

Efficacy and Safety of Tranexamic Acid in Bariatric Surgery

A systematic review and meta-analysis

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Disclosures

I have no conflicts of interest to declare

Background

- Bleeding after bariatric surgery: 1.5-3%
- 3% require reoperation for hemorrhage
- Prophylactic reinforcement strategies: costly, variable efficacy
- Tranexamic acid (TXA) = antifibrinolytic agent
- Effective in other surgical fields, limited bariatric evidence
- Unique profile of obese populations (hypercoagulable but also prone to bleeding) warrants dedicated study
- Last SR Mar 2025, n=1121 → 4 additional studies

Objective

Determine the safety and efficacy of prophylactic TXA use in bariatric surgery.

Outcomes of interest:

- Efficacy: Bleeding events, Transfusion rate, Hemoglobin reduction, LOS, operative time
- Safety: VTE, PE, MI, Stroke, MINS

Methods

- PRISMA guidelines, registered PROSPERO protocol
- Databases: Medline, Embase, Cochrane from inception to April 2025
- Inclusion: comparative studies that compared prophylactic intravenous TXA versus non-use among bariatric surgery patients

Methods

- Dichotomous outcomes – Mantel Haensel method
- Continuous outcomes – Inverse variance model
- Random effects models

Results - included studies



Included studies

First author, year	N	Study Design	Type of Surgery
Bieniaszewski 2025	238	RCT	Sleeve
Park/Devereaux 2022/2025	76	RCT	Sleeve/RYGB
Lo 2024	275	Retrospective cohort	RYGB
Hossain 2024	418	Retrospective cohort	Sleeve
Almalki 2024	200	Retrospective cohort	Sleeve
't Hart 2023	101	RCT	Sleeve
Sermet 2023	177	RCT	Sleeve
Lech 2022	314	Retrospective cohort	Sleeve
Brito 2022	61	Prospective Cohort	Sleeve
Alhomoud 2016	50	RCT	Sleeve
Chakravartty 2016	50	Prospective Cohort	Sleeve

Included studies

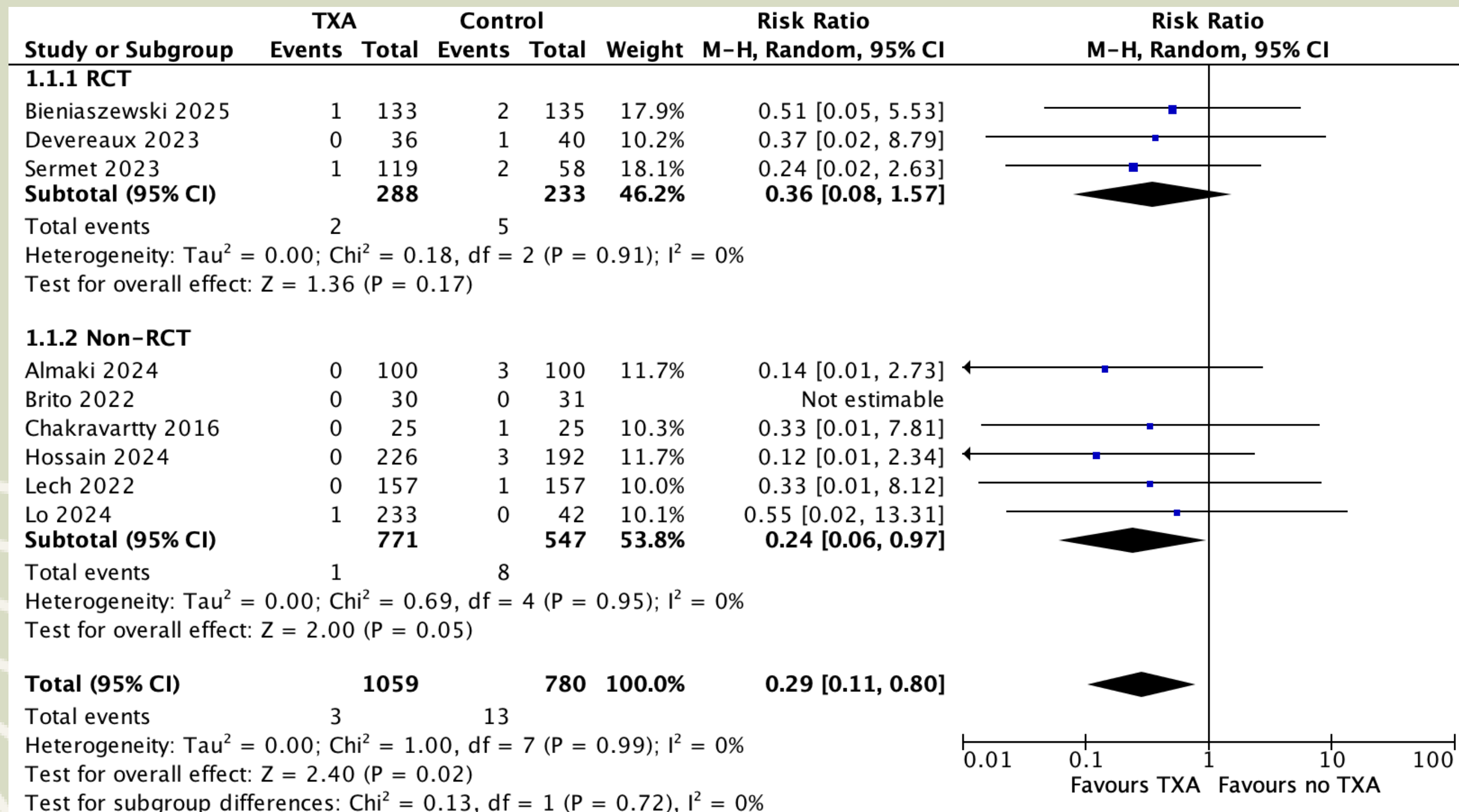
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Included: 11 studies, 1990 patients
 5 RCT, 6 cohort studies
 78% female, mean age 41
 Mostly sleeve gastrectomy, some RYGB
 TXA dosing: typically 1-2g IV total

