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RESEARCH ARTICLE

A COMPARATIVE STUDY OF DYNAMIC HIP SCREW VERSUS PROXIMAL FEMORAL NAILING IN THE TREATMENT OF INTERTROCHANTERIC FRACTURE IN ELDERLY AGE GROUP

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ABSTRACT

Intertrochanteric fractures account for approximately half of the hip fractures in elderly, out of these more than 50% fractures are unstable. Sliding devices like dynamic hip screw have been extensively used for fixation. However, if the patient bears weight early, especially in comminuted fractures these devices can penetrate the head, bend, break or separate from the shaft. Intramedullary devices like proximal femoral nail has been reported to have an advantage in such fractures as their placement allowed the implant to lie closer to the mechanical axis, thereby decreasing the lever arm and bending moment on the implant. The goal of this study is to compare the clinical and radio graphical results of the DHS and PFN for the treatment of intertrochanteric hip fractures (Load bearing vs Load sharing).

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INTRODUCTION

Inter-trochanteric fractures account for approximately half of the hip fractures in elderly; out of this, more than 50% fractures are unstable (Robert *et al*., 2006; David Lavelle, 11th edition). The goal of treatment of any intertrochanteric fracture is to restore mobility safely and efficiently while minimizing the risk of medical complications and restore the patient to pre-operative status. The dynamic hip screw (DHS) has gained widespread acceptance in the last two decade and is currently considered as the standard device for comparison of outcomes. The DHS has been shown to produce good results but complications are frequent, particularly in unstable inter-trochanteric fracture. The advantage of Proximal Femur Nailing fixation is that it provides a more biomechanically stable construct by reducing the distance between hip joint and implant (Kish *et al*., 2001; Ely Steinberg *et al*., 2005). The goal of this study is to compare the clinical and radio graphical results of the DHS and PFN for the treatment of Inter-trochanteric hip fractures (Load bearing vs. Load shearing).

MATERIALS AND METHODS

This study is a randomized prospective comparative study carried out in Pratima Institute of Medical Sciences (PIMS), nagunoor, karimnagar district, telangana state from 2015-2017 on 60 patients of intertrochanteric fracture who were treated with proximal femoral nailing in 20 cases and dynamic hip screw in 40 cases. Each patient was subjected to clinical and radiological along with routine pathological investigations.

S.No.	Type of fixation used	Cases	
		Number	Percentage
1.	Dynamic hip screw	40	66.6%
2.	Proximal femoral nailing	20	33.3%

Inclusion criteria

Age >50 years, either sex, fit for surgery, patient giving consent for surgery.

Exclusion criteria

Unfit for surgery, compound fractures, pathological fractures, associated fractures on same side, with previous ipsilateral hip /femur surgeries. Pre-existing femoral deformity (Robert *et al*., 2006; Christian, 2003) preventing hip screw osteosynthesis or intra-medullary nailing and Sub-trochanteric fractures (Robert *et al*., 2006; Nuber *et al*., 2003; Pajarinen, 2005)

Study design

Block randomized prospective comparative study.

Type of fracture	DHS	PFN
Type 1	4 (10%)	0
Type 3	20(50%)	6(30%)
Type 3	6(15%)	9(45%)
Type 4	10(25%)	5(25%)
Total	40	20

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The decision for the type of the operation was based on surgeon's preference and availability of the implant. Prior to hip surgery, each patient was evaluated by the same trauma team. The overall time from injury to surgery averaged 3.2 days (range: 1–6 days). Steps were taken to ensure that every individual was in the best possible medical condition at the time of surgery. All surgeries were performed on the traction table following closed reduction confirmed with fluoroscopy on two different planes. The clinical outcome for each group was analyzed, and intra operative, early (within first month after hip fracture repair), and late complications (after first month) were recorded. Patients followed up at regular intervals of 4 weeks, 8 week, 12 weeks, 6 months and annually thereafter.

RESULTS

The overall functional results were excellent in 70% cases in PFN series while they were 55% in DHS series. Time of union in DHS series was between 16-60 weeks and in PFN series was 12-16 weeks. Return to pre-injury functional status was possible in 87.5% cases with DHS while it was 95% with PFN. Mean operative time was less in PFN series (46minutes in DHS and 35minutes in PFN series). Mean blood loss (246ml in DHS and 141ml in PFN series) & mean reduction of hemoglobin (2gm% in DHS and 1.4% in PFN series) was less in PFN series. Union was earlier with PFN. Majority of

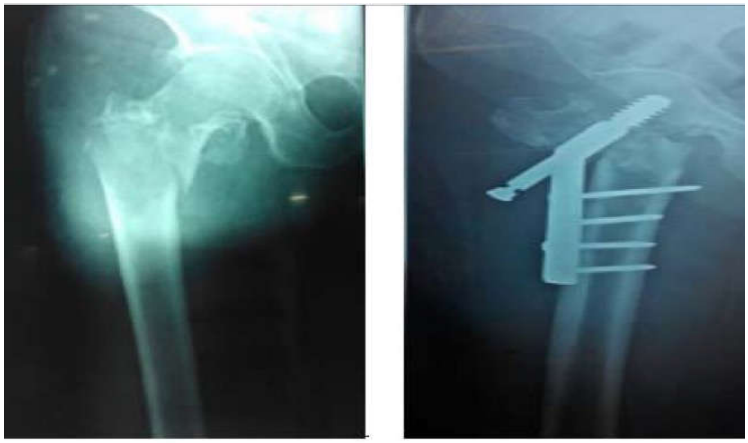

Fig 1: DHS reduction loss because of early wright bearing

A. Preoperative view **B.** 3 months followup

Fig 2: A. PRE-OP X-RAY **B.** IMMEDIATE POST-OP XRAY **C.** AT 6 WEEKS

Followup showing screw penetration into acetabulm (because of complete weight bearing walking against doctors advice)

fractures in the series of DHS united in 16-20 weeks while in PFN series it was 12-16 weeks. Superficial infection was present in 7.5% of cases with DHS as compared to 5% in PFN. Coxa vara was seen in 7.5% cases of DHS while it was 5 % with PFN. Shortening was seen in 7.5% of cases of DHS while it was 5 % with PFN. Incidence of overall complications was more in DHS compared to PFN.

Conclusion

PFN fixation is superior method of fixation to DHS in trochanteric fractures for early full weight bearing, early union of fracture, incidence of complications like coxa vara, shortening as less with PFN as compared to DHS, early return to work. The overall functional results were better with PFN.

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