International Journal of Research in Engineering and Science (IJRES)
ISSN (Online): 2320-9364, ISSN (Print): 2320-9356
www.ijres.org Volume 10 Issue 3 ǁ 2022 ǁ PP. 55-58

Study of Clinical and Functional Outcomes of Operative Management of Subtrochanteric Fractures of Femur with Intramedullary Nailing. (Minimum 6 Months Follow Up)

Dr. RISHABH PANDEY
[2]3rd YEAR RESIDENT , M P SHAH GOVT.COLLEGE , JAMNAGAR
CORRESPONDING AUTHOR : DR RISHABH PANDAY, 3rd YEAR RESIDENT , SHRI M P SHAH GOVT, COLLEGE, JAMNAGAR

DR VIJAY SATA
M S ORTHO , PROFESSOR AND HEAD OF DEPARTMENT OF ORTHOPEADICS
SHREE M P SHAH MEDICAL COLLEGE , GURU GOBINGSINGH GOVT. HOSPITAL JAMNAGAR

ABSTRACT
Subtrochanteric fracture is a leading cause of hospital admissions in elderly people. The number of such admissions is on a raise because of increasing life span, sedentary habits, continuous ongoing changes in people's life style, industrialization and urbanization and rapidly raising accidents. Conservative methods of treatment results in mal-union with shortening and limitation of hip movement as well as complications of prolonged immobilization like bed sores, deep vein thrombosis and respiratory infections. This study is done to analyze the functional outcome of Subtrochanteric fractures treated with intramedullary Nailing
Objectives : *To evaluate anatomical and functional outcome and impact of fixation related complications after fixation of subtrochanteric femur fracture by intramedullary nailing.*
Material and Method: *This was a retrospective study based on the hospital records of 33 patients who had subtrochanteric femur fractures treated with intramedullary nailing in orthopaedics department of government hospital affiliated with medical college. Detailed records of preoperative x rays, postoperative x rays and clinical assessment data of 6 months follow up of each patients were recorded and assessed.*
Results: *In this study Modified harris hip score was used for objective quantification of the outcome of subtrochanteric femur fracture. In our study 45.45% patient had excellent outcome, 36.36% patient had good outcome and 15.15% patient had fair outcome and only 3.03 % patient had poor outcome. Infection rate was 3%, there were 2 patients of non union and 1 was having implant failure and 1 was having infected nonunion.*
Conclusion: *In this study, as per outcome based on Modified harris hip score, treatment results were excellent and comparable with that of similar other studies.*
Key words: *Subtrochanteric femur fracture , Modified harris hip score , outcome , intramedullary nailing*

Date of Submission: 05-03-2022 Date of acceptance: 21-03-2022

I. Introduction:

Fractures of the proximal femur and hip are relatively common injuries in adults. Several epidemiological studies have suggested that the incidence of fractures of the proximal femur is increasing, which is not unexpected because the general life expectancy of the population has increased significantly during the past few decades.

Sub-trochanteric fractures are the fractures of proximal femur, that involve the lesser trochanter and it extend distally up to 5cm . These fractures usually accounts for about 10% to 35% of all hip fractures . The sub-trochanteric region is mostly exposed to high stresses during the day to day routine activities. The axial loading forces that act through the hip joint which creates a large moment arm, with significant lateral tensile stresses and medial compressive loads. In addition to the bending forces,the musclar forces acting at the hip also create torsional effects that leads to significant rotational shear forces. The thickness of cortical bone in sub-trochanteric region is more and its vascularity is less, which can produce healing disturbances. High compressive and tensile forces of muscles can separate the fracture fragments and causes instability of the fracture. This fracture is difficult to manage because of the above mentioned reasons and is associated with many complications affecting fracture healing like mal-union, delayed union, non-union and implant failure . The factors responsible for these complications in subtrochanteric fractures are often due to high stress concentration in the subtrochanteric region, and difficulties in getting biomechanically sound reduction because

of communition and intense concentration of deforming forces at the fracture site. The subtrochanteric region is cortico- diaphyseal, rather than the more rapidly healing cancellous bone which more predominates in the intertrochanteric region

Objective:

1. To evaluate clinical and functional outcomes of operatively managed subtrochanteric fractures of femur with intramedullary nailing in special reference to fracture anatomy, pattern and status of stability (minimum 6 month follow-up)
2. To study fracture healing and union rates with intramedullary interlocking nails.
3. To assess the functional outcome with regarding to hip movements using Harris Hip Score.

II. Material And Method

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 intramedullary nailing.

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 intramedullary nailing, 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.