Results: Transfusion

0.3% vs. 1.7%,
RR 0.29 (0.11-0.80),
p=0.02, I²=0%

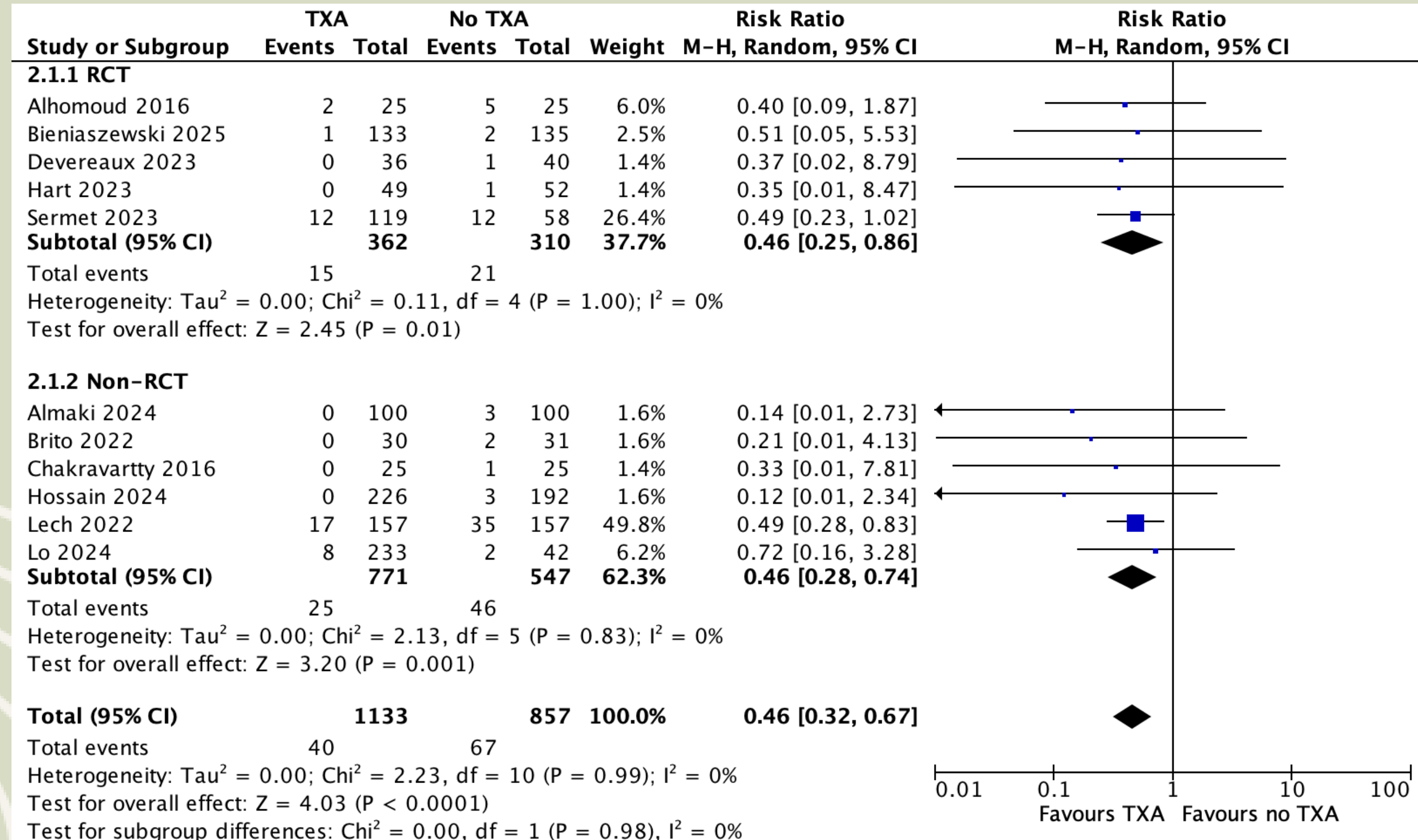
No subgroup effects
by study design
p=0.90, I²=0%



