

## EVALUATION FUNCTIONAL OUTCOME OF HELICAL FIXATION PFN A2 IN PROXIMAL FEMUR FRACTURE IN ELDERLY

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**Article Info:** Received 28 July 2021; Accepted 04 September 2021

**DOI:** <https://doi.org/10.32553/ijmbs.v5i9.2184>

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**Conflict of interest:** No conflict of interest.

### Abstract

**Background:** Intertrochanteric fractures are the most frequently operated fractures and has the highest mortality and morbidity rates. Evaluation functional outcome of helical fixation pfn a2 in proximal femur fracture in elderly

**Methods:** Hospital based prospective randomized comparative study conducted during year Oct 2017 – Dec2019 at Department of Orthopedics, GMC Hospital and Associated Groups of Hospitals, Kota

**Results:** The Distribution of the cases according to HHS (24 week). As per HHS, we have found that 78.57% cases (22) under excellent category and 17.85% (5) good and 3.57% (1) fair of HHS.2 patients. 2 patients were lost in their followup.

**Conclusion:** We can conclude that the PROXIMAL FEMORAL NAIL ANTIROTATION2 is after proper training and technique a safe and easy implant option for treatment of complex peritrochanteric fractures.

**Keywords:** HHS, Femur, fracture

### Introduction

Globally, proximal femoral fractures have been on the rise with the increase in life expectancy and osteoporosis in the elderly population and road traffic accidents among the younger counterparts. The total number of trochanteric fractures is predicted to reach 1.6 million by 2025 and 2.5 million by 2050.<sup>1,2</sup>

Intertrochanteric fractures are the most frequently operated fractures and has the highest mortality and morbidity rates. Intertrochanteric femur fracture is one of the most important health problems amongst the elder population. Incidence of these fractures has increased primarily due to increasing life span and more sedentary life style brought by urbanization. In younger population, IT fracture occurs due to high velocity trauma, where as in elderly population, it is most often due to trivial trauma. Incidence of intertrochanteric fractures is more in females compared to males due to osteoporosis. Mortality ranges between 15-20%. The incidences of all hip fracture is approximately 80 per 100,000 people and is expected to double over the next 50 years as the population age. Intertrochanteric fracture makes up 45% of all hip fracture.<sup>3</sup>

Intertrochanteric femoral fractures occur mostly in the elderly and are associated with high mortality rates. Systemic or localized complications can occur during long-term bed rest. Early rehabilitation through stable reduction and firm internal fixation can be viewed as the most important treatment goal. Although the type of orthopaedics implant used for surgical treatment of intertrochanteric femoral fracture should be selected based on the pattern of fracture

and the patient's condition, the experience and preference of the surgeon performing the procedure often play the most important role in this selection process.<sup>4</sup>

For long time, dynamic hip screws (DHS) were the main treatment option, but proximal femoral nails have recently gained wide popularity<sup>1</sup>. Many researchers have reported on the outcomes of DHS and proximal femoral nails in the treatment of unstable trochanteric fractures; however, there have been few studies regarding the treatment outcomes for stable trochanteric fractures, as such fractures can be easily overlooked. The surgical treatment of stable trochanteric fractures is uncontroversial, and good results regarding fracture union and a reduced need for revision surgery can be expected with various implants. However, caution should be taken in cases involving elderly patients with osteoporosis, since postoperative reduction loss is not all that rare in such patients, even for stable fractures. In particular, most previous studies involving patients with stable trochanteric fractures have focused on evaluating different surgical methods and implants, with the primary aim to reduce the rate of fracture complication and reoperation.

### Materials and Methods

- **Study Site:** Department of Orthopedics, GMC Hospital and Associated Groups of Hospitals, Kota
- **Study Period:** during year Oct 2017 – Dec2019
- **Study Design:** Hospital based prospective randomized comparative study

- **Study Participant:** Patient who met the inclusion criteria and report at department of Orthopedics, GMC and associated hospitals, Kota
- **Study Place:** Department of Orthopedics, GMC and associated Hospital, Kota

#### Selection of Cases

30 cases of Trochanter fracture were included in this study .

#### Inclusion criteria

- Close stable & unstable intertrochanteric femur fracture.
- Boyd and Griffith type I, II, III grade fracture.
- Patients consenting to study
- Age above 60 years

#### Exclusion Criteria

- Compound and pathological intertrochanteric fracture.
- Patients with vascular injury.
- Medically or anaesthetically unfit patients.
- Patient below 60 yrs.

All the cases were subjected to detailed history and clinical examination with emphasis on age, sex, mode of injury, fracture pattern, medical co-morbidities, other associated bony

injury, duration of reporting after injury and time interval between injury and treatment.

