

Dynamic Hip Screw and Proximal Femoral Nailing As a Surgical Treatment of Peritrochanteric Fracture of Femur-A Comparative Study

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I. Introduction

Fractures of limb especially the lower limb bring tough time not only for the patient but for the entire family owing to prolong immobilization and disability.

Early restoration of joints motion with a stable fixation of fracture, return to normal physiological function and minimal morbidity is now regarded as ideal fracture treatment Peritrochanteric/intertrochanteric fractures are of intense interest globally.

Peritrochanteric area includes part of femur from extracapsular part of neck to a point 5cm. distal to lesser trochanter. It can be divided in to Intertrochanteric Area between greater and lesser trochanter of femur and subtrochanteric area 5 cm. below lesser trochanter. Being a transition zone between neck and shaft of femur and cancellous bone, this area has different fracture characteristic. Weight bearing is also unequally distributed throughout this area. Medial comminution influence influences the fracture stability and treatment outcome.

Peritrochanteric fracture can be stable or unstable depending on integrity of posteromedial cortex and pattern of fracture. Evans in 1949 described about stability of Peritrochanteric fracture, according to him in stable fracture posteromedial cortex remains intact or has minimal comminution. Unstable fracture on other hand has greater comminution of posteromedial cortex. Although they are inherently unstable these fracture can be converted in to a stable reduction if medial cortex apposition is obtained. Reverse oblique pattern of fracture is also unstable type of fracture.

II. Aims And Objective

Aim:

The main aim is to obtain union of fracture in most anatomical position compatible with maximal functional return of the extremity, decrease the mortality, reduce the duration of hospital stay, mobilize the patient early and to prevent bed ridden complications.

Objective:

Compare the result of dynamic hip screw and Proximal Femoral Nailing as a surgical treatment of peritrochanteric fracture of femur.

To study the outcome of the procedure, with respect to early mobilization and return to prefracture ambulatory status.

Assessment of results based on subjective parameters (like pain, ability to squat or sit cross legged and walking), objective parameters (like deformity, range of movements of the hip and limb length) and radiological findings (like fracture union, consolidation, neck shaft angle and position of the implant), after clinical and radiological union, and comparison with previous studies.

III. Material & Methods

Source Of Data:

The material for the present study was obtained from the patients admitted in Katihar Medical College, Katihar, with the diagnosis of peritrochanteric fracture femur.. The patients were randomly selected on first come and first inclusion basis. The patients admitted were taken for prospective study. A minimum of 30 cases were taken and the patients were informed about the study in all respects and informed consent was obtained from each patient.

Method Of Collecton Of Data

- By interview
- By follow up at intervals of 6, 12, 18, and 24th week
- By clinical examination
- By analyzing case papers

Inclusion criteria:

1. Patient who has been diagnosed as having intertrochanteric fractures.
2. Adult patient 21 years of age and above, Sex – Both male and female.
3. Patient who are fit for surgery.

Exclusion criteria:

1. Patients unfit for the surgery.
2. Patients with compound fractures.
3. Patients with pathological fractures.
4. Patients admitted for re-operation.
5. Patient not given written consent for surgery.

Pre-Operative Evaluation

Patients admitted with Peritrochanteric fracture were examined meticulously; detailed history was taken and investigated with X-ray pelvis with both hips AP and Lateral view. X-Rays were reviewed and classified according to Boyd and Griffin's and Evans classification. Skin traction was applied to all cases. The required information was recorded in the proforma prepared. Blood and urine examinations were ordered as follows:

Investigations

- Blood – Hb%, Total count, Differential count, E.S.R.
- Urine – Albumin, Sugar, microscopy.
- Blood grouping and Rh type
- BT, CT.

Special Investigations

- HIV1&2, HbsAg, HCV
- Blood urea
- Serum Creatinine
- Blood sugar Level
- ECG
- Chest X –ray

Observation

The study involved 30 confirmed cases of Peritrochanteric femur of either sex. Out of 30 cases, 15 were treated by a dynamic hip screw & 15 were treated by proximal femoral nail. The analysis of the patient data, intra operative data & post operative outcome is as follows.

Side Of Limb Involved In Peritrochanteric Fracture Of Femur Study Group

Side of limb	PFN		DHS	
	Number of Patients	Percentage (%)	Number of Patients	Percentage (%)
Right	8	53.33	6	40
Left	7	46.67	9	60
Total	15	100	15	100

Time Interval Between Injury And Operation In Study Group

Time interval	Number Of Cases		Percentage (%)	
	PFN	DHS	PFN	DHS
Within 1 week	11	8	73.33	53.33
1 to 2 wks.	4	5	26.67	33.33
Between 2 to 4 wks	0	2	00.00	13.33
Total	15	15	100	100

Operative Time For Fixation Peritrochanteric Fracture Of Femur By P.F.N And D.H.S In Study Group

Operative Time (min.)	PFN		DHS	
	No. of Patients	%	No. of Patients	%
60 – 90 min.	3	20.00	2	13.33
90 – 120 min.	10	66.67	9	60.00
120 – 150 min.	2	13.33	4	26.67
Total	15	100	15	100

