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A Study of Management Intertrochanteric Femur Fracture by Dynamic Hip Screw and Proximal Femur Nail Minimum Six Month Follow Up

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ABSTRACT
Introduction: *Femoral trochanteric fractures are one of the most frequently occurring fractures in the elderly, usually following trivial trauma. In the younger age group of people, in whom it is uncommon, it occurs always due to high velocity trauma. Trochanteric fractures are seen now a days with increasing frequency and severity, as the life span of the population has increased.*
Objectives*: To evaluate anatomical and functional outcome and fixation related complications after fixation of intertrochanteric femur fracture fixation by dynamic hip screw and proximal femur nail.*
Material and Methods*: This was a retrospective study of 45 patients who received a dynamic hip screw or a proximal femoral nail in order to compare age, sex, duration of surgery, duration of hospitalization, time of first mobilization.*
Results*: In this study Overall functional outcome was measured by Modified Hip Harris Score. According to hip Harris score in DHS group we got excellent results in 7 patients, good results in 7 patients, fair results in 6 patients and poor results in 1 patients. While in PFN group we got excellent results in 10 patients, good results in 9 patients, fair results in 4 patients and in only 1 patient we got poor results. So overall excellent to good results were seen in 80% of patients in PFN group and 60% of DHS group.*
Conclusion: *This study we conclude that in stable intertrochanteric fractures both PFN and DHS have similar functional outcomes. However, in unstable intertrochanteric fractures the PFN has significantly better functional outcome in terms of earlier restoration of walking ability due to early union and less complications.*
Key words: *Inter trochanteric fractures, Modified Harris hip score, outcome, proximal femur nail and Dhs.*

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I. INTRODUCTION

With the tremendous improvements achieved in the field of medicine over the decades, life span of an individual has also increased. Geriatrics is a new field in its own. Trochanteric fractures are one of the most common injuries sustained predominantly in patients over sixty years of age.

Little attention was paid to these fractures in the past, as they occur through the cancellous bone with excellent blood supply and they healed without any active treatment. However conservative treatment usually resulted in malunion with Varus and external rotation deformity resulting in a short limb gait and a high rate of mortality due to complications of recumbence and immobilization.

Due to improved treatment, early ambulation is possible and better functional outcome is achieved with reduction in the morbidity and mortality rates. Incidence is gender and race dependent and varies from country to country. In the United States ratio is 63 per 100,000 in females and 34 per 100,000 in males. In India with the incidence is increasing due to the increased life span.

Only moderate or minimal trauma is enough to cause proximal femur fractures in geriatric patients. Simple trivial trauma causes intertrochanteric fractures in elderly people due to osteoporosis and increased incidence of trivial trauma with increasing age is due to decreased muscle power, decreased reflexes, poor vision and labile blood pressure. In younger patients it requires high energy trauma.

Femur is the most important weight bearing bone of the lower limb. Proximal femur has two ridges the greater trochanter and the lesser trochanter. Intertrochanteric fracture line involves along extra capsular basilar neck region to region along the lesser trochanter, undisplaced fractures and fractures with intact posteromedial

cortex are said to be stable[1] displaced with broken posteromedial cortex are said to be unstable. Unstable contribute to about 50%-60% of all intertrochanteric fractures.[2,3]

Treatment of intertrochanteric fracture is by both non-operative and operative methods. Non-operative method includes skeletal traction and de-rotation boot. Operative methods are by dynamic hip screw, intramedullary nailing and prosthetic replacement.

Non operative treatment in Intertrochanteric fractures cause patients to be bedridden for prolonged period of time and they are more prone for urinary tract infection, respiratory tract infection, bed sores and joint stiffness etc. To avoid these complications operative treatment is indicated.

The goal of operative treatment in intertrochanteric fracture is the restoration of the patient to his or her pre-injury status as early as possible. This led to internal fixation of these fractures to increase patient comfort, facilitate nursing care, decrease hospitalization and reduce complications of prolonged recumbency.[4]

Two main mode of operative management are dynamic hip screw and intramedullary nailing mainly proximal femoral nailing. Operative treatment has better prognosis and reduces mortality due to fracture. Different types of implants are used according to type of intertrochanteric fracture.

This is a study mainly to analyses the functional outcome of dynamic hip screw and proximal femoral nailing when used in all types of intertrochanteric fractures.

II. AIMS AND OBJECTIVES

- The present study was carried out with an aim to "compare the functional outcome of the intertrochanteric fracture of femur managed by dynamic hip screw and proximal femoral nail'.
- To compare the functional outcome with respect to union of the fracture, return to functional activity and implant failure among both the group.
- To compare the dynamic hip screw and proximal femoral nail fixation in intertrochanteric fracture of femur in the patients with respect to intra operative parameter (total duration of surgery and intraoperative complication).

