EVMS EM Critical Review Form
Therapy Articles

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Citation: Zahed R et al, **Topical Tranexamic Acid Compared With Anterior Nasal Packing for Treatment of Epistaxis in Patients Taking Antiplatelet Drugs: Randomized Controlled Trial. Acad Emerg Med. 2018 Mar;25(3):261-266. 9.**

Objectives: "To evaluate efficacy of topical TXA compared to anterior nasal packing for epistaxis in patients taking antiplatelet medications aspirin, clopidogrel, or both) who presented to the emergency department (ED)."

Methodology: A randomized, parallel-group clinical trial was conducted at two EDs in Iran. A total of 124 participants were randomized to receive topical TXA (500 mg in 5 mL) or ANP, 62 patients per group.

Guide		Comments
I.	**Are the results valid?**	
A.	**Did experimental and control groups begin the study with a similar prognosis (answer the questions posed below)**	
1.	Were patients randomized?	Yes, enrolled patients were randomized in blocks of two, four and six. to either have cotton pledget soaked in TXA or pledget soaked in lidocaine with epinephrine followed pledgets covered with tetracycline ointment.
2.	Was randomization concealed (blinded)?	Randomization occurred using identical boxes containing the different pledgets, however due to differences in number of pledgets as well as appearance of pledgets, it was not possible to blind patients or physicians.
3.	Were patients analyzed in the groups to which they were randomized?	Yes. A total of 124 eligible patients were randomized and included in the intention-to-treat analysis therefore, patients were analyzed in the groups to which they were randomized.
4.	Were patients in the treatment and control groups similar with respect to known prognostic factors?	Overall, the treatment and control groups were very similar, even in the antiplatelet medications they were taking. The TXA group did have significantly more patients with a history of epistaxis, potentially leading to an underestimation of the effect. 85.4% TXA vs. 33.8% ANP
B.	**Did experimental and control groups retain a similar prognosis after the study started (answer the questions posed below)**	

1.	Were patients aware of group allocation?	Patients were aware of group allocation due to the differences in number of pledgets.
2.	Were clinicians aware of group allocation?	Clinicians were also aware of the group allocation due to differences in the pledgets. This may predispose to performance bias
3.	Were outcome assessors aware of group allocation?	Yes. Those responsible for data analysis were not the same as those performing the treatments and so they were blinded to group allocation.
4.	Was follow-up complete?	Follow-up was performed at 24 hours and one week after intervention. Impressively, no patients were lost to follow-up, although 1 week is a relatively short period in which to perform follow-up.
II.	**What are the results (answer the questions posed below)?**	
1.	How large was the treatment effect?	The treatment effect was significant: See table below - 44% increase in percent of patients with bleeding stopped at less than 10 minutes (NNT = 2.2 patients)., -84% increase in discharge time less than 2 hours -16% decrease in re-bleeding in 1 week. No significant difference in complications or re-bleeding in 24 hours. Patient satisfaction was significantly greater in the TXA group (median = 9; IQR = 8–9.25) compared with the ANP group (median = 4; IQR = 3–5; $p < 0.001$).
2.	How precise was the estimate of the treatment effect?	The estimate of treatment effect appears to be quite precise as is reflected in the CI's listed below.
III.	**Can I apply the results to patient care (answer the questions posed below)?**	
1.	Were the study patients similar to my patient?	Possibly. Non-US study. Patient population similar to ours in that they studied ED patients at an urban center currently taking aspirin or Plavix. They did not include presenting BP or history of HTN in their patient demographic data which seems to be a common issue in our patient population. Epistaxis is a very common complaint in our ED and likely the majority of our patients are either on aspirin, Plavix, or both.
2.	Were all clinically important outcomes considered?	The primary outcomes certainly seemed clinically relevant with measurements of re-bleeding at different intervals as well as discharge times. I did also like that patient satisfaction was included as an outcome as patients typically do not tolerate anterior packing well and this is an

		important factor. I would have liked to have seen more discussion of complications encountered as this was only briefly touched upon with the mention of nausea/vomiting and "treatment intolerance" without further explanation. Importantly, there were a higher number of complications with TXA, although this did not reach statistical significance.
3.	Are the likely treatment benefits worth the potential harm and costs?	Probably. Overall, I do feel that the treatment benefits are worth the potential harm and costs given the large effect size when comparing TXA versus anterior packing with bleeding stop time and discharge time. There do not seem to be any associated increase in harm or cost, although I would have liked further explanation as to what was deemed a "complication".

Limitations:

Limited scope of patients to which the data applies. Only patient's on antiplatelet medications were studied with exclusion of those that are anticoagulated or on no medications. Additionally, those with a visible bleeding vessel or what was considered posterior epistaxis were excluded, further limiting the population the data applies to.
Despite this, there does seem to be limited downside to attempting TXA in these patients given the large effect when compared to anterior packing.
Another important limitation when considering the practice in our ED's is that TXA was compared to packing with multiple pledgets covered in tetracycline ointment. This is certainly not our standard practice when it comes to anterior packing, where rhino rockets or merocel are much more commonly used by ED providers. These methods could be significantly more effective than the simple cotton pledgets used as a control in this study, leading to an overestimation of the effect of TXA in this study when compared to our current standard of care.
In addition, experience of provider likely contributes to success with packing and this study's clinicians were PGY2 and PGY3 emergency medicine residents who participated in a 2-hour workshop

Effects of Tranexamic Acid Compared With Anterior Nasal Packing on Efficacy Variables

	Anterior Nasal Packing	Tranexamic Acid	Percent Difference (95% CI)	p-value
Bleeding stop time ≤ 10 min (%)	29	73	44 (26 to 57)	<0.001
Bleeding stop time (min), median [IQR]	15 [10–20]	10 [10–15]		<0.001
Discharge time ≤ 2 h (%)	13	97	84 (71 to 91)	<0.001
Complications in the ED (%)	5	10	5 (–5 to 15)	0.299
Rebleeding in the first 24 h (%)	10	5	–5 (–15 to 5)	0.299
Rebleeding from procedure until 1 week (%)	21	5	–16 (–28 to –4)	0.007

Bottom Line:

Overall, this study shows that TXA is another tool we can use when treating epistaxis in the ED. We often jump to anterior packing when simple afrin and pressure do not resolve bleeding, but TXA could be a less invasive and more effective option. While this study demonstrates an effect on a limited group of patients and does not compare to our current anterior packing methods, the limited negative effects of TXA as well as the drawbacks inherent to nasal packing make it a worthwhile option to attempt when pressure does not alleviate bleeding.