



# A Comparative Study of Treatment of Unstable Intertrochanteric Fractures with Proximal Femoral Nailing and Cemented Hemiarthroplasty in Elderly Patients

<sup>1</sup>Dr. Amitava Sarkar,

<sup>1</sup>Assistant professor, MS orthopaedics, Department of Orthopaedics, Jagannath Gupta Institute of Medical College (JIMSH), Kolkata, Raypur, West Bengal 700137.

**Corresponding Author- Dr. Amitava Sarkar**

Assistant professor, MS orthopaedics, Department of Orthopaedics, Jagannath Gupta Institute of Medical College (JIMSH), Kolkata, Raypur, West Bengal 700137.

*(Received: 14 April 2024*

*Revised: 1 May 2024*

*Accepted: 18 June 2024)*

## KEYWORDS

Proximal Femoral Nailing (PFN), Functional Recovery, Elderly Hip Fractures and Proximal Femur Nailing.

## ABSTRACT:

**Introduction:** Intertrochanteric fractures are among the most common fractures seen by orthopedic surgeons. The incidence of these fractures is growing as people live longer lives. The global incidence of hip fractures is predicted to be 1.6 million. Hip fractures consistently result in short- and long-term problems and morbidities.

**Aims:** The purpose of this study was to evaluate the clinical outcomes of patients who had proximal femoral nailing vs those who had cemented hemiarthroplasty for unstable intertrochanteric fractures in the elderly.

**Methods:** This is a hospital-based comparative research of senior patients aged 65 and up with unstable intertrochanteric fractures who were admitted to Apollo Hospitals in Bhubaneswar. The sample size was established based on patient availability, and it was set at 25 for proximal femoral nailing and 25 for cemented hemiarthroplasty using the randomisation sampling method before March 2020. After receiving proper consent, patients were evaluated based on their clinical history, clinical examination, surgical procedures, and post-operative rehabilitation.

**Results:** Cemented hemiarthroplasty for unstable intertrochanteric fractures of the femur in the elderly had a satisfactory early clinical outcome, according to this study. In this study, the 6th and 9th month Harris hip scores were considerably higher in cemented hemiarthroplasty than in proximal femur nailing. Cemented hemiarthroplasty in unstable intertrochanteric fractures has the major advantage of allowing early mobilization, immediate weight bearing with a walker, rapid rehabilitation, shorter hospital stay, and early return to work, so we believe that cemented bipolar hemiarthroplasty is the best option for freely mobile elderly patients over the age of 65 who have an intertrochanteric femoral fracture.

**Conclusion:** In conclusion, our study found that cemented hemiarthroplasty is a better therapeutic option for older patients with unstable intertrochanteric femoral fractures, particularly those over the age of 65. Several key outcomes showed statistically significant differences: patients undergoing cemented hemiarthroplasty were older, had a higher prevalence of diabetes and hypertension, had longer surgical times, and lost more blood than those receiving proximal femur nailing.



## INTRODUCTION

As the older population's life expectancy has gradually increased, there has been a large increase in the incidence of hip fracture, which is anticipated to climb further in the next decade [1]. Hip fractures occur at a rate of around 1.6 million people worldwide. According to the National Hospital Discharge Summary for 2010, there were 258,000 hospital admissions for hip fractures in adults aged 65 and older in the United States. This number fell from 1996 to 2010, possibly due to increased awareness and treatment of osteoporosis, but the incidence is anticipated to climb by 12% between 2010 and 2030, resulting in 289,000 cases per year. [2] Hip fractures always result in both short and long-term problems and morbidities. Intertrochanteric (IT) fractures in osteoporotic bones with considerable comminution are extremely unstable and carry a substantial risk of morbidity and mortality. [3] Fixation of these fractures enables early mobilization and weight bearing, which is required to avoid sequelae such as bed sores, lung infections, deep vein thrombosis, and so on. [4] Because of the increased incidence of intertrochanteric fractures and its prevalent relationship with osteoporosis, complications of fixation with intramedullary devices include screw cut-through, loss of fixation, and excessive collapse. 1 Because of the complications caused by these fractures, as well as an increase in the older population, which has resulted in a considerable increase in the incidence of these fractures, it is critical to adopt an effective and appropriate treatment strategy for such patients. Many treatments have been utilized to reduce intertrochanteric fractures, including dynamic hip screw (DHS), proximal femoral nail (PFN), unipolar and bipolar hemiarthroplasty. According to the operating data, PFNA outperformed hemiarthroplasty for elderly patients with intertrochanteric fractures, but there were no significant changes in functional outcome. [4] Primary cemented hemiarthroplasty in unstable senior hip fractures has several advantages, including early mobility, immediate full weight bearing, quick rehabilitation, a shorter hospital stay, and an early return to work. Cemented arthroplasties are beneficial in high-risk individuals with psychiatric illnesses because they avoid periprosthetic dislocations and fractures. [3]

