

## ORIGINAL ARTICLE

**Outcomes of Intertrochanteric Fractures in Patients Managed with Proximal Femoral Nail Antirotation**SARDAR SOHAIL AFSAR<sup>1</sup>, AKBAR ALI<sup>2</sup>, YAQOOB UR REHMAN<sup>3</sup><sup>1</sup>Chairman and associate professor orthopaedics, Nowshera medical college and qazi Hussain Ahmed medical complex, Nowshera<sup>2</sup>Assistant professor, Nowshera medical college and qazi Hussain Ahmed medical complex Nowshera<sup>3</sup>Assistant Professor, Qazi Hussain Ahmad Medical Complex/ Nowshera Medical CollegeCorresponding author: Yaqoob Ur Rehman, Email: [yaqooburehman@gmail.com](mailto:yaqooburehman@gmail.com)**ABSTRACT****Background:** The older population is quite susceptible to intertrochanteric fractures. These fractures generally affect elderly patients with several medical conditions and eventually result in the patient losing their functional independence. Different treatment modalities are used for the management of proximal femoral fractures.**Objective:** Outcomes of intertrochanteric fractures in patients managed with Proximal Femoral Nail Antirotation**Methodology:** The current study was descriptive study carried out at the orthopedic department, Qazi Hussain Ahmad Medical College, Nowshera from June 2021 to June 2022. All the enrolled patients were operated under an image intensifier by Proximal Femoral Nail Antirotation. Consultations after surgery were planned every two weeks for the first month, and then every month for the next six months. Radiographs were used to evaluate the radiological union at each visit. The functional outcome was determined with Harris Hip Score. SPSS version 23 was used to enter and analyze all of the data.**Results:** In the current study, totally 40 patients with intertrochanteric fractures were enrolled. The male participants in this study were 12 (30%) while female patients were 28 (70%). In all of our enrolled patients, radiological union occurs in a mean (SD) duration of 14.9 (2) weeks. The functional outcome in our study, based on Harris Hip Score was excellent in 12 (30%) patients, good in 18 (45%), fair in 8 (20%) patients and poor in 2 (5%) patients.**Conclusion:** Our study concludes that management of intertrochanteric fractures with proximal femoral nail antirotation is an effective procedure for excellent and good functional outcomes and less post-operative complication.**Keywords:** intertrochanteric fractures; Proximal Femoral Nail Antirotation; functional outcomes**INTRODUCTION**

Osteoporosis and low-energy trauma are the most prevalent causes of proximal femoral fractures in older individuals. In contrast, high-energy trauma, such as that caused by road accidents, is the most common cause of these fractures in young individuals<sup>1</sup>. Since the elderly population has been growing recently, the incidence has been progressively rising<sup>2</sup>. High rates of complications and death are seen in patients with this fracture because of their advanced age, low quality bone mass, and prevalence of coexisting disorders<sup>3, 4</sup>. The earlier surgical technique has proven to be the accepted standard for the treatment of intertrochanteric fractures in order to lower death and disability rates<sup>5</sup>. The main goals of the surgical procedure are early weight-bearing and reliable fixation. Pertrochanteric fractures, neck of femur fractures, intertrochanteric, and subtrochanteric fractures, as well as combinations of these fractures, are examples of proximal femoral fractures<sup>6</sup>. Different treatment modalities are used for the management of proximal femoral fractures. These methods include dynamic Hip Screw, Gamma Nail, Interlocking Nail, Proximal Femoral Locking Plate and Proximal Femoral Nail Antirotation<sup>7, 8</sup>. Extramedullary implants and intramedullary nails are the two kinds of implants employed in these fractures. The fracture pattern is the primary factor influencing implant selection for both stable and unstable fractures. Reverse oblique fractures, subtrochanteric extension fractures, fractures with reverse oblique patterns, and fractures with significant destruction of the posteromedial cortex due to comminution are all examples of unstable intertrochanteric fractures. Stable fractures are those lacking subtrochanteric extension or damage of the posteromedial cortex<sup>9, 10</sup>. When fixing a fracture, it's best to utilize an intramedullary implant instead of an extra medullary one so that early mobilization is guaranteed and the risk of bleeding, infection, and implant failure is minimized<sup>11</sup>. The current gold standard method for managing type III and IV intertrochanteric fractures is proximal femoral nail antirotation<sup>12</sup>. Numerous investigations on proximal femoral nail antirotation have been carried out for the management of intertrochanteric fractures with excellent and good functional outcomes<sup>13, 14</sup>. In our setting, no previous research has been carried out on the Proximal Femoral Nail Antirotation for the management of intertrochanteric fractures. This study was carried out with the goal to assess the outcomes of intertrochanteric

fractures in patients managed with Proximal Femoral Nail Antirotation.

