

## Effect of Locally Injected Tranexamic Acid on Blood Transfusion and Complications in Fragility Hip Fractures

*Daniel Witmer, MD; Matthew J. Solomito, PhD; Mandeep Kumar, MD;*

**Stephen Lawrence Davis, MD**

*Bone and Joint Institute at Hartford Hospital, Hartford, CT, United States*

**Purpose:** Fragility hip fracture surgery is associated with significant blood loss, potentially increasing perioperative complications and necessitating blood transfusion at times. There is a paucity of data around interventions to minimize blood loss in this population. Our institution started utilizing locally injected tranexamic acid (TXA) at the time of wound closure with the hypothesis that patients receiving TXA would need fewer blood transfusions and experience no difference in risk of surgical site infection and venous thromboembolism (VTE) compared to a matched historical cohort.

**Methods:** Patients aged 50 years and over who underwent surgical treatment for a fragility fracture of the femoral neck, intertrochanteric, or subtrochanteric aspect of the proximal femur between March 1, 2018 and February 1, 2020 met inclusion criteria. Fragility hip fracture was defined as occurring after an injury equal to or less than a fall from a standing height. Exclusion criteria include subsequent fracture in the same or contralateral hip, bilateral hip fractures, hip fracture as part of a polytrauma, or high-energy injury. Patients were placed in the study group if they received TXA and were compared to a historical control group of patients who had not received TXA.  $\chi^2$  contingency tests were used to assess differences between groups for both complications and blood transfusions. Logistic regression was also used to determine if the use of TXA was associated with a need for transfusion.

**Results:** 490 patients were included in this study (252 patients received TXA). There was a statistically significant difference in the need for blood transfusions between those who received TXA (33% required transfusions) and those who did not receive TXA (43% required transfusions) ( $P = 0.034$ ). There were no significant differences in 30-day emergency department visits ( $P = 0.899$ ), readmissions ( $P = 0.991$ ), deaths ( $P = 0.914$ ), VTE occurrence ( $P = 0.526$ ), or infection ( $P = 0.965$ ). It is important to note that VTE, infection, and death rates for the entire study cohort were less than 0.5%. Regression analysis indicated that patients receiving TXA were 31.2% less likely to need a transfusion ( $P = 0.045$ , odds ratio: 0.688 [95% confidence interval: 0.477-0.993]).

**Conclusion:** Locally injected TXA use in the surgical treatment of fragility hip fractures reduced transfusion needs by 10%. Regression analysis demonstrated that TXA could reduce transfusion needs by up to 31%. Additionally, there was no increased risk of complications in those receiving TXA. Therefore, locally injected TXA seems to be both a safe and effective means of reducing postoperative blood transfusions in patients with fragility hip fractures.