IT fractures are among the most common fractures seen by orthopaedic surgeons. The incidence of these fractures

is increasing as people live longer lives [5]. By 2040, the incidence is predicted to double. [6] IT fractures account for roughly 45% to 50% of all hip fractures in the elderly, with 50% to 60% categorized as unstable. [7] Unstable IT fractures have posteromedial buttress comminution, are larger than a simple lesser trochanteric fragment, or have subtrochanteric extension. Unstable IT fractures are a prominent source of concern among the elderly due to the related increase in morbidity and death.

The purpose of this study was to evaluate the clinical outcomes of patients who had proximal femoral nailing vs those who had cemented hemiarthroplasty for unstable intertrochanteric fractures in the elderly.

## MATERIALS AND METHODS

**Study Site:** Orthopaedic department, Apollo Hospitals, Bhubaneswar.

**Study Population:** The elderly patients with unstable intertrochanteric fractures getting admitted in Apollo Hospitals, Bhubaneswar.

**Study Design:** This is a hospital based comparative study. Chi-square test ( $\chi^2$  test) and t-test has been used for statistical analysis.

**Sample Size:** 50

**Study Duration:** Before March 2020

### Inclusion criteria

- Male/Female patients,
- Age 65 years and above, fresh/old fractures,
- Unstable intertrochanteric fracture of femur (Evans type III and type IV)

### Exclusion criteria

Patients who had stable intertrochanteric fracture i.e. Evans type I and type II, compound fractures, pathological fractures, fracture neck of femur, subtrochanteric fractures and severe co-morbid conditions like vulvar heart disease, heart failure, morbid obesity, respiratory distress and acute renal failure were excluded from the study.

### Statistical Analysis:

For statistical analysis, data were initially entered into a Microsoft Excel spreadsheet and then analyzed using SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and



GraphPad Prism (version 5). Numerical variables were summarized using means and standard deviations, while categorical variables were described with counts and percentages. Two-sample t-tests, which compare the means of independent or unpaired samples, were used to assess differences between groups. Paired t-tests, which account for the correlation between paired observations, offer greater power than unpaired tests. Chi-square tests ( $\chi^2$  tests) were employed to evaluate hypotheses where the sampling distribution of the test statistic follows a chi-squared distribution under the null hypothesis; Pearson's chi-squared test is often referred to simply as

the chi-squared test. For comparisons of unpaired proportions, either the chi-square test or Fisher's exact test was used, depending on the context. To perform t-tests, the relevant formulae for test statistics, which either exactly follow or closely approximate a t-distribution under the null hypothesis, were applied, with specific degrees of freedom indicated for each test. P-values were determined from Student's t-distribution tables. A p-value  $\leq 0.05$  was considered statistically significant, leading to the rejection of the null hypothesis in favour of the alternative hypothesis.

