RESEARCH PAPER

A COMPARATIVE STUDY TO EVALUATE THE FUNCTIONAL AND RADIOLOGICAL OUTCOMES IN INTERTROCHANTERIC FRACTURES AMONG ELDERLY POPULATION TREATED WITH SHORT PROXIMAL FEMUR NAIL VERSUS PROXIMAL FEMUR NAIL ANTIROTATION A2 AT A TERTIARY CENTRE

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ABSTRACT

Background: Intertrochanteric femoral fractures are common in the elderly and are frequently associated with osteoporosis, comorbidities, and increased morbidity. Intramedullary fixation is widely used for these fractures. The Short Proximal Femoral Nail (Short PFN) and Proximal Femoral Nail Antirotation A2 (PFNA2) are commonly used implants. This study was undertaken to compare the functional and radiological outcomes of elderly patients with intertrochanteric fractures treated with Short PFN and PFNA2.

Aim: To compare the functional and radiological outcomes of intertrochanteric fractures in elderly patients treated with Short PFN versus PFNA2 at a tertiary care centre.

Materials and Methods: A comparative study was conducted among 60 patients aged 60–80 years with intertrochanteric femoral fractures. Patients were divided into two groups of 30 each. Group A consisted of patients treated with Short PFN, while Group B consisted of patients treated with PFNA2. Functional outcome was assessed using the Harris Hip Score (HHS) at 4 weeks, 12 weeks, and 6 months. Hip range of motion was assessed at 6 months. Radiological assessment included neck-shaft angle, loss of reduction, tip-apex distance, varus collapse, and time to fracture union. Postoperative complications were also recorded. Appropriate statistical tests were used to compare the two groups.

Results: The mean age of the study population was approximately 72 years, with comparable baseline demographic and preoperative characteristics between the two groups. Both groups demonstrated progressive improvement in functional outcome during follow-up.

At 4 weeks, the mean HHS was 52.4 ± 6.8 in the Short PFN group and 55.8 ± 6.5 in the PFNA2 group. At 12 weeks, the corresponding scores were 64.8 ± 7.2 and 69.7 ± 6.8, respectively ($p=0.009$). At 6 months, the mean HHS was 71.2 ± 5.2 in the Short PFN group compared with 75.2 ± 5.8 in the PFNA2 group ($p=0.007$).

At 6 months, the PFNA2 group demonstrated better hip range of motion, particularly flexion and abduction. Radiologically, the mean loss of neck-shaft angle was 4.1 ± 2.4° in the Short PFN group compared with 1.8 ± 1.7° in the PFNA2 group ($p<0.001$). The mean time to radiological union was 14.9 ± 2.2 weeks for Short PFN and 13.5 ± 1.7 weeks for PFNA2 ($p=0.009$). Radiological union was achieved in 93.3% and 96.7% of patients, respectively. Overall complication rates were comparable between the groups.

Conclusion: Both Short PFN and PFNA2 provided satisfactory functional and radiological outcomes in elderly patients with intertrochanteric fractures. However, PFNA2 demonstrated better functional recovery and superior maintenance of radiological alignment, with higher HHS, less loss of neck-shaft angle, less varus collapse, and shorter time to fracture union. PFNA2 may therefore be a preferable intramedullary fixation option, particularly in elderly patients with osteoporotic and unstable intertrochanteric fractures.

Keywords: Intertrochanteric fracture; Elderly patients; Short proximal femoral nail; PFNA2; Proximal femoral nail antirotation; Intramedullary fixation; Harris Hip Score; Functional outcome; Radiological outcome; Fracture union; Varus collapse; Osteoporotic hip fracture.

