

Role of Tranexamic Acid in Reducing Transfusion Requirement in Calvarial Vault Remodeling

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Purpose

- Cranial vault remodeling for craniosynostosis is associated with substantial intraoperative blood loss due to extensive bone remodeling and vascular scalp dissection.
- **Objective:** Evaluate whether TXA use in primary cranial vault remodeling reduces transfusion requirements without increasing postoperative thrombosis.

Methods

- Retrospective review of patients undergoing cranial vault remodeling (2010–2023).
- TXA administered as **10–50 mg/kg bolus** followed by **5 mg/kg/hr intraoperative infusion**.
- Statistical analysis: independent t-tests (continuous variables), chi-squared tests (categorical variables), and multivariable linear regression adjusting for confounders.

Figure 1 Mechanism of Action of Tranexamic Acid

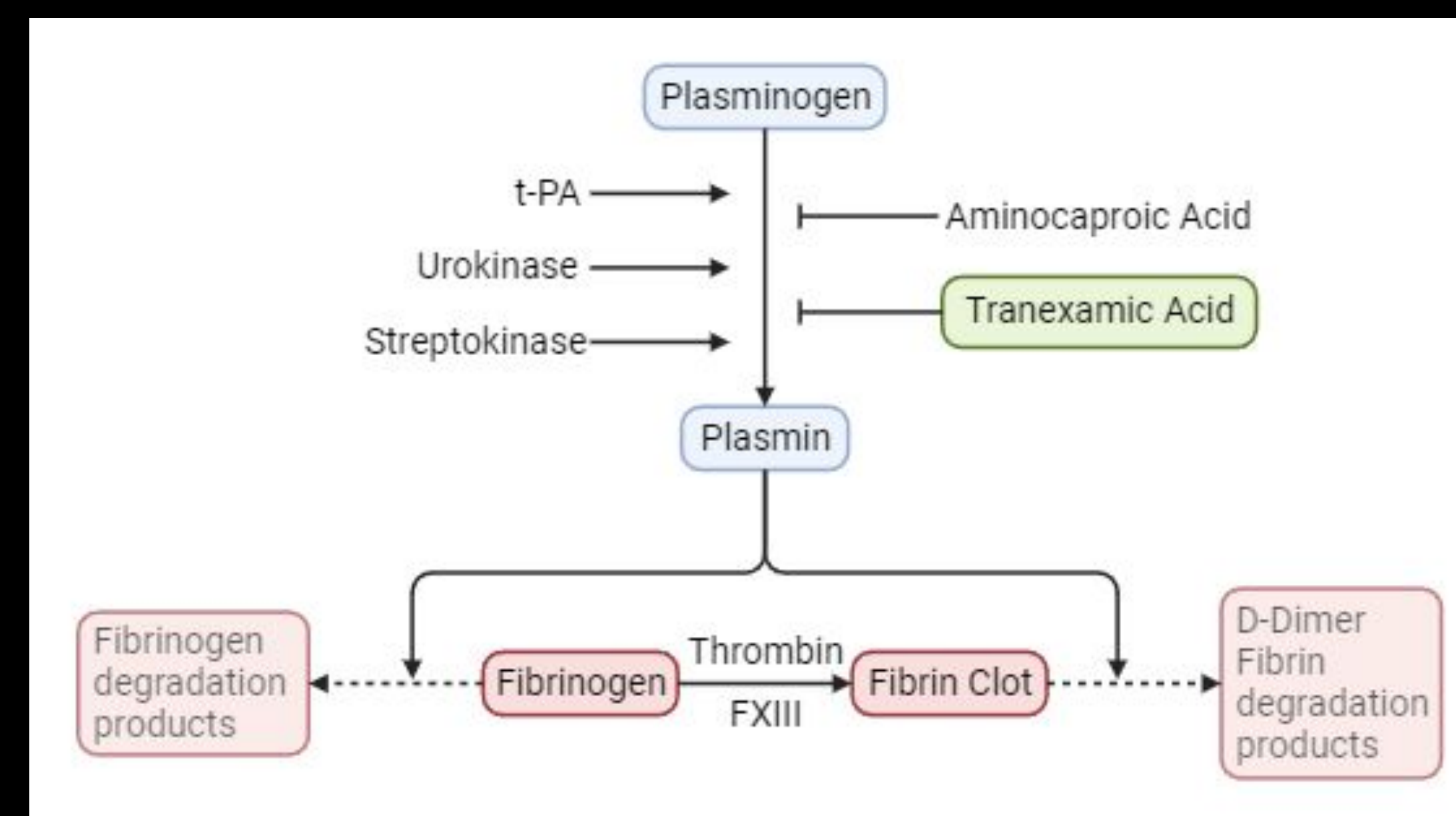


Table 1 Patient Characteristics and Outcomes

	Non-TXA N=278	TXA n=279	p-value
Total Patients			
Sex, n (%)			0.363
Male	170 (61.2%)	181 (64.9%)	
Female	108 (38.9%)	98 (35.1%)	
Age at Surgery, mean months ± SD	10.1 ± 9.9	9.0 ± 5.5	0.062
Syndromic, n (%)	42 (15.1%)	51 (18.3%)	0.316
Operative Time, median hours ± SD	229.3 ± 91.1	220.1 ± 72.1	0.253
Weight-adjusted EBL (mL/kg), mean ± SD	31.2 ± 19.0	28.9 ± 23.1	0.21
Transfusion (units/kg), mean ± SD	0.13 ± 0.06	0.11 ± 0.08	0.01
Hematoma, n (%)	7 (2.5%)	5 (1.8%)	0.54
DVT/PE/VTE	0 (0%)	0 (0%)	-

Results

- **557 patients** met inclusion criteria; **279 (50.1%) received TXA**.
- Weight-adjusted estimated blood loss was **not significantly different** between cohorts.
- **Transfusion requirement was significantly lower in the TXA group** (0.11 ± 0.08 vs. 0.13 ± 0.06 units/kg, $p=0.01$).
- Multivariable regression confirmed TXA **independently associated with reduced transfusion requirement** (OR 0.76, 95% CI 0.62–0.91, $p=0.02$).
- **No cases of DVT, PE, or other venous thromboembolic events**

Conclusion

- TXA use in cranial vault remodeling was **associated with decreased transfusion requirements**.
- **No increase in perioperative thrombotic complications** was observed.