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TO STUDY THE FUNCTIONAL OUTCOME OF 95 DEGREE ANGLE BLADE PLATING DONE FOR FAILED OPERATED CASE OF INTERTROCHANTERIC FRACTURE.

Orthopaedics

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ABSTRACT

Background: Proximal femoral fractures occur typically at the junction between trabecular Failed intertrochanteric fractures often results in significant pain and functional disability. Revision surgery often requires. One of the salvage options after failed primary fixation is 95 degree Angle blade plating with or without bone grafting. **Methods:** A prospective study was conducted in Tertiary Health Care Center, Surat from April 2020 to August 2021. The Study was a series of 22 of treatment of failed operated case of intertrochanteric fractures of the femur in adults by open reduction and internal fixation using 95 degrees angle blade plate Prior approval from the Institutional Ethical Committee was obtained. All patients were explained clearly about the study and an informed consent was obtained from each of them. **Results:** Among 22 patients 4(18%) patients scored excellent, 17(77%) patients scored good and 1(5%) patient scored fair, at 6 month post-operative follow up. **Conclusions:** The 95 degrees angle blade plate can be used for both stable and unstable intertrochanteric fractures, but the final outcome was dependent on various factors such as the type of fracture, the condition of the medial wall, the bony architecture, and the co-morbid conditions of the patient, the operative technique, implant position and post-operative care. This study shows that the 95 degrees angle blade plate offers a reliable and effective alternative for the treatment of failed operated case of intertrochanteric fractures. The 95 degrees angle blade plate was a stable and acceptable implant for the treatment of failed operated case of intertrochanteric fractures.

KEYWORDS

Intertrochanteric fractures, 95 degree angle blade, failed implant

INTRODUCTION

Proximal femoral fractures occur typically at the junction between trabecular bone and cortical bone, where the mechanical stress across the junction is highest in the femur, which is responsible for their frequent communition. These fractures account for 10% to 34% of all hip fractures. Trochanteric fractures are one of the most common injuries sustained predominantly in patients over sixty years of age[1].

These fractures occur typically in two age groups. In young and healthy individuals, the injury results from high-energy trauma, whereas in the elderly population, most of the fractures are osteoporotic; trivial fall being the most common mechanism of injury.[2] With the increase in the ageing population, there is also considerable growth in the number of pathological fractures and fractures around hip prosthesis (periprosthetic fractures).

The greatest problems for the orthopaedic surgeon treating this fracture are instability and the complications of fixation that result from instability. Stability refers to the capacity of the internally fixed fracture to resist muscle and gravitational forces around the hip that tend to force the fracture into a varus position. Intrinsic factors like osteoporosis and comminution of the fracture and extrinsic factors like choice of reduction, choice of implant and technique of insertion, early weight bearing, contribute to failure of internal fixation.

Failed intertrochanteric fractures often results in significant pain and functional disability. Revision surgery often requires. One of the salvage options after failed primary fixation is 95 degree Angle blade plating with or without bone grafting.

METHOD

Study Design, Sample Size And Period:

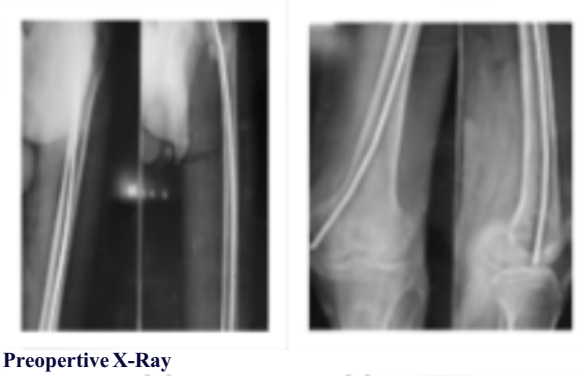
The present study includes 22 cases of intertrochanteric fracture of femur in adult patients above 18 years of age treated by open reduction and internal fixation with 95 degrees angle blade plate, in the Department of Orthopaedics, TERTIARY CARE HOSPITAL, SURAT from APRIL 2020 to AUGUST 2021, selected on the basis of purposive sampling method. The clearance has been obtained from ethical committee.

