. The independent variables considered were age, sex, and comorbid conditions (renal disease, diabetes and obesity).

Outcome, Measures, and Comparisons: The primary outcome measured in this study was the development of postoperative DVT or PE, as identified by ICD-10 codes. The rates of DVT or PE were compared for all patients and for each of the three age groups (18-40 years, 40-60 years, and ≥ 60 years). The results were presented as odds ratio of a patient developing a postoperative DVT, comparing postoperative enoxaparin and aspirin groups. The effect size (ES) was calculated using Cramer's V statistics. Variables that demonstrated a p-value < 0.10 were included in a multivariate logistic regression model.

RESULTS: The study included 24,600 patients separated by age (18-40 years, 40-60 years, and 60+ years) and sex (male and female). 36.5% were female. The overall incidence rate of DVT was 1.27% in enoxaparin users and 1.09% in aspirin users (OR = 1.17, p = 0.3284, ES = 0.0062). The overall incidence rate of PE was 0.53% in enoxaparin users and 0.48% in aspirin users (OR = 1.12, p = 0.6967). When separated by age, the rates of DVT in patients who received postoperative enoxaparin were 0.92%, 1.56%, and 1.54% for the 18-40 years, 40-60 years, and ≥ 60 years age ranges, respectively. The rates of DVT in patients who received postoperative aspirin were 0.76%, 1.23%, and 1.62% for the 18-40 years (OR = 0.82, p = 0.5293, ES = 0.0058), 40-60 years (OR = 0.79, p = 0.3491, ES = 0.0101), and ≥ 60 years (OR = 1.02, p = 1.0, ES = 0) age ranges, respectively. Effect sizes were all lower than 0.1, which denotes a small difference between enoxaparin and aspirin users. Logistic regression using relevant univariate variables (age and obesity) demonstrates no statistical difference between enoxaparin and aspirin.

DISCUSSION AND CONCLUSION: There was no statistically significant difference between the postoperative use of enoxaparin or aspirin in preventing DVTs and PEs in patients treated with intramedullary nailing of closed tibia fractures.