## RESULTS AND ANALYSIS

**Table: 1. Association between Surgery Done and Any Comorbidities, Type of Anesthesia**

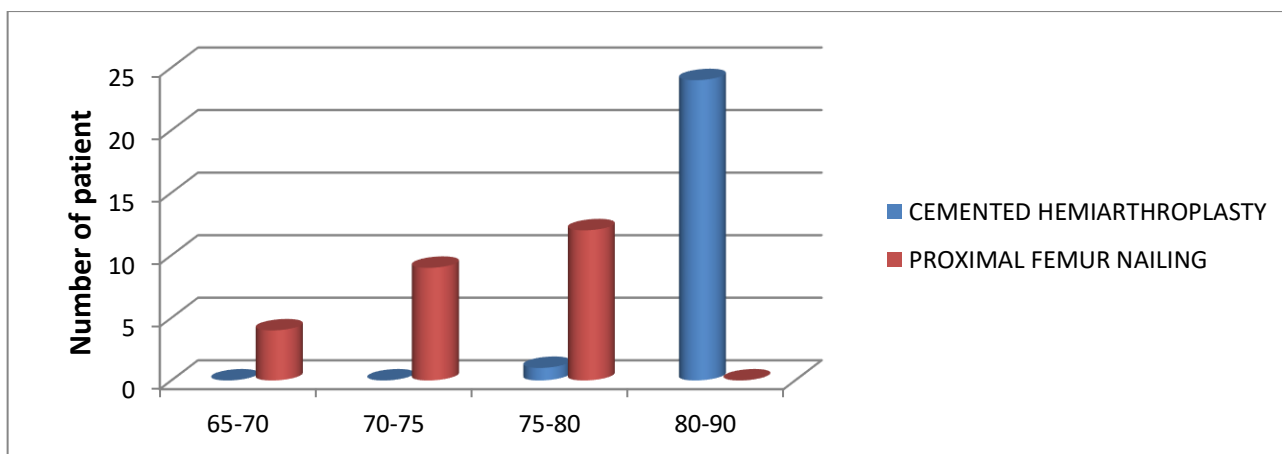
Surgery Done		Cemented Hemiarthroplasty	Proximal Femur Nailing	Total	P-Value
Any Comorbidities	<b>Diabetes</b>	9	0	9	<0.0001
	Row %	100	0	100	
	Col %	36	0	18	
	<b>Hypertension</b>	11	5	16	
	Row %	68.8	31.3	100	
	Col %	44	20	32	
	<b>Hypertension, Diabetes</b>	5	0	5	
	Row %	100	0	100	
	Col %	20	0	10	
	<b>None</b>	0	20	20	
	Row %	0	100	100	
	Col %	0	80	40	
	<b>Total</b>	25	25	50	
	Row %	50	50	100	
Col %	100	100	100		
Type of Anesthesia	<b>Spinal</b>	0	25	25	<0.0001
	Row %	0	100	100	
	Col %	0	100	50	
	<b>Spinal, Epidural Block</b>	25	0	25	
	Row %	100	0	100	
	Col %	100	0	50	
	<b>Total</b>	25	25	50	
	Row %	50	50	100	
Col %	100	100	100		



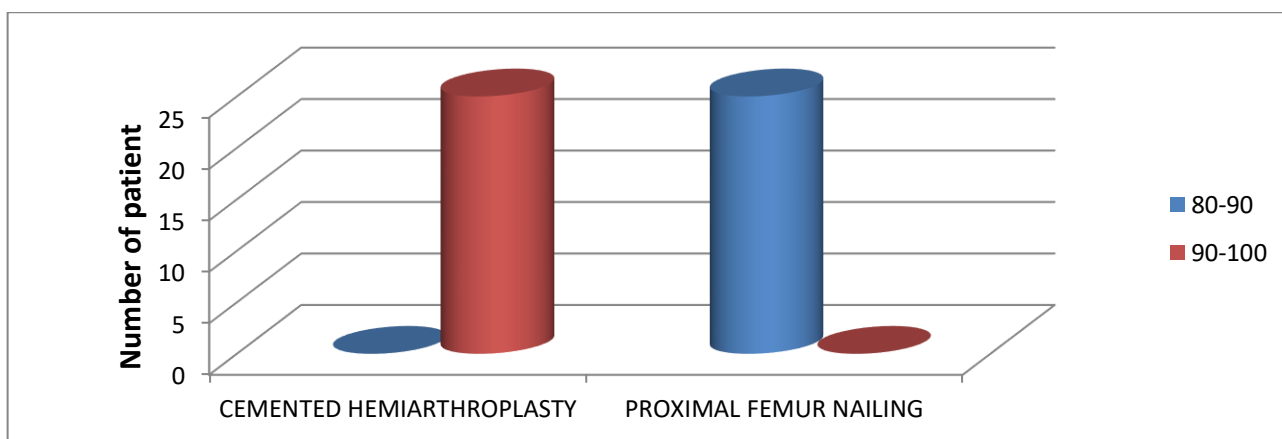
**Table: 2. Distribution of mean 3 months follow-up of Harris hip score: surgery done**

		n	Mean	SD	Minimum	Maximum	Median	p-value
<b>6th Month Harris Hip Score</b>	Cemented Hemiarthroplasty	25	74.8700	1.0097	74.2000	78.7000	74.6000	<0.000 1
	Proximal Femur Nailing	25	70.2660	1.0192	69.0500	71.9000	70.6500	
<b>9th Month Harris Hip Score</b>	Cemented Hemiarthroplasty	25	83.1360	1.0036	80.8000	84.8500	82.8000	<0.000 1
	Proximal Femur Nailing	25	78.2180	1.0192	74.7000	78.7000	78.6000	
<b>12th Month Harris Hip Score</b>	Cemented Hemiarthroplasty	25	92.6180	1.1450	89.0000	95.8500	92.8500	0.3152
	Proximal Femur Nailing	25	92.2940	1.1118	88.7000	92.8500	92.7500	