ANALYSIS

The observations made and results obtained in this study are presented as follows:

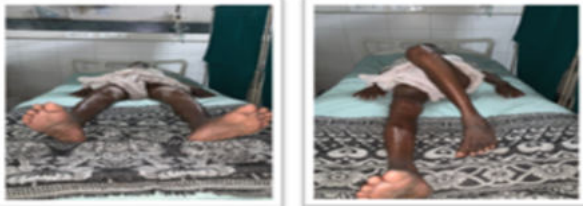
Age of the patients ranged from 20-80 years with the fracture being most common in the 6th decade.

Out of 22 patients, the study group comprised of 8 males and 14 females. The study showed a female preponderance over males.



Preopertive X-Ray

Immediate Postop X-Ray 6 Months Followup



HIP Abduction HIP External Rotation


HIP Flexion (Straight Leg Raise) **HIP Extension**

Type Of Fracture:
In this series 20(91%) fractures were Boyd and Griffin's[3] type II fractures, followed by 1 (4.5%) cases of type III and 1(4.5%) cases of type IV.

Table 9.4: Type Of Fracture

TYPE 1	0
TYPE 2	20
TYPE 3	1
TYPE 4	1
TOTAL	22

RADIOLOGICAL UNION:
Radiological union was said to be achieved on the evidence of obliteration of fracture lines and trabecular continuity between the two fragments on AP & lateral x-rays in three cortices.

19 (86.36%) cases showed union by 3 months, 3(13.63%) cases at 4months.

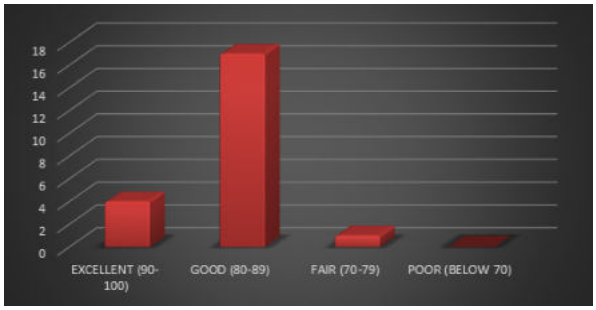
UNION IN WEEKS	FREQUENCY	PERCENTAGE
0-12	19	86.36
13-16	3	13.63
17-20	0	0
21-24	0	0

Functional Outcome:
The total functional outcome was assessed using Harris hip score, which consisted of evaluation of patient

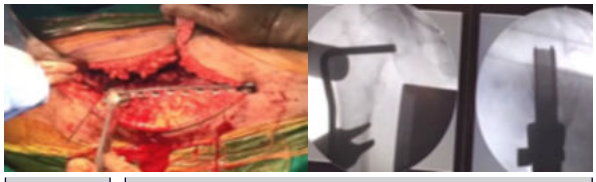
HARRIS HIP SCORE (HHS)
Among 22 patients 4(18%) patients scored excellent, 17(77%) patients scored good and 1(5%) patient scored fair, at 6 month post-operative follow up.

Table 9.17

SCORE	FREQUENCY
EXCELLENT (90-100)	4
GOOD (80-89)	17
FAIR (70-79)	1
POOR (BELOW 70)	0
TOAL	22



Surgical Technique



The initial incision was facilitated with slight internal rotation of the leg. A straight lateral incision was made two finger breadths below the vastus ridge to a point 5-7 cm distally. Typically the incision was made too cephalad, and typically was made much longer than was necessary. Large Beckman Retractors are used to retract the subcutaneous tissue in obese patients.

A periosteal elevator was used to sweep the subcutaneous tissue from either side of iliotibial band.

