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A RETROSPECTIVE STUDY COMPARING PROXIMAL FEMORAL NAIL ANTI-ROTATION WITH CEMENTLESS BIPOLAR HEMIARTHROPLASTY FOR UNSTABLE FEMORAL INTERTROCHANTERIC FRACTURE

[1]Dr. Satish Bobade, [2]Dr. Sandesh Bobade, [3]Dr. Pravin Deokate
[1]Assistant Professor, Government Medical College, Baramati
[2]Senior Resident, Government Medical College, Baramati
[3]Associate Professor, BJ Medical College, Pune

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Corresponding author: Dr. Satish Bobade
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Abstract

Background: Intertrochanteric femoral fractures are one of the most common types of bone fractures that are usually caused by severe direct or indirect force. It has also been estimated that nearly 50% of all the fractures are intertrochanteric fractures and the remaining are unstable fractures. Also, it has been found that the mortality related to hip fractures is as high as 15-20%. With an increase in the life expectancy of people, there has been a substantial increase in the number of patients with postmenopausal or senile osteoporosis.

Aim: To compare Proximal femoral nail anti-rotation with cementless bipolar hemiarthroplasty for unstable femoral intertrochanteric fracture

Methods: It was a retrospective study carried out at the Government Medical College, Baramati for a period of 1 year. One hundred patients were included for the scope of the study. Out of which 50 patients belonged to the PFNA group, and 50 patients belonged to the CPH group.

Results: The number of patients in the PFNA group was 50 and that in the CPH group was 50. Both groups show male preponderance. The mean age among both the groups was almost the same, and there was no statistically significant difference among the two groups regarding the mean age. The mean operation time for PFNA was 54.15±16.1 mins, and that of the CPH group was 76.69±15.89 mins. The mean bleeding time for PFNA was 133.12±33.16 ml, and that of the CPH group was 289.25±44.01 ml. There was no statistically significant difference among the ASAA grade scores of the two groups. There was no statistically significant difference among the Evans-Jensen classification of the two groups. The mean length of hospital stay for PFNA group was 7.89±2.0 days, and the mean hospital stay for CPH group was 6.54±1.9 days.

Conclusion: The current study depicted that CPH and PFNA are both safe and effective methods of treating elderly patients suffering from intertrochanteric fractures. However, it was found in the current study that CPH was found to have more mean operative time and increased blood loss. Still, the recovery and hospitalization time was almost similar in both the groups. Both the groups had almost similar ASA and Evans Jensen scores that made both the techniques equally safe.

Introduction

Intertrochanteric femoral fractures are one of the most common types of bone fractures that are usually caused by severe direct or indirect force[i]. This is the most common fracture affecting the elderly than the younger age group patients[ii]. It has also been estimated that nearly 50% of all the fractures are intertrochanteric fractures and the remaining are unstable fractures[iii]. Also, it has been found that the mortality related to hip fractures is as high as 15-20%[iv].

With an increase in the life expectancy of people, there has been a substantial increase in the number of patients with postmenopausal or senile osteoporosis[v]. These are the people at high risk of having an intertrochanteric femoral fracture. The patients with senile osteoporosis intertrochanteric fractures usually face some underlying disease that increases the risk of complications[vi]. Other than osteoporosis the other underlying accompanying the fracture include hypertension, diabetes, and chronic lung disease that make the patient's condition poor along with making them less tolerant towards surgical treatments[vii].

The surgical treatment for unstable intertrochanteric fractures has always been debatable. A majority of the authors have been advocating the use of proximal femoral nail anti-rotation (PFNA) with a type of intramedullary nailing (IMN)[viii]. However, a significant number of patients have suggested the use of cementless bipolar hemiarthroplasty (CPH) for the treatment of unstable intertrochanteric fractures[ix]. Therefore, the study focuses

on analyzing the clinical efficacy and safety of proximal femoral nail anti-rotation (PFNA) with a type of intramedullary nailing (IMN) and cementless bipolar hemiarthroplasty for treating the patients with unstable intertrochanteric fractures.

Aim

To compare Proximal femoral nail anti-rotation with cementless bipolar hemiarthroplasty for unstable femoral intertrochanteric fracture

Material and Methods

It was a retrospective study carried out at the Government Medical College, Baramati for a period of 1 year. One hundred patients were included for the scope of the study. Out of which 50 patients belonged to the PFNA group, and 50 patients belonged to the CPH group.

