

Combined Intra-articular and Intravenous Tranexamic Acid Significantly reduce Blood Loss in Knee Arthroplasty

136.

Christian Skovgaard Nielsen, Oejvind Jans, Nicolai Bang Foss, Tue Ørsnes, Anders Troelsen, Henrik Husted

Department of Orthopaedic Surgery , Hvidovre University Hospital, Denmark; Lundbeck Foundation Centre for Fast-track Hip and Knee Arthroplasty, Rigshospitalet, Copenhagen, Denmark; Department of Anaesthesia, Hvidovre University Hospital, Denmark

Background: In total knee arthroplasty (TKA) both systemic and topical administration of tranexamic acid (TXA) has been proven to reduce blood loss in several RCT's though routine use of systemic TXA is considerably more common. However, additional benefit of topical TXA in addition to systemic TXA has not previously been investigated.

Purpose / Aim of Study: The aim was to evaluate if combined topical and systemic TXA administration reduced total blood loss compared to systemic TXA alone.

Materials and Methods: In this randomized, double-blind, placebo- controlled, trial 60 patients scheduled for TKA were assigned to receive either 1) combined TXA administration 1 g intravenously (IV) preoperatively + intra-articular (3 g TXA diluted in 100 ml saline) prior to wound closure (TXA IA + IV) or 2) 1 g TXA IV alone + 100 mL saline intra- articular (TXA IV + placebo). IA TXA was administered through a puncture needle. Primary outcome was 24 h calculated blood loss. Secondary outcomes were blood loss on 2nd postoperative day, thromboembolic complications and transfusion rate. Blood loss was calculated by hemoglobin differences.

Findings / Results: Data on primary outcome was available for all 60 included patients. 24 h blood loss was 466 (SD±313) mL in the TXA IV + IA vs. 743 (SD±358) mL in the TXA IV + placebo group, treatment effect 277 (95% CI 103 – 451; $p = 0.002$) mL. 2nd day blood loss was 644 (SD±382) mL in the TXA IV + IA vs. 1017 (±519) mL in the TXA IV + placebo group, treatment effect 373 (95% CI 132 – 614; $p = 0.003$) mL. No thrombo- embolic complications were observed within 90 days postoperatively.

Conclusions: The combined administration of systemic and intra- articular TXA resulted in a clinically relevant reduction in blood loss of 37% both 24 h and 2nd day after surgery compared to intravenous TXA alone. No thromboembolic events were observed.