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FUNCTIONAL OUTCOME OF INTERTROCHANTERIC FRACTURE FEMUR MANAGED WITH CEPHALOMEDULLARY NAIL

Orthopaedics

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ABSTRACT

Background: Nearly 50% of fractures around hip are intertrochanteric fracture.Till 1980's the fractures were treated with continuous skeletal traction of 6 week followed by hip spica. With the advancement of implants Proximal femoral nailing (PFN) is now using as a gold standard for management of intertrochanteric fractures.

Aims and Objectives: To study the functional outcome of fracture intertrochanteric fractures managed with proximal femoral nailing according to modified Harris Hip Score.

Material and Method: A prospective study over 44 patients of fracture intertrochanteric fracture femur treated with proximal femoral nailing done from October 2015 to September 2017 on Govt Medical College Rajnandgaon (C.G.)

Results: We have done prospective study of fracture intertrochanteric femur treated with proximal femoral nailing over 44 patients.In our study male patients were predominant (64%) in number. Most common fracture pattern was A2.2 type.64% of patients started partial weight bearing within <6 weeks of surgery. In our study59% of patients achieved excellent result.

Conclusion: Proximal femoral nailing takes less time and the patient can be mobilised fast postoperatively as well. Proximal femoral nail should always considered for the management of intertrochanteric fractures in young as well as elderly patients who have multiple pre-existing illnesses.

KEYWORDS

Intertrochanteric, Proximal femoral nail(PFN), Femoral fractures.

INTRODUCTION:

Nearly 50% of fractures around hip are intertrochanteric fracture.It was a fracture of the elderly. Now a day, because of road traffic accidents it is occurring in younger patients. Till the 1980'sthe fractures were treated with continuous skeletal traction of 6 weeks followed by hip SPICA cast. [1] This was because non-union of fracture trochanter was unheard. But being bedridden for months had its own morbidity and mortality nearly 30% of patients succumbing to these. [2] To avoid this and get the patient out of the bed early surgical intervention with various implants were tried. Jewett and Holt tried with nail and plate combination. [3] The AO came later with fixed angle condylar blade plate. Results were not optimal because of fixed angle of the blade plate. [4] Gamma nail was introduced in the 80's.This did not last long, as the screw of the nail cut through the head of the femur. Then came the Richard's sliding hip screw or dynamic hip screw system which allowed the compression and controlled collapse of the fracture. [5] The results were encouraging. After this ,the much longer and straighter in the proximal ends of the nail than the gamma nail called proximal femoral nail with an additional derotational screw proximally was developed.[6] It had theoretical advantage of more load transfer with shaft lever arms. Early mobilisation and quick return of function is the goal of any fracture treatment. With this mind study was conducted to know the functional outcome of PFN in unstable trochanteric fracture.

MATERIAL AND METHOD:

A prospective study over 44 patients of unstable intertrochanteric fracture femur, treated with intramedullary nailing was done from October 2015 to September 2017 at Govt. Medical College, Rajnandgaon(C.G.) India. Their functional results were analysed using modified Harris Hip Score.

Inclusion criteria

- All unstable type of fracture pattern AO/OTA type 3 1A2.2 to 3 1A3.3
- Age between 18-90 years
- Patients who survives minimum6 months after operation are included.

Exclusion criteria

- Age <18 years
- Pathological fractures
- Previous surgery on proximal femur
- Old malunion and non-union

Pre-operative assessment and procedure

All patients who attended to our emergency department and OPD basis from October 2015 to September 2017 with intertrochanteric fracture of the femur were included.Radiographs were taken and all the fractures were classified according to AO type. All patients were preoperatively assessed to rule out any co-morbidities conditions or any other medical condition which was contraindicated for surgery. Patients were worked up and pre-anaesthetic check-up was done. Preoperatively antibiotics were given according to hospital protocol. Reduction was achieved by closed manipulation and traction under anaesthesia. The fracture site was exposed only if reduction by closed means was not successful. The fixation used as intramedullary nailing, a lag screw and a hip pin which is shorter than lag screw. All patients were placed supine in fracture table with affected limb in slight adduction after closed fracture reduction with C -arm facility. All patients post-operatively received 3 doses of intravenous antibiotics. Stitches were removed on 12th post op day. Patients were followed up on 3rd ,6th,12th,18th weeks then at 6th month and at 1 year. Patients were assessed using radiographs and clinically. The functional outcome of the patients was assessed using the Harris Hip Score. All patients who had a follow up for at-least6 months were included in the study.