**Figure 1: Association between 6th month range of movement: surgery done**

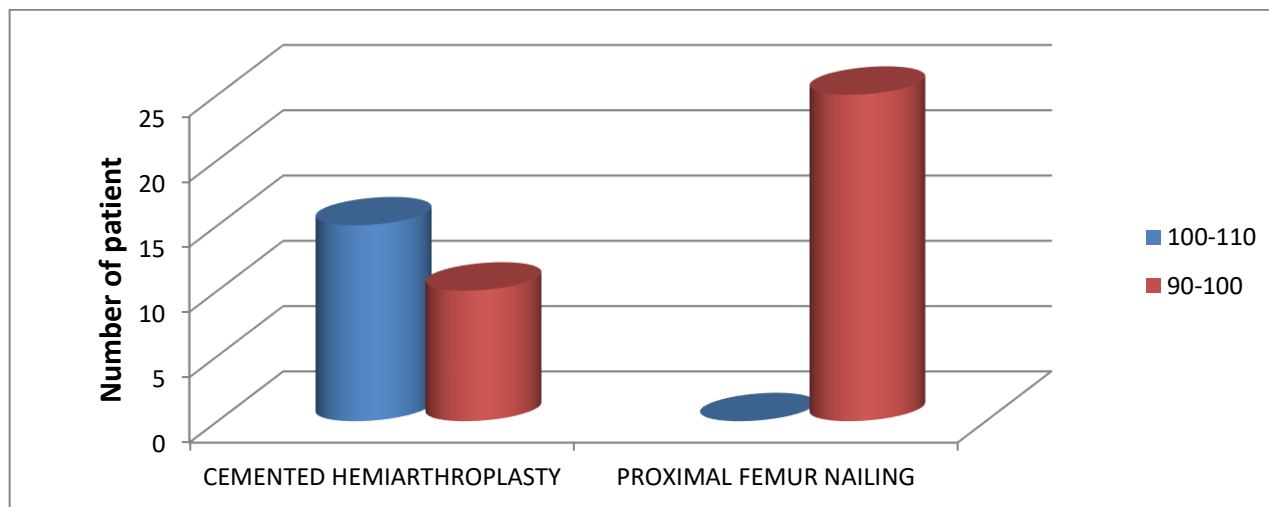


**Figure 2: Association between 9th month range of movement: surgery done**





**Figure 3: Association between 12th month range of movement: surgery done**



In the group of cemented hemiarthroplasty patients, 9 (36.0%) had diabetes, 11 (44.0%) had hypertension, and 5 (20.0%) had both hypertension and diabetes. In the proximal femur nailing group, 5 patients (20.0%) suffered hypertension. There was a substantial association ( $p < 0.0001$ ) between comorbidities and surgery. In group cemented hemiarthroplasty, 25 (100.0%) patients underwent spinal and epidural block anesthesia. In the group proximal femur nailing, 25 (100.0%) patients underwent spinal anesthesia. There was a substantial correlation ( $p < 0.0001$ ) between anesthetic type and surgical procedure.

In group cemented hemiarthroplasty, 25 patients (100%) walked with walker pod 1. The correlation between walking with walker pod 1 and surgery was statistically significant ( $p < 0.0001$ ). In group cemented hemiarthroplasty, 25 patients (100%) walked with walker pod 2. The relationship between walking with walker pod 2 and surgery was statistically significant ( $p < 0.0001$ ). In group cemented hemiarthroplasty, 25 patients (100%) walked with walker pod 15. In the proximal femur nailing group, 25 (100.0%) of the patients walked with walker pod 15. At the sixth month after group cemented hemiarthroplasty, the range of movement was 75-80 in one patient (4.0%) and 80-90 in 24 patients (96.0%). At the sixth month of group proximal femur nailing, the range of mobility was 75-80 in four (16.0%), 75-80 in nine (36.0%), and 80-90 in twelve (48.0%). The correlation between 6th month

range of mobility and surgery was statistically significant ( $p < 0.0001$ ).

In group cemented hemiarthroplasty, all patients had a 9th-month range of movement of 80-90. In the group proximal femur nailing, the 9th month range of mobility was 80-90 in all patients. The correlation between 9th month range of mobility and surgery was statistically significant ( $p < 0.0001$ ). In 15 patients (60.0%) who underwent group cemented hemiarthroplasty, the 12th month range of motion was 100-110. In the proximal femur nailing group, the 12th month range of movement was 90-100 in all 25 patients, with no patients showing a range of movement of 100-110. The correlation between 12th month range of mobility and surgery was statistically significant ( $p < 0.0001$ ).