Inclusion criteria

1. All the patients with type III-V intertrochanteric fracture according to the Evans-Jensen classification
2. All the patients whose fracture resulted from a low energy trauma
3. Patients having severe osteoporosis
4. All the patients who gave written consent for being a part of the study

Exclusion criteria

1. All those patients who showed any kind of mental illness were excluded from the study
2. All the patients with multiple organ dysfunction
3. All the patients who did not provide consent to be a part of the study

Results

Table 1: Group distribution

Group	PFNA	CPH
No. of patients	50	50

The above table signifies that the number of patients in the PFNA group was 50 and that in the CPH group was 50.

Table 2: Gender Distribution

Group	Male	Female
PFNA	30	20
CPH	35	15

The above table shows the number of male and female patients in PFNA and CPH groups. Both groups show male preponderance.

Table 3: Mean Age

Group	Mean age (years)	P-value
PFNA	82.45±5.1	>0.05
CPH	82.98±69	

The mean age among both the groups was almost the same, and there was no statistically significant difference among the two groups regarding the mean age.

Table 4: Mean Operation time

Group	Mean operation time (min)	P-value
PFNA	54.15±16.1	<0.05
CPH	76.69±15.89	

The above table depicts that the mean operation time for PFNA was 54.15±16.1 mins and that of the CPH group was 76.69±15.89 mins. It shows that the meantime for CPH group was more as compared to the PFNA group. There was a statistically significant difference between the operation time of the two groups.

Table 5: Mean bleeding time

Group	Mean bleeding time (ml)	P-value
PFNA	133.12±33.16	<0.05
CPH	289.25±44.01	

The above table depicts that the mean bleeding time for PFNA was 133.12±33.16 ml and that of the CPH group was 289.25±44.01 ml. It shows that the meantime for CPH group was more as compared to the PFNA group. There was a statistically significant difference between the bleeding time of the two groups.

Table 6: ASA grade score

Group	PFNA group	CPH group	P-value
ASA Grade III	43	32	>0.05
ASA Grade IV	21	19	>0.05

The above table shows the ASA Grade II and IV scores of the patients among the PFNA group and CPH group. There was no statistically significant difference among the ASAA grade scores of the two groups.

Table 7: Evans-Jensen Classification

Group	PFNA group	CPH group	P-value
Evans-Jensen III	30	19	>0.05
Evans-Jensen IV	21	20	>0.05

The above table shows the Evans-Jensen classification of the patients among the PFNA group and CPH group. There was no statistically significant difference among the Evans-Jensen classification of the two groups.

The mean length of hospital stay for PFNA group was 7.89±2.0 days, and the mean hospital stay for CPH group was 6.54±1.9 days. There was no statistically significant difference between the two variables.

Discussion:

In the current study, it was found that the number of male patients was high as compared to that of the female

patients in both the groups and thus, the study showed male preponderance in the study. Similar results were found in the study of Zhou et al. (2019)[2]. The study by Luo et al. (2017)[8] also showed male preponderance in the study. The mean operation time in the current study for PFNA was less as compared to that of CPH, and there was a statistically significant difference among the two operative techniques. Similar results were found in the study of Saraf et al., (2018)[x]. Supporting both the studies, Zhou et al. (2019)[2] also found a statistically significant difference among the mean operation time of the two techniques. Furthermore, according to the current study, the mean bleeding time for PFNA group was comparatively lower than the mean bleeding time of the CPH group. In the views of Zhang et al., (2018)[1], the PFNA group required comparatively lower mean operational time as the CPH group. Similarly, supporting the statement Luo et al., (2017)[8] also found similar results.

Conclusion:

The current study depicted that CPH and PFNA are both safe and effective methods of treating elderly patients suffering from intertrochanteric fractures. However, it was found in the current study that CPH was found to have more mean operative time and increased blood loss. Still, the recovery and hospitalization time was almost similar in both the groups. Both the groups had almost similar ASA and Evans Jensen scores that made both the techniques equally safe. However, the clinicians need to choose upon the method based on the patient's condition. However, owing to the small size of the study population might act as a limitation, and further study is required for further evidence.

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