



The Current State of Tranexamic Acid in Breast Reconstruction: A Systematic Review and Meta-Analysis

Mount
Sinai

Ethan Fung BS, Maxwell Godek BS, Jacquelyn M Roth BA, Bernice Z Yu DO,
Keisha E Montalmant MD MPH, Peter W Henderson MD MBA FACS

Division of Plastic and Reconstructive Surgery
Icahn School of Medicine at Mount Sinai (New York, NY)

1. BACKGROUND

- Tranexamic acid (TXA) is an antifibrinolytic, aiding in hemostasis
- Increasing use in multiple surgical settings, including breast reconstruction
- Recent studies have reported on its impact – no recent analysis of results

2. OBJECTIVE

To critically analyze literature on TXA use in patients undergoing mastectomy with/without breast reconstruction

3. METHODS

- 5 databases queried for articles involving TXA in breast surgery, narrowed down to mastectomy with/without reconstruction
- Outcomes assessed: hematoma, seroma, surgical site infections, drain output, drain duration
- Meta-analysis reported odds ratios (OR) and mean differences (MD) via Review Manager

4. RESULTS

- 13 studies included (2,115 pts) (Fig. 1)
TXA cohort = 43.8% (926)
No TXA (control) = 56.2% (1,189)
- Types of study:
 - RCT = 4
 - Prospective studies = 5
 - Retrospective studies = 4
- Surgical intervention
 - Mastectomy alone = 9
 - Mastectomy + reconstruction = 4
- Intraoperative TXA administration:
 - Topical TXA = 38.1% (294)
 - IV TXA = 61.9% (478)

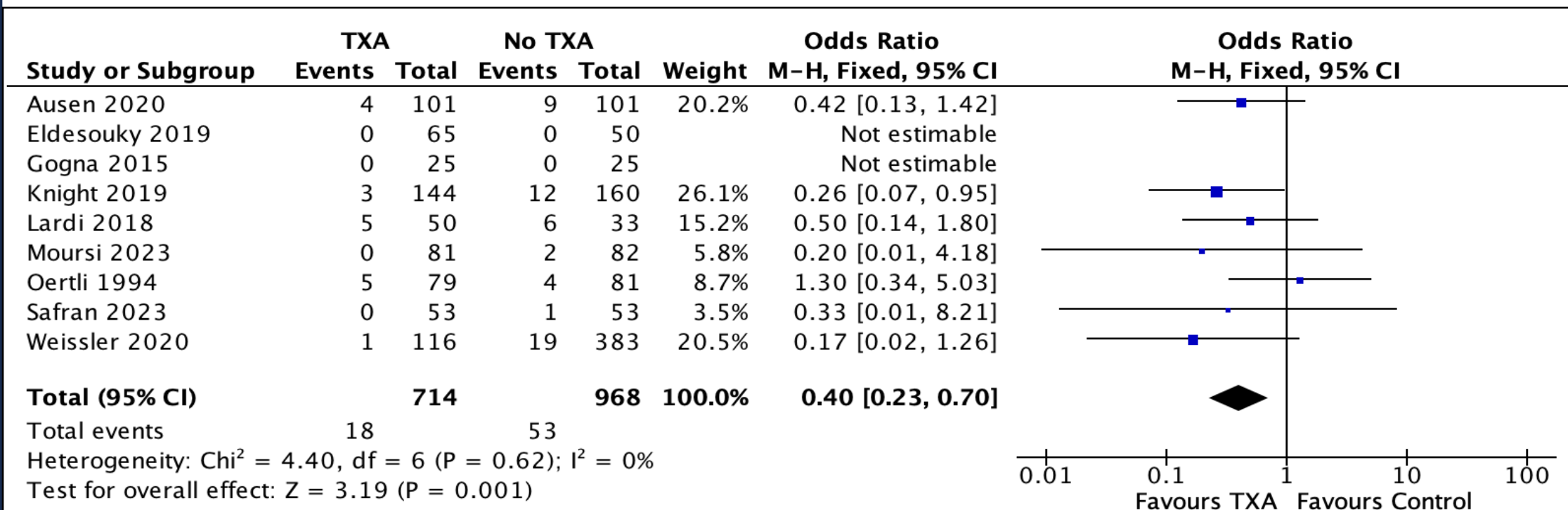


Figure 2: Pooled analysis for postoperative hematoma

- TXA cohort had 60% decreased odds of postoperative hematoma formation (Fig. 2) (OR: 0.40; 95% CI [0.23-0.70], P < .01)**

