Original article:

Assessment of Prognosis of Patients with Intertrochanteric Fractures Undergoing Treatment with PFN: An Observational Study

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ABSTRACT

Background: The Intertrochanteric region comprises the proximal femur distal to the neck extending to the lesser trochanter. Current preferred treatment shows an inclination towards use of proximal femoral nail (PFN) and gamma nail. Under the light of above mentioned data, we planned the present study to assess the prognosis of patients with intertrochanteric fractures undergoing treatment with PFN.

Materials & methods: The present prospective study was done on a total of 15 patients who were admitted due to intertrochanteric fractures of femur and were treated with proximal femoral nail (PFN). Complete recording of the clinical and radiological profile of all the patients was done. All the patients were treated with PFN. Occurrence of postoperative complications in all the patients was recorded. Follow-up records were maintained in all the patients till 24 weeks of time.

Results: Mean duration of procedure in the present study was 63.5 minutes. Complications were found to be present in 2 patients. One suffered from wound infection while other suffered from delayed union.

Conclusion: PFN is a good and satisfactory method of treating patients with intertrochanteric fractures of femur

Key words: Intertrochanteric Fractures, Proximal Femoral Nail.

INTRODUCTION

The Intertrochanteric region comprises the proximal femur distal to the neck extending to the lesser trochanter. The majority of the bone in the region is cancellous, extracapsular, and highly vascularized (contrast with subcapital femoral neck) leading to a robust healing environment. Several anatomic features influence treatment.¹⁻³ Patient with an intertrochanteric hip fracture present with an external rotation deformity with shortened extremity. As most of these patients are elderly they often need medical optimization.⁴⁻⁶ On the other hand timing of surgical intervention is critical. Current preferred treatment shows an inclination towards use of proximal femoral nail (PFN) and gamma nail.⁷⁻⁸

Under the light of above mentioned data, we planned the present study to assess the prognosis of patients with intertrochanteric fractures undergoing treatment with PFN.

MATERIALS & METHODS

The present prospective study was done in the Department of Orthopaedics, Lala Lajpat Rai Memorial Medical College, Meerut, Uttar Pradesh (India) and included assessment of a total of 15 patients who were admitted due to...
Intertrochanteric fractures of femur and were treated with proximal femoral nail (PFN). Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol.

**Inclusion Criteria**
1. Adults
2. Both sexes
3. Isolated intertrochanteric fractures operated within 15 days of injury
4. No associated vascular injury in the limb
5. Normal opposite hip

**Exclusion Criteria**
1. Pure subtrochanteric fractures
2. Bilateral intertrochanteric fractures
3. Pathological fracture
4. Presence of systemic disease or any other systemic illness
5. Patients who refused to give informed consent

Detailed demographic details of all the patients were obtained. Preoperative hematological and biochemical profile of all the patients was obtained. Complete recording of the clinical and radiological profile of all the patients was done. All the patients were treated with PFN. Occurrence of postoperative complications in all the patients was recorded. Follow-up records were maintained in all the patients till 24 weeks of time. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. Chi-square test was used for assessment of level of significance.

**RESULTS**

A total of 15 patients with fresh intertrochanteric fractures who were operated within 15 days of injury were recruited in the present study conducted in the Department of Orthopaedics, Lala Lajpat Rai Memorial Medical College, Meerut, Uttar Pradesh (India). Mean age of the subjects of the present study was 62.3 years. Majority of the patients of the present study belonged to the age group of 61 to 70 years. There were 9 (60%) males and 6 (40%) females in the study population. Mean duration of procedure in the present study was 63.5 minutes. Complications were found to be present in 2 patients. One suffered from wound infection while other suffered from delayed union.

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Group</th>
<th>No.</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 50</td>
<td>3</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>50-60</td>
<td>5</td>
<td>33.3</td>
<td></td>
</tr>
<tr>
<td>61-70</td>
<td>7</td>
<td>46.7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Mean age (years)</td>
<td>62.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2: Showing gender wise distribution

<table>
<thead>
<tr>
<th>Gender</th>
<th>Group</th>
<th>No.</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td>9</td>
<td>60</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 3: Showing postoperative complications

<table>
<thead>
<tr>
<th>Complications</th>
<th>PFN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screw cut-out</td>
<td>0</td>
</tr>
<tr>
<td>Delayed union / non-union</td>
<td>1</td>
</tr>
<tr>
<td>Z-effect</td>
<td>0</td>
</tr>
<tr>
<td>Reverse Z-effect</td>
<td>0</td>
</tr>
<tr>
<td>Wound infection</td>
<td>1</td>
</tr>
<tr>
<td>Varus deformity</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
</tr>
</tbody>
</table>

DISCUSSION

A total of 15 patients with fresh intertrochanteric fractures who were operated within 15 days of injury were recruited in the present study conducted in the Department of Orthopaedics. A total of 15 subjects were recruited in the present study. A study in 2002 reported a technical failure rate (8.7%) due to cut-out, 1 case of implant failure and 2 cases of fracture below the tip of the nail after a second fall, out of 60 patients with exclusively unstable trochanteric fractures treated with proximal femoral nail (PFN). They concluded that the proximal femoral nail (PFN) is a good choice for stabilizing subtrochanteric fractures and unstable trochanteric fractures.

A randomized, prospective study comparing proximal femoral nail (PFN) with dynamic condylar screw (DCS) in treatment of the reverse oblique and transverse intertrochanteric fractures found patients treated with an intramedullary nail had shorter operative times, fewer blood transfusions, and shorter hospital stays. Implant failure and/or nonunion was noted in seven of the nineteen patients who had been treated with the 95° screw-plate. Only one of the twenty fractures that had been treated with an intramedullary nail did not heal. They supported the use of an intramedullary nail rather than a 95° screw-plate for the fixation of reverse oblique and transverse intertrochanteric fractures in elderly patients.

Mean age of the subjects of the present study was 62.3 years. Majority of the patients of the present study belonged to the age group of 61 to 70 years. There were 9 (60%) males and 6 (40%) females in the study population. Mean duration of procedure in the present study was 63.5 minutes. Complications were found to be present in 2 patients. One suffered from wound infection while other suffered from delayed union. A study reported the outcome of 76
unstable pertrochanteric fractures treated with proximal femoral nail (PFN) and were followed up to fracture union or fixation failure. The majority of the procedures were reported as easy or usual. Distal locking was difficult in three patients. In one patient, the fixation failed because the screws were wrongly positioned and was revised to a THR. Mortality rate, during the first 3 months, was 27%. Of the surviving patients, screws cut through the femoral head in four patients (8%), however, fractures united in all the patients. There was one incidence of fracture around the tip of the nail. Seventy-eight percent of the patients at the final follow-up scored >20 points (out of 40 points), using the Salvati and Wilson hip function scoring system. According to the patients and/or their carers, outcome was described as good or very good in 94% of the patients and the level of function was similar to pre-injury level in 50% of the patients. They concluded that the proximal femoral nail (PFN) is a useful device in the treatment of the unstable trochanteric femoral fracture. It is a relatively easy procedure and a biomechanically stable construct allowing early weight bearing. Femoral neck screws positioning is critical.

CONCLUSIONS

Under the light of above mentioned data, the authors conclude that PFN is a good and satisfactory method of treating patients with intertrochanteric fractures of femur. However; further studies are recommended.

REFERENCES
