The Incidence of Venous Thromboembolism in Breast Reconstruction and the Efficacy of Current Prediction Models

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Abstract

Background: Venous thromboembolism (VTE) is a source of significant morbidity and mortality in surgical patients. Prediction models have been developed to determine VTE risk in plastic surgery patients including the Davison risk score and the 2005 Caprini risk score. This retrospective study evaluates the incidence of symptomatic VTE in breast reconstruction and the efficacy of current models in predicting VTE in different methods of breast reconstruction.

Methods: Breast reconstruction patients by a single surgeon were retrospectively evaluated. One hundred consecutive TRAM reconstructions, one hundred consecutive implant reconstructions, and fifty consecutive latissimus reconstructions were identified. These surgical reconstructions all took place over a ten year period in which VTE chemoprophylaxis was not routinely performed. Each patient’s chart was reviewed for the parameters needed to calculate the 2005 Caprini risk score and the Davison risk score. Outpatient follow up, operative notes, and other procedures were also reviewed. Fisher’s exact test was used to calculate differences in VTE incidence and risk factor incidence. ANOVA test was used to compare mean risk scores between the reconstruction groups.

Results: The TRAM reconstruction group had a significantly higher VTE rate (6%) than the implant (0%) or the latissimus (0%) reconstruction groups (p<0.01). There was no significant difference (p>0.05) in the 2005 Caprini risk scores or the Davison risk scores between the TRAM, implant, and latissimus reconstruction groups (Figure 1). The Davison risk score and the 2005 Caprini score stratified the majority of patients as “high risk” with a calculated risk score ≥5 (Davison score 64.8%, 2005 Caprini score 86%). Interestingly, the VTE rate among “high risk” patients in each group was not statistically different from the overall VTE rate of each reconstruction group (p>0.05).

Conclusions: TRAM reconstruction is associated with a higher VTE rate than both implant reconstruction and latissimus reconstruction. Implant and latissimus reconstruction patients appear at low risk for VTE even in the presence of many “high risk” features. Overall, neither the 2005 Caprini risk score nor the Davison risk score demonstrated effective VTE risk stratification in breast reconstruction patients. Current and future VTE prediction models should take into account the specific surgical procedure to more accurately determine VTE risk.
References

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