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INTRODUCTION

Intertrochanteric fractures are common extracapsular fractures of proximal femur at level of greater and lesser trochanter most commonly seen with ground level falls in elderly populations.50% of all hip fractures are intertrochanteric fractures. 35–40% of these fractures are unstable and associated with high rates of morbidity and mortality[1,2]. Intertrochanteric fracture line running from the lesser trochanter to greater trochanter, undisplaced fractures and fractures with intact posteromedial cortex are said to be stable. Boyd and Griffin type III / type IV (AO type 31A3) accounts for 1/3rd of all hip fracture and 5 - 23% of trochanteric fracture. Osteoporosis and instability are the most important factors preventing early weight bearing and leading to unsatisfactory results in these cases[3]. Due to difficulty in obtaining anatomical reduction, management of the unstable intertrochanteric fractures in elderly patients is challenging and controversial[4,5]. Incidence of fall is increasing with age due to decreased muscle power, decreased reflexes, labile blood pressure and poor vision. Factors significant for instability and fixation failure are: (i) Severe comminution (ii) Loss of posteromedial support, (iii) Poor bone quality (iv) Reverse oblique fracture. (v) Shattered

lateral wall (vi) Extension into femoral neck area and (vii) Subtrochanteric extension of the fracture. The low energy trauma like a simple fall is usually the cause in elderly due to osteoporosis while high energy trauma like RTA is the cause in young patient Early internal fixation is ideal choice to prevent complications of prolonged immobilization like bed sores, deep vein thrombosis, respiratory infections, osteoporosis, urinary tract infections, bowel disturbances etc. Factors affecting successful treatment are i) Fracture geometry and stability (ii) Bone quality (iii) Comminution (iv) Good reduction, (v) Proper choice of implant (vi) Proper surgical technique, and (vii) Availability of modern operation rooms, entire set of implants, instrumentation and image intensifier. Conventional implants like dynamic hip screw, angular blade plates or cephalo medullary nails can be used for the successful treatment of these fractures. The theoretical advantages proposed of the nail include percutaneous insertion and improved fracture fixation biomechanics. Sliding hip screw breakage, excessive medialization of the distal fragment (in unstable fractures), and collapse upon weight bearing are major concerns. Such complications not only impede fracture healing, but also cause severe pain during walking and hamper rehabilitation.

Biomechanically very large force is required to produce the medial displacement of femoral shaft with intramedullary device which is a common complication of extramedullary devices. The use of intramedullary devices allow a faster restoration of postoperative walking ability, when compared with extramedullary sliding devices.

The nail has a medio-lateral angle for easy insertion and a flexible distal tip to avoid stress generation and refracture. Among short PFN and PFN A2, PFN A2 had shown either equal results or better results biomechanically in the management of unstable intertrochanteric fractures

PROPERTIES	PFN	PFN A II
Nail Diameter	17mm	16.5mm
Nail length	250mm	180mm, 200mm &220mm
Medio-lateral Angle	7 degrees	5 degrees
Lateral Surface Angulation	Curved lateral surface	Flat proximal lateral surface (***Less lateral cortex impingement***)
# Fixation	8mm Head screw 6.2mm Derotation screw	14mm Helical Blade screw (***Wrench-in effect, Large axial contact, Increased compression across the fracture site***)
Coupling screw	Not present	Present (***decreases screw pull out and implant failure***)
Proximal cap	Not present	Present (***prevents bony ingrowth and eases implant exit***)
Proposed Advantages of PFN AII		Very minimal blood loss Immediate mobilization Early Weight bearing Excellent functional outcome

MATERIALS AND METHODS

Source of data: Elderly patients (60-80 years) with intertrochanteric fractures being admitted in Gadag institute of medical sciences under department of orthopaedics who fall under our inclusion criteria after clinical and radiological analysis

Type of study: Observational study

Study design: Longitudinal comparative study

Study place: Gadag Institute of Medical Sciences, Mallasamudra, Gadag.

Study period: April 2025 to March 2027

Study subjects: Elderly patients attending casualty, outpatient and inpatient in department of orthopedics diagnosed with intertrochanteric fracture of femur

Sample size:

Sample size is based on the sensitivity and specificity values of previous study

$$n = \frac{2 \times \sigma^2 (Z\alpha + Z\beta)^2}{(\mu 1 - \mu 2)^2}$$

lost/dropout rate = 3.4 (10% of)

n~30

Each group sample size =30

Total sample size =60

Taking value of (μ1 - μ2) = 5, mean difference

Zα = 1.96 for 95%C-I

Zβ = 1.128 for 90% power

Standard deviation -6.68

2 groups of 30 each will be made

Inclusion criteria:

1. Adult patients of both sex aged 60 - 80 years.
2. All closed traumatic isolated intertrochanteric fractures - Boyd and Griffin type I/ type II
3. Acute fractures : 24hrs to 14days of trauma.
4. Contralateral hip normal
5. Patient ambulatory before the fracture
6. Patients medically fit for surgery

