Role of Topical Tranexamic Acid in Reducing Closed-tube Drainage in Breast Surgery: A Meta-Analysis

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INTRODUCTION

Topical Tranexamic acid (TXA) is a haemostatic agent used in trauma, thoracovascular and orthopaedic surgery. Its role in breast surgery is not yet established

OBJECTIVE: To compare the mean volume of drainage after application of topical TXA vs. placebo in patients who underwent breast surgery.

METHODOLOGY

DATA SOURCES: Systematic search of randomized controlled trials using PubMed, OVID and Google Scholar. Search terms used were "topical tranexamic acid", "breast surgery" OR "mastectomy" OR "mammoplasty" were included. Outcome assessed was mean drainage volume. Outcome assessed was

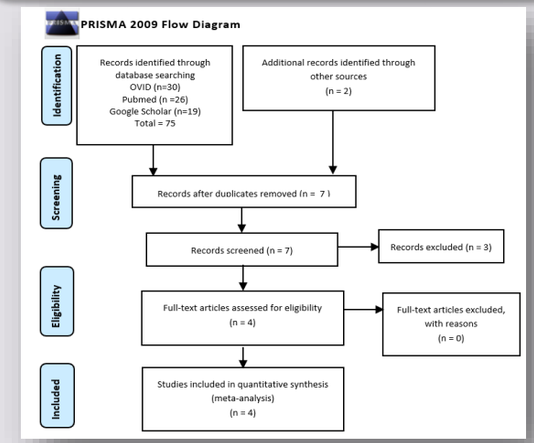

Figure 1: PRISMA Flow Diagram

RESULTS

DATA EXTRACTION: Four studies met the inclusion criteria with a total of 372 patients. STATA software was used for meta-analysis for fixed effect model.

DATA SYNTHESIS: The pooled mean difference was 0.80 (95% CI, -1.00, -0.59), test of SMD = 0 with p-value = 0.000 favors the topical TXA over placebo in reduced drainage.

Study		Procedure	N	Intervention	Primary Outcome	Secondary Outcome
Ausen 2015	Double Blinded placebo-controlled	Reduction Mammoplasty	30	20 ml of 25 mg/ml tranexamic acid.	Drain fluid production in the first 24 h after surgery	postoperative pain
Pathak 2016	Double Blinded placebo-controlled	Reduction Mammoplasty	25	20 ml of 25 mg/ml tranexamic acid	Drain fluid production in the first 24 h after surgery	Post-operative pain
Eldesouky 2019	Prospective Non-Randomized trial	Modified Radical Mastectomy	115	20 ml of 25 mg/ml tranexamic acid	Daily Drainage Fluid Collection (up to 14 days)	Necrosis of the breast skin flap, seroma, hematoma, and infection of the surgical wound
Ausen 2019	Double Blinded placebo-controlled	Mastectomy with or without ALND	202	20 ml of 25 mg/ml tranexamic acid	Drain fluid production in the first 24 h after surgery	Total drain production and drain time, early hematoma, seroma formation.

Table 1:. Characteristics of included Studies

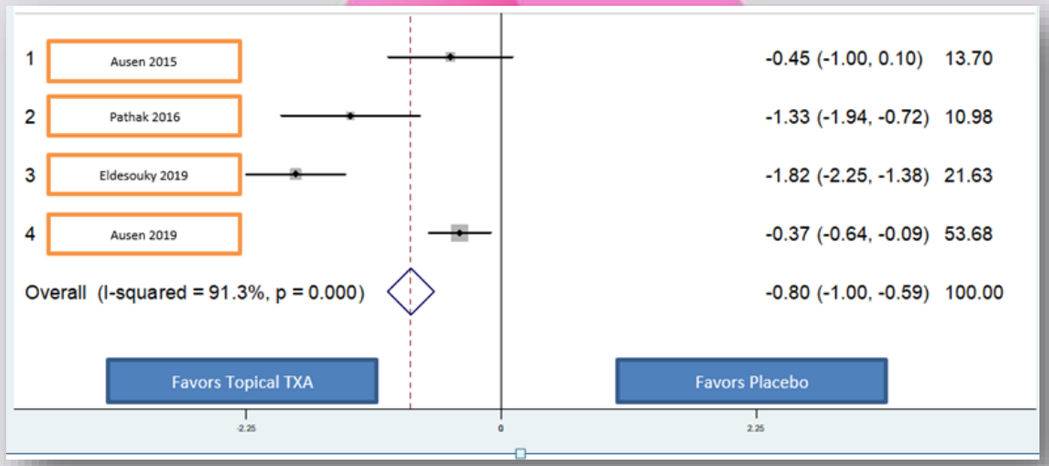

Fig 2a. Forest Plot of Mean Drainage Volume

Study	SMD	(95%Conf. Interval)	Weight
Ausen 2015	-0.446	-0.997; 0.104	13.70
Pathak 2016	-1.330	-1.945; -0.715	10.98
Eldesouky 2019	-1.815	-2.254; -1.377	21.63
Ausen 2019	-0.366	-0.644;-0.088	53.68

Heterogeneity chi-squared = 34.43 (d.f. = 3) p = 0.000
I-squared (variation in SMD attributable to heterogeneity) = 91.3%
Test of SMD=0: z= 7.66 p = 0.000

Fig 2b. Standard Mean Difference of TX and

CONCLUSION

The use of topical tranexamic acid can **significantly reduce the amount of drainage** of patients who underwent mastectomy and mammoplasty, based on pooled analysis of three randomized control trials and one prospective trial. In theory, less drainage may result in less seroma formation, infection and early removal of drains.

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