Before an angled blade plate could be inserted into bone, a channel must be cut with the U-profile seating chisel. The sides of the tip of the seating chisel converge slightly, which facilitates the centering of the chisel within the femoral neck. Once the track of the blade was determined on the preoperative plan, the surgeon will know the exact position that the seating chisel should occupy in the bone.

The 95º condylar plate guide was then placed along the lateral cortex and a second, definitive guide wire was inserted, parallel in the axial view to the first guide wire and parallel with the upper edge of the condylar plate guide in the AP view. It was drilled into the greater trochanter just above the planned point of entry. The track for the seating chisel will be parallel to this wire. The wire's position should be checked radiologically in both planes, and adjusted accordingly, as necessary.

Guided by the measurement made on the preoperative plan, the point of entry on the outer face of the greater trochanter was determined. It was important to remember that, at this level, the posterior edge of the greater trochanter overhangs more than the anterior edge and the centre of the point of insertion was at the junction of the anterior one third and middle one third of the outer face of the greater trochanter.

Three 4.5 mm drill holes are made. These holes are then enlarged with a router to produce a horizontal slot matching the width and height of the seating chisel. The lower edge of the entry hole should be bevelled, using a chisel, to accommodate the curve of the shoulder of the angled blade plate.

The seating chisel can now be inserted through the prepared entry slot and parallel in both axial and AP views to the definitive guide wire. This parallelism was judged by frequent visual reference, in both planes, to the advancing seating chisel and the guide wire. Radiology has no part to play in this maneuver. The use of the slotted hammer over the seating chisel aids the control of this track. Throughout the insertion of the seating chisel, the parallelism of the tongue of the seating chisel guide to the femoral shaft axis was also carefully maintained.

This was the most demanding and crucial step of the procedure, and the grip on the slotted hammer and the seating chisel guide was crucial. Once the seating chisel has been inserted, its position should be checked radiologically. This determines also whether the planned blade length was appropriate. The seating chisel bears markings that indicate the depth of its insertion. The seating chisel was then removed by back strokes with the slotted hammer.

The chosen 95° angled blade plate was then mounted into the plate holder and the blade was pushed by hand into the pre-chiselled track. The blade should pass easily into the precut track and light blows with a hammer should be all that was required to insert it into the femoral neck.

When the plate was about 5 mm from the bone, remove the plate holder and hammer the plate fully home, using the point of the impactor in the indent on the shoulder of the implant. The blade should be stabilized with a screw. After the angled blade plate has been inserted into the proximal femur, it was secured with a fully threaded 6.5 mm cancellous screw through the most proximal of the holes of the plate.

The use of a cortical screw at this site would require drilling of the calcar of the femur, with the attendant weakening of this important bony buttress.

ANGLE BLADE PLATE
A 95 degrees angle blade plate is an implant which consists of a metal plate or a shank terminated by a blade at an angle of 95°. The profile of the blade and the shaft are similar to each other. It is made of stainless

steel. The 95° design allows two or more cancellous screws to be inserted through the plate into the calcar region, providing additional fixation of the proximal fracture fragment. An additional benefit of this device is that it can be inserted into a small proximal fragment.

The blade has a U- profile. It is available in lengths of 50mm, 60mm, 70mm, 80mm, 90mm and 100mm. The most commonly used size for the adult proximal femur is 70mm. The thickness of the blade is 6.4mm. The width of the blade is 16mm. The blade needs to be inserted in the middle of the femoral neck.

The shaft has a fixed angle of 95° with the blade. The two round holes next to the blade accept 6.5 mm cancellous bone screws; the remaining screw holes have a DCP profile and accept 4.5mm cortical screws. There are 5, 7, 9 and 12 hole versions of the 95° angled blade plates. The thickness of the plate is 6.4mm. The width of the plate is 16mm. The spacing between the holes is 16 mm. The plate portion of the angled blade plate must line up with the axis of the femoral shaft at the end of the procedure.

