Efficacy and Safety of Topical Tranexamic Acid in Patients With Hip Fractures Undergoing Surgical Treatment: Meta-Analysis of Randomized Controlled Trials

*Saran Tantavisut, MD; **Sanzhar Artykbay, MD**; Chavarin Amares, MD; Paweena Susantitaphong, MD*

Purpose: Hip fractures are a major health concern, especially among older adults. Surgical treatment is standard, but it can lead to significant blood loss and complications. Tranexamic acid (TXA) has shown promise in reducing bleeding during surgery. This study focuses on adult patients with hip fractures, comparing the effects of topical TXA with systemic TXA and placebo. Key outcomes include total blood loss, drainage volume, blood transfusion needs, complications, hospital stay, and mortality.

Methods: PubMed, Scopus, and Google were searched until November 2023 to find randomized controlled trials (RCTs) comparing topical TXA with placebo and IV TXA for hip fracture surgery. Safety and efficacy outcomes were evaluated. Two reviewers independently assessed study quality with the Cochrane-recommended risk of bias tool. Summary and intervention effectiveness analysis were conducted using RevMan 5.4 software.

Results: Nine RCTs with 1024 patients assessed topical TXA in hip fracture surgery. Topical TXA significantly reduced hemoglobin loss (mean difference [MD] = 1.004, 95% confidence interval [CI] 0.096 to 1.911; P = 0.03) and transfused blood units (relative risk [RR] = 0.640, 95% CI 0.487 to 0.841; P = 0.001) versus placebo, but there was no significant difference in hematocrit loss, total blood loss, deep vein thrombosis (DVT) rates, mortality, hospital stays, or surgery duration compared to placebo. Moreover, no significant differences were found between topical and IV TXA in transfusion rates, total blood loss, DVT rates, or surgery duration.

Conclusion: The available evidence suggests that local TXA can significantly reduce hemoglobin loss, and the number of transfused blood units without the risk of DVT, compared to placebo. Furthermore, local TXA demonstrated comparable effectiveness and safety to IV TXA following hip surgery.