Intravenous Tranexamic Acid Given at Femoral Fragility Fracture Surgery Reduces Blood Transfusion Requirements Fourfold

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Purpose: Tranexamic acid (TXA) is an inexpensive antifibrinolytic. TXA use in major trauma and hip and knee arthroplasty is promoted through national guidelines. Currently there are no national guidelines in the UK or US that promote the use of TXA in femoral fragility fracture (FFF) management. The aim of the study was to determine whether intraoperative intravenous TXA affects blood loss following the surgical management of FFFs. The primary outcome measure was blood transfusion requirement. Secondary outcomes included calculated blood loss (CBL), percentage drop in hemoglobin (Hb), early postoperative complications, and 30-day mortality.

Methods: This was a single center (university teaching hospital), prospective, nonrandomized case-control study. 361 consecutive patients with FFF admitted over a 4-month period were included (mean age, 81.4 years; mean body mass index, 23.5 kg/m2; 73.7% female). Patient demographics, comorbidities, preoperative anticoagulation use, surgical management, intravenous TXA use, perioperative Hb and hematocrit, and requirement for blood transfusion were recorded prospectively. Intravenous TXA 1 g was given at the beginning of surgery at the discretion of the operating team: 178 (49%) received TXA and 183 (51%) did not. The primary outcome was postoperative blood transfusion requirement. Secondary outcomes included postoperative day 1 CBL (using the Nadler and Gross formula) and fall in Hb (percentage) from preoperative levels, and the incidence of thrombotic events and mortality up to 30 days.

Results: Groups were well matched at baseline in terms of patient demographics, comorbidities, preoperative anticoagulation use, injury types, and surgical management. The requirement for postoperative blood transfusion was significantly reduced in the TXA group: 15 of 178 (8.4%) compared to control group at 58 of 163 (31.7%) ($P<0.001$, $\chi 2$). This was the case for all types of fracture surgery: intracapsular fracture surgery 5 of 101 versus 12 of 87, $P = 0.035$; dynamic hip screw 2 of 40 versus 22 of 62, $P<0.001$; cephalomedullary nail 7 of 23 versus 16 of 26, $P = 0.029$; and open reduction and internal fixation 1 of 12 versus 8 of 10, $P = 0.002$. TXA significantly reduced both the percentage fall in Hb (mean difference 4.3% (–6.3 to –2.3, 95% confidence interval [CI]), $P<0.001$) and the CBL (mean difference –222 mL (–337 to –106, 95% CI), $P<0.001$). The difference in CBL was greatest in patients treated with intramedullary nail (n = 49: mean difference –394 mL (–751 to 36, 95% CI), $P = 0.030$) and dynamic hip screw (n = 101, mean difference –216 mL (–411 to –21, 95% CI), $P = 0.032$). There was no difference in the rate of complications between TXA and control groups. Specifically, there was no difference in the rate of image-proven venous thromboembolism (2 vs 1, respectively; $P = 0.620$).

Conclusion: Intraoperative intravenous TXA during the surgical management of FFF significantly reduced the rate of transfusion, CBL, and the percentage drop in Hb.