XXVIII IFSO World Congress
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Effectiveness of Prophylactic Doses of Tranexamic Acid in Reducing Hemorrhagic Events in Metabolic Bariatric Surgery: A Systematic Review and Meta-Analysis

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Nothing to disclose

Background

- **Post-op bleeding:** one of the **main complications** → ↑ morbidity, length of stay (LOS), costs.
- **Sleeve gastrectomy:** higher **staple line bleeding** risk
- **TXA:** inexpensive, antifibrinolytic, effective in trauma & obstetrics.
- ***Gap: Effectiveness in bariatric surgery not well established.***

How does TXA work?

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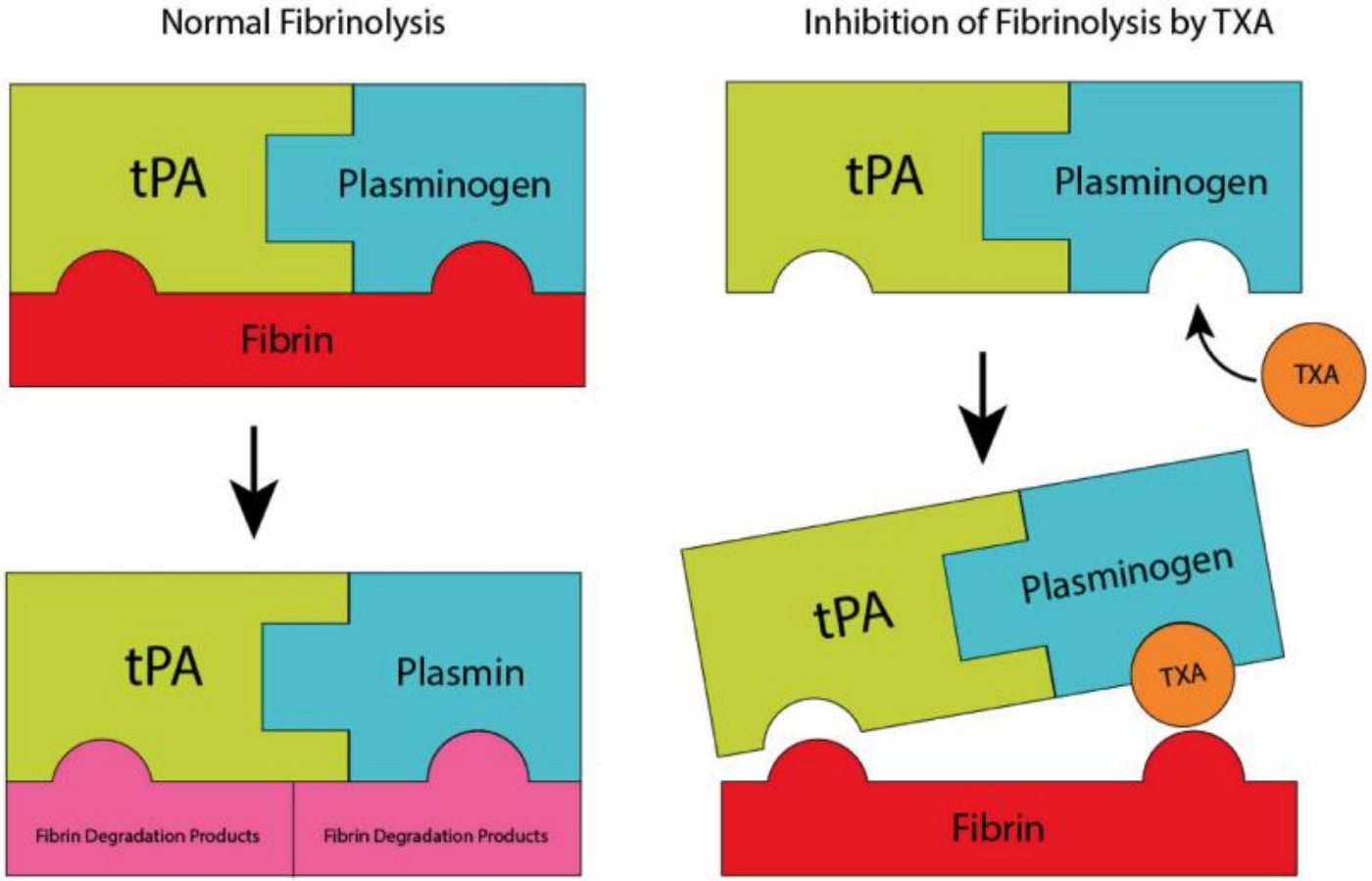
- Synthetic lysine analogue → Blocks plasminogen binding
- **Prevents fibrinolysis → Reduces bleeding**



