The Effectiveness of Tranexamic Acid on Operative and Perioperative Blood Loss in Long Segment Spinal Fusions

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Background

- Adult spine deformity surgery can be complicated by significant operative morbidity, especially in older patients.
- An often anticipated complication is perioperative blood loss, frequently necessitating transfusions.
- Tranexamic acid (TXA) stabilizes fibrin-linked platelets through inhibition of plasminogen (Figure 1).
- Pre-operative administration of TXA reduces blood loss in other, similarly large surgeries.
- Less literature exists to support TXA use in long-segment spinal deformity surgery.
- We hypothesize that low-dose TXA will reduce peri-operative blood loss and transfusions in adult spinal deformity surgery without compromising safety.

Methods

Study Design
- Retrospective, non-randomized, single-center, consecutive series.

Population
- Inclusion criteria: ≥4 thoracic or lumbar vertebra fused, ≥18 years of age
- Exclusion criteria: Patients undergoing revision surgery, or concurrent infectious or metastatic spine disease

TXA Administration
- Decision to administer pre-operative TXA was at surgeon’s discretion
- Patients receiving TXA received a 10 mg/kg bolus + 1 mg/kg/hr infusion intraoperatively.

Outcomes
- Pre- and post-operative transfusion volume, estimated blood loss, % hemoglobin drop, length of stay, readmissions, adverse events.

Statistical Analysis
- TXA group (n=71) was compared to control (n=48) using χ² and 1-t test

Results

Table 1. Patient demographic and operative characteristics. Standard deviation represented in parentheses. * = significant; ^ = significant; χ²

Table 2. Outcome measures, thrombotic complications, and readmissions. * = significant; ^ = χ²

Conclusions

- Despite undergoing larger surgeries, TXA patients had similar intraoperative blood loss.
- TXA is effective in reducing postoperative blood loss and transfusion requirements.
- TXA did not compromise safety, but higher-powered studies are needed to make definitive conclusions.
- Low-dose TXA was effective and safe, however, higher does may contribute to greater reduction in blood loss.

References