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Original Research

Assessment of outcome of patients with Inter-trochanteric femoral fractures undergoing surgical management by Proximal Femoral Nail (PFN): A Clinical Study

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***ABSTRACT*:**

Background: Proximal femoral fractures are a big challenge in traumatology both for orthopedic surgeons and anaesthetists. AO/ASIF in 1996 designed a new intramedullary device, the Proximal Femoral Nail (PFN), used for treating unstable per- intra- and sub-trochanteric femoral fractures. Hence; the present study was undertaken for assessing the outcome of patients with Inter-trochanteric femoral fractures undergoing surgical management by PFN. **Materials & Methods:** A total of 10 patients with Inter-trochanteric femoral fractures were enrolled in the present study. Complete demographic details of all the patients were obtained. Pre-operative assessment was done and Harris hip score was calculated in all the patients. All the patients underwent treatment with PFN under the hands of skilled and experienced orthopaedic surgeon. After the completion of the surgical procedure, patients were kept on follow-up. Removal of sutures was done on 10th post-operative day. Harris hip score and time to weight bearing was calculated on subsequent follow-up till one year. All the results were analysed by SPSS software. **Results:** Mean time to weight bearing was found to be 12.5 days. In 70 percent of the patients, mean time to weight bearing was 12 weeks. According to Harris hip score grading, in 70 percent of the patients, excellent results were obtained. However; in 20 percent and 10 percent patients respectively, good and fair results were obtained. **Conclusion:** PFN is an effective line of treatment for treating patients with inter-trochanteric femoral fractures.

Key words: Inter-trochanteric fractures, Proximal femoral nail

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INTRODUCTION

Proximal femoral fractures are a big challenge in traumatology both for orthopedic surgeons and anaesthetists. These fractures are relatively common in the elderly in 5th decade of life due to decreasing bone stock, leading to fracture by trivial trauma thus necessitating the hospital admission. The younger age group is getting involved because of high energy trauma and rapid industrialization with resultant complex pattern of injury in the working class of people.[1- 3]

The proximal femoral fractures occur 2 to 3 times more in females than in males. The risk of suffering from a proximal femur fracture doubles every ten years after the age of fifty. Substantial morbidity and mortality is associated with proximal femur fractures. The intertrochanteric fractures and femoral neck fractures represent an epidemic disease to the health care system and society in general.[4] Proximal femoral fractures include the intracapsular and extracapsular fractures. Intracapsular fractures are femoral head and neck fractures proximal to the attachment of hip capsule. Pertrochanteric, intertrochanteric and subtrochanteric fractures are extracapsular fractures.[5- 7] AO/ASIF in 1996 designed a new intramedullary device, the Proximal Femoral Nail (PFN), used for treating unstable per- intra- and sub-trochanteric femoral fractures.[6]

Hence; under the light of above mentioned data, the present study was undertaken for assessing the outcome of patients

with Inter-trochanteric femoral fractures undergoing surgical management by PFN.

MATERIALS & METHODS

We planned the present study in the department of orthopaedics of the medical institute. It involved assessment of outcome of patients with Inter-trochanteric femoral fractures undergoing surgical management by PFN. Ethical approval was obtained from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. A total of 10 patients with Inter-trochanteric femoral fractures were enrolled in the present study. Complete demographic details of all the patients were obtained. Pre-operative assessment was done and Harris hip score was calculated in all the patients based on criteria described previously in literature.[8] Preoperative Radiographic evaluation was done in all the patients. All the patients underwent treatment with PFN under the hands of skilled and experienced orthopaedic surgeon. After the completion of the surgical procedure, patients were kept on follow-up. Removal of sutures was done on 10th post-operative day. Harris hip score and time to weight bearing was calculated on subsequent follow-up till one year. According to Harris hip score, a score of 0 to 100 was given to each patient depending upon the physical activity of the bone. Grading of the Harris hip score included: Poor- Score of less than 70, Fair- Score of between 70 to 79, Good- Score of between 80 to 89, and Excellent- Score of between 90 to 100. All the results were analysed by SPSS software. Chi-square test was used for assessment of level of significance.

RESULTS

In the present study, a total of 10 patients with inter-trochanteric fractures were enrolled in the present study. Mean age of patients of the present study was 67.5 years. 60 percent of the patients of the present study belonged to the age group of less than 60 years. 60 percent of the patients of the present study were males while the remaining 40 percent were females.

In the present study, mean time to weight bearing was found to be 12.5 days. In 70 percent of the patients, mean time to weight bearing was 12 weeks. According to Harris hip score grading, in 70 percent of the patients, excellent results were obtained. However; in 20 percent and 10 percent patients respectively, good and fair results were obtained.

DISCUSSION

The trochanter area consists of greater trochanter and lesser trochanter representing the transitional zone between femur neck and shaft. The intertrochanteric region has abundant blood supply and osteogenic properties hence fracture union occurs more often than not.[6- 8] Earlier conservative treatment was given for these fractures which resulted in delayed mobilization and malunion as the patients were bed ridden for long periods resulting in various morbidities like bed sores, deep vein thrombosis etc.[9]

Table 1: Age-wise distribution of patients

Age Group	Number of patients	Percentage of patients
Less than 60	6	60
60 - 70	2	20
71 - 80	1	10
>80	1	10
Total	10	100

Table 2: Gender-wise distribution of patients

Gender	Number of patients	Percentage of patients
Male	6	60
Female	4	40
Total	10	100

Table 3: Time to Weight Bearing

Weight bearing (weeks)	Number of patients	Percentage of patients
12	7	70
14	0	0
16	3	30
Total	10	100
Mean ± SD	12.5 ± 3.12	

Table 4: Total Harris hip score grading postoperatively on follow-up

HARRIS Grade	Number of patients	Percentage of patients
Excellent	7	70
Fair	1	10
Good	2	20
Total	10	100

PFN is a third-generation intramedullary device provided improved fixation of unstable intertrochanteric fractures as it allowed multiple lag screws into femur head providing better rotational stability compared to a solitary lag screw. The proximal section of the nail has a small diameter hence reducing the damage to gluteus medius on nail insertion resulting in in improved bone integrity in the region. The smaller superior screws when placed close to the subchondral bone of the femur head experience huge varus stresses not shared by the larger inferior screw leading to fracture.[10] Hence; under the light of above mentioned data, the present study was undertaken for assessing the outcome of patients with Inter-trochanteric femoral fractures undergoing surgical management by PFN.