Condition Of Incision Site After Stitch Removal In Dhs And Pfn Group

Time interval	Number Of Cases		Percentage (%)	
	PFN	DHS	PFN	DHS
Within 1 week	11	8	73.33	53.33
1 to 2 wks.	4	5	26.67	33.33
Between 2 to 4 wks	0	2	00.00	13.33
Total	15	15	100	100

Average Duration Of Hospital Stay In Dhs And Pfn Group

	Average Hospital Stay(In Days)	
	PFN	DHS
Stable	18	26
Unstable	21	28
Subtrochanteric	28	33

Clinical Union Based On Tenderness And Swelling In Dhs And Pfn Group

Post-operative Weeks	Number of Patients							
	swelling				Tenderness			
	PFN		DHS		PFN		DHS	
	Absent	Present	Absent	Present	Absent	Present	Absent	Present
6 th Week	12	3	10	5	13	2	3	12
12 th Week	14	1	12	3	14	1	12	3
18 th Week	15	Nil	15	Nil	15	Nil	15	Nil
24 th Week	15	Nil	15	Nil	15	Nil	15	Nil

Radiological Union In Dhs And Pfn Group

Amount of Callus	Number of Patients							
	PFN				DHS			
	6 th Wk.	12 th Wk.	18 th Wk.	24 th Wk.	6 th Wk.	12 th Wk.	18 th Wk.	24 th Wk.
No Visible Callus	1	-	-	-	1	-	-	-
Little Amount of Callus	8	1	-	-	9	2	-	-
Fair Amount of Callus	6	10	1	-	5	9	1	-
Good Amount of Callus	-	4	14	15	-	4	14	15

Range Of Movement At Joints At The End Of 24th Week In Pfn And Dhs Group

Range of Movement at Hip	PFN		DHS	
	No. of Patients	%	No. of Patients	%
<90 ⁰	Nil	00.00	Nil	00.00
0 ⁰ – 110 ⁰	1	06.66	1	06.66
0 ⁰ – 130 ⁰	1	06.67	4	26.67
Full	13	86.67	10	66.67
Total	15	100	15	100

Range Of Movement At Knee At The End Of 24th Week

Range of Movement at Knee	PFN		DHS	
	No. of Patient	%	No. of Patient	%
<90 ⁰	Nil	00.00	Nil	00.00
0 ⁰ - 110 ⁰	Nil	00.00	Nil	00.00
0 ⁰ - 130 ⁰	3	20.00	4	26.67
Full	12	80.00	11	73.33
Total	15	100	15	100

Complication In Dhs And Pfn Group

Complication	Number of Patients	
	PFN	DHS
1) No Complication	11	9

2)	Shortening	Nil	2
3)	Coxa Vara	Nil	3
4)	Coxa Valga	Nil	Nil
5)	Pain Around Nail Insertion site	2	Nil
6)	Internal Rotation of Limb	Nil	Nil
7)	External Rotation of Limb	1	Nil
8)	Infection		
	• Superficial	1	2
	• Deep	Nil	Nil
9)	Delayed Union	2	Nil
10)	Non Union	Nil	Nil
11)	Screw cut out	Nil	Nil
12)	Fracture of Proximal Femur	Nil	Nil
13)	Broken Implant	Nil	Nil
14)	Bending of Screw	Nil	Nil

IV. Discussion & Conclusion

In patients with peritrochanteric fracture union is not a problem if left untreated it generally unite because intertrochanteric area is the area of cancellous bone. If treated conservatively coxa vara deformity, shortening develops. Thus with the time in the last 3-4 decades treatment of intertrochanteric fractures has changed significantly. Treatment of peritrochanteric fracture has moved from conservative to operative side. Closed reduction and internal fixation of peritrochanteric fracture is the treatment of choice now a day. A large number of fixation implants has been devised and discarded. Differences still exist regarding the type of implant to be used. The treatment still merits the type of fracture and condition of patient.

In the present prospective study 30 patients of either sex with peritrochanteric fractures were studied. 15 had been treated by Proximal Femoral Nail and rest fifteen by Dynamic Hip screw and Plate irrespective of age, sex, and nature of fracture. The data collected in this study is assessed, analyzed, compared with other series and the results were evaluated.

Nail Or Plate

- The sliding hip screw with plate remained the gold standard for fixation of intertrochanteric fractures for years. With the arrival of the intra medullary hip screw it was thought that the sliding hip screw would be replaced forever, however this is not true the intra medullary hip screw has its own set of complications, more exposure to radiation, a higher learning curve & all at a higher cost.
- The dynamic hip screw is still the implant of choice in the stable types of intertrochanteric fractures. If the proper intra operative guide lines are adhered to then the results in this group of patients is excellent
- In the more unstable types of fracture the intra medullary hip screw has distinct advantages over the plate & should be the preferred implant for fixation. The need to achieve an anatomical reduction is mandatory since there is less sliding with this implant. Any gap on the post operative X-rays could always lead to a future non –union.
- In conclusion both the implants are here to stay, it is the fracture geometry & bone quality which will influence the choice of fixation .The quality of the reduction & proper positioning of the implant are the keys to achieving the best postoperative out come.

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