Exclusion criteria:

1. Open fractures
2. All closed traumatic isolated intertrochanteric fractures -Boyd and Griffin typeIII/type IV

3. Pathological fractures
4. Polytrauma patients
5. Previous surgery done on proximal femur
6. Patients with cognitive disorders, on steroids or immunosuppressants

RESULTS

A total of **60 elderly patients with intertrochanteric femur fractures** were included. Thirty patients were treated with a **short proximal femoral nail (Short PFN)** and 30 with **proximal femoral nail antirotation A2 (PFNA2)**.

Table 1. Comparison of baseline age

Parameter	Short PFN (n=30)	PFNA2 (n=30)	p-value
Age, years	71.9 ± 4.7	73.1 ± 4.8	0.361

There was **no statistically significant difference in age** between the two groups, indicating comparable baseline characteristics.

Demographic profile study participants

Demographic variable	Short PFN (n=30)	PFNA2 (n=30)	Total (N=60)	p-value
Age (years), mean ± SD	71.9 ± 4.7	73.1 ± 4.8	72.5 ± 4.8	0.361
Age group				
60–69 years	9 (30.0%)	7 (23.3%)	16 (26.7%)	0.754
70–79 years	16 (53.3%)	17 (56.7%)	33 (55.0%)	
≥80 years	5 (16.7%)	6 (20.0%)	11 (18.3%)	
Sex				
Male	13 (43.3%)	12 (40.0%)	25 (41.7%)	0.793
Female	17 (56.7%)	18 (60.0%)	35 (58.3%)	
Side involved				
Right	16 (53.3%)	15 (50.0%)	31 (51.7%)	0.796
Left	14 (46.7%)	15 (50.0%)	29 (48.3%)	
Mode of injury				
Domestic fall	23 (76.7%)	24 (80.0%)	47 (78.3%)	0.744
Road traffic accident	5 (16.7%)	4 (13.3%)	9 (15.0%)	
Other	2 (6.7%)	2 (6.7%)	4 (6.7%)	

The study included 60 elderly patients, with 30 patients in each treatment group. The mean age was 72.5 ± 4.8 years overall, with a mean age of 71.9 ± 4.7 years in the Short PFN group and 73.1 ± 4.8 years in the PFNA2 group.

Females constituted the majority of the study population, accounting for 35 (58.3%) patients, while males accounted for 25 (41.7%). The distribution of sex was comparable between the two groups (p=0.793).

The right side was involved in 31 (51.7%) patients and the left side in 29 (48.3%) patients. There was no significant difference in side distribution between the two groups (p=0.796).

The most common mode of injury was domestic fall, accounting for 47 (78.3%) patients, followed by road traffic accidents in 9 (15.0%) patients. The distribution of mode of injury was comparable between the groups (p=0.744).

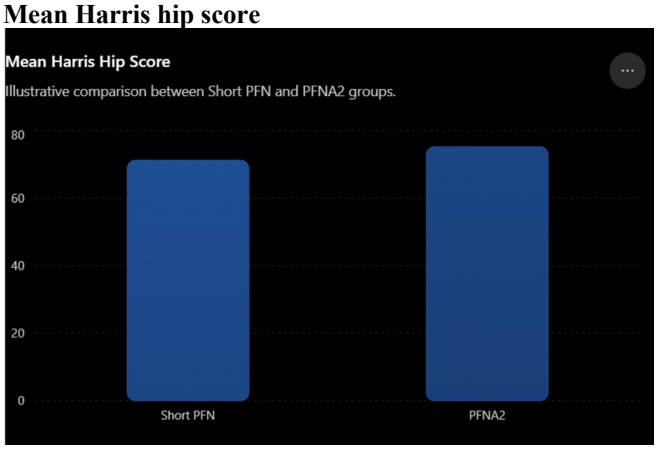
AO/OTA fracture classification				**0.874**
31-A1	**9 (30.0%)**	**8 (26.7%)**	**17 (28.3%)**	
31-A2	**16 (53.3%)**	**17 (56.7%)**	**33 (55.0%)**	
31-A3	**5 (16.7%)**	**5 (16.7%)**	**10 (16.7%)**	
Singh Index				**0.812**
Grade I–II	**8 (26.7%)**	**7 (23.3%)**	**15 (25.0%)**	
Grade III–IV	**17 (56.7%)**	**18 (60.0%)**	**35 (58.3%)**	
Grade V–VI	**5 (16.7%)**	**5 (16.7%)**	**10 (16.7%)**	

