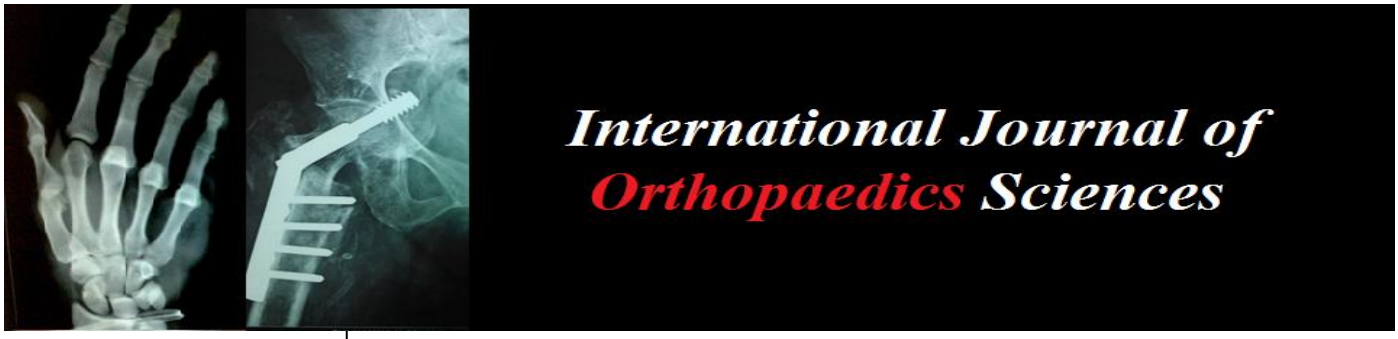

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Dr. Marouf Aslam
Department of Orthopaedics, GMC Srinagar, Jammu and Kashmir, India

Dr Lokendra Singh
MS, Assistant professor, HIMSR, New Delhi, India

Dr. Mufti Noumaan
Department of Orthopaedics, GMC Srinagar, Jammu and Kashmir, India

Dr. Malik Jahangir
Department of Orthopaedics, GMC Srinagar, Jammu and Kashmir, India

Dr. Gh. Nabi Dar
Assistant Professor, Department of orthopaedics, GMC Srinagar, Jammu and Kashmir, India

Corresponding Author:
Dr. Marouf Aslam
Department of Orthopaedics, GMC Srinagar, Jammu and Kashmir, India

Use of tranexamic acid in per trochanteric fractures: Is it beneficial?

Dr. Marouf Aslam, Dr. Lokendra Singh, Dr. Mufti Noumaan, Dr. Malik Jahangir and Dr. Gh. Nabi Dar

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Abstract
Background: Elderly people who have hip fractures frequently need blood transfusions. The purpose of this study was to ascertain whether tranexamic acid (TXA) usage in hip fracture patients lowers intraoperative and postoperative blood loss. For a year, patients with hip fractures were the subjects of the study. Two groups of patients were formed, with one getting TXA and the other receiving a placebo (1:1). Both the amount of drainage during the 48-hour postoperative period and the amount of blood lost during the procedure were measured. Patients who received TXA experienced a 1.4 fold reduction in total blood loss (368.61 vs.529.24 mL of blood). Thus the use of TXA in patients with per trochanteric fractures significantly reduces intraoperative and postoperative blood loss.

Keywords: Tranexamic acid, hip fracture, blood loss

Introduction
Because of the multiple complications and high mortality associated with proximal femur fractures, they represent a significant clinical issue. Some authors claim that these individuals have a 25% first-year mortality rate [1, 2, 3]. Blood loss is one of the key issues for those who have hip fractures [1, 2]. It happens right away after the injury, though it can also develop as a side effect of surgical intervention. Postoperative anemia and the requirement for blood transfusions are frequently the results of this. The usage of tranexamic acid (TXA) as a blood loss reducer has grown during the past few years. Following the publication of a number of substantial investigations investigating its application in joint replacement and spine surgery, it is now encouraged that TXA be widely incorporated into routine clinical practice [5, 6]. TXA is helpful in minimizing blood loss during spine surgery without increasing risk or consequences, according to clinical trials [7, 8]. The effectiveness and safety of TXA in total knee and hip arthroplasty have been shown in large prospective studies and meta-analyses [5, 9]. Our study's objective is to examine whether using TXA in patients with hip fractures changes how much blood is lost during and after surgery.

