ORIGINAL RESEARCH PAPER

Orthopaedics

KEY WORDS: PFN (Proximal femoral nail), CRIF (closed reduction internal fixation), ORIF (open reduction internal fixation), AO/ASIF (Arbeitsgemeinschaft fuer Osteosynthesefragen/ Association for the Study of Internal Fixation)

UNSTABLE EXTRACAPSULAR PROXIMAL FEMORAL FRACTURES: IS PROXIMAL FEMORAL NAIL AN OPTIMAL IMPLANT

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ABSTRACT

Introduction: In the present study we have treated unstable extracapsular femoral fractures by using proximal femoral nail (PFN). We have observed the age and sex distribution and mode of trauma in the proximal femoral fractures. Also various intraoperative parameters like method of fracture reduction (CRIF/ORIF), intraoperative blood loss, duration of surgery, use of antirotation (hip pin) screw and postoperative hospital stay were analysed. **Material & Method:** It was an observational study carried out in the department of Orthopaedics DR. RPGMCH, Tanda over a period of two years from 1st January 2013 to 30th December2014. **Results & Observation:** In our study patients between thirty one to ninety years of age presented to us during study period. Fifty two percent of cases had 31A2.2 type of fracture, 28 percent of cases had 31 A2.3 type of fracture. Fifty six percent of cases had fracture on left side. Mean duration of time before admission to surgery was 7 days and only 6 percent of cases were operated within 16 to 20 days. Intra operatively reduction of the fracture was achieved through closed means in 98 percent of the cases. Only one patient required open reduction. Mean duration of surgery was 45 minutes. Mean hospital stay after surgery was 5.94 days. Thirteen percent of the patients had high velocity trauma in which 11 percent were males and 2 percent were females. **Conclusion:** It is concluded that PFN implant is biomechanically a stable construct and is a safe and reliable method of fixation of unstable proximal femoral fractures. The operating time was less as most of the fractures were treated by closed reduction procedure thereby decreasing the perioperative blood loss and less perioperative complications.

INTRODUCTION

The operative treatment of proximal femoral fractures has been advocated to prevent the complications of long term confinement of patients to the bed.[1] A large number of fixation implants has been devised and discarded in the search of an ideal implant. Dynamic hip screw came in 1960's and established itself as a better implant in the management of these fractures, however extensive surgical dissection, blood loss and surgical time required for the surgery often made it a contraindication in elderly with comorbidities. The implant also showed undesirable outcomes in unstable fracture patterns. Then the intramedullary devices came which had numerous biomechanical and biological advantages over the conventional DHS.[2,3,4] The intramedullary device has a shorter lever arm and it bears the bending load which is transferred to the intramedullary nail and is resisted by its contact against the medullary canal (load sharing device). Gamma nail being an intramedullary device was used for these fractures considering the above mentioned advantages, however several implant related complications such as femoral shaft fractures, failure of fixation and problems of distal locking were reported and were attributed to the design and geometry of the nail and inadequate placement of the distal locking screw.[5,6,7] To prevent these complications AO/ASIF group (1997) has designed proximal femoral nail (PFN) with certain design modifications. The PFN has certain design advantages and has been found to be more useful in unstable fracture patterns.[8,9,10] It is reported that the use of PFN in the treatment of pertrochanteric fractures may have positive effect on the speed at which walking is restored.

In the present study we have observed the age and sex distribution and mode of trauma in the proximal femoral fractures. Also various perioperative parameters like method of fracture reduction, intraoperative blood loss, duration of surgery, use of antirotation (hip pin) screw, intraoperative complications and postoperative hospital stay were analysed.

MATERIALS & METHODS

It was an observational study carried out in the department of Orthopaedics, DR. RPGMCH, Tanda. All skeletally mature patients with unstable extracapsular proximal femoral fractures as per AO/ASIF fracture classification system (31A2.2 to 31A3.3) presenting to the department were included in the study after giving written informed consent to participate in this study. Patients excluded from the study include fracture neck of femur and stable extracapsular proximal femoral fractures, pathological fractures, ipsilateral hip and shaft fractures, unresolved medical comorbidities, patients with open physis, open fractures and poly trauma patients. This study was carried on in two years from 1st January 2013 to 31st December 2014.

RESULT

In our study patients between thirty one to ninety years of age presented to us during study period.

Type of Trauma:

Thirteen percent of the patients had high velocity trauma in which 11 percent were males and 2 percent were females. Low velocity trauma was seen in eighty nine percent of patients. Thirty three percent were males and sixty percent were females.

