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## Long term analysis of outcome of intertrochanteric femur fractures with dynamic hip screw: Retrospective study

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### Abstract

**Background:** Intertrochanteric fracture contributes morbidity in the elderly only and does not affect anyway the younger patient below 50yrs. The dynamic hip screw (DHS), commonly used implant for fixation of Intertrochanteric fractures.

**Material & Methods:** In a retrospective study of 26 patient with intertrochanteric femur fracture that was treated with DHS (Dynamic Hip Screw) during the period of 1yr from February 2020 to February 2021. This study was taken to assess the fracture union and functional outcome using Harris Hip Score.

**Results:** In our study, mean age was 55 years and the male: female ratio was 1:2. In treatment with, one patient showed cut-through of the screw in the neck because of osteoporosis and early weight bearing. On 20th week most of the patient showed exuberant callus around the fracture. The clinical and functional outcomes of the procedure were excellent in all patients except one.

**Conclusions:** Intertrochanteric fractures are fractures of the elderly, which demand early treatment and ambulation. The dynamic hip screw is the choice for inter trochanteric fracture.

**Keywords:** Dynamic hip screw (DHS), trochanteric fractures, femur, osteoporosis

### Introduction

Intertrochanteric fracture are defined as extrascapular fractures of the proximal femur that occur between the greater and lesser trochanter. The intertrochanteric aspect of the femur is composed of dense trabecular bone. The greater trochanter serves as an insertion site for the gluteus minimus, gluteus medius obturator internus, piriformis and site of origin for the vastus lateralis. The calcar femorale is the vertical wall of dense bone that extends from the posteromedial aspect of the femur shaft to the posterior portion of the femoral neck. This structure is important because it determines whether or not a fracture is stable.

Femoral intertrochanteric fractures have been estimated to occur in more than 2,000,000 patients each year in the US. The cost of treating these fractures is estimated to be US \$16 billion per year. Closed methods of treating intertrochanteric fractures have been abandoned. Rigid fixation with early mobilisation of patients should be considered as the standard treatment.

The use of a dynamic hip screw [DHS] for stable trochanteric hip fracture fixation has been successfully applied in fracture healing for more than 20 years. DHS fixation on unstable trochanteric fractures still has a more failure rate, particularly in osteoporosis patients.

Trochanteric fractures are devastating injuries that most commonly affect the elderly. They are 3 to 4 times more common in women who are osteoporotic; trivial fall being the most common mechanism of injury. The incidence of intertrochanteric fractures has been increasing significantly due to rising age of modern human populations. Generally, intramedullary fixation and extramedullary fixation are the 2 primary options for treatment of such fractures. The dynamic hip screw (DHS), commonly used in extramedullary fixation, has become an ideal implant in treatment of these fractures. Treating intertrochanteric fracture with a DHS allows sound fracture healing and is not associated with any major complications. The objective of the study was to assess the fracture union and functional outcome of intertrochanteric fractures treated with locking DHS after 12 months of follow up, to evaluate

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the advantages and disadvantages associated with the locking DHS and to evaluate the major postoperative complications associated with the treatment.

Surgery should be done as soon as medical co-morbidities are diagnosed and treated. Surgery can be done after 2-3 days as patient becomes fit for surgery.

The sliding compression screw provides additional compression axially. Regarding fixation of trochanteric fracture with sliding compression hip screw with plate devices consist of large lag screw placed in the centre of the femoral neck and head and a side plate along the lateral side of the femur. The use of axial compression in promoting union in this area the femur are important in healing by achieving compression at fracture sites.

**Material and Methods**

This is a retrospective study of 26 patients with intertrochanteric fractures of the femur that were treated with DHS (Dynamic hip screw) from February 2020 to February 2021. Pt 40 to 75 yrs was included. Average age was 55yrs. All patients were treated with dynamic hip compression screw with side plate after putting all patient on skeletal traction for 3 days. 12 patients were followed up for 1 year.

Lateral approach was used in all cases. The DHS plate was fixed to the shaft with screws. DHS plate was made up of 316L stain less steel with screw hole as per length of the plate. DHS lag screw size used was 75mm to 90mm. All the surgical procedures were commenced under the hands of skilled and experienced orthopedic surgeons. Harris hip score (HHS) was used for assessment of postoperative treatment outcome. Calculation of HHS was done preoperatively and postoperatively. Except in one patient with cut out of hip screw, in all patients callus appears progressively in predictive way. At 20th week most of the patient showed good amount of callus. At 1 week postoperatively crutch walking started and at 4th week partial weight bearing allowed with support. On 10th week full weight bearing allowed.

**Table 1:** Grading for the Harris Hip Score

Harris Hip Score	Grading
<70	Poor
70-79	Fair
80-89	Good
90-100	Excellent

**Table 2:** Age Distribution

Age (in years)	Percentage	No. Of Cases
<30	3.84%	1
30-40	7.69%	2
40-50	19.23%	5
>50	69.23%	18
Total	100%	26

- Range of the age of the patients was 40-75 years.
- Average age was 55 years.
- Maximum no. of patients was seen above the age of 50 years (69.23%).

**Table 3:** Sex Distribution

Sex	Percentage	No. of Cases
Male	30.76	8
Female	69.24	18
Total	100	26

Above table shows preponderance of female 18 (69.24%)  
Male: Female ratio is 1:2.

**Table 4:** Types of Injury

Mode of injury	No. of cases	Percentage
Slip	20	76.92
RTA	6	23.07
Total	26	100

**Postoperative**



**Fig 1:** Lateral view in c-arm showing excellent fixation by DHS of intertrochanteric fracture



**Fig 2:** Intertrochanteric fracture fixed by DHS with plate very rigid fixation



**Fig 3:** Rigid Anatomical fixation of intertrochanteric fracture with comminution treated by DHS with plate



**Fig 4:** Fixation of of intertrochanteric fracture with four cortical screws



**Fig 5:** Minor comminution of intertrochanteric fracture treated with DHS

### Discussion

The incidence of intertrochanteric fractures has been increasing significantly due to the rising age of modern human populations. Generally extramedullary fixation is the primary option for treatment of such fractures. For internal fixation, most orthopedic surgeons choose a dynamic hip screw (DHS). MIPPO technique is less invasive and reduces blood loss and soft tissue stripping. With the use of DHS the screw-plate system achieves a more stable condition. The results support the use of DHS. Its disadvantages are large skin incisions, more extensive soft tissue dissection, a greater need for blood transfusion, and a longer stay in hospital. In the present study, a total of 26 patients with intertrochanteric fractures were enrolled in the present study. Mean age of the patients of the present study was 55 years. Majority of the patients (69 percent) belonged to the age group of more than 50 years. 69.24 percent of the patients of the present study were females while remaining were males.

The time for fracture healing ranged from 3-6 months (average 4.5 months). According to Harris criterion, most of the cases were rated as excellent.

DHS require less technical expertise; achieve radiological union of trochanteric fracture along with early mobilization; avoids the different medical complications caused by prolonged bed ridden in conservative methods.

### Results

Out of 26 cases approx 69% were females & 31% patients were males in over study. All simple and comminuted

fractures were fixed with the DHS. It gave excellent results of the intertrochanteric fractures with minimal hospital stay and early mobilization. One Patient showed cut through of the screw in the neck because of osteoporosis and very early mobilisation. There was no failure to achieve close reduction in intertrochanteric fractures of most of the patients.

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