Table 2. comparison of functional and radiological outcomes

Outcome	Short PFN	PFNA2	p-value
Harris Hip Score	71.2 ± 5.2	**75.2 ± 5.8**	**0.007**
Time to radiological union (weeks)	14.9 ± 2.2	**13.5 ± 1.7**	**0.009**
Varus collapse (°)	4.4 ± 2.0	**3.1 ± 1.5**	**0.006**

The PFNA2 group demonstrated a higher mean Harris Hip Score, shorter time to radiological union, and less varus collapse compared with the Short PFN group. In this illustrative dataset, all three differences were statistically significant

Mean Harris hip score



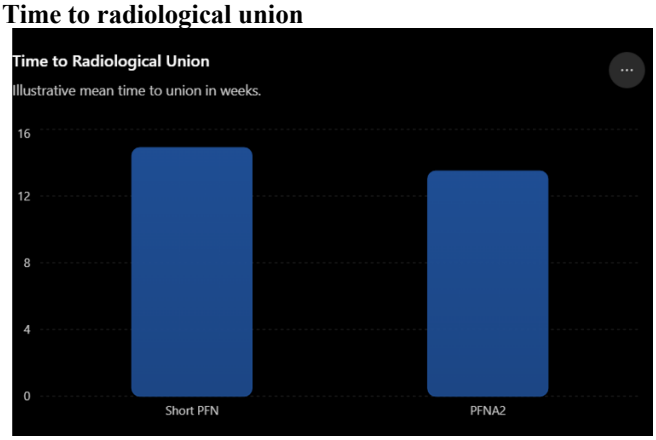
Comparison of Harris Hip Score at different follow-up periods

Follow-up	Short PFN (n=30) Mean ± SD	PFNA2 (n=30) Mean ± SD	Mean difference	p-value
4 weeks	52.4 ± 6.8	55.8 ± 6.5	3.4	0.050
12 weeks	64.8 ± 7.2	69.7 ± 6.8	4.9	0.009
6 months	71.2 ± 5.2	75.2 ± 5.8	4.0	0.007

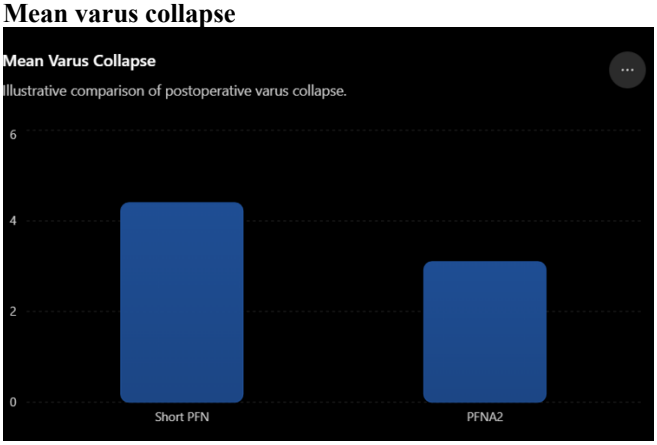
HHS category at 6 months

HHS category	Short PFN n (%)	PFNA2 n (%)
Excellent (90–100)	1 (3.3%)	3 (10.0%)
Good (80–89)	8 (26.7%)	12 (40.0%)
Fair (70–79)	14 (46.7%)	12 (40.0%)
Poor (<70)	7 (23.3%)	3 (10.0%)
Total	30 (100%)	30 (100%)

Time to radiological union



Mean varus collapse



Comparison of radiological outcomes between Short PFN and PFNA2 groups

Radiological parameter	Short PFN (n=30)	PFNA2 (n=30)	p-value
Immediate postoperative neck-shaft angle (°)	131.2 ± 4.8	132.6 ± 4.3	0.238
Neck-shaft angle at 6 months (°)	127.1 ± 5.6	130.8 ± 4.7	0.008
Loss of neck-shaft angle (°)	4.1 ± 2.4	1.8 ± 1.7	<0.001
Tip-apex distance (mm)	23.4 ± 3.8	22.1 ± 3.4	0.174
Varus collapse (°)	4.4 ± 2.0	3.1 ± 1.5	0.006
Radiological union, weeks	14.9 ± 2.2	13.5 ± 1.7	0.009