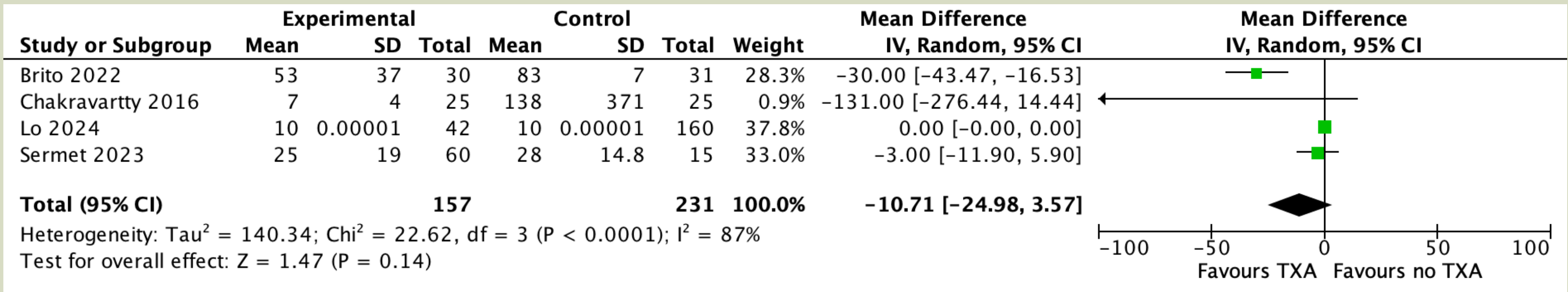
*bleeding episode associated with hemodynamic changes, significant hemoglobin drop or requiring an intervention

