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RESULTS OF PROXIMAL FEMORAL NAIL IN THE MANAGEMENT OF SUBTROCHANTERIC FRACTURES

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ABSTRACT

Introduction: Fractures of the proximal femur that occur from lesser trochanter to the isthmus of the femoral canal. The surgical management of the subtrochanteric fractures is the accepted gold standard. In our study, we studied the functional outcome and complication profile of the proximal femoral nail for the internal fixation of the subtrochanteric femoral fractures.

Materials and methods: 46 patients with subtrochanteric fractures of femur, which were managed with proximal femoral nail were included in our study. The patients were followed for a period of 6 months. Outcome was studied and graded using Salwati & Wilson hip scoring system.

Results: We achieved excellent results in 28 patients (60.68%), good results in 14 patients (30.43%), fair results in 02 patient (4.34%) and poor result in 02 patient (4.34%). The complications observed included wound infection in 4 patients (8.69%), knee stiffness in 4 patients (8.69%), shortening in 4 patients (8.69%) and delayed union in 2 patients (4.47%).

Conclusion: We conclude that long proximal femoral nail is an effective implant for the management of subtrochanteric femur fractures in view of promising functional results, minimal soft tissue damage, short surgical time, less operative blood loss and early fracture union rates.

KEYWORDS :

INTRODUCTION

Fractures of the proximal femur that occur from lesser trochanter to the isthmus of the femoral canal, which is roughly 5 cm distal to the lesser trochanter, are generally termed as subtrochanteric fractures.[1] Previously these fractures were grouped along with complex intertrochanteric fractures.[2] Subtrochanteric fractures tend to have a bimodal age distribution.[3] Young patients presenting with subtrochanteric femur fractures tend have high energy trauma as the mode of injury, where as in elderly patients these fractures, most of the times, are osteoporotic.[4]

The subtrochanteric fractures of femur have been classified by various authors, but most of the classifications systems do not have a bearing on the management and outcome. Seinsheimer classification is one of the most practical classification systems available for subtrochanteric fractures.[5] Russel and Taylor classification is the other commonly used classification for subtrochanteric fractures.

The surgical management of the subtrochanteric fractures is the accepted gold standard.[6] Two broad categories of the implants for the internal fixation of the subtrochanteric fractures are available, which include extramedullary side plate devices and intramedullary fixation devices. In our study, we studied the functional outcome and complication profile of the long proximal femoral nail for the internal fixation of the subtrochanteric femoral fractures.

MATERIALS AND METHOD

This study is a prospective, observational study, which was conducted from June 2017 to August 2019. This study included 46 patients with subtrochanteric fractures, which were managed with long proximal femoral nail.

Inclusion criteria

1. Age >18 years
2. Both sexes
3. Fracture < 2 weeks old

Exclusion criteria

1. Polytrauma
2. Neglected fractures
3. Pathological fractures
4. Intertrochanteric fractures
5. Open fractures

After initial resuscitation according to advanced trauma life support (ATLS) protocol in the emergency department, patients were subjected to detailed history and thorough clinical examination for the assessment of any associated injuries, medical or surgical ailments. Radiographs of the affected proximal femur (anteroposterior and lateral views) and Pelvis with both hips (anteroposterior view) were taken to determine the type of the fracture which was classified according to the Seinsheimer classification system. All the patients were managed with open reduction with internal fixation using proximal femoral nail (PFN). All the patients were followed for a period of 6 months.

RESULTS AND OBSERVATIONS

Patients in our study were aged between 26 to 82 years, with a mean age of 55.34 years. Out of the 46 patients 32 (69.56%) were males and only 14 (30.43%) patients were females. Right limb was involved in 26 patients (56.52%) and left limb in 20 patients (43.47%). Out of 46 patients, the mode of injury was road traffic accident in 24 patients (52.17%), domestic fall in 16 patients (34.78%) and fall from height in 06 patients (13.04%). Out of 46 patients, associated comorbidities were present in 22 patients (47.82%).

We used Seinsheimer system to classify the subtrochanteric fractures. We observed 22 patients (47.82%) with type II fractures, 18 patients (39.13%) with type III fractures, 06 patients with type IV fractures and none of the patients with type I or type V fractures were seen.

The mean operative time was 68.45 minutes. The mean operative blood loss was 190.96 ml. The average duration of union was 17.35 weeks. The mean functional outcome score, as studied using Salwati and Wilson hip scoring system, was 31.64 at 6 months.

42 patients (91.30%) showed excellent to good outcome, 02 patient (4.34%) showed fair and 02 patient (4.34%) showed poor outcome.

The complications studied included wound infection in 4 patients (8.69%), knee stiffness in 4 patients (8.69%), shortening in 4 patients (8.69%) and delayed union in 2 patient (4.47%).

DISCUSSION

Subtrochanteric fractures of the proximal femur continue to be a challenge to an Orthopaedic surgeon. The specific anatomy, biomechanical stresses and forces acting at the region, make the management difficult.[1] Present consensus is that all the subtrochanteric fractures should be internally fixed, to allow for the early mobilization and hence reduce the associated morbidity.[6] Currently, two broad categories of internal fixation devices are commonly used for fixation of subtrochanteric fractures. These include, extramedullary side plate implants like dynamic condylar screw (DCS) and intramedullary implants like proximal femoral nail (PFN).

In the present study, we studied 46 patients with subtrochanteric fractures managed with proximal femoral nail, which included 32 males (69.56%) and 14 females (30.43%). The mean age of the patients taken for study was 55.34 years, which is lower than that observed by Radford PJ *et al*, Nungu K *et al* and Emrah KS *et al*.[7,8,9] This is probably

due to the fact that the activity level of the older population in our region is low. Right limb was involved in 26 patients (56.52%) and left limb in 20 patients (43.47%). In our study, road traffic accidents predominated as the cause of trauma which is in contrast to Emrah KS *et al* and other published series in which low velocity domestic injuries predominate.[9] We used Seinsheimer system to classify the subtrochanteric fractures. We observed 22 patients (47.82%) with type II fractures, 18 patients (39.13%) with type III fractures, 06 patients with type IV fractures and none of the patients with type I or type V fractures were seen. The mean operative time was 68.45 minutes. The mean operative blood loss was 190.96 ml. The average duration of union was 17.35 weeks. The mean functional outcome score, as studied using Salwati and Wilson hip scoring system, was 31.64 at 6 months.

We achieved excellent results in 28 patients (60.68%), good results in 14 patients (30.43%), fair results in 02 patient (4.34%) and poor result in 02 patient (4.34%). The complications observed included wound infection in 4 patients (8.69%), knee stiffness in 4 patients (8.69%), shortening in 4 patients (8.69%) and delayed union in 2 patient (4.47%). Our results are in agreement to the previous studies including Emrah KS *et al* and RKJ Simmermacher *et al*.[9,10]

CONCLUSION

We conclude that long proximal femoral nail is an effective implant for the management of subtrochanteric femur fractures in view of promising functional results, minimal soft tissue damage, short surgical time, less operative blood loss and early fracture union rates.

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