Source: Wu et al. (2020), "Computational model of tranexamic acid on urokinase mediated fibrinolysis," PLoS ONE

Aim

- Does **prophylactic TXA** reduce **bleeding** and improve **perioperative outcomes** in bariatric surgery?

- **Outcomes:** Hb change, operative time, length of stay.

Methods

- **Design**: Systematic review + meta-analysis (PRISMA, PROSPERO).
- **Databases**: PubMed, Embase, Cochrane (up to Nov 2024).
- **Studies**: 9 (2 RCTs, 7 observational); N = 1,956.
- **Analysis**: Random-effects; Sensitivity: leave-one-out; Risk of bias: Newcastle-Ottawa & RoB2

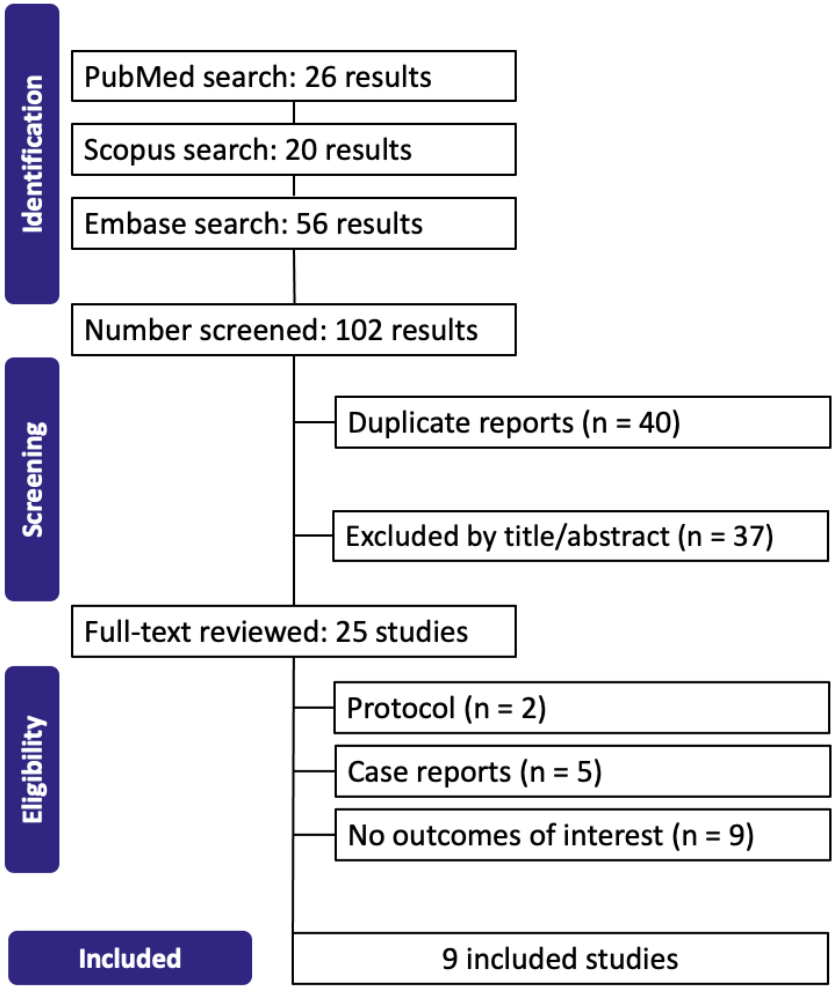


Figure 1. PRISMA flow diagram of study screening and selection

Key results

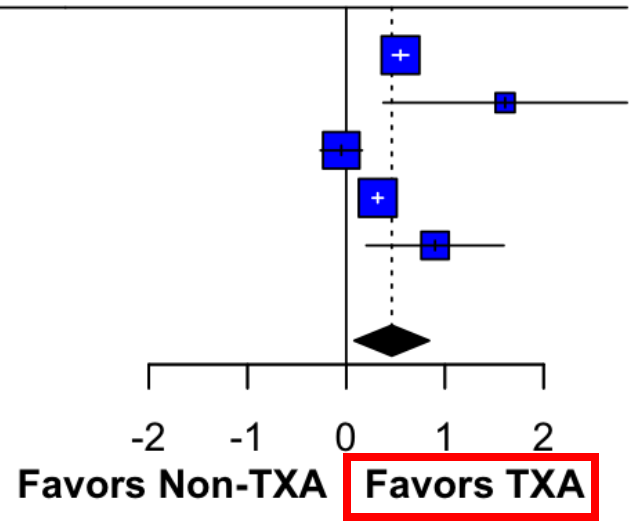
- **Less blood loss** → Hb drop reduced (+0.46 g/dL).
- **Shorter operative time** → – 9.7 minutes.
- **Shorter hospital stay** → – 0.19 days (~5 h).
- **No** increase in **thrombosis**

Forest Plot: Hemoglobin

- TXA: **smaller Hb drop** (MD +0.46 g/dL; p=0.02).
- Fewer transfusions/interventions.
- Robust despite heterogeneity.

Studies	TXA Mean	TXA SD	TXA Total	Non-TXA Mean	Non-TXA SD	Non-TXA Total	Weight	MD	95% CI
Brito 2022	0.55	0.20	30	0.00	0.10	31	26.8%	0.55	[0.47; 0.63]
Hart 2023	-3.55	3.10	49	-5.16	3.23	52	7.0%	1.61	[0.38; 2.84]