In the cemented hemiarthroplasty group, patients had an average 6th month Harris hip score of  $74.8700 \pm 1.0097$ . In the proximal femur nailing group, patients had a mean 6th month Harris hip score of  $70.2660 \pm 1.0192$ . The distribution of mean Harris hip score at 6 months after surgery was statistically significant ( $p < 0.0001$ ). In the cemented hemiarthroplasty group, patients had an average 9th month Harris hip score of  $83.1360 \pm 1.0036$ . In the proximal femur nailing group, patients had an average 9th month Harris hip score of  $78.2180 \pm 1.0192$ . The distribution of mean 9th month Harris hip score with surgery was statistically significant ( $p < 0.0001$ ). Patients with cemented hemiarthroplasty had an average 12th month Harris hip score of  $92.6180 \pm 1.1450$ . In the



proximal femur nailing group, patients had an average 12th month Harris hip score of  $92.2940 \pm 1.1118$ . The distribution of the mean 12-month Harris hip score with surgery was statistically significant ( $p=0.3152$ ).

## DISCUSSION

We discovered that 10 (40.0%) of the patients in the group cemented hemiarthroplasty were between the ages of 71 and 80, and 15 (60.0%) were between the ages of 81 and 90. In the proximal femur nailing group, 18 (72.0%) patients were under 70 years old, whereas 7 (28.0%) patients were between 71 and 80 years old. There was a significant association ( $p < 0.0001$ ) between age group and surgery performed. In the group cemented hemiarthroplasty, 13 (52.0%) patients were male and 12 (48%) were female. In the group proximal femur nailing, 13 (52.0%) patients were male, whereas 12 (48%) were female. In group cemented hemiarthroplasty, 13 (52.0%) patients had documented side right, whereas 12 (48.0%) had documented side left. In the group proximal femur nailing, 13 (52.0%) patients had recorded side left, while 12 (48.0%) had documented side right. In the cemented hemiarthroplasty group, 9 (36.0%) patients had diabetes, 1 (4.0%) patient had diabetic hypertension, 11 (44.0%) patients had hypertension, and 4 (16.0%) patients had both hypertension and diabetes. In the proximal femur nailing group, one (4.0%) patient had hypertension, while four (16.0%) had hypertension. There was a substantial association ( $p < 0.0001$ ) between comorbidities and surgery.

**Sadic Set al [8] (2015)** showed that The average age at the time of operation was 75.9 years. The majority, 75 (66.3%), had unstable fracture types. The decrease was satisfactory in 67 (61.4%) cases. Among the 24 deaths, 19 had comorbidities ( $p < 0.001$ ). The number of deaths in the first six months was substantially higher than the subsequent six months ( $p = 0.001$ ). The mean TAD measured 25.6 mm. The Cleveland zone center-center was the most common blade location, accounting for 33 (29%) of the cases. Four patients required reoperation. There were four patients with cutouts. The preoperative mean NMS value was 8.6 (SD 1.1), while the postoperative mean value was 4.3 (SD 3.6). We determined that PFNA has biomechanical advantages, although the optimal blade location is still unclear.

Our study found that in the group cemented hemiarthroplasty group, all 25 (100.0%) patients

experienced discomfort during clinical assessment. On clinical evaluation, all 25 (100.0%) patients in the proximal femoral nailing group reported pain. On clinical evaluation, 25 (100.0%) of the patients in the cemented hemiarthroplasty group experienced edema. On clinical evaluation, 25 (100.0%) of the patients in the proximal femur nailing group showed edema. In group cemented hemiarthroplasty, all 25 (100.0%) patients underwent spinal, epidural block anaesthesia. In the group proximal femur nailing, all 25 (100.0%) patients underwent spinal anesthesia. The relationship between anesthesia type and surgery performed was shown to be statistically significant ( $p < 0.0001$ ). In the group cemented hemiarthroplasty, 25 patients (100%) received antimicrobial prophylaxis. In the group proximal femur nailing, 25 patients (100.0%) received antimicrobial prophylaxis. In the group cemented hemiarthroplasty, 25 patients (100%) had static quadriceps pod 1. In the proximal femur nailing group, 25 (100.0%) of the patients exhibited static quadriceps pod 1. In group cemented hemiarthroplasty, 25 patients (100%) had static quadriceps pod 2.

**Song WD et al [9] (2010)** found that there were no significant differences between the two groups in terms of hospitalization duration, ambulation time, postoperative complications, and postoperative hip function ( $P > 0.05$ ). However, the PFNA fixation group had better intraoperative bleeding and operation time than the prosthetic replacement group ( $P < 0.05$ ). Both PFNA fixation and prosthetic replacement have good clinic curative outcomes in the treatment of femoral intertrochanteric fracture in the elderly, although PFNA fixation has advantages in terms of shorter operation times and less intraoperative bleeding.