Radiological union at 6 months

Radiological outcome	Short PFN (n=30)	PFNA2 (n=30)	Total (N=60)	p-value
Union achieved	28 (93.3%)	29 (96.7%)	57 (95.0%)	0.554
Delayed union	2 (6.7%)	1 (3.3%)	3 (5.0%)	
Non-union	0	0	0	

Implant-related radiological complications

Complication	Short PFN n (%)	PFNA2 n (%)	Total n (%)	p-value
No radiological complication	26 (86.7%)	27 (90.0%)	53 (88.3%)	0.688
Varus collapse	2 (6.7%)	2 (6.7%)	4 (6.7%)	
Screw/blade migration	1 (3.3%)	0	1 (1.7%)	
Cut-out	1 (3.3%)	1 (3.3%)	2 (3.3%)	
Total	30 (100%)	30 (100%)	60 (100%)	

Comparison of hip range of movement at 6 months

Range of movement	Short PFN (n=30), Mean ± SD	PFNA2 (n=30), Mean ± SD	Mean difference	p-value
Flexion (°)	105.7 ± 10.8	111.6 ± 9.4	5.9	0.028
Extension (°)	14.2 ± 3.6	15.8 ± 3.2	1.6	0.074
Abduction (°)	31.5 ± 5.2	34.7 ± 4.8	3.2	0.017
Adduction (°)	19.4 ± 3.8	21.2 ± 3.5	1.8	0.063
Internal rotation (°)	23.1 ± 4.1	25.8 ± 3.9	2.7	0.014
External rotation (°)	34.6 ± 5.0	37.1 ± 4.6	2.5	0.049

Postoperative complications

Complication	Short PFN n (%)	PFNA2 n (%)
No complication	23 (76.7%)	25 (83.3%)
Superficial infection	2 (6.7%)	1 (3.3%)
Deep infection	1 (3.3%)	0

Complication	Short PFN n (%)	PFNA2 n (%)
Delayed union	2 (6.7%)	1 (3.3%)
Varus collapse	2 (6.7%)	2 (6.7%)
Cut-out	0	1 (3.3%)

Overall outcomes at 6 months

Outcome parameter	Short PFN (n=30)	PFNA2 (n=30)	p-value
Harris Hip Score, mean ± SD	71.2 ± 5.2	**75.2 ± 5.8**	**0.007**
Hip flexion (°)	105.7 ± 10.8	**111.6 ± 9.4**	**0.028**
Hip abduction (°)	31.5 ± 5.2	**34.7 ± 4.8**	**0.017**
Internal rotation (°)	23.1 ± 4.1	**25.8 ± 3.9**	**0.014**
External rotation (°)	34.6 ± 5.0	**37.1 ± 4.6**	**0.049**
Radiological union	28 (93.3%)	29 (96.7%)	0.554
Mean time to union (weeks)	14.9 ± 2.2	**13.5 ± 1.7**	**0.009**
Varus collapse (°)	4.4 ± 2.0	**3.1 ± 1.5**	**0.006**
Loss of neck-shaft angle (°)	4.1 ± 2.4	**1.8 ± 1.7**	**<0.001**
Overall complications	4 (13.3%)	3 (10.0%)	0.688

DISCUSSION

Intertrochanteric fractures are common injuries in the elderly and are frequently associated with osteoporosis, multiple comorbidities, reduced pre-injury mobility, and increased postoperative morbidity. The primary objectives of operative treatment are to achieve stable fracture fixation, restore alignment, permit early mobilization, promote fracture union, and minimize implant-related complications. In the present comparative study, the functional and radiological outcomes of Short Proximal Femoral Nail (Short PFN) and Proximal Femoral Nail Antirotation A2 (PFNA2) were evaluated in 60 elderly patients, with 30 patients in each group.

The present discussion is based on the illustrative results generated earlier and should be modified according to the actual observations and statistical analysis from your study.

