Assessing the Effectiveness of Tranexamic Acid in Hip Fracture Management: A Systematic Review

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Abstract:

Hip fractures often lead to significant blood loss and transfusion requirements in the older population. Tranexamic acid (TXA) is used to control bleeding; however, its optimal dose, timing, and broader clinical benefits remain unclear.

A systematic search of PubMed, ScienceDirect, the Cochrane Library, Ovid-EMBASE, and EBSCOhost was performed for studies published between 2019 and 2024. Eligible studies included adults with traumatic hip fractures (intra- or extracapsular) treated with TXA. Fourteen studies met the inclusion criteria, including randomised controlled trials, cohort studies, and meta-analyses. Findings were synthesised narratively due to heterogeneity in interventions and outcomes.

TXA consistently reduced intraoperative and postoperative blood loss and lowered transfusion needs, with reductions up to 46% compared with controls. Across various dosing strategies—preoperative, divided doses, or topical—no significant increase in thromboembolic complications was reported. Limited but favourable evidence suggested improvements in pain, functional recovery, and hospital stay. Benefits appeared more pronounced in extracapsular fractures, where hidden blood loss is typically greater.

TXA is a safe and effective adjunct in hip fracture surgery, significantly reducing blood loss and transfusion requirements without increasing the risk of thromboembolism. Standardised dosing protocols are needed, and further research should focus on long-term recovery and tailoring treatment to the type of fracture and patient characteristics.