

# Total Shoulder Arthroplasty for Patients with Factor V Leiden: Defining perioperative adverse events and five-year implant survival

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**INTRODUCTION:** Total shoulder arthroplasty (TSA) is an effective treatment for end-stage glenohumeral osteoarthritis. However, preoperative considerations for patient comorbidities are crucial. To that end, Factor V Leiden (FVL) is the most common inherited thrombophilia and may affect postoperative outcomes. The current study leveraged a large, national, administrative database to identify the largest FVL cohort of TSA patients to date and assess 90-day adverse events and 5-year revision rates.

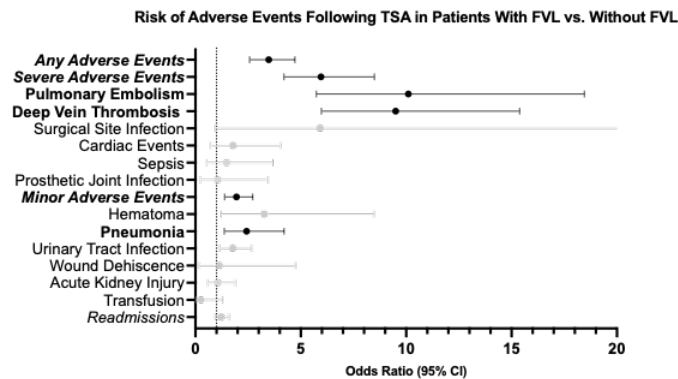
**METHODS:** Adult patients undergoing primary TSA for osteoarthritis indication were identified in the 2010 through October 2021 PearlDiver M157 database. Patients with or without FVL were matched at a 1:4 ratio based on age, sex, and Elixhauser Comorbidity Index. Ninety-day adverse events and 5-year revisions rates were assessed and compared.

**RESULTS SECTION:** Of 104,258 TSA patients, FVL was identified for 283 (0.27%). After matching, 1,081 patients without FVL and 272 patients with FVL were identified.

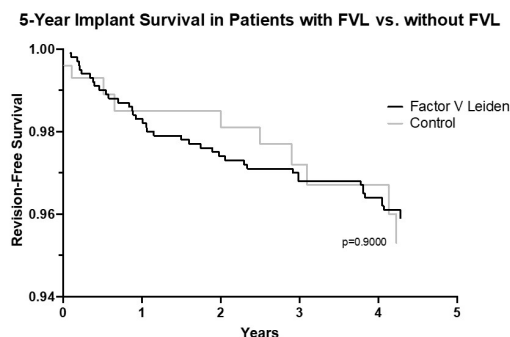
By multivariable logistic regression, FVL patients demonstrated increased independent odds of deep vein thrombosis (DVT, odds ratio [OR] 9.50,  $p < 0.0001$ ), pulmonary embolism (PE, OR 10.10,  $p < 0.0001$ ), and pneumonia (OR 2.43,  $p = 0.0019$ ) (Figure 1). Further, these events contributed to increased odds of aggregate minor (OR 1.95,  $p = 0.0001$ ), serious (OR 6.38,  $p < 0.0001$ ), and all adverse events (OR 3.51,  $p < 0.0001$ ). All other individual 90-day adverse events, as well as 5-year revision rates (Figure 2), were not significantly different between the study groups.

**DISCUSSION:** TSA patients with FVL present a challenge to shoulder surgeons. The current study highlights the risk of PE, DVT, and pneumonia following TSA for these patients. Reassuringly, no other assessed adverse outcomes were greater for this FVL population, including 5-year survival to revision.

**SIGNIFICANCE/CLINICAL RELEVANCE:** The current study represents the largest study to date of patients with FVL undergoing TSA. While there was the expected increase in perioperative venous thromboembolic events, the limited other increased risk and lack of difference in five-year implant survival is reassuring.



**Figure 1.** Forest plot of odds ratios with 95% confidence intervals in the Factor V Leiden cohort relative to the control cohort. Black bars are statistically significant, whereas gray bars are not. FVL = Factor V Leiden, TSA = Total Shoulder Arthroplasty, CI = Confidence Interval.



**Figure 2.** Kaplan-Meier curve comparing 5-year revision-free survival in adult patients who underwent primary total shoulder arthroplasty with Factor V Leiden compared to patients without Factor V Leiden. P-value resulting from a Log-rank test is shown. FVL = Factor V Leiden.