

## Proximal Femoral Nail versus Antirotation Proximal Femoral Nails in Managing Subjects of Femur Fracture at a Tertiary Care Hospital

Vinod Kumar Singh

Associate Professor, Department of Orthopaedics,  
A. N. M. Medical College and Hospital, Gaya, Bihar, India.

### ABSTRACT

**Background:** Hip fractures or fractures of proximal femur are commonly seen and terrible fractures that normally affect the elderly patients with 90% seen in more than 60 years. Since the age of subjects was a matter of debate as who suffered from intertrochanteric fractures primarily had osteoporosis therefore, screw modification of proximal femur nail was required that consisted of a helical blade and provided better hold in the region of osteoporotic femur head. Because of this, the aim of the present study was to assess the effectiveness of PFN and PFN anti-rotation in management of subjects with intertrochanteric femur fractures.

**Materials and Methods:** The study was categorized into two groups- Group I patients were treated by PFN and Group II patients were treated by PFN anti-rotation nails. The follow up of subjects was done after 6 months. Both clinical and radiographic results of all the treated patients were evaluated. Functional outcome was determined with the Harris hip score. All the data thus obtained was arranged in a tabulated form and analyzed using SPSS software. Chi square test was used for assessing the probability. P value of less than 0.05 was considered as significant.

**Results:** The mean time to sit amongst Group I patients was

2.9 days and Group II patients was 2.7 days. The mean time to stand amongst Group I and Group II subjects was 5.2 days and 5.1 days. The mean time to walk amongst both the groups was 5.7 days and 5.5 days respectively. There was no significant difference between the groups.

**Conclusion:** No significant difference was observed in present study with respect to weight bearing and Harrison hip score amongst both the categories.

**Keywords:** Femur, Trochanteric, Hip, Fracture.

### \*Correspondence to:

**Dr. Vinod Kumar Singh**  
Associate Professor,  
Department of Orthopaedics,  
A. N. M. Medical College and Hospital, Gaya, Bihar, India.

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### INTRODUCTION

Hip fractures or fractures of proximal femur are commonly seen and terrible fractures that normally affect the elderly patients with 90% seen in more than 60 years. Intertrochanteric fractures are described as fractures of the proximal part of femur, between lesser and greater trochanteric area of the bone. Because of advancement in the medical management, the senior subjects populace is elevating day by day.<sup>1-2</sup> Before the introduction of apt fixation tools, intertrochanteric femoral fractures management was non operative and needed prolonged bed rest along with traction until complete healing of fracture was observed and followed by life-long ambulation training.<sup>3</sup> Since the age of subjects was a matter of debate as who suffered from intertrochanteric fractures primarily had osteoporosis therefore, screw modification of proximal femur nail was required that consisted of a helical blade and provided better hold in the region of osteoporotic femur head.<sup>4-6</sup> Because of this, the aim of the present study was to assess the effectiveness of PFN and PFN anti-rotation in management of subjects with intertrochanteric femur fractures.

### MATERIALS AND METHODS

The prospective study was conducted in the Department of Orthopaedics, A. N. M. Medical College and Hospital, Gaya, Bihar (India) enrolling 30 subjects with intertrochanteric fractures amongst adults elder than 21 years.

The study was categorized into two groups- Group I patients were treated by PFN and Group II patients were treated by PFN anti-rotation nails. The follow up of subjects was done after 6 months. The patients were informed about the study and a written consent was obtained from all in their vernacular language. The study was approved by the institutional ethical committee.

Detailed clinical and demographic information of patients was obtained. Complete biochemical and hematological tests were performed prior to surgery initiation. Only skilled and experienced surgeons completed all the surgical treatment as per the respective categories. Both clinical and radiographic results of all the treated patients were evaluated. Functional outcome was determined with the Harris hip score.

All the data thus obtained was arranged in a tabulated form and analyzed using SPSS software. Chi square test was used for assessing the probability. P value of less than 0.05 was considered as significant.

