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ANALYSIS OF FUNCTIONAL OUTCOME OF INTERTROCHANTERIC FRACTURES MANAGED WITH PROXIMAL FEMORAL NAIL IN OUR INSTITUTION

Orthopedics

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ABSTRACT

Introduction: Pertrochanteric Femoral Fractures has increased significantly during recent decades Several implant designs have been developed in order to facilitate early ambulation and to reduce the risk of complications when treating stable, unstable trochanteric and subtrochanteric fractures. Unstable intertrochanteric femoral fractures are best treated with an intramedullary implant

Materials And Methods: We studied a series of 52 patients,who were treated with Proximal Femoral Nailing in our institution Govt Villupuram Medical College Hospital, Villupuram. Out of 52, Patients, 38 were included in the study, 10 patient had lost follow up, and 3 patients had associated other fractures, and one died during follow up.

Results: In our series 14 patients had excellent results, 21 had good result, 2 had moderate results and one had poor score based on Harris Hip Scoring .one patient had implant failure with shaft fracture after a trivial fall.

Conclusion: In our study, osteosynthesis using a PFN, resulted in low rates of clinical complications, excellent stabilization, few mechanical complications and good functional results. Thus the treatment of intertrochanteric fracture with PFN had a more favourable outcome and it is the ideal implant of choice for intertrochanteric fractures at present.

KEYWORDS

Intertrochanteric Fractures, Proximal Femoral Nail, Harris Hip Score

INTRODUCTION

The incidence of pertrochanteric femoral fractures has increased significantly during recent decades [1]. Several implant designs have been developed in order to facilitate early ambulation and to reduce the risk of complications when treating stable, unstable trochanteric and subtrochanteric fractures. Unstable intertrochanteric femoral fractures are best treated with an intramedullary implant. The theoretical benefits of intramedullary nails over side plate devices include improved biomechanics (shortened lever arm), decreased blood loss, smaller incisions, and decreased femoral neck shortening

In this study, we aimed to assess, post-operative rehabilitation status and functional status at the end of one year in all types of intertrochanteric femoral fractures treated using proximal femoral nail

Classification:

Boyd and Griffin [4]initially described four types of peritrochanteric femoral fractures in 1949

Type 1: Fractures that extend along the intertrochanteric Line
Type 2: Comminuted fractures with the main fracture line along the intertrochanteric line but with multiple secondary fracture lines (may include coronal fracture line seen on lateral view)
Type 3: Fractures that extend to or are distal to the lesser trochanter
Type 4: Fractures of the trochanteric region and proximal shaft with fractures in at least two planes

AIM OF THE STUDY

To analyse the functional outcome of intertrochanteric fractures managed with PROXIMAL FEMORAL NAIL.

MATERIALS AND METHODS:

We studied a series of 52 patients were treated with proximal femoral nailing in our institution Govt Villupuram Medical College Hospital, Villupuram. Out of 52, Patients, 38 were included in the study, 10 patient had lost follow up, and 3 patients had associated other fractures, and one died during follow up. Study was conducted from Jan 2016 To December 2016.

STUDY DESIGN:

The study is prospective study.

INCLUSION CRITERIA:

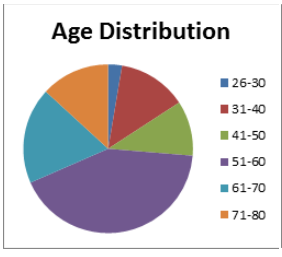
[1]All trochanteric fractures [2]Age more than 25 years.

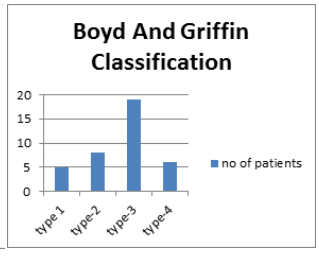
EXCLUSION CRITERIA:

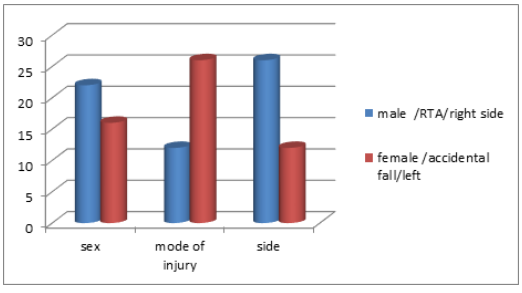
[1]Less than 25 yrs [2] Open fractures [3]Neurological and psychiatric disorders that preclude reliable assessment[4] Medical co morbidities precluding the patient for internal fixation

AGE DISTRIBUTION:

Age distribution in our series ranges from 29 to 73 years with mean average of 55.6 years.







PROCEDURE:

All the surgeries were performed under spinal anesthesia. Reduction was done before making an incision and confirmed using image intensifier. Entry point was made just lateral to the tip of the trochanter using a 2-4 cm skin incision. Fixation was completed using a lag screw and an anti-rotation screw proximally and a single distal locking screw

Post op protocol:

Isometric quadriceps exercises and knee range of motion exercises were started from first postoperative day. Those patients who were relatively pain free and motivated were allowed toe touch ambulation on same day. Hip range of motion exercises started from second

postoperative day All patients were allowed toe-touch ambulation for the first postoperative week followed by partial weight bearing ambulation (25%-50% of the body weight) from seventh postoperative day until three weeks. The weight bearing was gradually increased to 75% of the body weight at 3-6 weeks and single crutch walking ambulation was initiated at 6 postoperative weeks. Unassisted full weight bearing ambulation was allowed to all the patients from 3 months after the surgery.

