

Risk-Stratified Outcomes of Tranexamic Acid Use in Total Hip Arthroplasty: Reduced Complications Without Increased Thromboembolic or Neurologic Risk

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INTRODUCTION:

Tranexamic acid (TXA) is an intravenous antifibrinolytic widely used in total hip arthroplasty (THA) to reduce blood loss and transfusion rates. While its safety in the general THA population is well established, data on high-risk patients remain limited due to concerns related to thrombosis, renal impairment, and neurologic complications.

METHODS: Using the TriNetX national health network, we identified patients undergoing primary THA between January 1, 2017, and December 31, 2023. High-risk patients were stratified by medical history in the year prior to surgery: (1) thromboembolic events (n=5,005), (2) renal failure (n=5,112), (3) atrial fibrillation (n=3,769), (4) seizures (n=1,051), and (5) visual disturbances (n=3,112). Following 1:1 propensity score matching, 90-day postoperative outcomes were compared between TXA and non-TXA groups.

RESULTS: TXA use increased from 66.3% to 74.3% in standard-risk patients and from 52.8% to 76.9% in high-risk patients between 2017 and 2023. In patients with thrombosis, TXA use was associated with reduced transfusions (OR: 0.61), DVT (OR: 0.70), acute renal failure (OR: 0.82), readmissions (OR: 0.74), and mortality (OR: 0.62). In those with renal failure, TXA reduced transfusions, revisions, and readmissions. In atrial fibrillation, TXA lowered transfusions and readmissions. Among seizure patients, TXA reduced readmissions. In patients with visual disturbances, TXA reduced myocardial infarction (OR: 0.58) but increased surgical site infection (OR: 1.90).

DISCUSSION AND CONCLUSION: TXA use in high-risk THA patients was associated with reduced transfusions, readmissions, and revisions without increasing the risk of DVT, PE, seizures, or other major complications. These findings support TXA as a safe and effective blood conservation strategy in high-risk populations.