Association Between Intravenous Tranexamic Acid Administration, Perioperative Blood Loss and Adverse Outcomes in Gender-Affirming Chest Reconstruction Surgery

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Introduction

Compared to adults (0.5%), recent surveys suggest that 1.4% of American youth (ages 13 to 17) experience being transgender.[1] Chest reconstruction mastectomy surgery is the most common gender-affirming surgical procedure desired by adolescents and young adults[2]. In a recent meta-analysis of intravenous TXA administration in adult breast surgery patients, there is limited evidence supporting decreased hematoma formation and minimal benefits to reducing drain volume 24 hours after surgery.

The objectives of this study are to:

1. Examine the association between intravenous tranexamic acid (TXA) administration and inpatient 24- hour Jackson Pratt (JP) drainage output in gender-diverse young adults undergoing chest reconstruction masculinizing surgery
2. Identify adverse outcomes

Methods

- After IRB approval, data were obtained from electronic medical records from January 2017 to April 2022 for transgender patients undergoing chest masculinizing surgery at a single institution.
  - Demographics
  - Patient characteristics
  - TXA yearly administration
  - 24-hour Jackson Pratt (JP) drainage loss
  - Adverse outcomes
- Primary outcome: 24-hour inpatient drainage loss in two cohorts:
  1. Intraoperative TXA bolus (30 mg/kg) and infusion (10 mg/kg/hr) group (n=239)[4]
  2. No administration group (n=123)

Table 1. Demographics and Patient Characteristics

Variable	Intraoperative TXA Infusion Given (n=239)	No Intraoperative TXA Infusion Given (n=123)
Age (years)	19 (17, 22)	18 (17, 20)
Patient a minor (< 18 years)	63 (26.4%)	49 (39.8%)
Weight (kg)	71 (60.1 (86.8)	70.6 (59.8, 82.6)
BMI	27 (22, 32)	26 (23, 31)
Gender Identity		
Non-binary	28 (11.7%)	6 (4.9%)
Trans Man	211 (88.3%)	117 (95.1%)
Hospital Location		
Main Hospital	78 (32.6%)	26 (21.1%)
Ambulatory Center	161 (67.4%)	97 (78.9%)
ASA		
I	43 (18%)	34 (27.6%)
II	186 (77.8%)	82 (66.7%)
III	10 (4.2%)	7 (5.7%)

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

ASA-PS, American Society of Anesthesiologists Physical Status; BMI, Body Mass Index

Table 2. Intraoperative and Postoperative Data

Variable	Intraoperative TXA Infusion Given (n=239)	No Intraoperative TXA Infusion Given (n=123)	P value
Year			
2017	0 (0%)	4 (3.3%)	
2018	0 (0%)	37 (30.1%)	
2019	1 (0.4%)	77 (62.6%)	<0.001*
2020	97 (40.6%)	3 (2.4%)	
2021	97 (40.6%)	2 (2.4%)	
2022	44 (18.4%)	0 (0%)	
Inpatient Drainage Loss in 24hr			
Inpatient 24-hour JP Drainage Output (inpatient overnight) (ml/kg)	0.82 (0.61, 1.17) n=85	1.5 (1.06, 2.25) n=118	<0.001*
Adverse Events			
Hematoma	11 (4.6%)	6 (4.9%)	0.999
Seroma	8 (3.4%)	4 (3.3%)	0.999
Cellulitis	4 (1.7%)	6 (4.9%)	0.095
Return to OR	2 (0.8%)	5 (5.1%)	0.047*

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

P values were calculated using the Wilcoxon rank sum test, the Chi-square test, or Fisher's exact test.

*Statistically significant.

**For patients discharged home (n=159), there were n=33 with scanned documents and n=126 with no scanned documents.

Discussion

- Our findings for implementing TXA in young adults undergoing gender-affirming chest surgery align with adult findings that suggest reduced drainage in first 24 hours after surgery[2] .
- Future prospective studies are warranted to confirm and evaluate TXA effectiveness, safety and associated outcomes for gender-affirming surgical procedures.
- TXA administration for transgender young adults having gender-affirming chest reconstruction surgery is associated with reduced 24-hour drainage and less return to OR compared to the cohort that did not receive TXA.

Results

- **Table 1** summarizes the demographics and patient characteristics of 362 transgender young adults who had chest masculinizing surgery
- **Table 2** summarizes the two groups' inpatient 24-hour drainage loss and adverse outcomes
- TXA administration was associated with decreased 24-hour inpatient drainage (P<0.001)
- Clinical outcomes of TXA administration were associated with reducing the return to the operating room within 24 hours of surgery (P=0.047)

References

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