Paper #10

Topical Tranexamic Acid Increases Early Postoperative Pain After Total Hip Arthroplasty ◊

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Introduction: Tranexamic acid (TXA) decreases blood loss and therefore may minimize painful postoperative hematomas after total hip arthroplasty (THA). This study evaluated early postoperative pain and blood loss in THA patients with and without the use of topical TXA.

Methods: A consecutive series of 174 THAs performed without TXA were compared to a consecutive series of 156 THAs performed with topical TXA. Procedures were performed by a single surgeon using identical perioperative medical and pain control protocols. Inpatient pain scores (VAS 0 to 10), opioid consumption (morphine equivalents, Meq), time to first opioid, and drop in hemoglobin (Hgb) were evaluated. Univariate analysis of topical TXA and 20 potential covariates of pain and blood loss were performed, followed by logistic and linear regression with $p \leq 0.250$.

Results: In multivariate analysis, THAs with TXA were independently associated with less hemoglobin loss than THAs without TXA (2.98 g/dL vs. 3.39 g/dL; p=0.001). Topical TXA use was associated with greater pain (3.41 vs. 1.71, p=0.001) and increased opioid consumption (44.2 vs. 24.2 Meqs, p<0.001) during the first 24 hours, and decreased time to first opioid (182 vs. 422 minutes, p=0.008). 33% of patients receiving TXA compared to 9% without TXA reported moderate-severe pain (p=0.021). Preoperative narcotic use (p=0.055 to 0.008) and fentanyl rather than morphine spinals (p=0.034 to 0.008) also independently increased postoperative pain.

Conclusions: Findings continue to support TXA in minimizing blood loss in THA; however, increased early postoperative pain with topical TXA was an unexpected discovery. This finding is reinforced by TXA affecting GABA and glycine receptors in the spinal dorsal horn, and TXA causing periarticular cell death in vivo at clinical concentrations. We currently avoid topical TXA use clinically, particularly in the outpatient early discharge setting, and are exploring whether similar findings are observed with intravenous TXA.

◊ The FDA has not approved tranexamic acid for use in orthopaedics.