

# ORIGINAL ARTICLE

## Evaluation of management of subtrochanteric fractures

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### ABSTRACT:

**Background:** A subtrochanteric fracture of the femur refers to a break in the femur (thigh bone) located just below the lesser trochanter, which is a bony prominence on the upper part of the femur. The present study was conducted to evaluate management of subtrochanteric fractures. **Materials & Methods:** 54 subtrochanteric fracture of the femur of both genders was selected. Russell Taylor classification was recorded. Parameters such as range of motion (ROM), union time, outcome, complications and management were recorded. **Results:** Out of 54 patients, males were 32 and females were 22. Type of fracture was IA in 10, IB in 16, IIA in 18 and IIB in 10 patients. Union time 4 months in 2, 4.5 months in 47 and 5 months in 5 cases. ROM was mild in 4 and full in 50 cases. Management given was dynamic hip screw in 15, locking plate in 18 and proximal femoral nail in 21 cases. Complications was mild varus deformity in 2 and shortening in 3 cases. Outcome was fair in 1, good in 7 and excellent in 46 cases. The difference was significant ( $P < 0.05$ ). **Conclusion:** We believe that PFN provided the best fixation with the greatest outcomes out of all the implant options available for the treatment of femur subtrochanteric fractures. PFN is a dependable cephalomedullary implant that we suggest for fixing femur subtrochanteric fractures.

**Keywords:** subtrochanteric fracture, femur, femoral nail

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### INTRODUCTION

A subtrochanteric fracture of the femur refers to a break in the femur (thighbone) located just below the lesser trochanter, which is a bony prominence on the upper part of the femur.<sup>1</sup> This type of fracture is often the result of high-energy trauma such as a fall, car accident, or sports injury, though it can also occur in individuals with weakened bones, such as those with osteoporosis or other conditions that affect bone density.<sup>2</sup>

Its incidence is much lower than that of the intra and extra capsular fracture of the neck of the femur. The incidence usually is six per 1 lack population per year, with a female preponderance.<sup>3</sup> It is common in older patients after low energy trauma along with osteoporosis and in younger patients with high energy trauma. This area is also the commonest site for pathological femoral fractures (17%) due to metastatic deposits from the lung, breast, prostate, myeloma and Paget's disease.<sup>4</sup> The mechanism of the injury is fall and direct lateral hip trauma, road traffics accidents, axial loading, fall form height and gunshot injury. Treatment failure is typical for subtrochanteric fractures, which are among the hardest fractures to

repair because of the comorbidities of rotational malunion, non-union, shortening, and angular deformity. The preferred course of treatment is surgical stabilization, notwithstanding its technical difficulties.<sup>5</sup> Anatomical alignment, length restoration, rotation with adequate fixation, prevention of the varus deformity, maintenance of the abduction muscle's lever arm, and promotion of early mobilization and rehabilitation are the objectives of treatment.<sup>6</sup> The present study was conducted to evaluate management of subtrochanteric fractures.

### MATERIALS & METHODS

The present study was conducted on 54 subtrochanteric fracture of the femur of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Russell Taylor classification was recorded. Parameters such as range of motion (ROM), union time, outcome, complications and management were recorded. Data thus obtained were subjected to statistical analysis. P value  $< 0.05$  was considered significant.

