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## INTRODUCTION

Antifibrinolytics reduce blood loss and transfusion in pediatric craniofacial surgery. However, tranexamic acid is associated with increased incidence of seizures and thromboembolic events in pediatric cardiac surgery.<sup>1</sup>

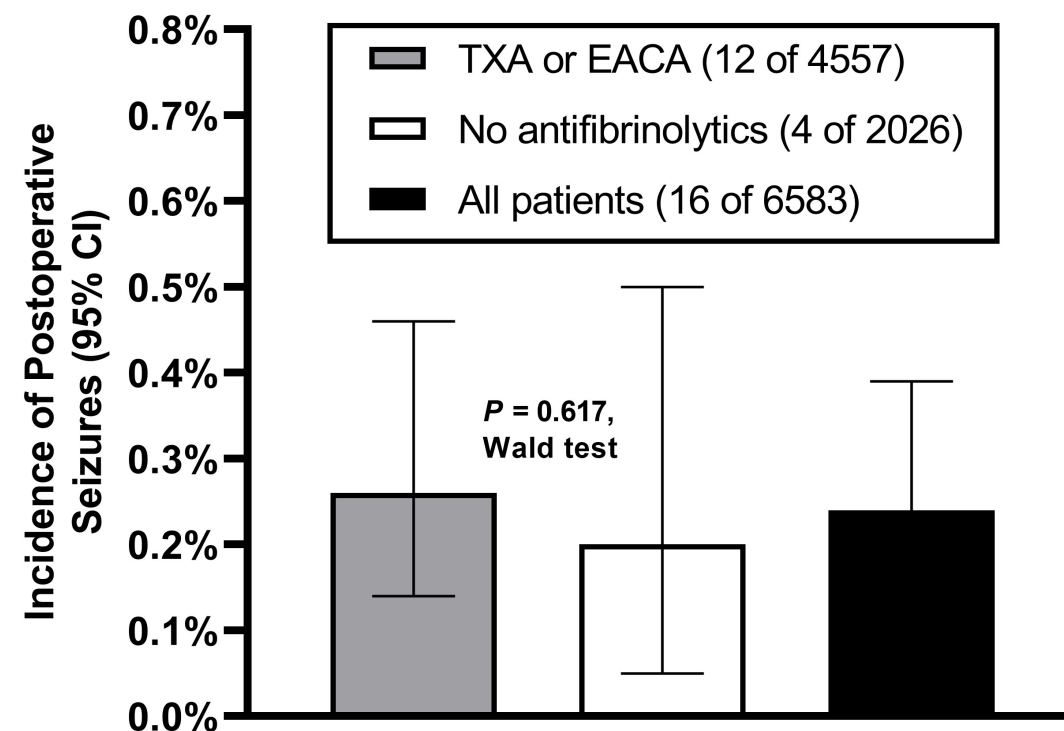
Antifibrinolytics have become recommended standard of care in open craniofacial surgery,<sup>2,3</sup> and their use has expanded to minimally invasive procedures at some centers.

**Primary outcome:** incidence of seizures and thrombotic events in patients undergoing open or minimally invasive craniofacial surgery who did or did not receive antifibrinolytics.

## METHODS

Patients in the PCCG registry between June 2012 and March 2021 having craniofacial surgery (fronto-orbital advancement, mid and posterior vault, total cranial vault remodeling, intracranial LeFort III monobloc), endoscopic cranial suture release and spring mediated cranioplasty were included. Subcranial LeFort III surgeries were excluded.

A multicenter international study of 6,583 pediatric patients undergoing craniofacial surgery found no statistically significant difference in the rate of seizures or thrombotic events in those who did or did not receive antifibrinolytics



## RESULTS

6583 patients from 45 institutions were included in the analysis. The overall seizure rate was 0.24%.

The seizure rate was 0.20% in the No Antifibrinolytic group and 0.26% in the Antifibrinolytic group with no statistical difference between groups. There was no statistically significant difference in seizure rates between aminocaproic acid (0.44%) versus tranexamic acid (0.22%) (odds ratio = 2.0; 95% CI: 0.6, 6.7; Wald test P=0.257; Figure 1). Thrombotic events were also not significantly different between groups.

Seizure rates were higher in the older group >6 months (0.30% vs 0.18%; P=0.327), open procedure group (0.30% vs 0.06%; P=0.141) and in syndromic patients (0.70% vs 0.19%; P=0.009).

Table 1. Demographics and Surgical Characteristics

Variable	All Patients (n=6583)	Seizure Cases (n=16)	No Seizure Controls (n=6567)	P value
Age (months)	8 (4, 15)	17 (3, 43)	8 (4, 15)	0.217
Age group				
0-6 months	2855 (43.4%)	5 (31.3%)	2850 (43.4%)	0.327
>6 months	3728 (56.6%)	11 (69.7%)	3717 (56.6%)	
Weight (kg)	8.3 (6.6, 10.5)	9.7 (6.2, 13.2)	8.3 (6.6, 10.5)	0.469
Gender	n=6580		n=6564	
Male	4246 (64.5%)	7 (43.8%)	4239 (64.6%)	0.082
Female	2334 (35.5%)	9 (56.2%)	2325 (35.4%)	
Race	n=6433		n=6417	
Caucasian	4827 (75%)	13 (81.3%)	4814 (75%)	0.657
Black	511 (7.9%)	2 (12.5%)	509 (7.9%)	
Other	1053 (16.4%)	1 (6.3%)	1052 (16.4%)	
Unknown/not available	42 (0.7%)	0 (0%)	42 (0.7%)	
ASA Class	n=6571		n=6555	
1 or 2	4871 (74.1%)	6 (37.5%)	4865 (74.2%)	0.001*
3 or 4	1700 (25.9%)	10 (62.5%)	1690 (25.8%)	
Syndrome	717/6569 (10.9%)	5 (31.3%)	712/6553 (10.9%)	0.009*
Antifibrinolytic Administered				
No	2026 (30.8%)	4 (25%)	2022 (30.8%)	0.617
Yes	4557 (69.2%)	12 (75%)	4545 (69.2%)	
Aminocaproic Acid Administered	911 (13.8%)	4 (25%)	907 (13.8%)	0.195
TXA Administered	3646 (55.4%)	8 (50%)	3638 (55.4%)	0.664

Continuous data are presented as median (interquartile range) and categorical data are presented as n (%).

Denominators (n) are presented to indicate variables with missing data.

P values were calculated using the Wilcoxon rank sum test and the Chi-square test, as appropriate.

\*Statistically significant.

## DISCUSSION

This large multicenter international experience of pediatric craniofacial surgery found no increase in seizures or thrombotic events in patient who did or did not receive antifibrinolytics (aminocaproic acid or tranexamic acid). Pharmacokinetic-based dosing guidelines are recommended.<sup>4,5</sup>

## REFERENCES

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