



COMPARATIVE STUDY OF PFNA AND PFNA2 IN AN UNSTABLE INTERTROCHANTERIC FRACTURE A RETROSPECTIVE STUDY OF 50 CASES.

Orthopaedics

Dr. Tarun Reddy* M.S.Ortho *Corresponding Author

Dr. Mohammad Ismail Hathiwale M.S.Ortho

Dr. Samar Gajabar M.S.Ortho

Dr. Tejdeep Kodela M.S.Ortho

ABSTRACT

Introduction: Geriatric hip fractures are one of the commonest fractures worldwide, and treating unstable intertrochanteric fractures in geriatric age groups is always challenging due to osteoporosis these are more common in females, and these fractures are complicated with associated comorbidities. Today operative treatment has largely replaced conservative management and the goal is to achieve stable fixation and early mobilization. **Materials And Methods:** the study was conducted on 50yrs elderly with unstable intertrochanteric fractures in which 25 cases were treated with PFNA and 25 cases were treated with PFNA2 from October 2020 to October 2021. **Conclusion:** we observed that both PFNA and PFNA2 perform well, showing equally good functional and radiological outcome, PFNA2 offers the advantages of better bone purchase in patients with osteoporotic bone and has the advantage of minimal incision, both offer excellent result in terms of mechanical stability and union rate.

KEYWORDS

INTRODUCTION

Geriatric hip fractures are one of the commonest fractures worldwide. In general, they impose a detrimental impact on both the healthcare system and society. An increase in patient's life span and a more sedentary lifestyle brought about by urbanization has rapidly increased the incidences of these fractures [2]. Due to osteoporosis, the incidence of intertrochanteric fracture is more in females than in males [1]. Today operative treatment has largely replaced conservative measures and the goal of treatment is to achieve accurate or acceptable anatomical and stable reduction with stable internal fixation in order to achieve early mobilization of patients and prevent complications of prolonged recumbence [3]. Proximal femoral fractures occur typically at the junction between trabecular bone and cortical bone, where the mechanical stress across the junction is highest in the femur, which is responsible for their frequent comminution. These fractures account for 10% to 34% of all hip fractures [4].

The proximal femoral region is usually exposed to high stresses during activities of daily living. Axial loading forces through the hip joint create a large momentum arm, with significant lateral tensile stresses and medial compressive loads. In addition to the bending forces, muscle forces at the hip also create torsional effects that lead to significant rotational shear forces. During normal activities of daily living, up to 6 times the body weight is transmitted across the proximal femoral region of the femur. As a result of these high forces, the bone in this region is a thick cortical bone with less vascularity, and results in increased potential for healing disturbances. Hence intertrochanteric fractures with posteromedial comminution and sub trochanteric fracture are difficult to manage and associated with many complications [5].

METHODS AND MATERIALS

Fifty patients were included in the study. 25 patients were treated with PFN and 25 patients were treated with PFNA2. Following are the various observations and conclusions made from the study. Here Group A is PFNA2 and Group B is PFN. All characteristics were summarized descriptively. For continuous variables, the summary statistics of mean $\pm$ standard deviation (SD) were used.

RESULTS

Functional Outcome Is Measured By Using Harris Hip Scoring System

- In case of PFNA2: 88% patients had an excellent outcome, 8% had good outcome, 4% had fair outcome.
- In case of PFN: 68% patients had an excellent outcome, 24% had good outcome, 8% had fair outcome.

Table 1: Distribution of Cases according to HHS at 6 months

HHS at 6 months	Group A		Group B		p value
	N	%	N	%	
Excellent	22	88	17	68	0.226
Good	2	8	6	24	
Fair	1	4	2	8	
Total	25	100	25	100	

Union

There were no cases of non-union found both in PFN and PFNA2 group

Table 2: Distribution of Cases according to Union

Union	Group A		Group B		p value
	N	%	N	%	
United	25	100	25	100	-
Total	25	100	25	100	

PFN

PRE-OP X-RAY

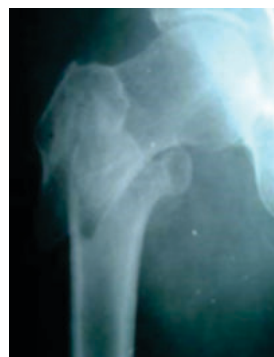


Figure: Showing post-op, 3 months and 6 months follow up x-ray PFN

PFN-A2



Figure: Showing post-op, 3 months and 6 months

DISCUSSION

In this study, we are just trying to evaluate functional and radiological outcomes and complications in patients treated with PFN and PFNA2.

All the patients are followed up closely and at least for 6 months. All patients were allowed to partial weight bear by 6 weeks of surgery. All cases are evaluated according to the modified Harris hip score on residual effects on clinical grounds at the final examination. Pain and functional capacity are the two basic considerations for this scoring system. Points are given for pain, function, range of motion, and absence of deformity. Functional outcome was assessed using Harris Hip Score after 6 months.