DISCUSSION

Failed operated case of intertrochanteric fractures is difficult to manage and need revision surgery most of the time.

Various modalities are available for the management of intertrochanteric fractures. These include both intramedullary and extramedullary implants. A stable reduction of an intertrochanteric fracture requires providing medial and posterior cortical contact between the major proximal and distal fragments. Hence the surgeon must understand the implant options available and strive to achieve accurate realignment and proper implant placement.

The purpose of the present study was to highlight the utility of 95 degree angle blade plate in failed primary fixation of intertrochanteric fracture and functional outcome of the patient. The study was conducted at tertiary care hospital, Surat from April 2020 to August 2021.

Patients with intertrochanteric fractures satisfying the inclusion criteria were included in the study. They were thoroughly evaluated pre-operatively. Their details were collected and entered in a pre-formed proforma. The patients were operated upon and intra-operative details recorded. The patients were followed up regularly after being discharged from the hospital and their post-operative details were recorded.

COMPLICATIONS:

In our study, 19 patients (86.36%) healed well without any immediate post-operative complication. 3 patients developed superficial infection, which was treated aggressively with intravenous antibiotics and adequate debridement, after which they healed well.

In Haidukewych and berry[4] out of 20 patients, 2 patients developed infection, which was treated aggressively with intravenous antibiotics and adequate debridement, after which they healed well.

The delayed post-operative complications noted in our study were hip pain, limp, coxa vara and limb shortening.

Hip pain: Pain in the hip region was the most common and the most important complication. Pain was an important criterion for evaluation of hip fractures. Persistent pain could be due to infection, implant failure, non-union, avascular necrosis etc.

In our study, 77% of patients had no pain. 13% of patients had mild to moderate pain not affecting their daily activities which subsided with medication.

Limp: In our study, 91% of the patients had a normal gait. 2 patients in our study had a limp on the affected side. Limp was due to shortening, coxa vara etc.

Shortening: In our study, 95% of our patients had no shortening.

Shortening of up to 2.5 cm was acceptable and can be corrected by a shoe raise.

CONCLUSION

Hip fractures are the leading cause of morbidity and mortality in the elderly. Intertrochanteric fractures are a common injury, more commonly seen in elderly females and arising out of trivial fall.

Patients with trochanteric fractures undergoing early surgery have an improved ability to return to independent living and prevention of complications of prolonged immobilization.

In case of failed implant, revision surgery is necessary, and 95 degree angle blade plate is one of the reliable options available for these patients.

The 95 degrees angle blade plate can be used for both stable and unstable intertrochanteric fractures, but the final outcome was dependent on various factors such as the type of fracture, the condition of the medial wall, the bony architecture, and the co-morbid conditions of the patient, the operative technique, implant position and post-operative care.

The position of the implant should be such that the tip of the blade should be in the lower half of the femoral head and the blade should pass below the superior cortex of the neck.

This study shows that the 95 degrees angle blade plate offers a reliable and effective alternative for the treatment of failed operated case of intertrochanteric fractures.

The 95 degrees angle blade plate was a stable and acceptable implant for the treatment of failed operated case of intertrochanteric fractures.

REFERENCES

1. Courtney AC, Wachtel EF, Myers ER, Hayes WC. Age-related reduction in the strength of the femur tested in a fall-loading configuration. J Bone Joint Surg Am. 1995 Mar;77(3):387–395.
2. Cleveland M, Bosworth DM, Thompson FR, Wilson Hj Jr, Ishizuka T. A ten-year analysis of intertrochanteric fractures of the femur. J Bone Joint Surg Am. 1959 Dec;41-A:1399–1408.
3. Boyd HB, Griffin LL. Classification and Treatment of Trochanteric Fractures. Arch Surg. 1949;31B:190-203.
4. Haidukewych GJ, Israel TA, Berry DJ. Reverse obliquity fractures of the intertrochanteric region of the femur. J Bone Joint Surg Am. 2001 May;83-A(5):643-50.