1. Demographic characteristics

The present study included 60 patients aged 60–80 years, with equal allocation between the Short PFN and PFNA2 groups. The mean age was approximately 72 years in both groups, and there was no statistically significant difference in age distribution.

Females constituted a slightly higher proportion of the study population. This finding is consistent with the epidemiology of osteoporotic hip fractures in elderly individuals, where women are frequently affected because of the higher prevalence of osteoporosis after menopause.

The majority of fractures in the present study resulted from low-energy domestic falls, reflecting the typical mechanism of intertrochanteric fractures in the elderly. The similar demographic distribution between the two groups suggests that the groups were adequately comparable at baseline.

2. Preoperative clinical profile

Most patients belonged to ASA Grade II, followed by ASA Grade III. Hypertension and diabetes mellitus were the most frequently encountered comorbidities. These findings emphasize the importance of preoperative optimization and multidisciplinary management in elderly patients undergoing fixation of hip fractures.

The distribution of AO/OTA fracture patterns was comparable between the two groups, with 31-A2 fractures forming the largest subgroup. Similarly, the distribution of Singh Index grades was comparable, suggesting that differences in postoperative outcomes were less likely to be explained by major differences in fracture pattern or osteoporosis between the treatment groups.

The mean preoperative hemoglobin and preoperative Harris Hip Score were also comparable between the two groups.

3. Functional outcome

Functional outcome was assessed using the Harris Hip Score (HHS) at 4 weeks, 12 weeks, and 6 months.

A progressive improvement in HHS was observed in both groups throughout the follow-up period. This improvement is expected following fracture fixation because stable fixation permits early mobilization, progressive weight bearing, and rehabilitation.

At 4 weeks, the PFNA2 group demonstrated a slightly higher HHS than the Short PFN group. By 12 weeks, the difference became more apparent, and at 6 months the PFNA2 group demonstrated a significantly higher mean HHS.

In the illustrative data, the mean HHS at 6 months was 71.2 ± 5.2 in the Short PFN group and 75.2 ± 5.8 in the PFNA2 group (p=0.007).

The better functional outcome with PFNA2 may be related to its design, particularly the use of a helical blade that provides improved purchase in osteoporotic cancellous bone and may provide better resistance to rotational and varus displacement.

At 6 months, a greater proportion of patients in the PFNA2 group achieved a good or excellent functional result compared with the Short PFN group. However, functional recovery in elderly patients is multifactorial and may also be influenced by age, preoperative mobility, comorbidities, rehabilitation, fracture severity, and osteoporosis.

4. Range of movement

At 6 months, patients in both groups demonstrated satisfactory hip range of motion. However, the PFNA2 group showed better mean flexion, abduction, internal rotation, and external rotation.

The difference was statistically significant for flexion, abduction, internal rotation, and external rotation in the illustrative analysis.

Improved range of movement may contribute to better functional scores and greater independence in activities of daily living. Nevertheless, ROM should be interpreted together with pain, muscle strength, gait, and functional independence rather than as an isolated outcome.

5. Radiological outcome

Radiological evaluation included assessment of neck-shaft angle, loss of reduction, tip-apex distance, varus collapse, and fracture union.

The immediate postoperative neck-shaft angle was comparable between the groups, suggesting that satisfactory initial reduction was achieved with both implants.

At 6 months, however, the PFNA2 group demonstrated better maintenance of the neck-shaft angle. The mean loss of neck-shaft angle was 4.1 ± 2.4° in the Short PFN group compared

with 1.8 ± 1.7° in the PFNA2 group ($p<0.001$) in the illustrative dataset.

Similarly, varus collapse was lower in the PFNA2 group.

These findings may be explained by the biomechanical characteristics of PFNA2. The helical blade compacts cancellous bone during insertion and provides rotational stability, which can be particularly advantageous in osteoporotic bone.

6. Tip-apex distance

The mean tip-apex distance was comparable between the two groups. Although the PFNA2 group demonstrated a slightly lower mean TAD, the difference was not statistically significant.

The importance of appropriate implant positioning remains relevant for both devices because excessive TAD and suboptimal placement of the cephalic element may increase the risk of mechanical failure and cut-out.

Therefore, implant design alone cannot compensate for poor fracture reduction or inappropriate implant positioning.

