

## FUNCTIONAL OUTCOME OF SUB- TROCHANTRIC FRACTURE TREATED BY LONG PFN

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### Abstract

**Background:** Hip fractures are a growing concern for the orthopedic surgeons all over the world because the incidence of hip fractures is increasing dramatically and these fractures impose a significant challenge in their efficient management.

**Methods:** It was a prospective study on 50 cases of proximal femoral fractures. The fractures were classified according to Seinsheimer classification. Salvati and Wilson Score were used for functional assessment.

**Results:** According to Salvati and Wilson scoring system excellent results were seen in 80% of cases (40 patients), good results in 16% cases (8 patients), fair result in 4% cases (2 patients) and poor results in (0% patients).

**Conclusions:** PFN is safe, effective and patient friendly device useful for the treatment of all subtrochanteric fractures irrespective of their comminution.

**Keywords:** Proximal femoral nail, Subtrochanteric fractures, Proximal femur fracture

### Introduction

Hip fractures rank in the top ten of all impairments worldwide in terms of loss in disability-adjusted years for people 50+ years old. <sup>1</sup> Consequences of hip fractures are significant in terms of lives lost and the associated negative impacts on hip fracture patients' functioning and quality of life <sup>2</sup>. Among the fractures of upper end of femur, intertrochanteric fractures and subtrochanteric fractures account for more than half of the hip fractures in elderly. Subtrochanteric fractures account for 10-15% of all hip fractures <sup>3</sup>.

Boyd and Griffin in 1949 called attention to subtrochanteric fractures as a variant of peritrochanteric fractures and noted their higher incidence of unsatisfactory results after operative treatment <sup>4</sup> They are seen in older patients sustaining low velocity trauma and in younger patients involved in high velocity trauma. The biomechanical characteristics of the area, poor vascularity caused by the predominance of cortical bone and inadequacy of reduction and internal fixation are responsible for malunion, delayed union and mechanical failure of implants used in the treatment <sup>5</sup>. Several implant designs have been developed in order to facilitate

ambulation and to reduce the risk of complications when treating subtrochanteric fractures.

Grundy (1970) <sup>6</sup> showed that the subtrochanteric area was the commonest site for femoral pathological fractures. In his study, 28.6% femoral fractures caused by Paget's disease occurred in the subtrochanteric area. Non-operative treatment of subtrochanteric fractures is rarely considered. It consists of skeletal traction followed by spica cast or cast brace. Nonoperative treatment is poorly tolerated, particularly in the elderly and multiply injured because of the need for prolonged bed rest and the potential for skin problems. Operative management is the treatment of choice to achieve the goals of early rehabilitation and optimal functional recovery. The purpose of the present study is to evaluate functional outcome of the subtrochanteric fractures -both high energy and low energy -treated by PFN. Functional as well as anatomical results were evaluated with regard to pain, limping, activities, deformity and range of movements. The present study was done with the hope to find out a solution for the treatment of subtrochanteric fractures.

**METHODS**

This was a prospective study on cases of subtrochanteric fractures treated, who were admitted in Department of Orthopaedics, R V R S Medical College, Bhilwara. Fractures were classified according to Seinsheimer classification. 50 cases were followed at regular intervals and final assessment was done at 6 months. The Salvati and Wilson score of hip function was used at the last clinical assessment.

**RESULTS**

**Table 1: Side of injury**

Side	No. of patients	Percentage
Right	29	58.00
Left	21	42.00
Total	50	100.00

In present study, right sided involvement is more when compared to left sided involvement.

**Table 2: Type of surgery**

Type of surgery	No. of patients	Percentage
Open reduction	7	14.00
Closed reduction	43	86.00
Total	50	100.00

In present study, closed reduction was done for 86.7% of patients.

**Table 3: Size PFN**

Size of the PFN	No. of patients	Percentage
9 mm	44	88.00
10 mm	6	12.00
11 mm	0	0.00
Total	50	100.00

Only 6 patients needed size 10 Proximal Femoral Nail. The rest had medullary canals appropriate for the size 9 nail. We didn't use 11 size nail for any of our patients.

**Table 4: Time of fracture union**

Time of union	No. of patients	Percentage
12-14 weeks	15	30.00
14-16 weeks	35	70.00
>16 weeks	0	0.00
Total	50	100.00

In our study the average time for radiological union of fracture was between 14 to 16 weeks.

**Table 5: Functional Outcome (Salvati and Wilson score)**

Functional outcome	No. of patients	Percentage
Excellent	40	80.00
Fair	8	16.00
Good	2	4.00
Poor	0	0.00

Results were assessed by Salvati and Wilson scoring system and excellent results were seen in 40 cases, good results in 8 cases, fair result in 2 cases and poor results in 0% cases.

**Discussion**

Subtrochanteric fractures of femur are usually the result of high energy trauma. Because of complex stress configuration in this region and its non-homogenous osseous structure and geometry, fractures occur along the path of least resistance through the proximal femur<sup>7</sup>

Alyassari et al also used Salvati and Wilson scoring system for final follow up. In their study salvati and Wilson score for hip function was >20 points in 78% of the patients (maximum score is 40 points)<sup>8</sup>. According to Salvati and Wilson score system in our study excellent results were seen in 40 cases, good in 8 cases, fair in 2 cases treated with proximal femoral nail (PFN).

**Table 6: Comparison with other studies**

	Boldin et al <sup>9</sup>	Ekstrom et al <sup>10</sup>	Menzes et al <sup>11</sup>	Present study
No. of patients	55	105	155	50
Duration of surgery (Min)	68	105	76	74.20
Bony union (%)	100	100	99	100
Failure of fixation (%)	0	11	2	0
Open reduction (%)	10	-	13	14

**CONCLUSIONS**

PFN is safe, effective and patient friendly device useful for the treatment of all subtrochanteric fractures irrespective of their comminution

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