### RESULTS

**Table I Distribution of patients**

Total- 54		
Gender	Male	Female
Number	32	22

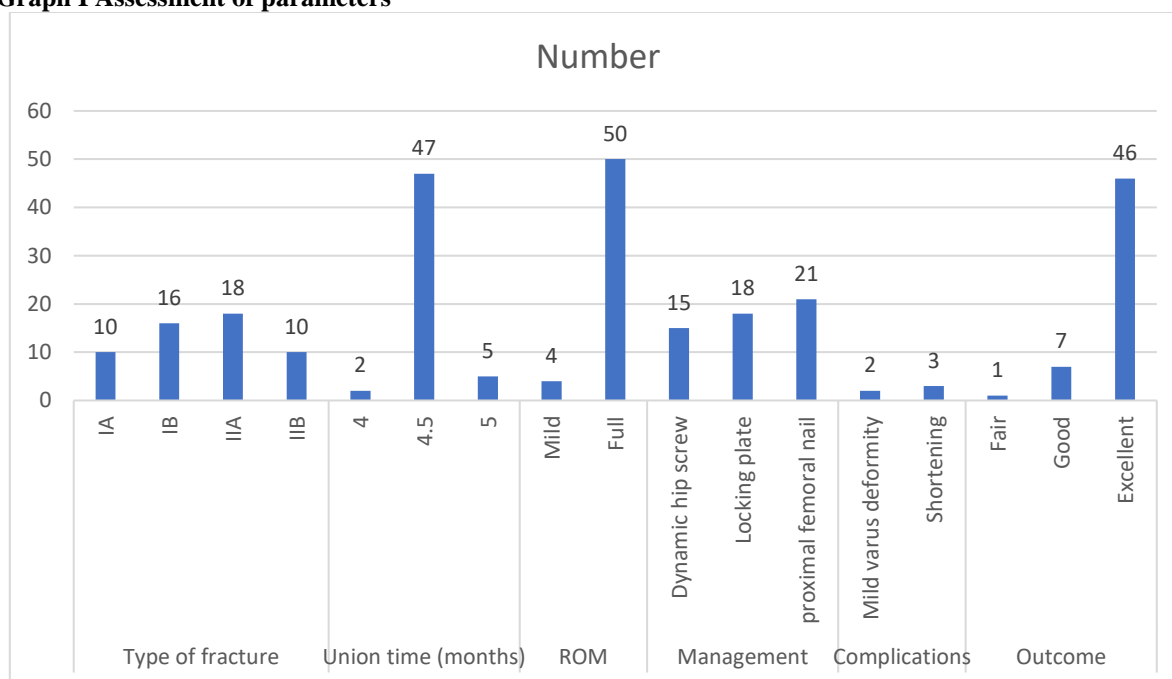
Table I shows that out of 54 patients, males were 32 and females were 22.

**Table II Assessment of parameters**

Parameters	Variables	Number	P value
Type of fracture	IA	10	0.95
	IB	16	
	IIA	18	
	IIB	10	
Union time (months)	4	2	0.04
	4.5	47	
	5	5	
ROM	Mild	4	0.01
	Full	50	
Management	Dynamic hip screw	15	0.63
	Locking plate	18	
	proximal femoral nail	21	
Complications	Mild varus deformity	2	0.72
	Shortening	3	
Outcome	Fair	1	
	Good	7	
	Excellent	46	

Table II shows that type of fracture was IA in 10, IB in 16, IIA in 18 and IIB in 10 patients. Union time 4 months in 2, 4.5 months in 47 and 5 months in 5 cases. ROM was mild in 4 and full in 50 cases. Management given was dynamic hip screw in 15, locking plate in 18 and proximal femoral nail in 21 cases. Complications was mild varus deformity in 2 and shortening in 3 cases. Outcome was fair in 1, good in 7 and excellent in 46 cases. The difference was significant ( $P < 0.05$ ).

**Graph I Assessment of parameters**



**DISCUSSION**

The fracture is displaced by the proximal femur muscle, and the bone is cortical. Primary cortical healing is used to treat this area, and it takes time for the healing to solidify.<sup>7</sup> There is a large moment arm with large lateral tensile and medial compressive loads as a result of the axial loading forces via the hip joint.<sup>8,9</sup> Torsional and rotational shear forces are also influenced by the hip's muscular forces.<sup>10</sup> Due to the high level of vascularity in this region, thigh bleeding

is frequent and can result in compartmental syndrome and shock. Six times the body weight is passed via this area during typical activities.<sup>11,12</sup> The present study was conducted to evaluate management of subtrochanteric fractures.

We found that out of 54 patients, males were 32 and females were 22. Chakraborty<sup>13</sup> in his study a total of 12 cases of subtrochanteric fracture of the femur were selected. Out of 12 cases, 9 were males and 3 were females. K-nail fixation was done in one case of

pathological fracture. Three locking plates, 4 DHS and 4 PFN were done. All the fractures united with good to excellent results, with few complications like mild restriction of the hip range of motion, mild varus deformity and a shortening of 2 cm.

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Jiang et al<sup>15</sup> examined the outcomes of 49 patients in a row who received intramedullary fixation. The patients were 53 years old on average. When follow-up was done at six weeks, twelve weeks, six months, one year, and two years, clinical and radiographic assessments were carried out. With the exception of one delayed union case, all 49 of the traumatic subtrochanteric fractures healed without incident. Every single case had full recovery of walking and squatting skills during the 6-month follow-up evaluation. Of them, 32 fractures were successfully treated with traction on a fracture table while under fluoroscopy; the remaining 17 instances required cerclage wiring or cable bandage through a little incision. 46 minutes was the average operating time (range, 21 to 98). Thirteen of the Seinsheimer type II fractures underwent static distal interlocking with a single bolt, while the remaining eighteen were left unlocked distally. No problems were experienced, such as implant breakage or cutting.

The shortcoming of the study is small sample size.

## CONCLUSION

We believe that PFN provided the best fixation with the greatest outcomes out of all the implant options available for the treatment of femur subtrochanteric fractures. PFN is a dependable cephalomedullary implant that we suggest for fixing femur subtrochanteric fractures.

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