A thorough clinical examination of the affected limb was carried out according to following points; attitude, pain, edema, ecchymosis, deformity.

Clinical examination was also included general, systematic examination and for associated injuries like head, chest-visceral injuries and other associated skeletal injuries.

The required information was recorded and proforma was prepared.

Radiographs of hip were taken in appropriate views and diagnosis was established by clinical and radiological means. The patient was put on preoperative traction table with appropriate weight.

All patients were taken for elective surgery as soon as possible after necessary blood, urine and radiographic preoperative work-up.

Preoperative intravenous antibiotic were given and continued at 12 hourly intervals postoperatively for five days and then switched to oral form till suture removal.

#### Results

**Table 1: Distribution of the cases according to general characteristics**

<b>Age in yrs</b>	67.23±7.4
<b>Male : Female</b>	18:12
<b>Rural : Urban</b>	18:12
<b>Time between Injury and Operation</b>	3.40±1.58 days
<b>Fall : RTA</b>	21 : 9
<b>Right Side : Left Side</b>	16 : 14
<b>Stable Fracture : Unstable Fracture</b>	12 : 18
<b>BOYD &amp; GRIFFITH Classification(1:2:3)</b>	17 : 10 : 3
<b>Open Reduction and Closed Reduction</b>	0 : 30

The above table depicts the distribution of cases according to age group. As per the age, we have observed 53.33% were fall under 66 to 70 years of age followed by 26.6 above 70 years of age. The mean ±SD value was 67.23±7.4 Yrs . As per gender wise 60% (18) female and 40% (12) male. As per geographical location 60% (18) rural and 40% (12) urban areas. The time between injury and operation was 3.40±1.58 days. As per mode of injury, we have observed that 70% (21) of the cases falls under FALL MOI category and 30% (9) of

the cases in RTA MOI category. As per side, we have found that 53.3% (16) right-handed and 46.7% (14) left handed category. As per type of fracture, we have found that 40% (12) stable and 60% (18) unstable type of fracture. As per BOYD & GRIFFITH classification, we have found that 56.67% (17), 33.33% (10) found type-3 and 10% (3) type-1. As per reduction, 100 % (30) of the cases fall under closed reduction category.

**Table 2: Distribution of the cases according to HHS (24 week)**

<b>HHS (24 week)</b>	<b>Number</b>	<b>Percentage%</b>
Excellent	22	78.57
Fair	1	3.57
Good	5	17.85
total	28	100

The above table depicts the Distribution of the cases according to HHS (24 week). As per HHS, we have found that 78.57% cases (22) under excellent category and 17.85% (5) good and 3.57% (1) fair of HHS. 2 patients were lost in their follow-up.

**Table No 3: Distribution of the cases according to complication**

Complication	Number	Percentage%
Varus On Reduction	0	0
Non Union	0	0
Superficial Wound Infection	2	7.14
Lld(>2cm)	0	0
Implant Failure	1	3.57

The above table depicts the Distribution of the cases according to complication. As per complication, we have observed that 7.14% (2) have superficial wound infection and 3.57% (1) have implant failure

- Mean blood loss (ml) : 140.83ml
- Standard deviation : 69.87ml

### Discussion

Fractures of intertrochanteric femur have been recognize as a major challenge by the Orthopaedics community, not solely for achieving fractures union, but for restoration of optimal function in the shortest possible time that to with minimal complications. The aim of management accordingly has drifted to achieving early mobilization, rapid rehabilitation and quick return of individuals to premorbid home and work environment as a functionally and psychologically independent unit.

	Operation Time	Blood loss
Jung Ho Park et al 2010 <sup>5</sup>	83.33 minutes	331.22 ml
Manoj R. et al. (2016) <sup>6</sup>	35.20 ± 6.03 minutes	59.80 ± 14.96
In our study	45 to 60 min	140.83

In 2015, G.N. Kiran Kumar et al(2015)<sup>7</sup>, reviewed 45 patients of unstable intertrochanteric fractures, recommended PFN A2 for fixation of unstable intertrochanteric fractures with less operative time and low complication rate. proper operative technique is important for achieving fracture stability and to avoid major complications.

In 2017 Srinivas Kasha et al conducted study on 78 patients in elderly population was operated with PFN A2 concluded that procedure with PFN A2 was easy to perform with minimal intraoperative and post-operative complications. Efficacy of implant is good. 2017 Y. Guo et al ·2018, J Thiyageswaran et al<sup>8</sup>

### Conclusion

Dynamic hip screw is the gold standard for treatment of stable type of intertrochanteric fractures as well as unstable types. But it is associated with many complications. We can conclude that the PROXIMAL FEMORAL NAIL ANTIROTATION2 is after proper training and technique a safe and easy implant option for treatment of complex peritrochanteric fractures.

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