

Title: Nebulized Tranexamic Acid Use in Post-Tonsillectomy Hemorrhage

Authors: Elizabeth Lamberty¹, James Thomas MD^{1,2}, Samantha C Roberts MS MPH¹, Alexander D. Cherches MD¹, Paul Hynes¹, Irina Topoz MD¹, Bernadette Johnson MD¹, Jeremy Prager MD^{1,2}, Norman Friedman MD^{1,2}

1 - University of Colorado School of Medicine, Aurora, CO, USA

2 - Children's Hospital Colorado, Aurora, CO USA

Introduction

Post-tonsillectomy hemorrhage (PTH) is a potentially life-threatening complication following adenotonsillectomy. Management strategies include ice water gargles, awake silver nitrate cauterization, or topical agents. Tranexamic acid (TXA), an antifibrinolytic agent, has demonstrated efficacy in controlling mucosal bleeding. Nebulized administration offers a non-invasive route for topical hemostasis that may reduce the need for reoperation. In October 2021, the Children's Hospital Colorado emergency department (ED) adopted a treatment policy in which children presenting with PTH with either bright red blood from the mouth or a tonsillar clot are administered nebulized TXA.

Objectives

The aim of this study is to evaluate whether the use of nebulized TXA is an effective treatment for children with a PTH. We hypothesize that nebulized TXA decreases the need for surgical intervention.

Methods

Retrospective chart analysis of patients less than 18 years of age who underwent extracapsular adenotonsillectomy between 1/1/2020 and 9/1/2025 and returned to the ED within the first 15 days for PTH after adenotonsillectomy surgery were included. 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

Among 11496 tonsillectomy patients, 390 presented to the ED with a bleed. After exclusion of children with bleeding disorders, epistaxis, multiple bleeds, or IV TXA administration, 356 patients remained. 246 (35.0%) did not receive nebulized TXA, while 110 (50.0%) did. Mean ages were 7.6 years no PTH, 10 years PTH w/TXA, and 8.9 years PTH No TXA. STOP score was significantly associated with TXA administration (Table 1). Return to OR rate with TXA use improved with time: 2023 No TXA 37%(86/76) vs TXA 65%(17/26) [p=0.02] compared to 2025: No TXA 14%(2/14) vs TXA 44%(12/27) [p=0.08] (Table 2).

Discussion

Our cohort is one of the largest to investigate the management of PTH with nebulized TXA. Since the children with more severe PTH receive TXA, these findings support nebulized TXA. TXA administration increased over time following pathway implementation, accompanied by evolving return-to-OR rates. These fluctuations likely reflect varying protocol familiarity and implementation, such as reserving TXA for severe bleeds. Early and standardized administration may offer greater benefit. Further analysis to clarify TXA's impact on reoperation rates, therefore, should be conducted.