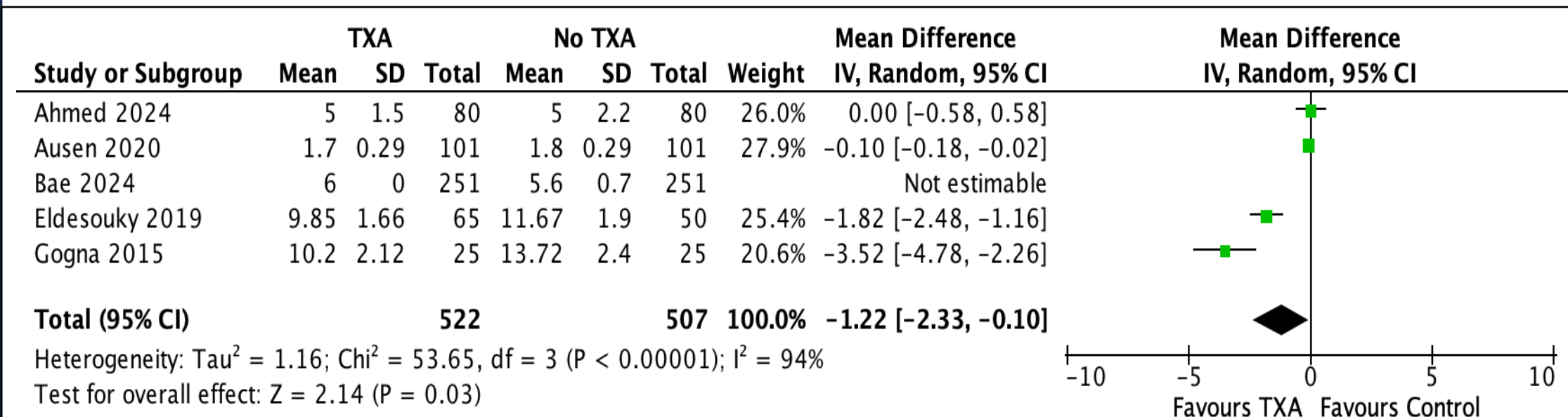


Figure 4: Pooled analysis for drain duration

Identification Of Studies

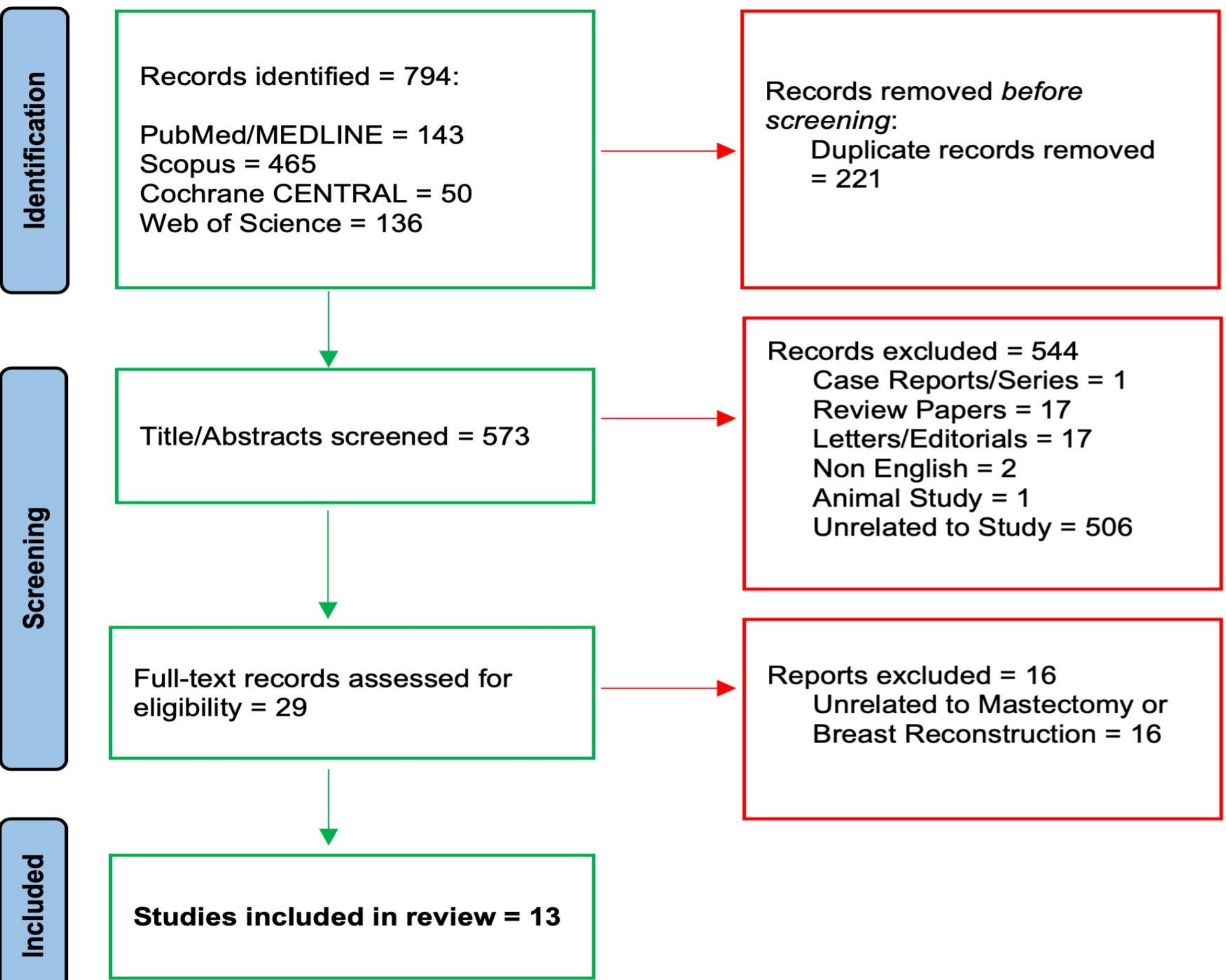


Figure 1: PRISMA identification of studies

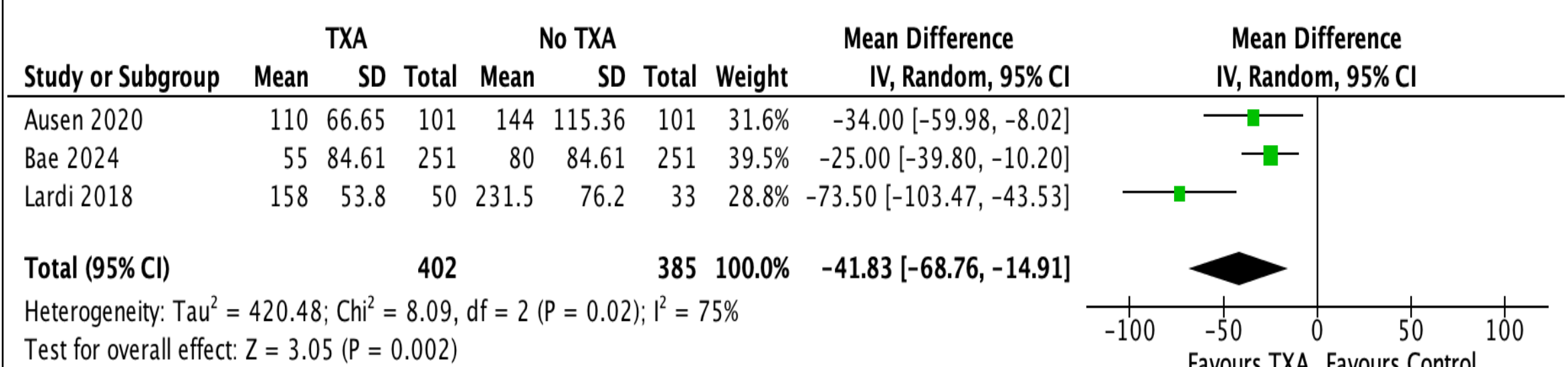


Figure 3: Pooled analysis for 24-hour drain output

- TXA cohort had drains removed 1.2 days earlier (Fig. 4) and 41.8mL less drain output at 24 hr (Fig. 3)**
(MD -1.2; 95% CI [-2.3 to -0.1], P = .03 and MD -41.8; 95% CI [-68.7 to -14.9], P = .002)

5. CONCLUSION

TXA safely reduces hematoma formation, drain duration, and 24-hour drain output without affecting seroma or SSI rates in mastectomy with/without breast reconstruction

6. CLINICAL RELEVANCE

- Largest study to date reviewing the role of TXA in this procedure
- No differences between study type, reconstruction type, or route of TXA administration
 - Potential for future studies
- 4 studies analyzed thromboembolic events – 0 in the TXA cohort, 1 PE in the control
- Limitations:
 - Heterogenous data
 - Variation in primary outcome definitions
 - Moderate bias among articles