III. Results:

In Our study OUT OF 33 Patients

1. 21 patients have started partial weight bearing between 1-1.5 months and full weight bearing between 2-2.5 months.These patients have excellent results with full range of motion in both hip and knee joints. Out of 21 patients 8 patients had Subtrochanteric femur fracture of seinsheimer type 3 classification and satisfactory closed reduction was achieved. Low grade seinsheimer type fractures with early weight bearing with closed reduction proved to be advantages in fracture union and patient prognosis.
2. 8 patients were of type 4 seinsheimer, out of which in 5 patients closed reduction with satisfactory fixation was achieved so early weight bearing was possible which led to excellent results on regular follow-ups. 3 other patients of seinsheimer type 4 and 5 patients of seinsheimer type 5 required additional procedure in the form of additional support in form of encirclage so early weight bearing was possible leading to good results on the long run.
3. Out of 7 patients who were advised delayed weight bearing due to various reasons 1 patient of of seinsheimer type 3 who had varus fixation in closed reduction however the patient had good results in long term follow ups. 2 patients of seinsheimer type 4 advised delayed weight bearing as additional encirclage was performed and the patients had varus fixation inspite of which the patient had good outcome in the long run.
4. Out 4 patients of seinsheimer type 5 who were advised delayed weight bearing 1 patient had varus fixation and infection on post operative follow-ups, 1 patient had varus fixation with significant osteoporosis, 1 patient had extensive soft tissue injury in as the patient had open grade 3 B fracture and 1 patient required additional support in the form of open reduction internal fixation in the form of anterior plating after 1 month of surgery as the patient had varus collapse.

In our study out of 33 patients in 40 percent (13 patients) of case Sirus Femur nail was done out of which 77 percent(10 patients) of patients showed excellent results on long term follow up 7 percent(1 patient) of cases shows poor results due to screw back out and varus collapse leading to non union and 16 percents(2 patients) of case showed good results on long term followups .Out of 33 patients, 60 percent(20 patients) of case underwent intramedullary nailing with proximal femoral nail out of which 40 percent(8 patients) cases showed excellent results, 45 percent(9 patients) of cases showed good results and 15 percent(3 patients) of cases showed fair results owing to the fracture pattern, varus fixation, advanced age and multiple medical comorbid conditions.Thus based upon the above results Both Sirus Femur nail and Proximal Femoral nail were proven to be excellent in the management of Subtrochanteric femur fractures, with distal Sirus Femur Nail provides additional advantage in the form of proximal.

Functional outcome were assessed in 33 cases available for follow-up. Excellent results were noted in 15 cases, good outcome in 12 cases and fair outcome in 5 cases and poor outcome in 1 case as per modified harris hip score.

Table : Functional Outcome

Results	Number of cases	Percentage
Excellent	15	45.45
Good	12	36.36
Fair	5	15.15
Poor	1	3.03