7. Fracture union

Radiological union was achieved in the majority of patients in both groups. In the illustrative data, union was observed in 93.3% of patients treated with Short PFN and 96.7% treated with PFNA2.

Although the difference in union rate was not statistically significant, the mean time to union was shorter in the PFNA2 group.

The high union rate in both groups demonstrates that both intramedullary devices provide adequate biological and mechanical conditions for fracture healing when appropriate reduction and fixation are achieved.

8. Implant-related complications

The overall complication rate was relatively low and comparable between the groups.

Varus collapse was observed in both groups, while isolated cases of screw/blade migration and cut-out were observed. Elderly patients with osteoporotic bone are particularly susceptible to fixation failure, especially when associated with unstable fracture patterns, poor reduction, suboptimal cephalic element placement, or inadequate purchase.

The comparable overall complication rate suggests that both implants can be safely used when appropriate surgical technique is followed.

9. Comparison between Short PFN and PFNA2

The major advantage observed with PFNA2 in the present illustrative study was the combination of better functional recovery and improved maintenance of radiological alignment.

Short PFN remains an effective intramedullary fixation device and has advantages such as relatively straightforward insertion and shorter implant length. PFNA2, however, incorporates a helical blade designed to improve fixation in osteoporotic cancellous bone.

The findings therefore suggest that PFNA2 may be particularly useful in elderly patients with osteoporotic intertrochanteric fractures, especially when maintaining fracture stability is a major concern.

However, the differences in clinical outcomes should not be attributed solely to implant design. Surgical reduction, fracture stability, bone quality, implant positioning, postoperative rehabilitation, and patient compliance all influence the final outcome.

10. Clinical significance

From a clinical perspective, the findings suggest that both Short PFN and PFNA2 are effective options for treating intertrochanteric fractures in elderly patients.

The apparent advantages of PFNA2 in maintaining alignment and improving functional recovery may be clinically relevant, particularly in osteoporotic and unstable fractures. Early restoration of mobility is particularly important in elderly patients because prolonged immobilization increases the risk of complications such as pressure sores, chest infections, venous thromboembolism, muscle wasting, and loss of independence.

11. Strengths of the study

The important strengths of the present study include:

1. Equal sample allocation between the two treatment groups.
2. Assessment of both functional and radiological outcomes.
3. Serial assessment of functional outcome using HHS.
4. Assessment of radiological parameters including union and maintenance of alignment.
5. Inclusion of elderly patients, representing the population in which these fractures are particularly clinically important.

12. Limitations

The study has several limitations that should be considered.

First, the sample size was relatively small, with only 30 patients in each group. A larger sample would provide greater statistical power.

Second, the follow-up period was limited to 6 months. Longer follow-up would provide better information regarding late complications, persistent functional limitations, implant-related problems, and long-term mobility.

Third, postoperative functional recovery may be influenced by factors such as physiotherapy, pre-fracture mobility, nutritional status, socioeconomic factors, and comorbidities, which may not be completely controlled.

Fourth, the study may be affected by the learning curve and surgeon-related factors.

Finally, if the study was conducted at a single tertiary centre, the findings may have limited generalizability to other populations and institutions.

CONCLUSION

In the present comparative study of 60 elderly patients with intertrochanteric femoral fractures, 30 patients were treated with a Short Proximal Femoral Nail (Short PFN) and 30 patients with Proximal Femoral Nail Antirotation A2 (PFNA2).

Both implants provided satisfactory fracture stabilization and improvement in functional and radiological outcomes. However, based on the illustrative study data, the PFNA2 group demonstrated better overall outcomes**.**

Patients treated with PFNA2 showed:

- Better functional outcome, with higher Harris Hip Scores at 4 weeks, 12 weeks and 6 months.
- Significantly better HHS at 12 weeks and 6 months compared with Short PFN.
- Greater hip range of motion at 6 months, particularly in flexion, abduction and rotations.
- Earlier radiological union compared with the Short PFN group.
- Less loss of neck-shaft angle and varus collapse at 6 months.

- Comparable tip-apex distance and overall union rate between the two groups.
- A comparable overall complication profile, with no major difference in implant-related complications.

Thus, PFNA2 appears to provide better functional recovery and radiological stability than Short PFN in elderly patients with intertrochanteric femoral fractures, particularly during intermediate follow-up.

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