

# Proximal Femoral Nail: A Case Series of 40 Intertrochanteric Fracture Cases Who Underwent Proximal Femoral Nail in Govt Theni Medical College Hospital

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## Abstract

**Introduction:** Intertrochanteric fractures are considered one of the commonest fractures in the population owing to the advancing age and longevity. Treatment options are available in various forms for managing intertrochanteric fractures. A case series of 40 intertrochanteric fractures who underwent surgical management by proximal femoral nailing in Govt Theni medical College hospital during the period of June 2022 to December 2022 and a follow up for 3 months.

**Materials and Methods:** The study was conducted in Govt Theni medical College hospital From June 2022 to December 2022 in the Department of Emergency medicine and Department of Orthopaedics. The patients were followed for 3 months duration.

**Results:** Postoperative radiographs showed a satisfactory fracture reduction in 30 patients. 10 out of 40 patients showed complications. 2 patients showed non-union of the fracture. They were taken for redo surgery with grafting. 4 patients showed features of infection and underwent debridement supported by antibiotics. 1 patient showed feature of broken screw with non-union who was taken for redo surgery with nail removal, re-nailing and bone grafting. 2 patients showed Z phenomenon and 1 patient showed reverse Z phenomenon due to screw migration which needed screw removal.

**Conclusion:** From the above case series, it is evident that the proximal femoral nailing is much superior implant in treating intertrochanteric fractures with less number complications which is acceptable in any surgical procedure.

**Keywords:** Intertrochanteric Fracture, Proximal Femoral Nailing.

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## Introduction

Intertrochanteric fractures are considered one of the commonest fractures in the population owing to the advancing age and longevity [5,6]. Treatment options are available in various forms for managing intertrochanteric fractures. Various intramedullary nails have been designed for improved fixation and stabilization of

the fracture. Among all implants and procedures, the proximal femoral nail (PFN) devised by the AO/ASIF group in 1996 has gained significance and importance in treating intertrochanteric fractures. A case series of 40 intertrochanteric fractures who underwent surgical management by proximal femoral

nailing in Govt Theni medical College hospital during the period of June 2022 to December 2022 and a follow up for 3 months.

### Materials and methods

The study was conducted in Govt Theni medical College hospital From June 2022 to December 2022 in the Department of Emergency medicine and Department of Orthopaedics. 40 patients of all age groups who suffered intertrochanteric fracture were included in the study. All patients were managed by surgical intervention (Proximal femoral nailing). Surgery was performed on a standard operation table. The patients were maintained on traction preoperatively. All operations were performed under spinal anaesthesia. Closed reduction was carried out and monitored by image intensifier on the anteroposterior and lateral views. An incision was initially made from the

cranial part of the greater trochanter, and a guide wire was passed through the trochanter distally, followed by trochanteric reaming over the guide wire. The nail was implanted manually. The 8.0-mm cervical screw and the 6.4-mm stabilizing screw were introduced after the position of the guide wires had been confirmed and then assembled under fluoroscopic guidance on the antero-posterior and lateral views. The distal static and dynamic holes were then locked. Active and passive exercises were initiated within 48 h of surgery. Partial weight bearing was allowed after suture removal.

The patients were followed for 3 months duration. Every 15 days in the first one and half months and monthly thereafter. X ray evaluation was done after 3 months or earlier if there is any symptom.

### Results

**Table 1: Age distribution**

Age	No of patients
30 – 39	4
40 – 49	5
50 – 59	12
60 – 69	8
>70	11

From the above table it is evident that most of the patients belongs to older age group.

**Table 2: Sex distribution**

Sex	No of patients
Male	15
Female	25

**Table 3: Mode of Injury**

Mode of Injury	No of patients
Self-Fall	28
Trauma	12

**Table 4: Complications**

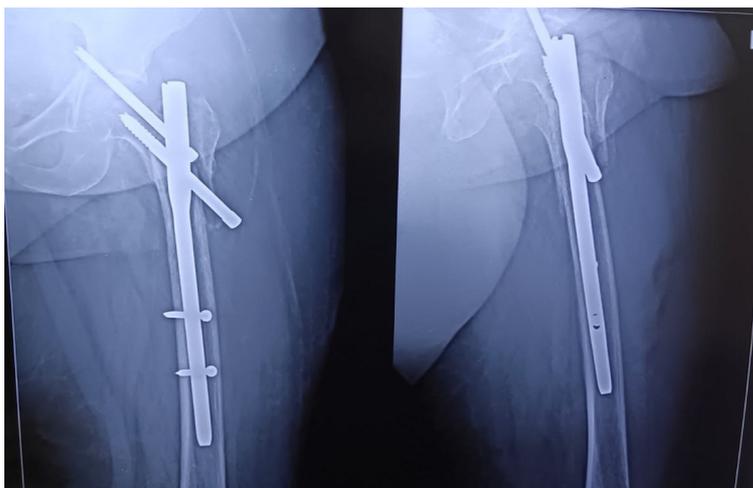
Complications	No of patients
Non union	2
Infection	4
Broken screw (Implant failure)	1
Z phenomenon	2
Reverse Z phenomenon	1



**Figure 1: Intertrochanteric fracture**



**Figure 2: Proximal femur nailing**



**Figure 3: Z phenomenon**



**Figure 4: Reverse Z phenomenon**



**Figure 5: Broken implant**

Postoperative radiographs showed a satisfactory fracture reduction in 30 patients (Fig 2). 10 out of 40 patients showed complications. 2 patients showed non-union of the fracture. They were taken for redo surgery with grafting. 4 patients showed features of infection and underwent debridement supported by antibiotics. 1 patient showed feature of broken screw with non-union (Fig 5) who was taken for redo surgery with nail removal, re-nailing and bone grafting. 2 patients showed Z phenomenon (Fig 3) and 1 patient showed reverse Z phenomenon (Fig 4) due to screw migration which needed screw removal.

### Discussion

Factors such as age, sex, patient's general condition, interval between fracture and

surgery, selection of implant, comorbid illnesses and stability of fixation are essential factors for a successful fracture fixation [3]. Since 1964, after the invention of dynamic hip screw (DHS) by Clawson, it remained the implant of choice because of its low incidence of failure. It provides controlled compression at the fracture site. DHS lost its fame due to some of its complications such as larger incision, more tissue dissection, significant blood loss, varus collapse. These factors lead to increased morbidity and implant failures. The DHS works as a weight bearing implant.

For a successful implant for unstable proximal femoral fractures the implant should satisfy the following factors - Axial telescoping and rotational stability. A minimally invasive implant providing the

foresaid factors is needed for better tolerability in elderly.

Higher static and a several-fold higher cyclical loading is essential for internal fixation of the proximal femur than DHS types of implants [9]. As a result, the fracture heals without the primary restoration of the medial support.

The smaller distal shaft diameter which reduces stress concentration at the tip prevent the fractures of the femoral shaft in PFN nailing. The stress generated on the intramedullary implants is less due to its position close to the weight-bearing axis. The PFN implant also prevents the medialisation of the shaft. Nails other than PFN had their entry through the piriform fossa which results in injury to the tendinous hip abductor musculature while PFN has its entry through the trochanter which results in less injury to the musculature [8]. The use of PFN in the treatment of intertrochanteric fractures may have positive effect restoration of walking. PFN works as a weight sharing implant.

### Conclusion:

From the above case series, it is evident that the proximal femoral nailing is much superior implant in treating intertrochanteric fractures with less number complications which is acceptable in any surgical procedure. It has much success rate and patient acceptability. Success rate also depends on the skill and proper placement of the implant rather than the implant per se.

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