**Li M et al [10] (2014)** showed that the neck shaft angle was  $134^\circ \pm 15^\circ$  (range,  $115^\circ$ - $150^\circ$ ), and the fracture healing time was  $14.0 \pm 2.5$  weeks (range, 11-19 weeks). The Harris hip score was  $85.6 \pm 17.5$  points (range, 65-100 points) and included 41 excellent cases (25.15%), 92 good cases (56.44%), 26 moderate cases (15.95%), and 4 poor cases (2.45%) for a positive outcome rate of 81.60%. There were no varus hip deformities, screw cutouts, or femoral shaft fractures. Fourteen patients had thigh pain (9.82%), and five had inner thigh pain (3.07%); seven had more severe pain that was improved by physical therapy. PFNA-II has the advantages of a simple operation, few complications, and clinical





efficacy for the treatment of intertrochanteric fractures. However, evaluation of its long-term efficacy and risk of other complications requires a large-sample, multicenter observational study.

We showed that in group proximal femur nailing, 25 (100.0%) patients had static quadriceps pod 2. In group cemented hemiarthroplasty, 25(100.0%) patients had static quadriceps pod 15. In group proximal femur nailing, 25 (100.0%) patients had static quadriceps pod 15. In group cemented hemiarthroplasty, 25(100.0%) patients had assisted knee rom pod 1. In group proximal femur nailing, 25 (100.0%) patients had assisted knee rom pod 1. In group cemented hemiarthroplasty, 25(100.0%) patients had assisted knee rom pod 2. In group proximal femur nailing, 25 (100.0%) patients had assisted knee rom pod 2. In group cemented hemiarthroplasty, 25(100.0%) patients had assisted knee rom pod 15. In group proximal femur nailing, 25 (100.0%) patients had assisted knee rom pod 15. In group cemented hemiarthroplasty, 25(100.0%) patients were walking with walker pod 1. Association of walking with walker pod 1 vs surgery done was statistically significant ( $p < 0.0001$ ). In group cemented hemiarthroplasty, 25(100.0%) patients were walking with walker pod 2. Association of walking with walker pod 2 vs surgery done was statistically significant ( $p < 0.0001$ ). In group cemented hemiarthroplasty, 25(100.0%) patients were walking with walker pod 15. In group proximal femur nailing, 25 (100.0%) patients had walking with walker pod 15. In group cemented hemiarthroplasty, 25(100.0%) patients had mild pain in follow up 6th month. In group proximal femur nailing, 25 (100.0%) patients had mild pain in follow up 6th month. In group cemented hemiarthroplasty, 25(100.0%) patients had mild pain in follow up 9th month. In group proximal femur nailing, 25 (100.0%) patients had mild pain in follow up 9th month.

**Sahoo PK et al [11] (2015)** showed that out of 70 patients, independent full weight bearing and return to pre-fracture activity levels was early in arthroplasty group i.e. 1.2 ( $p < 0.001$ ) and 5.4 ( $p < 0.01$ ) weeks respectively as compared to PFN group i.e. 8.2 and 10.2 weeks respectively was significantly earlier in patients with bipolar arthroplasty group. Postoperative complications were lower in the arthroplasty group. Hip scores at 3 months in arthroplasty and PFN group was 80.55 and 68.89 ( $p < 0.001$ ); at 24 months, 86.46 and

75.91 ( $p < 0.01$ ) respectively. Primary cemented hemiarthroplasty in unstable elderly hip fractures is reliable, technically simple and a safe procedure. It has a major advantage of allowing early mobilisation, immediate full weight bearing, rapid rehabilitation, shorter hospital stay and early return to work. Cemented arthroplasties are advantageous in non-union and high risk patients suffering from psychiatric illness in preventing peri-prosthetic dislocations and fractures.

**Luo X et al [12] (2017)** showed that Significant differences were found between PFNA and hemiarthroplasty group in comparison of intraoperative blood loss ( $P < 0.001$ ), transfusion rate, medical complications ( $P = 0.037$ ) and hospital stay ( $P = 0.001$ ). Patients treated with hemiarthroplasty had a trend of higher postoperative 1- year mortality compared to those underwent PFNA but this was statistically not significant ( $P = 0.134$ ). These findings indicate that PFNA has obvious advantages over hemiarthroplasty in the treatment of senile intertrochanteric fractures. Hemiarthroplasty in treating these fractures is associated with greater surgical trauma and higher incidence of postoperative medical complications.

