

Clinical Features Associated with Venous Thromboembolism Risk in Patients Undergoing Adult Deformity Surgery: A Review of 4,793 Patients

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Introduction

Patients undergoing adult deformity surgery (ADS) are at increased risk for venous thromboemboli (VTE) due to long operating room (OR) times, increased blood loss/transfusion and extended recovery times. Though, low rates of VTE are reported in the literature, it can be a devastating complication. Consistent risk factors have not been identified in this population using a large nationwide database, thus we aimed to identify predictors of VTE in patients undergoing ADS.

Methods

Adults (>18 years) undergoing ADS (anterior fusion 2+ levels and/or posterior fusion 6+ levels) were divided into two groups: those who suffered a VTE (DVT and/or PE) and those that did not. The two cohorts were compared using chi-square test and analysis of variance. Multivariate regression models were employed to adjust for preoperative risk factors. Odds ratio (OR) were calculated with 95% confidence interval (CI).

Results

Of 4,793 patients who met inclusion criteria, 61 (1.3%) suffered a VTE, including DVT in 42 (0.9%) and PE in 30 (0.6%). At baseline, patients with VTE events were older (65.7 years vs 57.0 years, p<0.0001) and more likely to suffer from chronic heart failure (p=0.005), peripheral vascular disease (PVD) (p=0.0001) and require dialysis (p=0.001). Patients with VTE were more likely to undergo fusion to the pelvis (p=0.008) and osteotomy (p=0.001). Multivariate analysis identified age >65 (OR 17.77, CI 2.33-135.44, p=0.006), age 45-64 (10.07, CI 1.32-76.73, p=0.026), PVD (OR 4.80, CI 1.24-18.60, p=0.023), prior neuromuscular injury (OR 3.45, CI 1.67-7.15, p=0.001), OR time >4 hours (OR 2.38, CI 1.26-4.48, p=0.007) and length of stay (LOS) >5 days (OR 5.27, CI 2.9-9.7, p<0.0001) as independent risk factors for VTE in ADS.

Conclusions

Patients undergoing ADS are at low risk for VTE, however, this risk is increased significantly with age over 65 years old, history of PVD, prior neuromuscular injury amd prolonged operative time. Surgeons should be aware of these risk factors in patients undergoing ADS and closely monitor potentially modifiable intra- and postoperative variables.

Learning Objectives

The objective of this investigation was to determine if certain patient, clinical and surgical factors are associated with increased risk of VTE following ADS.

References