

10th International Conference on
Orthopedics, Trauma and Rheumatology
March 08-09, 2018 London, UK

The effect of application tranexamic acid by different routes on the blood loss in total knee arthroplasty

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Total Knee Replacement (TKA) surgery has been shown to have significant blood loss that sometimes requires blood transfusions. In this prospective, randomized, double-blind study, we have investigated the effect of an antifibrinolytic agent, tranexamic acid (TXA-Cyklokapron), on blood loss and transfusion requirements associated with total knee arthroplasty. 60 patients undergoing primary total knee arthroplasty operation were randomly divided into four equal groups. Group-A received intravenous tranexamic acid, group-B received the same drug preparation locally, group-C received it in both ways (intravenous and local) and finally group-D received only placebo. The primary outcome was blood collected in vacuum drains in surgical ward, but also important, secondary outcomes included the rate of perioperative blood transfusion and change in hemoglobin level. TXA led to a significant reduction in the proportion of patients requiring blood transfusion [risk ratio (RR)-2.56, 95% confidence interval (CI)-2.1 to 3.1, $p < 0.001$]. TXA also reduced total blood loss by a mean of 591 ml (95% CI-536 to 647, $p < 0.001$) on comparing the 1st three groups with the 4th group. As conclusion, when compared to placebo, TXA led to statistically significant reduction in perioperative blood loss in TKR cases. Combined intravenous and topical administration of TXA led to statistically significant reduction in perioperative blood loss in TKR compared to either method alone and with no increased risk in DVT.

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