**Kim SY et al [13] (2005)** showed that Patients treated with a proximal femoral nail had a shorter operative time, less blood loss, fewer units of blood transfused, a lower mortality rate, and lower hospital costs compared with those treated with the long-stem cementless calcar-replacement prosthesis. In elderly patients with an unstable intertrochanteric femoral fracture, a proximal femoral nail provides superior clinical outcomes but no advantage with regard to functional outcome when compared with a long-stem cementless calcar-replacement arthroplasty.

Our study showed that in group cemented hemiarthroplasty, 25(100.0%) patients had slight pain in follow up 12th month. In group proximal femur nailing, 25 (100.0%) patients had slight pain in follow up 12th month. In group cemented hemiarthroplasty, the range of movement was 75-80 in 1(4.0%) patient and 80-90 in 24(96.0%) patients at 6th month. In group proximal femur nailing, range of movement was 75-80 in 4(16.0%) patients, 75-80 in 9(36.0%) patients and 80-90 in 12(48.0%) patients at 6th month range. Association of 6th month range of movement vs surgery done was statistically significant ( $p < 0.0001$ ). In group cemented



hemiarthroplasty, 9th range of movement was 80-90 in all the patients. In group proximal femur nailing, 9th month range of movement was 80-90 in all the patients. Association of 9th month range of movement vs surgery done was statistically significant ( $p < 0.0001$ ). In group cemented hemiarthroplasty, 12th range of movement was 100-110 in 15 (60.0%) patients. In proximal femur nailing 12th range of movement was 90-100 in all 25 patients and none of the patients showed range of movement of 100-110 in this group. Association of 12th month range of movement vs surgery done was statistically significant ( $p < 0.0001$ ). In cemented hemiarthroplasty group, the mean age (mean  $\pm$  s.d.) Of patients was  $81.8400 \pm 3.7603$ . In proximal femur nailing group, the mean age (mean  $\pm$  s.d.) Of patients was  $69.9200 \pm 1.3204$ . Distribution of mean age in years with surgery done was statistically significant ( $p < 0.0001$ ).

**Ahmed E et al [14] (2012)** showed that the Harris Hip Score ranged from 93 to 51 with a mean value 78.19. Four cases (9.76%) were excellent (91 - 100), 16 cases (39.02%) good (81 - 90), 16 cases (39.02%) fair (71 - 80) and 5 cases (12.02%) poor ( $\leq 70$ ). Six cases had complications; infection (1), dislocation (1), stem loosening and subsidence (2), bleeding peptic ulcer (1) and intra-operative crack of the femur while preparing the femoral canal for implant insertion (1). Five patients died within the first year (12.19%). Four patients had revision surgery. Conclusion: Bipolar hemiarthroplasty for the unstable intertrochanteric fractures of the femur in elderly has good early clinical outcome. It is to be considered as one of the treatment options for such injury speciality in case of fragility fractures.

Our study showed that in cemented hemiarthroplasty group, the mean duration of surgery (mean  $\pm$  s.d.) Of patients was  $127.4400 \pm 10.5873$ . In proximal femur nailing group, the mean duration of surgery (mean  $\pm$  s.d.) Of patients was  $90.3200 \pm 8.8021$ . Distribution of mean duration of surgery with surgery done was statistically significant ( $p < 0.0001$ ). In cemented hemiarthroplasty group, the mean amount of blood loss (mean  $\pm$  s.d.) Of patients was  $236.5600 \pm 51.1331$ . In proximal femur nailing group, the mean amount of blood loss (mean  $\pm$  s.d.) Of patients was  $94.2000 \pm 10.1201$ . Distribution of mean amount of blood loss with surgery done was statistically significant ( $p < 0.0001$ ). In cemented hemiarthroplasty group, the mean 6th month harris hip score (mean  $\pm$  s.d.) Of patients was  $74.8700 \pm 1.0097$ . In

proximal femur nailing group, the mean 6th month harris hip score (mean  $\pm$  s.d.) Of patients was  $70.2660 \pm 1.0192$ . Distribution of mean 6th month harris hip score with surgery done was statistically significant ( $p < 0.0001$ ). In cemented hemiarthroplasty group, the mean 9th month harris hip score (mean  $\pm$  s.d.) Of patients was  $83.1360 \pm 1.0036$ . In proximal femur nailing group, the mean 9th month harris hip score (mean  $\pm$  s.d.) Of patients was  $78.2180 \pm 1.0192$ . Distribution of mean 9th month harris hip score with surgery done was statistically significant ( $p < 0.0001$ ). In cemented hemiarthroplasty group, the mean 12th month harris hip score (mean  $\pm$  s.d.) Of patients was  $92.6180 \pm 1.1450$ . In proximal femur nailing group, the mean 12th month harris hip score (mean  $\pm$  s.d.) Of patients was  $92.2940 \pm 1.1118$ . Distribution of mean 12th month harris hip score with surgery done was statistically significant ( $p = 0.3152$ ).

