ORIGINAL RESEARCH

Comparison of dynamic hip screw and proximal femoral nailing in inter-trochanteric fractures of the femur

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ABSTRACT

Background: Inter-trochanteric fractures are fractures that occur in the proximal (upper) part of the femur (thigh bone), specifically between the greater and lesser trochanters. Restoring mobility safely and effectively, reducing the chance of medical problems, and getting the patient back to their pre-operative state are the objectives of treatment for any intertrochanteric fracture. Although the DHS has been demonstrated to yield positive outcomes, complications are common, especially in cases of unstable intertrochanteric fracture. One benefit of Proximal Femur Nailing fixation is that it shortens the distance between the hip joint and implant, making the construct more biomechanically stable. **Aim & objectives:** The present study was conducted to compare dynamic hip screw and proximal femoral nailing in inter-trochanteric fractures of the femur. **Materials & Methods:** The present randomised interventional study conducted on 94 cases of inter-trochanteric fractures of femur of both genders. The cases were randomly divided into 2 groups of 47 each. Group I patients were treated with dynamic hip screw and group II with proximal femoral nailing. Parameters such as type of fracture, symptoms, Harris Hip Score and complications etc. were recorded. **Results:** Group I had 27 males and 20 females and group II had 22 males and 25 females. Type of fracture was A1 in 22 and 25, A2 in 16 and 14 and A3 in 9 and 8 patients in group I and II respectively. Harris Hip Score was excellent in 29 and 35, good in 12 and 8, fair in 5 and 4 and poor in 1 and 0 patients in group I and II respectively. Complications were hematoma in 3 and 2, prolonged drainage in 2 and 1, superficial infection in 1 and 2 and implant failure in 2 and 0 patients in group I and II respectively. The difference was significant ($P< 0.05$). **Conclusion:** Proximal femoral nailing as compared to dynamic hip screw in inter-trochanteric fractures of the femur exhibited superior results.

Keywords: dynamic hip screw, inter-trochanteric, Proximal femoral nailing.

INTRODUCTION

Inter-trochanteric fractures are fractures that occur in the proximal (upper) part of the femur (thigh bone), specifically between the greater and lesser trochanters.[1] These fractures are common in older adults, often resulting from a fall, and can lead to significant morbidity. The most common cause, especially in elderly individuals with osteoporosis. High-energy trauma such as car accidents are more common in younger individuals, pathologic fractures due to underlying conditions like metastatic cancer or other bone diseases.[2] Symptoms are severe pain in the hip or groin area, particularly with movement, inability to bear weight and swelling and bruising around the hip area.[3] The leg on the injured side may appear shorter and turned outward.

About half of hip fractures in the elderly are caused by intertrochanteric fractures, of which more than half are unstable.[4]According to AO/OTA classification[5], A1 fractures are simple, two-part fractures, A2 fractures have multiple fragments, A3 fractures includes reverse oblique and transverse fracture patterns. Restoring mobility safely and effectively, reducing the chance of medical problems, and getting the patient back to their pre-operative state are the objectives of treatment for any intertrochanteric fracture. In the past 20 years, the dynamic hip screw (DHS) has become widely accepted and is presently regarded as the standard tool for outcome comparison.[6] Although the DHS has been demonstrated to yield positive outcomes, complications are common, especially in cases of unstable intertrochanteric fracture. One benefit of

Proximal Femur Nailing fixation is that it shortens the distance between the hip joint and implant; making the construct more biomechanically stable.[7]

AIM & OBJECTIVES

The present study was conducted to compare dynamic hip screw and proximal femoral nailing in inter-trochanteric fractures of the femur.