**MATERIALS AND METHODS**

The current study was descriptive study carried out at the orthopedic department, Qazi Hussain Ahmad Medical College, Nowshera. The study was carried out for a period of one year from June 2021 to June 2022. The study approval was taken from the institutional review board. The overall sample size based on the WHO calculator for sample size was 40 patients.

**Inclusion criteria**

- Patients with Boyd and Griffin type III and IV intertrochanteric fractures
- Both male and female
- Age range 18-80 years
- Willing to participate in our study

**Exclusion criteria**

- Patients of poly trauma
- Pathological fractures patients
- Open fractures patients
- Bilateral fractures patients
- Patients with revision surgery
- Patients not willing to take part in our study

All the data was collected in a special designed proforma for this study. All the enrolled patients were examined clinically. All the relevant laboratory and radiological investigations were carried out for the enrolled patients. All the enrolled patients were operated under an image intensifier by Proximal Femoral Nail Antirotation. Each patient was then rehabilitated and mobilized after surgery by a professional physiotherapist. Consultations after surgery were planned every two weeks for the first month, and then every month for the next six months. Radiographs were used to evaluate the radiological union at each visit. The functional outcome was determined with Harris Hip Score (HHS) similar to previous study<sup>15</sup>. SPSS version 23 was used to enter and analyze all of the data. Age, fracture duration, and the Harris Hip Score were computed as mean and SD. Gender, type and side of fractures were documented as frequency and percentage.

## RESULTS

In the current study, totally 40 patients with intertrochanteric fractures were enrolled. The male participants in this study were 12 (30%) while female patients were 28 (70%). (Figure 1) The mean age of the patients was 52 ( $\pm 4.75$ ). The average (SD) duration of fracture was 5.11 (1.09) days. Based on fracture side, right side fracture was observed in 18 (45%) patients while left side fracture was observed in 22 (55%) patients. (Figure 2) Based on Boyd and Griffin type fracture, type III fracture was observed in 23 (57.5%) patients whereas type IV fracture was observed in 17 (42.5%) patients. (Figure 3) In all of our enrolled patients, radiological union occurs in a mean (SD) duration of 14.9 (2) weeks. At the final follow-up on sixth month, the mean (SD) Harris Hip Score was 82 (6.12). The functional outcome in our study, based on Harris Hip Score was excellent in 12 (30%) patients, good in 18 (45%), fair in 8 (20%) patients and poor in 2 (5%) patients. (Figure 4)

