

Impact of Continuous Perioperative Anticoagulation on DVT/PE Events in Trauma Patients

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Purpose: Historically at our institution, if patients with orthopaedic trauma went directly to the operating room (OR) from the emergency department (ED), no preoperative prophylaxis was given. Postoperatively, the agents were held for 24 hours, then started. On review, unacceptable rates of deep vein thrombosis/pulmonary embolism (DVT/PE) based on Trauma Quality Improvement Program (TQIP) standards were noted. We then instituted a prospective protocol operating directly through prophylaxis and not stopping preoperatively or postoperatively, regardless of circumstances. Enoxaparin is now used throughout the perioperative and entire postoperative periods. The purpose of this study was to determine if reduction in DVT/PE followed, compared to our initial prophylaxis scheme. Secondary measures were assessed to determine if an increase in adverse complications or outcomes occurred.

Methods: A matched cohort of patients based on mechanism of injury from our retrospective review was compared to our new study cohort evaluating DVT/PE rates in patients following the procedural change over a 5-year time period, using our trauma and Epic database(s) with 3 years of new protocol data. Clinical data recorded time to surgery, type of injury/surgery, anticoagulant prior to surgery, and if anticoagulation agents were held. DVT and/or PE occurrence, mortality, and cause of death were noted. Closed head and spinal injuries were excluded. Transfusions, wound issues, and other complications were documented. Categorical variables were summarized for significance using Pearson χ^2 and likelihood ratios. Linear-by-linear association assessed differences in DVT/PE rates and secondary outcomes between the pre- and post-policy groups.

Results: More than 400 patients were analyzed. A significant difference in DVT/PE rates between the pre- and post-policy groups was 9% versus 0.7% ($p = 0.016$). DVT/PE was 14.553 times ($p = 0.002$) more likely when anticoagulation agents were held prior to surgery. Secondary analysis for blunt trauma revealed no difference in transfusion or mortality related to DVT/PE.

Conclusion: This study demonstrates the effectiveness of continuous anticoagulation in reducing the incidence of thromboembolic events in patients with orthopaedic trauma. These findings suggest that DVT/PE rates have significantly decreased without an increase in complications. Continuous anticoagulation was shown to be successful in this interim analysis. We continue to evaluate our prospective study with no protocol change.