MATERIALS & METHODS

The present randomised interventional study conducted on 94 cases of inter-trochanteric fractures of femur of both genders.The present study is conducted those who met the specified criteria for inclusion and exclusion at the Department of Orthopedics, Major S.D. Singh Medical College& Hospital, Farrukhabad, U.P, India,for a period of six months (October 2011– March 2012). All were informed regarding the study and their written consent was obtained. The Institutional Ethics Committee gave the study its approval.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 47 each. Group I patients were treated with dynamic hip screw and group II with proximal femoral nailing. Parameters such as type of fracture, symptoms, Harris Hip Score and complications etc. were recorded.

INCLUSION CRITERIA

- Patients to give written informed consent
- Patient's age between 18-60 years
- All adult patients admitted withinter-trochanteric fractures of femur.
- Available for follow up.

EXCLUSION CRITERIA

- Patients not give written informed consent.
- Pre-existing femoral deformity preventing hip screw osteosynthesis or intra-medullary nailing and Sub-trochanteric fractures or fractures extending 5 cm distal to the inferiorborder of the lesser trochanter.
- Pathological fractures, patients with distal neurovascular deficit, fractures more than 3 months old.
- Those unable to attend follow-up.

STATISTICAL ANALYSIS

The data obtained was subjected to statistical analysis using a Microsoft Excel spread sheet and analysed using SPSS. Chi-squared and Student's t-test was used as the test of significance was used to perform for assessed the statistical significance. A p-value less than 0.05 was deemed significant.

RESULTS

Table I: Distribution of patients

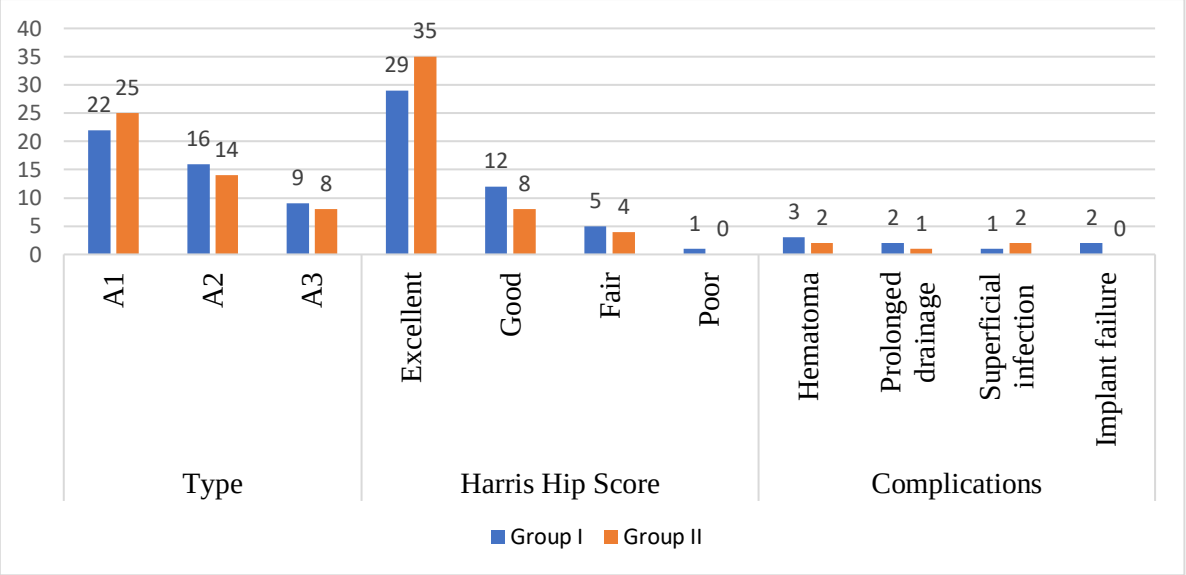
Groups	Group I	Group II
Method	Dynamic hip screw	Proximal femoral nailing.
M:F	27:20	22:25

Table I shows that group I had 27 males and 20 females and group II had 22 males and 25 females.