Lech 2022	-1.17	0.90	157	-1.12	1.00	157	25.0%	-0.05	[-0.26; 0.16]
Lo 2024	-1.37	0.17	233	-1.69	0.16	42	27.0%	0.32	[0.27; 0.37]
Sermet 2023	-1.30	2.25	119	-2.20	2.20	58	14.2%	0.90	[0.20; 1.60]
Total (95% CI)			**588**			**340**	**100.0%**	**0.46**	**[0.08; 0.84]**

Heterogeneity: $Tau^2 = 0.1382$; $Chi^2 = 44.38$, df = 4 ($P < 0.01$); $I^2 = 91\%$
Test for overall effect: Z = 2.38 (P = 0.02)



Forest Plot: Operative time

- TXA: **–9.7 minutes** (p<0.01).
- Likely reflects **fewer bleeding interventions intra-operative**

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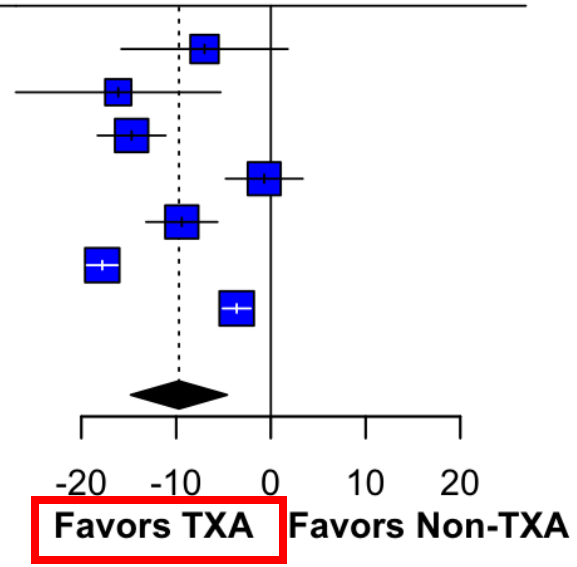
Studies	TXA Mean	TXA SD	TXA Total	Non-TXA Mean	Non-TXA SD	Non-TXA Total	Weight	MD	95% CI
Brito 2022	85.00	17.00	30	92.00	18.00	31	11.2%	-7.00	[-15.78; 1.78]
Chakravartty 2016	67.05	12.73	25	83.16	24.44	25	9.6%	-16.11	[-26.91; -5.31]
Deganutti 2024	74.60	19.90	260	89.30	21.40	250	15.5%	-14.70	[-18.29; -11.11]
Hart 2023	34.10	11.80	49	34.80	8.70	52	15.2%	-0.70	[-4.76; 3.36]
Lech 2022	53.70	14.50	157	63.10	19.20	157	15.4%	-9.40	[-13.16; -5.64]
Lo 2024	76.91	5.69	233	94.71	4.83	42	16.5%	-17.80	[-19.43; -16.16]
Sermet 2023	47.70	5.06	119	51.30	4.50	58	16.6%	-3.60	[-5.08; -2.13]
Total (95% CI)			**873**			**615**	**100.0%**	**-9.70**	**[-14.79; -4.61]**