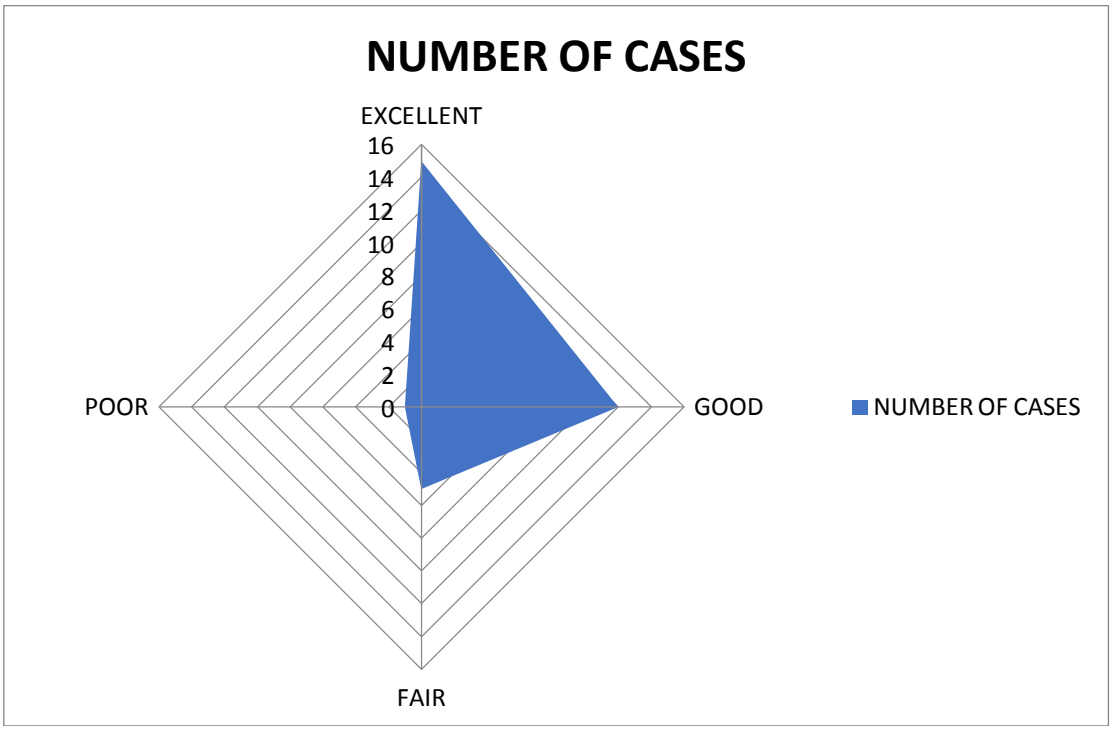

Figure : Functional outcome

IV. Discussion:

Sub-trochanteric Femur fractures usually occur as a result of high velocity trauma and is often subjected to significant displacement with a difficulty in achieving closed reduction with traction. The high incidence of delayed union, nonunion and malunion of fractures has left conservative treatment abolished in modern trauma care. Seinsheimer et al (1978 April) has conducted a retrospective study of 56 cases and reported that in 47 cases who has undergone surgery, 9 had internal fixation failure, 3 had developed non-union (failure rate: 26%); 9 cases which received conservative treatment were all healed, out of which 5 cases (56%) had hip varus deformity of 15-29 degree[15] . Extra medullary fixation performed with plating had a lot of disadvantages of being an extensive soft-tissue dissection, and increase in blood loss, thus leading to problems of fracture union and implant failure. In addition, the eccentric plating is more prone to fatigue breakage of implant due to mechanical load-sharing effect.

Closed reduction intramedullary nailing is closely linked to"biological internal fixation", in addition to its mechanical benefits, over plate fixation.

Intramedullary fixation allows the surgeon to minimize soft tissue dissection, thereby reducing surgical trauma, blood loss, infection, and wound complications.[50-52] Intramedullary (IM) nailinghas arguably emerged as the standard treatment methodology ,achieving union rate in up to 95% of cases. The Intramedullary nail (eg : PFN) acts like an internal splint and so it can bear a large axial load and this in turn allows the patient to bear weight early. It is done by using a small surgical incision, so it is minimally invasive and there is very minimal blood loss. Some of the reported disadvantages of using Intramedullary nail (eg : PFN) , includes cutout of implant, lateral migration of the proximal screws and femoral medialization.

Various fracture reduction techniques , have been evolved to combat the deforming forcescaused by the muscular pull, which includes; percutaneous joysticking with Schanz pin/stienmann pin, bone hook ,by using Hoffman retractors .

Good reduction which is achieved by doing minimal dissection, use of the appropriate nail length and proper positioning of the nail and screws are necessary to avoid failure or revision. The abundant muscles present around the sub trochanteric region usually cause a significant pull ,causing displacement of the fractured

fragments ,which leads to greatdifficulties in closed reduction . Sometimes ,performing open reduction by using a small incision at the fracture site, is inevitable

V. Conclusion:

Intramedullary nail is found to be an efficient device for the treatment of all subtrochanteric femoral fractures specially Type 3, 4 &Type 5 Seinsheimer's with high rate of bony union, provided that optimal reduction of the fracture along with that good positioning of the nail and screws is achieved. The great majority of patients, were provided with stable fixation along with early rehabilitation and early mobilisation and return to pre-fracture status. Osteosynthesis with the cephalomedullary nail(proximal femoral nail), offers a significant number of advantages giving a high rotational stability of the head-neck fragment and achieving a good compression at fracture site and it is found to be biomechanically sound as it is an intramedullary device, thus leading to minimal soft tissue damage and high rate of bone union.

In our study we have used both sirus femur and proximal femur nail, both the implants are excellent choice for all types of Subtrochanteric femur fractures with sirus femur nail had additional advantage of proximal interlocking options for Subtrochanteric femur fracture with distal extension and the proximal femur nail had an additional advantages of larger size of proximal hip screw providing good hold in osteoporotic bones.

Our results indicates that there is a necessity of a careful surgical technique and certain modifications that are specific to the individual fracture pattern in order to reduce the incidence of complications. The Proximal femoral nail which combines the intrinsic advantages, of intramedullary nail(less operative time,less exposure ,less meddling of fracture hematoma).

In our patients we have not found any patient who required early bone grafting or primary open reduction internal fixation with plating.

All the patients operated in our series were of high demanding age group and most of the recovered well and went back to their routine work (21 out of 33 patients)

For planning of better management for Subtrochanteric femur fractures a larger study will be required.

ACKNOWLEDGEMENT

The authors are thankful to the institution for granting permission to carry out the study and technical staff of department of orthopaedics ,Shri M.P Shah Govt Medical College Jamnagar in providing timely help

Reference:

[1]. Zhou ZB, Chen S, Gao YS, Sun YQ, Zhang CQ, Jiang Y. Subtrochanteric femur fracture treated by intramedullary fixation. Chin J Traumatol. 2015; 18(6): 336-41.
[2]. Vineet Thomas Abraham*, M. Chandrasekaran, Swagat Mahapatra. Outcome of subtrochanteric fracture of the femur managed with proximal femoral nail;
[3]. M.J Parker et al :Injury, Subtrochanteric fractures of femur,1997
[4]. Zu bin Zhou,Yao Jiang: Subtrochanteric femur frature treated with intramedullary fixation (2015,Elsevier)
[5]. Prasoon kumar,Ramesh sen et.al. Reliability of Modified Harris Hip Score as a tool for outcome evaluation of Total Hip Replacements in Indian population. J Clin Orthop Trauma.