Results: Bleeding Event

3.5% vs. 7.8%,
RR 0.46 (0.32-0.67),
p<0.0001, I²=0%



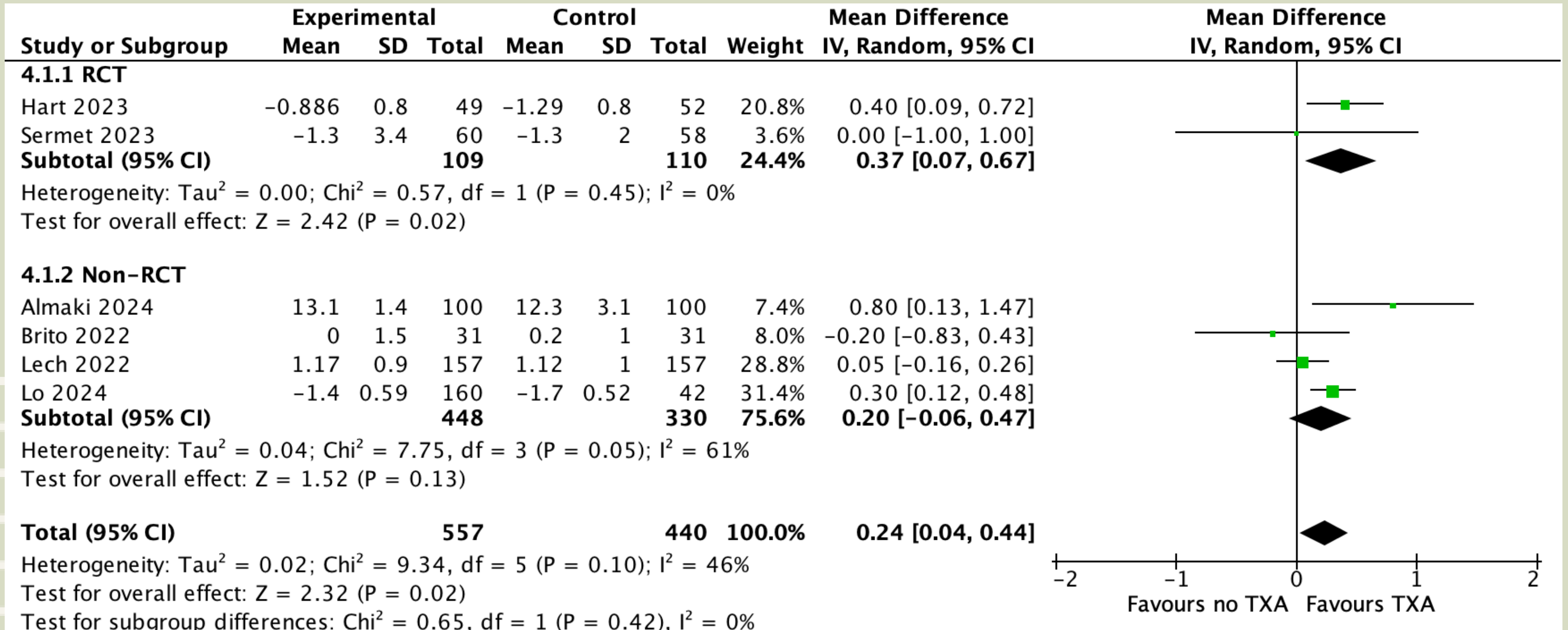
Results: Intraoperative blood loss



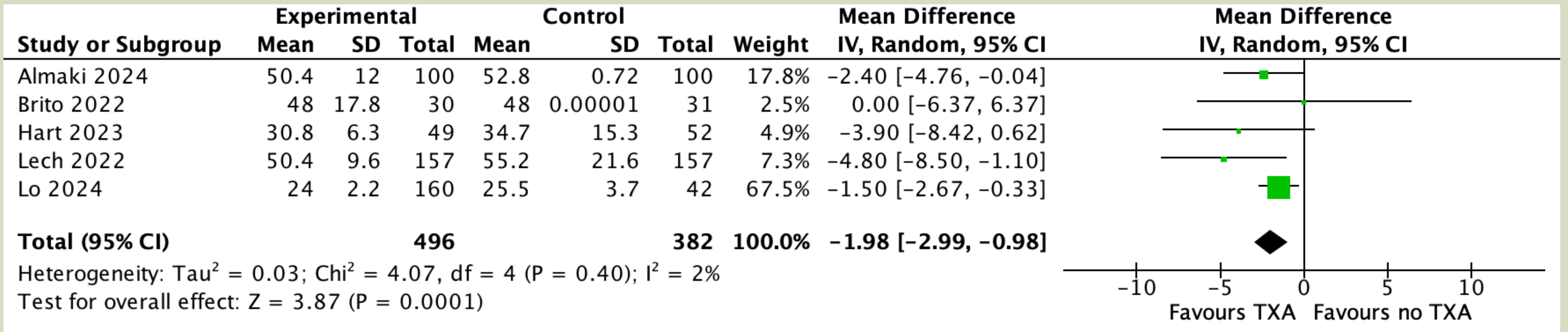
Mean difference -10.7mL (-25.0 to 3.6),
 $p=0.14$, $I^2=87\%$