In this study, the majority of patients in PFN (40%) and PFNA (36%) were between 71-80 and 61-71 years respectively. The mean age of patients of PFN and PFNA was 71.88 ± 10.29 and 72.04 ± 10.91 years respectively. More than half of the patients of PFN (72%) and 44% of PFNA were males. There was no significant ($p > 0.05$) difference in age and gender between the groups.

In this study, screw back out was in 12% of patients in PFN and there is no case of screw back out in the case of PFNA2. But this was not significant as the p-value is 0.074. There were no cases of infection in patients of both PFN and PFNA groups. Mohan et al (2016) reported that there were 2 cases of superficial infection in PFNA and 2 each of superficial & deep infection in PFN. This study showed excellent outcome in 68% of patients with PFN and in 88% of patients with PFNA2. A good outcome was in 24% patients of with PFN and in 8% of PFNA. Fair outcome was in 8% patients of PFN and 4% patients of with PFNA2.

CONCLUSION

The study suggests that both PFN and PFNA2 performs well, showing equally good functional and radiological outcome following the fixation of unstable intertrochanteric fractures. PFNA2 offers no significant benefits over PFN in terms of post-operative complications. PFNA2 offers the advantage of better bone purchase in patients with osteoporotic bone. PFNA2 has the advantage of minimal incision, shorter operative time, minimal blood loss, and less fluoroscopic shots during the procedure. Both PFN and PFNA2 offer excellent result in terms of mechanical stability and union rates. Both PFN and PFNA2 are good choices of implant for unstable intertrochanteric fractures in the elderly, however, PFNA2 has a significant benefit in terms of shorter operative time and minimal blood loss. Randomization of patients strengthened the study. However, the smaller sample size and shorter duration of follow-up are limiting factors.

Summary

This was conducted at Al Ameen Medical College, vijayapura, from October 2020 to October 2021. It was conducted, to study —COMPARISON OF PROXIMAL FEMORAL NAIL(PFN) vs PROXIMAL FEMORAL NAIL ANTI-ROTATION 2(PFNA2) IN THE TREATMENT OF ELDERLY UNSTABLE INTERTROCHANTERIC FRACTURE — Total number of 50 patients with unstable intertrochanteric fracture of elderly age groups (>50 years) were included in our study. In which 25 patients were treated with PFN and 25 patients were treated with PFNA2. In most of the patients, the mode of injury was a trivial fall at home and only few patients the mode was a road traffic accident. In our study, all patients had Unstable intertrochanteric fracture (BOYD AND GRIFFIN Type 2 and 3) based on radiographic finding. Almost all patients were operated with closed technique (close reduction and internal fixation). The average surgical time was more than one hour for PFN but less than one hour for PFNA2. Postoperative there were no infectious complications seen in both PFN and PFNA2 and radiographic reevaluation was done on post-operative day 2. The majority of the patients were discharged within 1 week of surgery. All patients were

regularly followed up and were allowed to weight bear partially after 6 weeks of surgery. Functional outcome was assessed using Harris Hip Score after 6 months. This study showed excellent outcomes in 68% patients of with PFN and in 88% patients of PFNA2. A good outcome was in 24% of patients of PFN and in 8% of PFNA2. The fair outcome was in 8% patients of PFN and 4% patients of with PFNA2. The study suggests that both PFN and PFNA2 performs well, showing equally good functional and radiological outcome following the fixation of unstable intertrochanteric fractures. PFNA2 offers no significant benefits over PFN in terms of postoperative complications. PFNA2 offers the advantage of better bone purchase in patients with osteoporotic bone. PFNA2 has the advantage of minimal incision, shorter operative time, minimal blood loss, and fewer fluoroscopic shots during the procedure. Both PFN and PFNA2 offer equal results in terms of mechanical stability and union rates. Both PFN and PFNA2 are good choice for unstable intertrochanteric fractures in the elderly with PFNA2 and have significant benefits in terms of shorter operative time and minimal blood loss. PFNA2 being an expensive implant when compared to PFN, the economic burden has to be taken into consideration, especially in peripheral hospitals.

REFERENCES

1. Mabrouk A, Madhusoodan M, Waseem M. Outcomes of geriatric hip fractures treated with Hip fracture nail. A retrospective study of 100 unstable geriatric hip fractures treated with hip fracture nail. The mean follow-up duration was 8 months (range 3-32). *Adv Orthop* (2014);509592
2. Xu YZ, Geng DC, Mao HQ, Zhu XS, Yang HL. A comparison of the proximal nail anti-rotation device and dynamic hip screw in the treatment of unstable pertrochanteric fracture. *J Int Med Res*.2010; 38(4):1266–75.
3. Court Brown C M, Heckman J D, McQueen M M, Ricci W M, Tornetta P. In : *Rockwood and Green's Fractures in adults*. 8th edition (2) Wolters Kluwer.2014
4. Weinlein J C. Fractures and dislocations of hip. Azar M F, Beatty J H, Canale S T. In *Campbells operative orthopaedics*. 13th edition (3) Elsevier 2016
5. DeLee JC, Clanton TO, Rockwood CA. closed treatment of subtrochanteric fractures of the femur in a modified cast-brace. *J Bone Joint Surg Am* 1981 june63(5):773-9