Table II: Assessment of parameters

Parameters	Variables	Group I	Group II	P value
Type	A1	22	25	0.825
	A2	16	14	
	A3	9	8	
Harris Hip Score	Excellent	29	35	0.04
	Good	12	8	
	Fair	5	4	
	Poor	1	0	
Complications	Hematoma	3	2	0.05
	Prolonged drainage	2	1	
	Superficial infection	1	2	
	Implant failure	2	0	

Table II shows that type of fracture was A1 in 22 and 25, A2 in 16 and 14 and A3 in 9 and 8 patients in group I and II respectively. Harris Hip Score was excellent in 29 and 35, good in 12 and 8, fair in 5 and 4 and poor in 1 and 0 patients in group I and II respectively. Complications were hematoma in 3 and 2, prolonged drainage in 2 and 1, superficial infection in 1 and 2 and implant failure in 2 and 0 patients in group I and II respectively. The difference was significant ($P< 0.05$).



Graph I: Assessment of parameters

DISCUSSION

For pertrochanteric fractures, the words intertrochanteric and peritrochanteric are interchangeable. In the proximal metaphyseal region of the bone, the injury results in a spectrum of fractures, damaging the fragile cortical bone as well as the intersecting cancellous compression and tensile lamellar networks.[8] Fracture pieces and associated muscle groups are displaced as a result. Regarding the challenge of achieving stable fixation, this femur region is similar to other metaphyseal-diaphyseal fractures in many biomechanical aspects.[9,10] Similar fracture patterns can result from high energy trauma in younger patients, even though it primarily affects older patients with low energy trauma.[11] One of the most often treated fracture patterns worldwide is the intertrochanteric fracture pattern, which has a high rate of death following surgery and significant post-operative care costs.[12] The present study was conducted to compare dynamic hip screw and proximal femoral nailing in inter-trochanteric fractures of the femur.

We found that group I had 27 males and 20 females and group II had 22 males and 25 females. Hardy D et al.[13] included 400 intertrochanteric fractures, out of which 240 are treated with DHS fixation and 160 are treated with PFN. All surgeries done on traction table and are followed up at regular intervals of 4 weeks, 8 weeks, 12 weeks, 6 months and annually thereafter. The functional results are assessed with Harris Hip Score and observed 37.5% excellent results in DHS group and 66.2% excellent results in PFN group. They observed no statistically significant difference between two groups in view of late & early complications and time to union. They observed significantly better outcomes in PFN group for unstable inter-trochanteric fractures and in unstable fractures reduction loss is significantly lower in PFN group. They observed total duration of surgery is significantly lower in PFN group.

We found that type of fracture was A1 in 22 and 25, A2 in 16 and 14 and A3 in 9 and 8 patients in group I and II respectively. Harris Hip Score was excellent in 29 and 35, good in 12 and 8, fair in 5 and 4 and poor in 1 and 0 patients in group I and II respectively. Complications were hematoma in 3 and 2, prolonged drainage in 2 and 1, superficial infection in 1 and 2 and implant failure in 2 and 0 patients in group I and II respectively. Pajarinen J et al.[14] compared the outcomes of proximal femoral nail (PFN) and dynamic hip screw (DHS) in treatment of unstable intertrochanteric fractures. They included 80 unstable intertrochanteric fractures, out of which 40 were treated with PFN and 40 were treated with DHS. The surgeries were performed on traction table and were followed up at regular intervals at 2 weeks, 4 weeks, 6 months and annually thereafter. The functional results were evaluated with Harris Hip Score. At most recent follow up, Patients with excellent results were 23 (46%) in group A and 20 (36%) in group B while patients with good results were 15(28%) in group A and 20(45%) in group B. Differences were observed to be statistically significant difference between two groups in view of late & early complications and time to union. Better outcomes were noted in PFN group for unstable intertrochanteric fractures.

LIMITATION OF THE STUDY

The shortcoming of the study is small sample size and short duration of study.

CONCLUSION

Authors found that proximal femoral nailing as compared to dynamic hip screw in inter-trochanteric fractures of the femur exhibited superior results.

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