III. MATERIALS AND METHODS:

TYPE OF STUDY: This is a retrospective study

DURATION OF STUDY: January 2019 to December 2020

- Data was collected from the record section of the hospital's orthopaedics department.
- Patients were called and examined to record outcomes at least after 6 months of dual plating.
- Indoor and outdoor case records, preoperative x rays, and postoperative x rays and clinical assessment data are assessed.
- Preoperative x rays are assessed for classifying fractures. Case records are assessed for treatment received by each patient, and for recording associated injury to soft tissue and other organs, if any.
- Immediate postoperative x rays are assessed for adequacy of reduction and alignment.
- Immediate complications were recorded from case records.
- On final follow up examination, at least after 6 months of surgery, bony union and maintenance of reduction and alignment are assessed using x rays, and functional outcome assessed using modified harris hip score, and complications noted.
- Result:
- In this study Overall functional outcome was measured by Modified Hip Harris Score. According to hip Harris score in DHS group we got excellent results in 7 patients, good results in 7 patients, fair results in 6 patients and poor results in 1 patients. While in PFN group we got excellent results in 10 patients, good results in 9 patients, fair results in 4 patients and in only 1 patient we got poor results. So overall excellent to good results were seen in 80% of patients in PFN group and 60% of DHS group. In our study Majority of patients in our study were in age group of 40-60 years 84% of the total patients were male. Most common mode of injury was trivial fall at home.51.2% of patients had involvement of right hip.49% patients had stable type of fracture while 51% patients had unstable fracture. The PFN required shorter incision, less blood loss and less operative time. Postoperative complication was higher in DHS group with higher rate of malunion, infection and screw backout. Closed reduction of the fractures preserves the fracture hematoma, an essential element in the consolidation process in both PFN and DHS. It allows the surgeon to minimize soft tissue dissection there by reducing surgical trauma, blood loss, infection, and wound complications. Early ambulation was possible in a majority of patients fixed with PFN. Partial weight bearing could be started as early as the 6^{th} week in majority of patients. In patients treated with DHS early mobilization could be started only in selected number of cases.

: Functional Outcome

	Method of Fixation		**Total**
	DHS	**PFN**	
Excellent	7 (33,3%)	10(41.66%)	17 (37.77%)
Good	7(33.33%)	9(37.5%)	16(35.5%)
Fair	6 (28.5%)	4(16.66%)	10 (22.22%)
Poor	1(4.7%)	1 (4.166%)	2 (4.44%)
Total	21 (100.0%)	24(100.0%)	45 (100.0%)

Excellent results were seen in 41.66% of patient in PFN group and 33.33% of patients with DHS group.

IV. DISCUSSION:

Overall functional outcome was measured by Modified Harris Hip Score. According to Modified Harris Hip score in DHS group we got excellent results in 7 patients, good results in 7 patients, fair results in 6 patients and poor results in 1 patients. While in PFN group we got excellent results in 10 patients, good results in 9 patients, fair results in 4 patients and in only 1 patient we got poor results. So overall excellent to good results were seen in 80% of patients in PFN group and 60% of DHS group.

In a study of 40patients conducted by Amandeep et al[39], the mean HHS in the DHS group was 83.75 and that in the PFN group was

84.4. In his study of 80 cases, Shakeel et al[45] found that the mean HHS in the DHS group was 73.73 while in the PFN group, it was 83.5.In above studies all patients were categorized based up on AO classification in which Amandeep et al[39] 70% patients were type A2 and Shakeel et al[45] 75% were type A2.

Kushal et al[40] in his study of 52pts noted that in the DHS group, excellent results were seen in 6(23%), good results seen in 5(19%), fair results seen in 13(50%) and poor results seen in 2(8%). In the PFN group, excellent results were seen in 4(15%), good results seen in 14(54%), fair results seen in 7(27%) and poor results seen in 1(4%).

Harish et al[50] in his study of 30pts noted that in the DHS group, excellent results were seen in 6(50%), good results seen in 2(13.33%), fair results seen in 2(13.33%) and no poor results were seen. In the PFN group, excellent results were seen in 8(72.73%), good results seen in 1(9.1%), fair results seen in 1(9.1%) and no poor results were seen.

In his comparative study of 80 patients using the Locking DHS and PFN, Gill et al[47] noted that in the DHS group, excellent results were seen in 6 (15%), good results seen in 14 (35.0%), fair results seen in 12 (30.0%) and poor results seen in 8 (20.0%). In the PFN group, excellent results were seen in 8 (20.0%), good results seen in 130 (75.0%), fair results seen in 2 (5.0%) and no poor results were seen.The smaller incisions, shorter operative time, less blood loss and early union with PFN indicate that the PFN has the advantages over the DHS even in the stable fractures while in the unstable fracture PFN is better than DHS in all aspects of fracture fixation and patients overall functional outcome.

V. CONCLUSION:

At the end of this study we conclude that in stable intertrochanteric fractures both PFN and DHS have similar functional outcomes. However, in unstable intertrochanteric fractures the PFN has significantly better functional outcome in terms of earlier restoration of walking ability due to early union and less complications. In addition, PFN requires shorter incision, less blood loss and shorter operative time, it has distinct advantages over DHS even in stable intertrochanteric fractures. Hence in our opinion, PFN may be better than DHS for most of the intertrochanteric fractures; especially unstable ones. However PFN do fail in few of the cases and further improvement in nail design as well as technique of the procedure may help in getting rid of the same.

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