Original Research Article

# Proximal femoral nailing in intertrochanteric fractures- A clinical study

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## Abstract

**Background:**Intertrochanteric fractures are very common in elderly. The present study was conducted to assess proximal femoral nailing (PFN) in intertrochanteric fractures.**Materials & Methods:**60 patients of intertrochanteric fractures of both genders were included. Parameters such as shortening, neck shaft angle and Harris Hip Score was done.All patients were followed-up regularly. **Results:** Out of 60 patients, males were 35 and females were 25. The mean shortening observed was 2.4 mm, mean neck shaft angle was 132.4degree, average abductor power 5grade and average difference with preinjury Harris hip score was 6.1. Complications were varus collapse in 1, difficult reduction in 2, trochantric translation in 5, trochantericcommunition in 1 and trochanteric widening in 2 cases. The difference was significant (P< 0.05).**Conclusion:** Proximal femoral nailing (PFN) in intertrochanteric fractures (IF) resulted in better treatment outcome.

**Keywords:** Intertrochanteric fractures, Proximal femoral nailing, Implant



## Introduction

Intertrochanteric fractures are very common in elderly. With the increase in life expectancy, the incidence of such fractures is still increasing. Quality of life becomes poor unless stabilized and mobilized early and hence many fixation devices were developed[1]. However, sliding hip screw device remains the gold standard. Although it produces acceptable reduction and healing, results are not at par in unstable fractures. Approximately only half of them can reach the preinjury activity status[2].Though union is not an issue, many of them will remain confined to home and have significant shortening due to excessive collapse in unstable fractures. That is why intramedullary device has been tried. Theoretically improved biomechanics with more stability and shorter lever arm, it provides more load sharing and allows less collapse. Minimal access reduces blood loss and infection[3].Understanding important factors in management of IT fracture like stability, reduction, role of posteriomedial wall, lateral wall, will help in choosing implant for better outcome. Most classifications are based on these factors and help in selecting management protocols[4].

Many classification systems have come from last 6 decades, but none of them are found to be unanimously acceptable worldwide. Few classifications have focussed on stability and anatomical pattern while others on maintaining reduction of various types[5].The present study was conducted to assess proximal femoral nailing (PFN) in intertrochanteric fractures.

**Materials & Methods**

The present study was conducted among 60 patients of intertrochanteric fractures of both genders. All were informed regarding the study and their consent was obtained.Data pertaining to patients such as name, age, gender etc., was recorded. A thorough clinical examination was performed in all patients. Parameters such as shortening, neck shaft angle and Harris

Hip Score was done.All patients were followed-up regularly. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

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**Results**

**Table 1:Distribution of patients**

| Total- 60 | | |
|---|---|---|
| **Gender** | Males | Females |
| **Number** | 35 | 25 |

Table 1 shows that out of 60 patients, males were 35 and females were 25.

**Table 2:Assessment of parameters**

| Parameters | Value |
|---|---|
| Mean shortening (mm) | 2.4 |
| Mean neck shaft angle (degree) | 132.4 |
| Average abductor power (grade) | 5 |
| Average difference with preinjury Harris Hip Score | 6.1 |

Table 2 shows that mean shortening observed was 2.4 mm, mean neck shaft angle was 132.4degree, average abductor power 5grade and average difference with preinjury Harris hip score was 6.1.

**Table 3:Assessment of complications**

| Complications | Number | P value |
|---|---|---|
| Varus collapse | 1 | 0.04 |
| Difficult reduction | 2 | |
| Trochantric translation | 5 | |
| Trochanteric Communition | 1 | |
| Trochanteric widening | 2 | |

Table 3,Fig 1 shows that complications were varus collapse in 1, difficult reduction in 2, trochantric translation in 5, trochanteric communition in 1 and trochanteric widening in 2 cases. The difference was significant (P< 0.05).