**RESULTS**

Table 1 shows the demographic characteristics of the study population. There were only 6 subjects less than 40 years of age, 9 were between 40-60 years. There were 15 subjects more than 60 years of age. There were 14 males and 16 females amongst the group. There were 15 subjects in each group.

Table 2 illustrates the mean time patients were allowed partial

weight bearing. The mean time to sit amongst Group I patients was 2.9 days and Group II patients was 2.7 days. The mean time to stand amongst Group I and Group II subjects was 5.2 days and 5.1 days. The mean time to walk amongst both the groups was 5.7 days and 5.5 days respectively. There was no significant difference between the groups.

Table 3 illustrates the Harrison Hip score amongst the study groups. The preoperative mean score in Group I and Group II was 50.2 and 51.5 respectively. The score and 1 month postoperative was 61.5 in Group I and 60.6 in Group II. There was no significant difference between the groups. The score at 6 month postoperative was 77.9 and 78.4 respectively in both the groups.

**Table 1: Demographic characteristics of the study**

Variable	Frequency		Total
Age(years)	Group I	Group II	
<40	4	2	6
40-60	4	5	9
>60	7	8	15
Gender			
Male	8	6	14
Female	7	9	16

**Table 2: Mean time patients were allowed partial weight bearing**

Time (days)	Group I	Group II	P value
Mean time to sit	2.9	2.7	>0.05
Mean time to stand	5.2	5.1	>0.05
Mean time to walk	5.7	5.5	>0.05

**Table 3: HHS score amongst the groups**

HHS score	Group I	Group II	P value
Preoperative	50.2	51.5	>0.05
Postoperative 1 month	61.5	60.6	>0.05
Postoperative 6 month	77.9	78.4	>0.05

**DISCUSSION**

The frequency of hip fractures are significantly increasing with advancement of age in all subgroups globally, and the incidence of hip fractures is tending to tremendously increase to around 512,000 by the upcoming year 2040.<sup>7</sup> Hip fractures critically consist of trochanteric and neck of femur fractures, and the frequency of mortality related with femur fractures varies between 15% to 30% amongst United States.<sup>8</sup> With the use of surgical management protocols with stable fixation, rapid mobilization is crucial and there is also reduction in the incidence of complications. There are typically two types of fixations especially for management trochanteric fractures, plate fixation and also there are intramedullary implantations available.<sup>9,10</sup> The normal implants for management of fractures of hip are dynamic hip screw.<sup>11-16</sup>

On the contrary, whenever they were compared with the intramedullary implants, it had a biomechanical setback due to their broad length.<sup>17</sup> The introduction of proximal femoral nails by

the AO/ASIF in 1998 and afterwards have been widely in use for the management trochanteric fractures.<sup>18-21</sup> There are various studies have illustrated the usefulness of PFN but few have been related with technical failures also.<sup>18,19</sup> In the present study, the mean time to sit amongst Group I patients was 2.9 days and Group II patients was 2.7 days. The mean time to stand amongst Group I and Group II subjects was 5.2 days and 5.1 days. The mean time to walk amongst both the groups was 5.7 days and 5.5 days respectively. There was no significant difference between the groups. The preoperative mean score in Group I and Group II was 50.2 and 51.5 respectively. The score and 1 month postoperative was 61.5 in Group I and 60.6 in Group II. There was no significant difference between the groups. The score at 6 month postoperative was 77.9 and 78.4 respectively in both the groups. A study conducted by Gadegone WM et al<sup>21</sup> to evaluate the outcome of proximal femoral nails with respect to prevention of clinical problems and failure incidence in subjects of unstable

trochanteric fractures, amongst 82 patients with trochanteric femur fractures between the month of April 2010 to December 2015 found the need of using a screw from trochanter to inferior aspect of femur head for enhancing the strength of the lateral trochanteric wall.

## CONCLUSION

The conclusion from the study is that both the management forms are equally effective in treatment fractures of femur. No significant difference was observed in present study with respect to weight bearing and Harrison hip score amongst both the categories.

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