Results: Change in hgb

MD 0.24 g/dL (0.04 to 0.44)
P=0.02, I²=0%



Results: length of stay (hours)

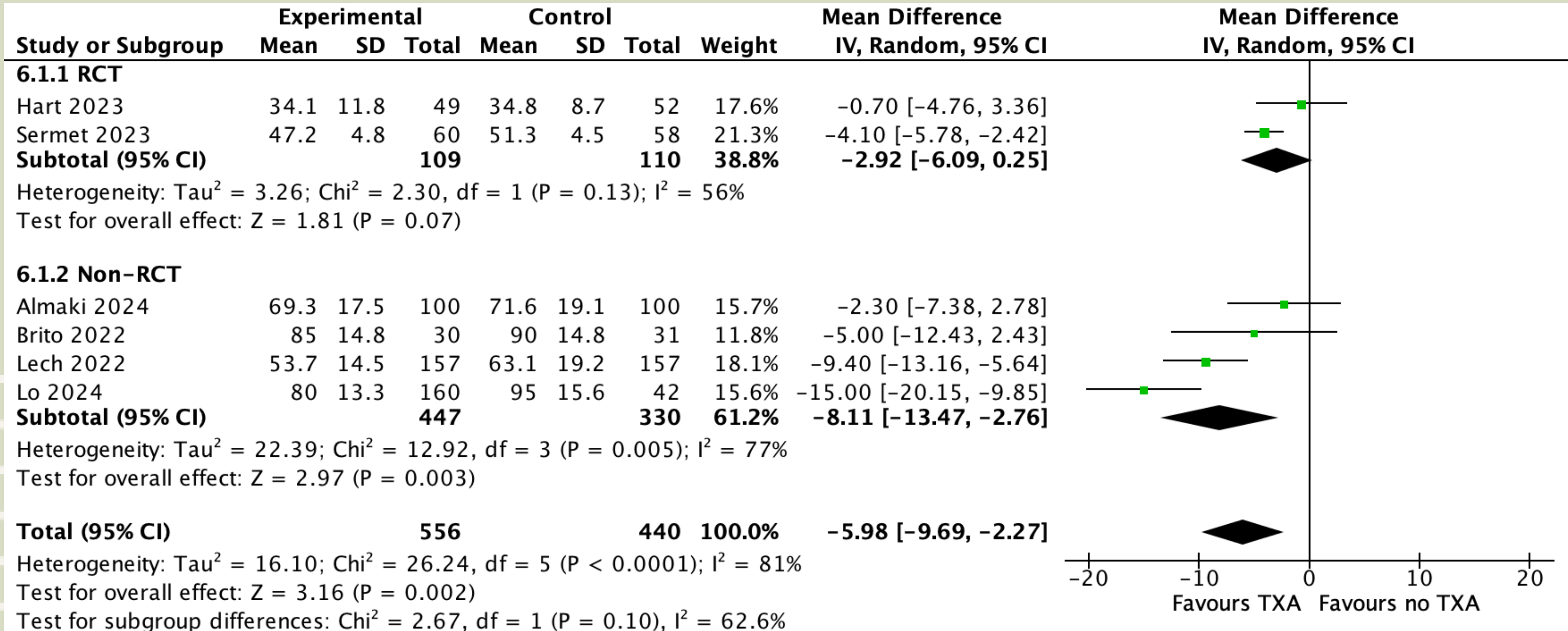


MD -1.98 hours (-2.99 to -0.98)

