



Individualized Risk Model for VTE following TJA

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Introduction: Venous thromboembolism (VTE) following total joint arthroplasty (TJA) continues to be an important and potentially fatal complication. Currently surgeons use a standard protocol for postoperative VTE prophylaxis and make little distinction between patients at different risk of VTE. The objective of this study was to develop a simple scoring system that can identify patients at higher risk for VTE in whom more potent anticoagulation may need to be administered.

Methods: Utilizing the National Inpatient Sample registry data, 1,721,806 patients undergoing TJA were identified, among which 15,775 patients (0.9%) developed VTE following their index arthroplasty. Among the entire cohort, all potential risk factors for VTE were assessed. An initial logistic regression model using all potential predictors for VTE was performed. A scoring system was then created based on the logistic regression coefficients and externally validated against our institutional data.

Results: Hypercoagulability, metastatic cancer, stroke, diagnosis of sepsis, and chronic obstructive pulmonary disease (COPD) carried the highest weight for increasing risk of VTE in our model. Patients with any one of these conditions had risk for postoperative VTE that exceeded the rate of 3%. There was a near perfect fit between the predicted VTE rate (using the model) and the actual rate of VTE in our institutional data up to a 5% rate of VTE.

Conclusions: Based on our VTE risk model, an iOS application has been developed (VTEstimator) that can be used to assign patients into low and high risk for VTE following TJA. We believe individualization of VTE prophylaxis following TJA is likely to improve the efficacy of preventing VTE while minimizing the untoward risks associated with the administration of anticoagulation.