Nebulized Tranexamic Acid Use in Post-Tonsillectomy Hemorrhage

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Background

- Post-tonsillectomy hemorrhage (PTH) is a potentially life-threatening complication following tonsillectomy.
- PTH management strategies include ice water gargles, silver nitrate cauterization, and topical agents.
- Tranexamic acid (TXA) has demonstrated efficacy in controlling mucosal bleeding. Nebulized TXA potentially provides a non-invasive option for topical hemostasis that may reduce the need for reoperation.
- In October 2021, the Children's Hospital Colorado ED adopted a policy in which children with PTH with bright red blood from the mouth or a tonsillar clot are administered nebulized TXA.
- This study aimed to evaluated whether the use of nebulized TXA is an effective treatment for children with PTH.

Methods

- Retrospective chart analysis of patients <18 years of age who underwent extracapsular adenotonsillectomy between January 1, 2020 and September 15, 2025 and returned to the Emergency Department for PTH were included. The cohort consisted of 405 patients.
- Patients with known or incidentally determined coagulopathy were excluded.
- A Chi-square test was used to compare surgical intervention rates between patients administered TXA and those who were not.

Results

CHARACTERISTIC	No TXA N = 246[1]	TXA N = 110[1]	p-value
SURGICAL INTERVENTION	87 (35%)	55 (50%)	0.010[2]
AGE AT ADENOTONSILLECTOMY	8.9 (4.3)	10.0 (4.3)	0.042[3]
STOP SCORE			<0.001[2]
1	127 (52%)	24 (22%)	
2	78 (32%)	47 (43%)	
3	40 (16%)	36 (33%)	
4	1 (0.4%)	3 (2.7%)	

[1] N (%); MEAN (SD)
[2] FISHER EXACT TEST, [3] T-TEST

Table 1. Comparison of Patient Characteristics in Patients Receiving Tranexamic Acid and Not Receiving TXA for Post-Tonsillectomy Hemorrhage

TABLE 2. YEARLY SURGICAL INTERVENTION BY TXA

	2022			2023		
	No TXA N=45	TXA N=3	p-value	No TXA N=76	TXA N=26	p-value[1]
SURGICAL INTERVENTION	21(47%)	3 (100%)	p=0.600	28 (37%)	17(65%)	p=0.021
	2024			**2025**		
	No TXA N=45	TXA N=52	p-value	No TXA N=14	TXA N=27	p-value[1]
SURGICAL INTERVENTION	13(29%)	22(42%)	p=0.206	2 (14%)	12(44%)	p=0.084

[1]FISHER EXACT TEST

Table 2. Year-to-Year Comparison of Post-Adenotonsillectomy Surgical Intervention Rates in Patients Receiving Tranexamic Acid and Not Receiving TXA for Post-Tonsillectomy Hemorrhage

Conclusions

- TXA administration increased over time following pathway implementation, accompanied by evolving return-to-OR rates.
- Fluctuations likely reflect varying protocol familiarity and implementation, such as reserving TXA for severe bleeds. Early and standardized administration may offer greater benefit.

Implications

- This study and its findings inform PTH management for pediatric patients, offering a non-invasive treatment option with observed reduction in subsequent surgical intervention rates.
- Further chart review could be conducted in order to determine consistency of observed results.
- Future studies can focus on timing of administration of TXA to further evaluate its efficacy in reduction of subsequent surgical intervention in PTH cases.

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