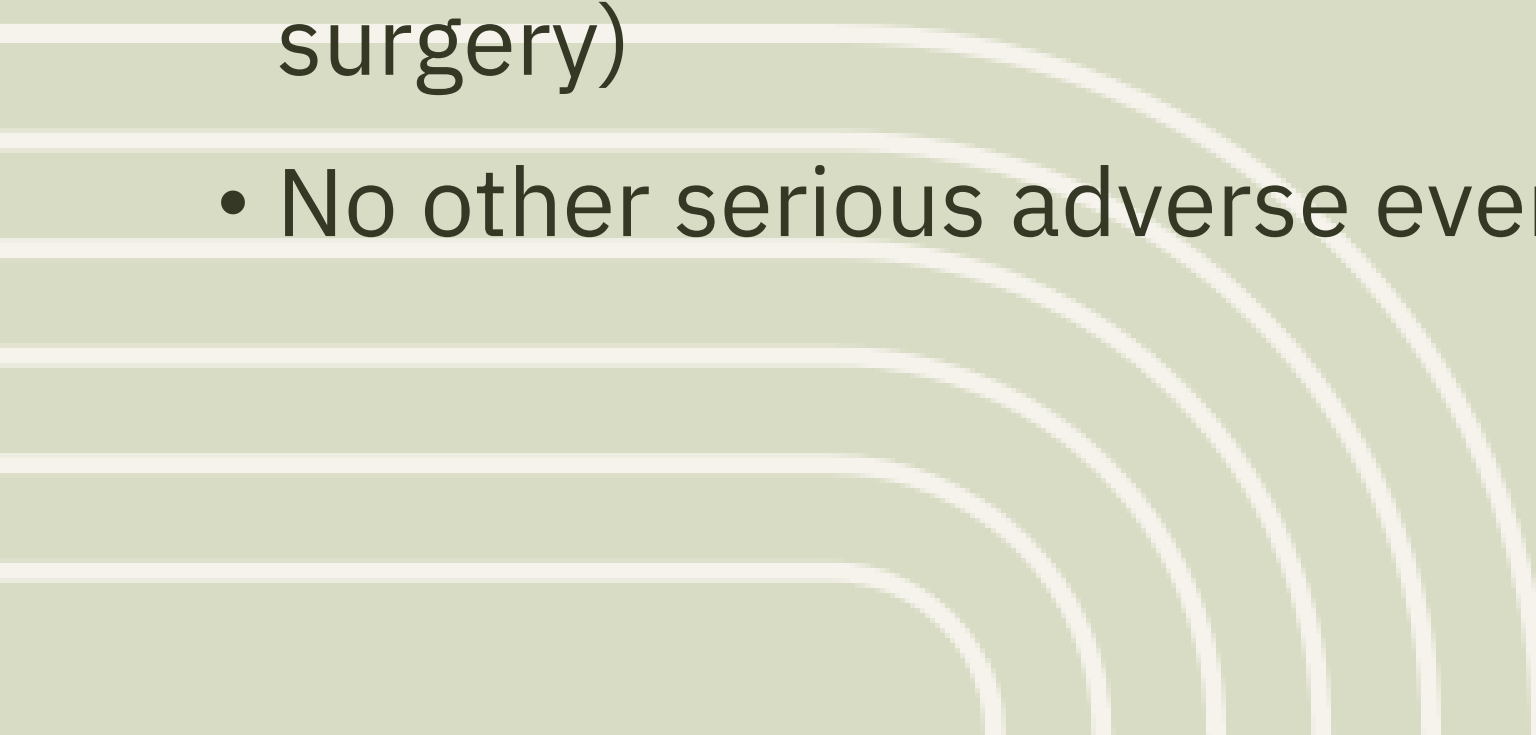
$P < 0.001$, $I^2 = 2\%$

Results: operative time (mins)

MD -5.98 minutes (-9.69 to -2.27), P=0.002, I²=81%



Results: Safety

- Across 11 studies, 1990 patients, no thromboembolic events reported in either the TXA or control groups
 - POISE-3 trial looked at a composite safety outcome where 2/36 (5.6%) patients in TXA group and 3/40 (7.5%) patients in the control group experienced a safety event (MINS = myocardial injury after non cardiac surgery)
 - No other serious adverse events reported
- 

Discussion and Implications

- TXA reduces transfusion rate, bleeding events, hemoglobin drop, length of stay, operative time
- No increased thromboembolic risk
- Increased sample size from last systematic review (1121 → 1990), increasing precision of estimates
- cost-effective, easy to administer compared to other options (staple line enforcement with clips, oversewing, which requires anticipation of bleeding sites)

Conclusion

- TXA is safe and effective in bariatric surgery
- Should be considered for routine prophylactic use
- Future: high quality RCTs to define optimal regimen/dosing

Thank you for your attention!

Questions?



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