In the present study, a total of 10 patients with inter-trochanteric fractures were enrolled in the present study. Mean age of patients of the present study was 67.5 years. 60 percent of the patients of the present study belonged to the age group of less than 60 years. 60 percent of the patients of the present study were males while the

remaining 40 percent were females. Kristensen et al in 2010 studied 280 elderly patients with proximal femoral fractures and sought to determine the predictive value of Parker's score on post operative outcome. They found that a patient with a low pre-fracture functional level (Parker's score ≤ 6) was 18 times more likely not to regain independence in basic mobility during hospitalization, regained independence in mobility during the post operative period (if at all) on average 3 days later, and was 13 times more likely not to be discharged directly to his or her own home, compared to a patient with a high functional level before fracture (NMS > 6). Older age was independently associated with not regaining independence in basic mobility, a greater number of postoperative days to independence in mobility, and not being discharged to one's own home.[11] Al-Yassariet et al in 2002 treated 76 patients by proximal femoral nail. According to the patients or their carers, outcome was described as good or very good in 94% of patients and the level of function was similar to pre-injury level in 50% of the patients. They concluded that the proximal femoral nail is a useful device in the treatment of unstable trochanteric femoral fractures.[12]

In the present study, mean time to weight bearing was found to be 12.5 days. In 70 percent of the patients, mean time to weight bearing was 12 weeks. According to Harris hip score grading, in 70 percent of the patients, excellent results were obtained. However; in 20 percent and 10 percent patients respectively, good and fair results were obtained. Ozkan et al [75] in 2011 described the performance of the proximal femoral nail in reverse oblique intertrochanteric fractures. In their series of fifteen patients with reverse oblique fractures, they achieved a mean Harris Hip Score of 74.66. The average consolidation time was 8.6 weeks. They did not encounter any intra-operative complications or post-operative technical failures.[13] Parmar et al [77] from Gujarat, India in 2011 compared the short PFN to the long PFN in terms of the Harris hip score, walking ability, complications and the need for revision surgery. They encountered two cases of Z effect, both of which were in the short PFN group. Four cases of reverse Z effect were described in their study, three of which were in the short PFN group.[14]

CONCLUSION

Under the light of above obtained data, the authors conclude that PFN is an effective line of treatment for treating patients with inter-trochanteric femoral fractures. However; further studies are recommended.

REFERENCES

1. Pare A. In Rockwood and Green's, Fractures in adults, 5thedn Philadelphia, Lippincott, Williams and Wilkins, 2001. 5th ed. 2017.
2. Cooper JA. The classic fractures of the neck of the thigh-bone. ClinOrthop 1973; 92:3–5.
3. Zuckerman J.D. Hip fracture. N Engl J Med 1996; 334: 1519-25.
4. Evans PJ, McGrory BJ. Fractures of the proximal femur. Nutr 1991; 54: 157-63.
5. Dimon JH, Hughston JC. Unstable intertrochanteric fractures of the hip. J Bone Joint Surg. 1967;49:440-50.
6. Sarmiento A. Intertrochanteric fractures of the femur. 150-degree-angle nail-plate fixation and early rehabilitation - A preliminary report of 100 cases. J Bone Joint Surg. 1963;45:706-22.
7. Parker MJ, Pryor GA. Gamma versus DHS nailing for extracapsular femoral fractures. Meta-analysis of ten randomized trials. IntOrthop. 1996;20:163–8.
8. Steinberg EL, Blumberg N, Dekel S. The fixion proximal femur nailing system: Biomechanical properties of the nail and cadaveric study. Journal of biomechanics 2005; 38: 63-68.
9. Reska M, veverkova L, Divis P et al. Proximal femoral nail (PFN) – A new stage in the therapy of extracapsular femoral fractures. ScriptaMedica (BRNO) 2006 June 79(2); 115-22.
10. Khan IA, Bhatti A, Power D et al. Trochanteric fractures. J Bone Joint Surg. 2004;38:1013-15.
11. Kristensen M, Foss N, Ekdahl C, Kehlet H. Prefracture functional level evaluated by the New Mobility Score predicts in-hospital outcome after hip fracture surgery. ActaOrthopaedica 2010;81(3):296-302.
12. Al-Yassariet G, Langstaff R, Jones J, Al-Lami M. The AO/ASIF proximal femoral nail (PFN) for the treatment of unstable trochanteric femoral fractures. Injury 2002; 33:395-99.
13. Ozkan K, Eceviz E, Unay K, Tassyikan L et al. Treatment of reverse oblique trochanteric femoral fractures with proximal femoral nail. International Orthopaedics 2011 Apr;35(4):595-98.
14. Parmar D, Porecha M, Chudasama S. Long proximal femoral nails versus short proximal femoral nails for the management of proximal femoral fractures – a retrospective study of 124 patients. Eur J OrthopSurgTraumatol 2011;21:159-164.