Short Communication

The American Journal of Hematology

Tranexamic acid and Reducing Blood Transfusions in the Fragility Hip Fracture Population: A Practical Application of Fundamental Ideas.

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Received Date : June 18, 2024
Accepted Date : June 20, 2024
Published Date : July 20, 2024

DESCRIPTION

Proximal femur fragility fractures continue to be a leading cause of morbidity and mortality in the United States and around the world. At our institution, a fragility fracture is defined as any fracture in a patient over 50 that follows a fall from a standing height or similar low energy mechanism, though definitions differ depending on the center [1]. Globally, there were 10 million fragility hip fractures in 2019, and by 2050, that figure is predicted to almost treble [2,3]. Following hip fractures, loss of functional status and walking ability is almost certain, and many patients also lose their capacity for independent living. For white women, the lifetime risk of hip fracture is 1 in 6, while the chance of breast cancer is 1 in 9. [4] At 30 days, mortality rates following hip fractures approach 10% and rise to almost thirty percent after a year.

Undoubtedly, there are many different factors contributing to these poor results, including prolonged immobility, injury and surgery complications, and low baseline health status. Many studies have been conducted with the goal of reducing mortality and poor outcomes, with a particular emphasis on accelerating the surgical treatment of fragility hip fractures. Patients with hip fractures who receive surgery within 48 hours have fewer problems, a shorter hospital stay, and a reduced death rate, according to extensive research.

An additional component of the endeavor to enhance results has involved the decrease of blood loss and the use of transfusions. Patients with hip fractures who receive blood transfusions are almost 2.5 times more likely to die within a year [7]. Patients with hip fractures can receive transfusions at varying rates; as much as 64% have been documented [8]. Tranexamic acid (TXA) has been shown in recent years to be a safe and useful treatment for reducing blood loss and transfusions in patients undergoing total joint arthroplasty [9]. The principles that were previously applied only to patients with fragility hip fractures have recently been expanded to include fracture patients in general [8]. By inhibiting the breakdown of fibrin monomers, tranexamic acid stabilizes pre-existing clots by blocking lysine binding sites on plasminogen.

Our data show that intravenous administration of 1g TXA upon induction of anesthesia for hip fracture surgery reduces transfusion risk by 65% compared with controls, and by 48% compared with patients who received locally injected TXA into the surgical incision at closure [1]. However, more work is needed to clarify the most effective dosing regimen. We did not see an increase in the risk of complications or venous thromboembolism, which is in line with other research [8]. For patients receiving intravenous TXA, we also saw a statistically significant decrease in the 30-day readmission risk; however, more investigation is required to establish any causal association.

TXA several doses may provide an even more potent reduction in the risk of transfusion and blood loss. A four-dosage intravenous regimen (admission, infusion before surgery, at the time of operation, and a last dose a few hours following surgery) may be preferable to a single dose, according to the data [10]. We have been simulating this dosage pattern, and so far the results have been encouraging, despite the preliminary nature of the data. A fracture causes blood loss that begins right away and lasts the entire perioperative period. Therefore, it makes sense that extending the time of an effective TXA tissue concentration could aid in reducing the patient's chronic bleeding in the event of a hip fracture.

Future studies should focus on alternative strategies to reduce blood loss and transfusion because, even among patients receiving IV TXA, our data still reveal a transfusion rate of 21%. Further efforts to enhance the outcomes of fragility hip fractures appear promising, including the optimization

of TXA administration schedules and dose, surgical timing, anesthetic procedures, and multidisciplinary care for patients with hip fractures. The application of TXA is only one more in a long line of instances where knowledge from one field can be used to improve patient outcomes in another. We are convinced that more advancements in treating this vulnerable patient population can be made with sustained research and commitment from other professions.

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