## CONCLUSION

In conclusion, our study demonstrates that cemented hemiarthroplasty is a preferable treatment option for elderly patients with unstable intertrochanteric femoral fractures, particularly those over sixty-five years of age. Statistically significant differences were observed in several key outcomes: patients undergoing cemented hemiarthroplasty were older, had higher prevalence of diabetes and hypertension, experienced longer surgical durations, and incurred more blood loss compared to those who received proximal femur nailing. Additionally, cemented hemiarthroplasty showed superior Harris hip scores at the 6th and 9th months, although the difference was not significant at the 12th month. These findings suggest that while cemented hemiarthroplasty may involve more surgical complexity and initial blood loss, it offers better early clinical outcomes and should be strongly considered for managing intertrochanteric fractures in this demographic.

## REFERENCES

1. Jolly A, Bansal R, More AR, Pagadala MB. Comparison of complications and functional results of unstable intertrochanteric fractures of femur treated with proximal femur nails and cemented hemiarthroplasty. J Clin Orthop Trauma [Internet]. 2017 Sep.
2. Leslie MP, Baumgaertner MR. Intertrochanteric Hip Fractures [Internet]. [cited 2019 Jan 20].





3. Sahoo PK, Dash SK, Panigrahi R, Kissan D, Das DS, Ranjan Biswal 5 1 Resident M. Issue: 6. *Int J Heal Sci Res* [Internet]. 2015 [cited 2019 Jan 18];5:99.
4. Tang P, Hu F, Shen J, Zhang L, Zhang L. Proximal femoral nail antirotation versus hemiarthroplasty: A study for the treatment of intertrochanteric fractures. [Internet]. *Injury*. 2011 [cited 2019 Jan 18]. p. 6–11.
5. Campbell WC, Canale ST, Beaty JH. *Campbell's operative orthopaedics*. 11th ed. Philadelphia, PA: Mosby/Elsevier; 2008. [Google Scholar]
6. Zuckerman JD. Hip fracture. *New England Journal of Medicine*. 1996;334:1519–23. [PubMed] [Google Scholar]
7. Dieter M, Lindskog MD, Michael R, Baumgaertner MR. Unstable IT hip fractures in the elderly. *Journal of the American Academy of Orthopaedic Surgeons*. 2004;12(3):179–90.
8. Sadic S, Custovic S, Jasarevic M, Fazlic M, Krupic F. Proximal femoral nail antirotation in treatment of intertrochanteric hip fractures: a retrospective study in 113 patients. *Medical Archives*. 2015 Dec;69(6):352.
9. Song WD, Peng YW, Qiu TB, Chen H. SymbolProximal femoral nail-antirotation versus prosthetic replacement for the treatment of intertrochanteric fractures in the elderly. *Journal of Clinical Rehabilitative Tissue Engineering Research*. 2010 Oct 22;14(43):7999-8003.
10. Li M, Wu L, Liu Y, Wang C. Clinical evaluation of the Asian proximal femur intramedullary nail antirotation system (PFNA-II) for treatment of intertrochanteric fractures. *Journal of orthopaedic surgery and research*. 2014 Dec 1;9(1):112.
11. Sahoo PK, Dash SK, Panigrahi R, Kissan D, Das DS, Biswal MR. Cemented bipolar hemiarthroplasty versus proximal femoral nails: a prospective comparative outcome analysis in unstable elderly intertrochanteric fractures.
12. Luo X, He S, Zeng D, Lin L, Li Q. Proximal femoral nail antirotation versus hemiarthroplasty in the treatment of senile intertrochanteric fractures: case report. *International journal of surgery case reports*. 2017 Jan 1;38:37-42.
13. Kim SY, Kim YG, Hwang JK. Cementless calcar-replacement hemiarthroplasty compared with intramedullary fixation of unstable intertrochanteric fractures: a prospective, randomized study. *JBJS*. 2005 Oct 1;87(10):2186-92.
14. Ahmed E, Mahmoud S, Mahmoud Z, Mahmoud H. Primary bipolar arthroplasty in unstable intertrochanteric fractures in elderly. *Open Journal of Orthopedics*. 2012 Mar 1;2012.