Follow up protocol:

The patients were evaluated using plain radiographs after surgery at 3 weeks, 6 weeks, 3 months, 6 months and 1year duration, and observed for signs of union, lag-screw cut out, any implant failure.The functional outcome was assessed using Harris Hip Scoring System at 3 months,6 months and 1 year follow up.

RESULTS:

In our series we have followed up 38 patients with a follow up period ranging from 5 months to 18 month with mean average of 13 months The patients were evaluated with Harris hip score at 3 month , 6 month and 1 year.Patients were categorized according to the scores they attained as follows. Harris hip score at the end of our study ranges from 66 -94, with the average score of 88.3 .

Score	No of patients	Percentage
Excellent	14	36.84
Good	21	55.26
Fair	2	5.26
Poor	1	2.64

Complications:

In our series ,there were two cases of superficial infection ,treated by antibiotics. Two cases had varus collapse despite good union and one case had breakage of implant after a fall

DISCUSSION

The treatment of trochanteric fractures depends on various factors like, the age of the patients, adequacy of treatment and stability of fixation. The appropriate method and the ideal implant used to fix these fractures are still debated.

Intramedullary nailing of trochanteric fractures with the use of Gamma nail was first introduced by Halder in 1980s Control of axial telescoping and rotational stability are essential in unstable proximal femoral fractures. An intramedullary implant inserted in a minimally invasive manner is better tolerated in the elderly patients. The cephalomedullary nails with a trochanteric entry point have gained popularity in recent years. They have been shown to be biomechanica llystronger than extramedullary implants[3].

Earlier reports suggested some substantial advantages of IM nailing including, minimally invasive surgical technique, shortened operative time, decreased blood loss, improved biomechanics, greater stability of fixation, earlier patient mobilization and shorter lengths of stay .However, there was a high rate of technical complications, including fractures of the femur distal to the nail[4,5,6]. Due to the complications encountered with Gamma nail, the AO/ASIF in 1996 developed Proximal Femoral Nail (PFN) with the length of 240mm, proximal diameter of 14mm, shaft diameter ranging from 10-12 mm, tip shaped to reduce the stress and lateral bend of 6 degree[2].

In a study conducted by Madsen 98% of the patients were able to withstand physiologic loads after intramedullary fi xation at 6 months after surgery. Similarly, Chevalley and Gamba found that 100% of their patients tolerated physiologic loads at 7.2 months after surgery. Pajarinen et al in his study found that patients treated with PFN regained their preoperative walking ability at 4 months[1]. In our series all patients tolerated full weight bearing ambulation at 3 months postoperative period. It has been seen that the rate of clinical failures decreased from 0% to 4.5% with the use of second generation nail like PFNA

Saudan et al used PFN in 100 patients and reported no fractures and the rate of femoral head cut out with the use of second generation nail was found to be ranging from 2.5% to 8.3%. In our study we had one case of femoral shaft fractures distal to the nail after a trivial fall.

A more extensive study comparing DHS with PFN in this population might be required for better understanding the various theories that are related to the treatment of trochanteric fractures[7] As the functional outcome of patients treated with PFN is not significantly different in different grades of trochanteric fractures, PFN which once thought an implant of choice for unstable trochanteric fractures can be a good option for more stable trochanteric fractures. This study also shows that PFN helps in better restoration of preoperative walking ability of the patients and early return to function[8,9].

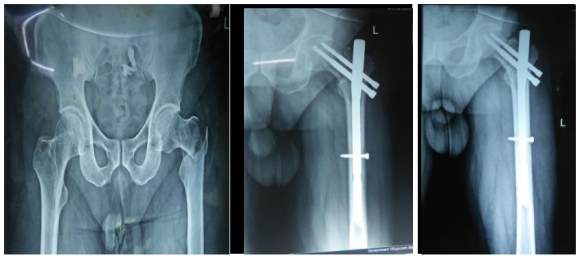
CONCLUSION

Finally, we conclude that the PFN is a significant advancement in the treatment of unstable trochanteric fractures which has the unique advantages of closed reduction, preservation of fracture hematoma, less tissue damage, early rehabilitation and early return to work. In our study osteosynthesis using a PFN, resulted in low rates of clinical complications, excellent stabilization, few mechanical complications and adequate functional results. Thus the treatment of intertrocha nteric fracture with PFN had a more favourable outcome and it is the ideal implant of choice for intertrochanteric fractures at present.

Case illustration:

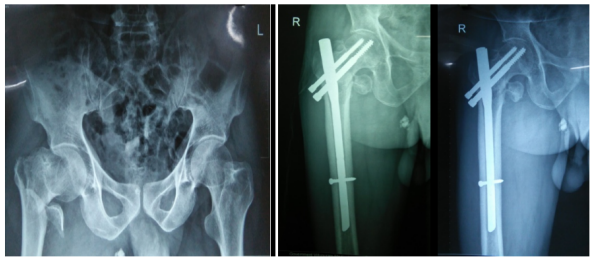
Case.1

58/male with 11 month follow up



Case .2

68/ male 6 month follow up



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