Tranexamic Acid Use in Total Shoulder Arthroplasty Continues to Increase and is Safe in **High-Risk Patients**

Cory Kishi Hiro Mayfield, Kevin Liu, Mary Richardson¹, Ryan Freshman², Amir Fathi, Alexander Weber³, Seth C Gamradt, Joseph Nairne Liu, Frank Petrigliano

¹Keck School of Medicine - Department of Orthopaedi, ²UCSF Department of Orthopedic Surgery, ³USC Department of Orthopaedic Surgerv

INTRODUCTION:

Tranexamic acid (TXA) is increasingly utilized in total shoulder arthroplasty (TSA) to reduce blood loss. However, some orthopaedic surgeons remain hesitant to utilize TXA in patients at increased risk of postoperative venous thromboembolism (VTE). We sought to evaluate the utilization trends and safety of TXA when used for patients undergoing TSA, as well as for patients with a history of VTE.

METHODS: Patients who underwent primary, elective anatomic TSA and reverse TSA from 2016-2020 were identified using the Premier Database. TXA utilization trends and blood transfusions were reported. A propensity score match and multivariable regression analyses were performed to compare cohorts. Primary endpoints included 90-day risk of pulmonary embolism (PE), deep vein thrombosis (DVT), and transfusion. **RESULTS:**

In total, 86.356 patients underwent TSA from 2016 to 2020. Of these, 41.380 (47.9%) received TXA, and 44.976 (52.1%) did not. Utilization of TXA increased from 33.4% in 2016 to 60.3% in 2020. Transfusion rates decreased from 1.05% to 0.47%. Following matching, the risk of thromboembolic complications (odds ratio[OR]: 0.98,95%-Confidence Interval[CI]: 0.72-1.33,p=0.874), DVT (OR:1.11, 95%-CI:0.71-1.71,p=0.655), and PE (OR:0.87, 95%-CI:0.56-1.33,p=0.513) were similar between cohorts. The high-risk cohort comprised 4,757 patients, of which 1,850 (38.9%) received TXA, and 2,907 (61.1%) did not. The utilization of TXA for high-risk patients increased from 27.4% to 52.0% while rates of transfusion decreased from 1.76% to 0.70%. Following multivariable regression, there was similar risk of all thromboembolic complications (adjusted OR[aOR]:0.77, 95%-CI:0.47-1.28,p=0.316), DVT (aOR:0.96, 95%-CI:0.39-2.36,p=0.92), and PE (aOR:0.54, 95%-CI:0.23-1.28,p=0.163) between high-risk cohorts.

DISCUSSION AND CONCLUSION:

TXA usage in shoulder arthroplasty has nearly doubled from 2016 to 2020 and is now administered to 60% of all patients, coupled with a significant decrease in the risk of blood transfusion. Patients receiving TXA were not at increased risk of thromboembolic, infectious, surgical, and medical complications even if they had a history of VTE.

2020





Figure 3. Proportion of total shoulder arthroplasty patients receiving TXA by dosage for each calendar year between 2016 and 2020