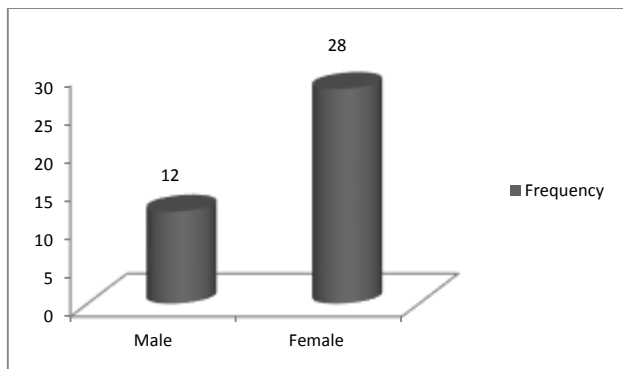


Figure 1: Distribution of patients based on gender

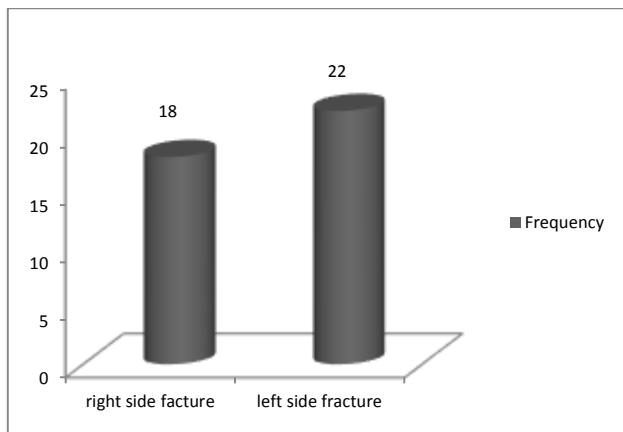


Figure 2: Distribution of patients based on side of fracture

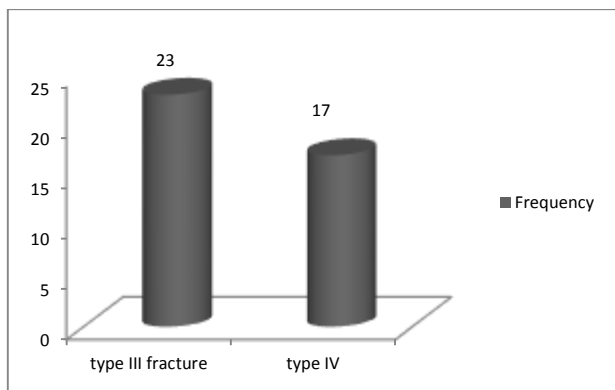


Figure 3: Distribution of patients based on Boyd and Griffin type fracture

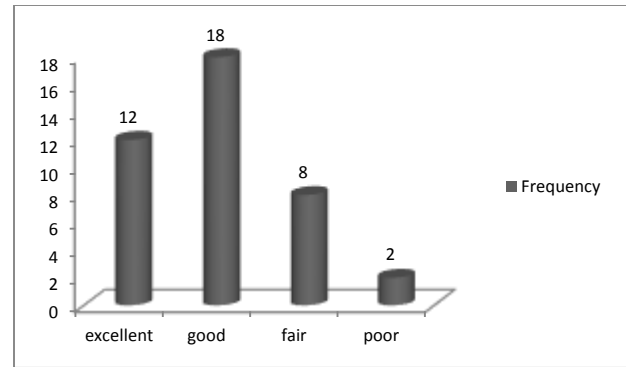


Figure 4: Functional outcomes based on Harris Hip Score

## DISCUSSION

The older population is quite susceptible to intertrochanteric fractures. These fractures generally affect elderly patients with several medical conditions and eventually result in the patient losing their functional independence<sup>16, 17</sup>. The objective should be to restore function with as few surgical and medical complications as feasible. Establishing an acceptable reduction and stable fixation of the fracture that enables early mobilization is the essential to achieve these objectives. Understanding the intertrochanteric fracture geometry and the available implants is necessary for decision-making in the treatment of these fractures<sup>18</sup>. There has been debate regarding the best implant for the management of intertrochanteric fracture. In the current study, totally 40 patients with intertrochanteric fractures were enrolled. The male participants in this study were 30% while female patients were 70%. The mean age of the patients was 52 ( $\pm 4.75$ ). The average (SD) duration of fracture was 5.11 (1.09) days. Based on fracture side, right side fracture was observed in 45% patients while left side fracture was observed in 55% patients. Based on Boyd and Griffin type fracture, type III fracture was observed in 57.5% patients whereas type IV fracture was observed in 42.5% patients. In all of our enrolled patients, radiological union occurs in a mean (SD) duration of 14.9 (2) weeks. At the final follow-up on sixth month, the mean (SD) Harris Hip Score was 82 (6.12). The functional outcome in our study, based on Harris Hip Score was excellent in 30% patients, good in 45%, fair in 20% patients and poor in 5% patients. In accordance with our study, another study was carried out by M Sajid et al. on the management of intertrochanteric fractures patients with Proximal Femoral Nail Antirotations. In their study 85 patients were enrolled. The female were more in their study as compared to male. The mean Harris hip score (standard deviation) at the final follow up in their study was 84.84 ( $\pm 8.80$ ). In their study, amongst the 85 patients, excellent outcome was observed in 31.76% patients and good in 44.71% patients which is almost similar with our findings<sup>19</sup>. In a research on 37 patients with proximal femoral nail antirotations, Onta et al. found that the mean Harris hip score was 84.73. Based on functional outcomes, the excellent, good, fair and poor outcomes were reported in 35.1%, 45.9%, 13.5% and 5.4% respectively. These authors came to the conclusion that, when compared to a dynamic hip screw, proximal femoral nail antirotations is a less invasive approach with reduced surgical time, blood loss, and radiation exposure<sup>20</sup>. Seventy patients with proximal femoral nail antirotations were examined in another research by Garabadi. At the one year follow up, he recorded excellent functional result in 62 patients, good functional outcome in 4, and poor functional outcome in 2 individuals<sup>19</sup>. In a prior research, Ye et al. treated 90 patients with proximal femoral nail antirotations and recorded mean HHS of 80.59.8 after one year of follow-up. 26 patients had excellent functional outcomes, 37 had fair outcomes, 18 had poor outcomes, and 9 had bad outcomes. Because proximal femoral nail antirotations had greater union rates, required less surgery time, and allowed for early post-

operative mobility, these authors came to the conclusion that it should be the best implant for treating unstable intertrochanteric fractures<sup>21</sup>.

## CONCLUSION

Our study concludes that management of intertrochanteric fractures with proximal femoral nail antirotation is an effective procedure for excellent and good functional outcomes and less post-operative complication. Our study recommends Proximal Femoral Nail Antirotation as a gold standard technique for the management of intertrochanteric fractures.

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