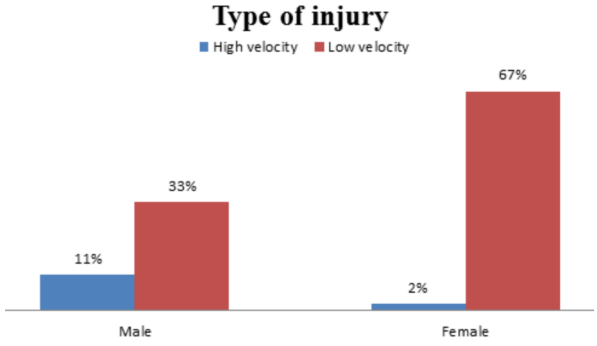

Figure 1: High/ Low Velocity Trauma

Age Distribution: Patients between age 31 to 90 years presented to us during study period (Mean=66.09 years, Range=31-90 years).

Type Of Fracture: Fifty two percent of cases had 31A2.2 type of fracture, 28 percent of cases had 31 A2.3 type of fracture, 11

percent had 31A3.1 type of fracture and 9 percent of cases had 31A3.2 fracture.

Side affected: 56 percent of cases had fracture on left side and 44 percent of patients had fracture on left side.

Time of surgery: Mean duration of time from admission to surgery was 7 days. 35 percent of cases were operated within 5 days, 48 percent of cases were operated within 6 to 10 days, 11 percent of cases were operated within 11 to 15 days and 6 percent of cases were operated within 16 to 20 days.

Method of reduction: Intra operatively reduction of the fracture was achieved through closed means in 98 percent of the cases. Only one patient required open reduction.

Duration of surgery: In our study mean duration of surgery was 54 minutes with 26 percent of cases being operated within 30 to 40 minutes, 32 percent of cases within 40-50 minutes, 19 percent within 60 to 70 minutes, 19 percent of cases within50 to 60 minutes and only 4 percent of cases operated within 90 to 100 minutes.

Use Of Hip Pin: Hip pin was used in 83 percent of cases.

Fluoroscopy Time: Mean time was significantly lower about 3.5 minutes.

Table 1: Perioperative Variables:

Sr No.	Variables	Values
1	Mean duration of time before admission to surgery	7 days
2	Mean duration of surgery	54 min.
3	Blood loss	245 ml
4	Fluoroscopy time	3.5 min.
5	Mean hospital stay after surgery	5.94 days

Post Operative Hospital Stay: Among our patients mean hospital stay after surgery was 5.94 days, 41 percent patients discharged after 5 days and 59 percent of patients were discharged between 6 to 10 days after surgery.

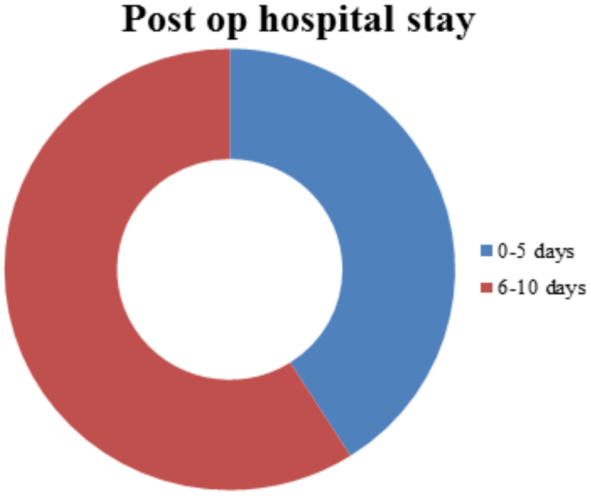

Figure 2: Post Surgery Hospital Stay

DISCUSSION

In the present study patients of unstable extracapsular proximal femoral fractures were treated by PFN. Thirteen percent of the patients had high velocity trauma while 87 percent of the patients had low velocity trauma. Fifty two percent of cases had 31A2.2 type of fracture, 28 percent of cases had 31 A2.3 type of fracture. Fifty six percent of cases had fracture on left side. Mean duration of time before admission to surgery was 7 days and 6 percent of cases were operated within 16 to 20 days. Intra operatively reduction of the fracture was achieved through closed means in 98 percent of the cases. Only one patient required open reduction. Mean duration of surgery was 54 minutes. Mean hospital stay after surgery was 5.94 days.

Our study had shown good out come with less intraoperative complications after treatment with PFN.

CONCLUSION

It is concluded that proximal femoral nail is biomechanically a stable construct and a reliable method of fixation of unstable proximal femoral fractures. The operating time was less as most of the fractures were treated by closed reduction procedure thereby decreasing the perioperative blood loss and less perioperative complications.

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