Heterogeneity: $Tau^2 = 40.1351$; $Chi^2 = 188.45$, df = 6 (P < 0.01); $I^2 = 97\%$
Test for overall effect: Z = -3.73 (P < 0.01)



Forest Plot: Length of Stay

- TXA: **– 0.19 days (~5 hours)** (p<0.01).
- Clinically relevant: **quicker recovery.**

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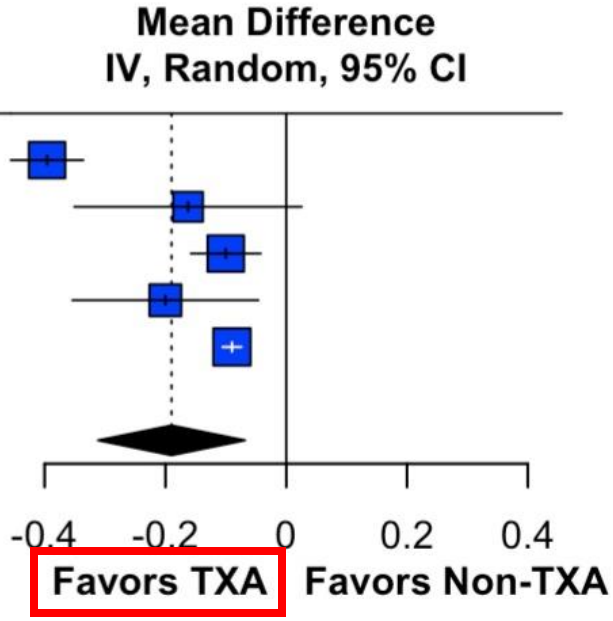
Studies	TXA Mean	TXA SD	TXA Total	Non-TXA Mean	Non-TXA SD	Non-TXA Total	Weight	MD	95% CI
Deganutti 2024	1.00	0.03	260	1.40	0.48	250	22.2%	-0.40	[-0.46; -0.34]
Hart 2023	1.28	0.26	49	1.45	0.64	52	15.0%	-0.16	[-0.35; 0.03]
Hossain 2024	2.00	0.09	226	2.10	0.40	192	22.3%	-0.10	[-0.16; -0.04]
Lech 2022	2.10	0.40	157	2.30	0.90	157	17.1%	-0.20	[-0.35; -0.05]
Lo 2024	0.97	0.05	233	1.06	0.05	42	23.4%	-0.09	[-0.11; -0.07]
Total (95% CI)			**925**			**693**	**100.0%**	**-0.19**	**[-0.31; -0.07]**

Heterogeneity: $Tau^2 = 0.0164$; $Chi^2 = 95.19$, df = 4 (P < 0.0001); $I^2 = 95.8\%$
Test for overall effect: Z = -3.06 (P < 0.01)



Discussion

- **TXA: Safe, cheap, effective adjunct.**
- **Improves Hb loss, operative time, length of stay.**
- **No evidence of thrombosis.**
- Faster, systemic, **cost-effective** vs. staple line reinforcement.
- **Heterogeneity in bleeding definitions** → need standardized RCTs.

Takeaway message

*Prophylactic TXA **improves perioperative outcomes** in bariatric surgery – with **no thrombotic** signal.*

Q&A

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Thank you!

Happy to take questions.

“Given its safety, efficacy, and cost-effectiveness, should TXA be routinely implemented in bariatric surgery protocols?”

Scan to access the poster