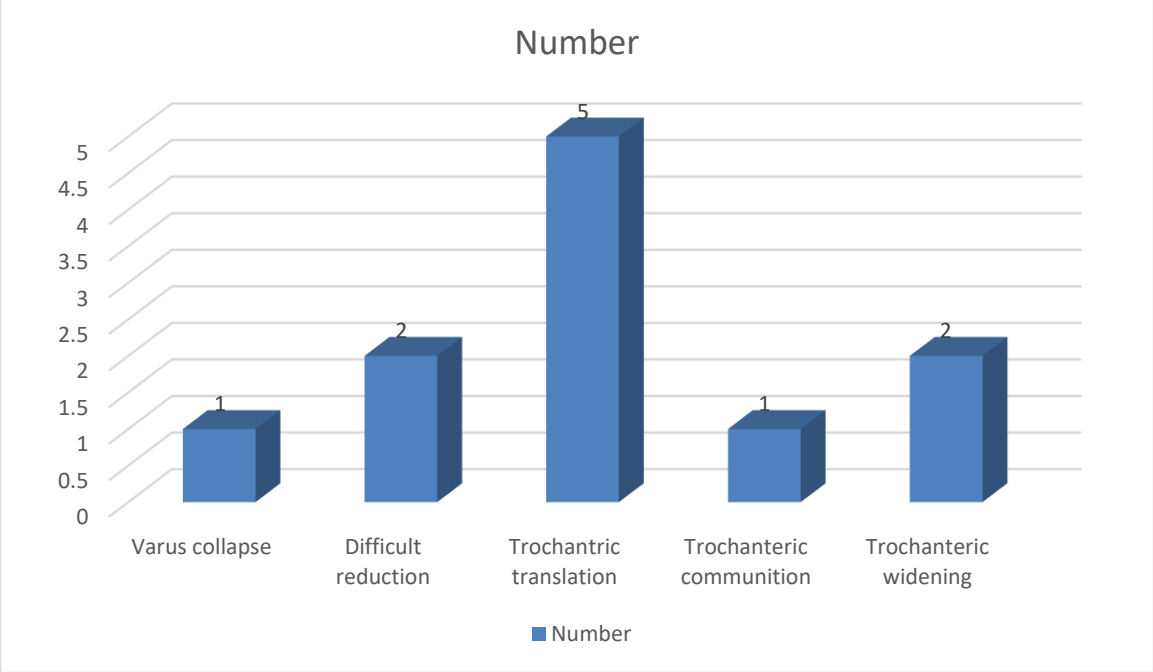


**Fig 1:Assessment of complications**

**Discussion**

Intertrochanteric fractures constitute 45% of all the hip fractures and are major cause of morbidity and mortality in elderly population. Hip fractures include mainly trochanteric and femoral neck fractures and the former reported with a mortality ranging from 22 to 30%[6]. Various methods of treatment of ORIF fixations like DHS, PFN, Gama nail,Trochanteric buttress plate, Condylar blade plate, depending up on the type of fracture, (stable and unstable), age and general condition of the patient[7]. Surgical treatment with stable fixation allows early mobilization and reduces complications. There are two main types of fixation for trochanteric fractures which are plate fixation DHS (extra medullary) and intra medullary implant (PFN) [8].DHS or SHS has been the standard implant in treating trochanteric fractures. However, in compliant with PFN it has a bio medical disadvantage because of wilder distances between weights bearing axis and implants[9].The proximal femoral nail (PFN) introduced by the AO/ASIF group in 1998 has become prevalent in treating trochanteric fractures now a days. Because it was improved by addition of an anti-rotation hip screw proximal to main lags screw however both benefits and technical failures of PFN have been reported[10].The present study was conducted to assess proximal femoral nailing (PFN) in intertrochanteric fractures.

In present study, out of 60 patients, males were 35 and females were 25. We found that mean shortening observed was 2.4 mm, mean neck shaft angle was 132.4 degree, average abductor power 5 grade and average difference with preinjury Harris hip score was 6.1.Jain et al[11]found that proximal femoral nailing (PFN) in Intertrochanteric Fractures (IF) is becoming the choice of implant due to better biomechanics and prevention of varus collapse associated with Dynamic Hip Screw (DHS). 55 patients presented to a tertiary trauma center in India with trochanteric fractures from April 2010 to March 2012 were included. In all except one, neck shaft angle greater than 130° was achieved and also maintained in the final follow up (Mean 131.1°). All fractures were united with mean shortening of 3.6 mm and average Harris Hip Score of 91 after two years. There were five complications which included one shortening, two varus collapses, one backed out screws and one reverse Z effect.
We found that complications were varus collapse in 1, difficult reduction in 2, trochantric translation in 5, trochantericcommunition in 1 and trochanteric widening in 2 cases.Kameshwaret al[12] found that intertrochanteric femur fracture is one of the major causes of morbidity and mortality in general population. The fracture results from trivial fall in elderly population, high velocity of injuries like motor accidents in younger people. A prospective study was

conducted in district hospital; Nalgonda over a period of 2 years. Patients aging 32-81 years with stable and unstable proximal femoral fractures treated with DHS and PFN (AO, ASIF) were enrolled in the study. Eightyone patients were included in the study. The mean age was 55 years with female predominance (70%), right side involvement (62%) with commonest mode of injury fall (domestic) and high velocity injuries noted in age group below 45 years was noted. In four fifth of the cases the fall occurred at home. The treatment constituted; 1/5th fixed with DHS and 4/5th PFN. The commonest, co-morbid condition was hypertension. Lag screw cut out is commonest with DHS with unstable fractures 15%, limb shortening due to coxavara results were excellent in 64% good 20% fair 12%, and poor in 6% of cases.The limitation of the study is small sample size.

**Conclusion**

Authors found that proximal femoral nailing (PFN) in intertrochanteric fractures (IF) resulted in better treatment outcome.

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