Data was compiled in MS excel & checked for completeness & correctness. Then it was analyzed by using suitable software.

Observations

Table-1.Distribution of patients according to age and sex

Age in years	No.	%
18-30	03	7
31-40	05	11
41-50	08	18
51-60	17	39
61-70	07	15
71-80	02	5
81-90	02	5
Male	28	64
Female	16	36

In our study male patients were slightly predominated 28(64%) than female 16(36%) cases. Majority of the cases 57% belongs to 41 to 60yr of age group. [Table-1]

Table-2.Distribution of patients according to mode of trauma

Mode of trauma	No.	%
Trivial trauma	25	56.8%

Road traffic accident	12	27.2%
Fall from height	7	16%
Total	44	100

Majority of the cases 56.8% got injury due to Trivial trauma followed by RTA & fall from height.[Table-2]

Table-3.Distribution of patients according to pattern of fracture

Fracture type	No. of patients	%
A2.2	22	50
A2.3	05	11
A3.1	04	9
A3.2	01	2
A3.3	12	27
Total	44	100

In our study, most common pattern of fracture was A2.2 22(50%) followed by A3.3 12(27%).[Table-3]

Table-4.Distribution of cases according to beginning of partial weight bearing

Duration in weeks	No.	%
<3	01	2
3-6	28	64
7-12	12	27
>12	03	7
Total	44	100

In our study 28 (64%)patients were started partial weight bearing within <6 weeks of surgery, while 12(27%) patients were started partial weight bearing after 7 weeks of surgery. Delayed partial weight bearing was due to old age.[Table-4]

Table-5.Distribution of cases according to beginning of full weight bearing:

Duration in weeks	No.	%
<6	01	2
6-12	26	59
13-18	14	31
>18	02	4
Not able to bear full weight	02	4
Total	44	100

26(59%) patients were started full weight bearing within 12 weeks following surgery whereas14(31%) patients were allowed to full weight bearing after 12 weeks of surgery.[Table-5]

Table-6.Distribution of cases according to HIP HARRIS SCORE:

Clinical results	Total points	No.	%
Excellent	81-100	26	59
Good	61-80	12	27
Fair	41-60	04	9
Poor	<40	02	5
Total		44	100

All cases are evaluated according to modified Harris Hip Score system. Pain and functional capacity are the two basic considerations for this scoring system. Points are given for pain, functions, range of motion and absence of deformity. In our study excellent results were obtain in 26(59%) patients, whereas 12(27%) patients scored as good result.04(9%) patients scored fair result and 02(5%) patients were scored as poor result.**[Table-6]**

DISCUSSION-

With the development of intramedullary devices and nail system, a new phase has started in the treatment of intertrochanteric fractures. [7,8] In general a rule which governs the surgical treatment is, achieving a stable fixation. A PFN consists of two screws, a larger head screw, which provides fixation and compression and a smaller antirotation screw, meant to provide rotational stability. [9, 10] The length of antirotation screw is important to prevent implant failure. When the antirotation screw is longer or of same length there are higher chances of screw cut out. The cut-out rate with PFN is 0.6-8%.Lag screw should be inserted as deep as subchondral bone. On lateral x-ray, the ideal location would be central-central or just inferior to it. Screw cut out is most common when it is placed in superior zone of the head which happens to be the weakest zone. [11-18] Lateral slide of the hip screw is common as the fractures consolidates over time though we didn't encounter a lateral slide in any of our cases in 6 months of follow-up.

CONCLUSION:

Proximal femoral nailing takes less time and the patient can be mobilised fast postoperatively as well.PFN should always be considered for the management of intertrochanteric fracture in young as well as in elderly patients who have multiple pre-existing illnesses. Modified Harris Hip Score is good score to evaluate functional outcome of the patients.

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