Materials and Method
We identified 100 patients with per trochanteric fractures who had undergone surgical osteosynthesis at the Bone and joint hospital, Government medical college Srinagar between March 2020 and September 2021. The patients were divided into two groups (Table 1): 50 patients who were administered tranexamic acid (group A) and 50 patients who received saline solution-placebo (group B). About 30 minutes before the anticipated surgical incision tranexamic acid was given intravenously. 15 milligrams per kilogram was the dosage. The identical dose of saline solution was also administered at the same time to the other group of patients (group B). This study included patients of both genders, above 18 years of age, with a confirmed diagnosis of hip fracture occurred in the last 24 hours (per trochanteric). These criteria were used to exclude people:

i) Reaction to TXA.
ii) Recent or continuing thromboembolic incidents (such as deep vein thrombosis, pulmonary embolism, arterial thrombosis, cerebral thrombosis, or stroke).
iii) Anticoagulation or hemostatic medication.
iv) Having a condition that impairs coagulation function.

v) A history of other illnesses (malignancy, preoperative hepatic or renal dysfunction, diabetes, organ damage, past hip surgery, and severe cardiac, respiratory, or other chronic conditions) that could affect the result, as well as.
vi) Pathological fracture. All the patients were operated under spinal anesthesia.

Using a suction device and gauze, the amount of intraoperative blood loss was assessed. Postoperative drain outputs were used to measure postoperative blood loss. The following formulas were employed:

Total blood loss = (Intraoperative blood loss + Postoperative blood loss)

Results

A total of 100 patients who complied with all inclusion requirements and were not disqualified due to any exclusion criteria were randomly assigned to either the TXA (n = 50) or control (n = 50) groups (Fig. 1). The patients underwent successful surgery. The TXA group suffered significantly less total blood loss (368.61 vs.529.24 mL of blood), intraoperative blood loss (290.30 vs 406.64ml) than the control group. Postoperative blood loss was also less compared to control group (78.31 vs 122.6 ml Table 2).

Table 1: Demographic and clinical characteristic of included patients

Variable	TXA group (n=50)	Control group (n=50)
Female (%)	66	60
Age (mean)	70.22	72.62
BMI (mean)	20.63	21.02
Side right (%)	60	65
Preop. Hb level mean (g/dL)	9.4	9.1
Preop. Hematocrit level mean (%)	30.34	31.33
Operative time (min, mean)	80	76
Hospital stay (days, Mean)	9.71	10.5

Table 2: Comparison of postoperative clinical outcomes between the TXA group and NS group

Variables	TXA group(n=50)	Control group(n=50)
Intraoperative blood loss (ml, mean)	290.30	406.64
Postoperative day 2 drainage (ml, mean)	78.31	122.6
Hemoglobin postop. Day 1 (g/dL, mean)	8.61	7.83
Hemoglobin postop. Day 3 (g/L, mean)	8.36	7.44
Hematocrit postop. Day 1 (%, mean)	27.34	24.78
Hematocrit postop. Day 3 (%, mean)	26.9	23.1
Estimated total blood loss (ml, mean)	368.61	529.24

Discussion

TXA is an antifibrinolytic drug that has been used extensively to lessen bleeding after trauma and surgery, including total hip and knee replacement [5], heart surgery with and without cardiopulmonary bypass [10], and prostatectomy [11].

TXA is able to lessen the local degradation of fibrin by plasmin by competitively blocking the lysine-binding sites on plasminogen [12]. Although the effectiveness of TXA in orthopedic surgery has been shown, its ideal application is still unknown [13]. Additionally, we are unsure of the true effects of TXA use in fractures. Furthermore, there is ongoing discussion regarding the ideal TXA administration time and dose [14]. Nearly every per trochanteric fracture requires surgery. RBC transfusion is routinely employed since both fractures and surgery result in blood loss. Blood transfusions are associated with higher mortality risk, increased risk of bacterial infections, and high expenditures for blood collection, preparation, transport, and administration [15, 16]. TXA is known to decrease the need for blood transfusions but may also increase the risk of hypercoagulability [17].

Conclusion

The amount of blood aspiration during surgery and after surgery is dramatically decreased in patients with hip fractures (both extra capsular and intracapsular) who utilize TXA. Patients who received TXA saw less overall blood loss than patients in the control group by a factor of 1.4.

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