



"FUNCTIONAL OUTCOME OF RETROGRADE NAILING IN THE MANAGEMENT OF SUPRACONDYLAR AND DISTAL FEMORAL FRACTURE"

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ABSTRACT

INTRODUCTION: Fractures of the Distal femur are complex injuries that pose a challenge to the orthopaedic surgeon. It constitutes about 6 % of all femoral fractures. It usually occurs during high energy trauma in younger patients and frequently are associated with concomitant injuries. In contrast, elderly patients with severe osteopenia might sustain solitary distal femoral fractures from minor trauma such as a simple fall. Proper diagnosis and treatment leads to early mobilization and rehabilitation of patients.

MATERIAL AND METHODS : This prospective study was conducted in Department of Orthopedics at Dr. S. N. Medical College and Associated group of Hospital, Jodhpur ,Rajasthan ,India on 30 patients who underwent the surgery with retrograde intramedullary interlocking nail in the management of extra-articular supracondylar femoral fracture from August 2019 to November 2020. On follow up axial alignment was assessed and functional analysis was quantified using **NEERS RATING SYSTEM**, Radiographs was analyzed for correction, maintenance of position or loss of reduction.

Function around knee was assessed according to **Schatzker and Lambert Criteria**, measures the flexion/extension , varus/valgus deformity , joint congruency and pain in operated patients.

RESULTS: In our study 30 patients with supracondylar & distal femoral fractures based on AO Classification on MULLER ET AL underwent retrograde supracondylar nail, long term final result were rated using NEER'S RATING SCORE , which gives point for pain, function, working, joint movement, gross and radiological appearance.

NEER'S RATING SCORE assigned for each patient after 24 weeks of follow up. After accessing this score out of total 30 patients, 10 have excellent score, 10 have good score, 8 have fair score and next 2 have poor score. Function around knee was assessed according to Schatzker and Lambert Criteria, measures the flexion/extension , varus/valgus deformity , joint congruency and pain in operated patients, out of 30 patients 9 patients have an excellent result , 8 have good , 12 have fair and only 1 patient have poor result

CONCLUSION: The retrograde intramedullary locked nail provides the surgeon with a different option in treatment of specific supracondylar fracture patterns. It offers a practical advantages of simple and efficient technique for patients with polytrauma, floating knee injuries and in elderly. this technique is very useful in distal femur fracture where antegrade nailing does not provide stability and also where plate fixation is not suitable due to soft tissue condition.

KEYWORDS :

INTRODUCTION

Supracondylar femur fractures are the most complex because of the soft tissue injury and the degree of comminution they involve. The supracondylar region because of its complex anatomy, proximity to the knee joint, a major weight bearing joint, difficulty in control over distal fragment always possess a challenge to treat. To add to this, are the associated ligamentous injuries, intra articular involvement and difficulty in anatomical alignment, which further complicated the treatment. Intramedullary interlocking nailing is one of the standard procedures used to stabilize fractures of distal femur as it is a biologic method of fixation and load-sharing device allowing early weight bearing.⁷ Intramedullary nailing can be introduced either in an antegrade or a retrograde fashion for treatment of these fractures.

AIM :-

The aim of our study is to evaluate the functional and clinical outcome of retrograde intramedullary interlocking nailing in the management of extra-articular supracondylar femoral fracture.

MATERIAL & METHODS

This prospective follow up study was hospital based and conducted on 30 patients who underwent the surgery with retrograde intramedullary interlocking nail in the management of extra-articular supracondylar femoral fracture in Department of Orthopedics at Dr. S. N. Medical College and Associated group of Hospital, Jodhpur

,Rajasthan ,India . Between time period of August 2019 to November 2020.

INCLUSION CRITERIA:-

Age in both genders (18-75) ,Extra articular supracondylar femur fracture according to AO-ASIF classification type A1, A2 & A3 fracture. Include both close and open fractures till grade 2 of extra-articular supracondylar fracture of femur.

EXCLUSION CRITERIA:-

All intra-articular supracondylar femur fracture according to AO-ASIF classification type, Grade III open fracture ,Skeletally immature patient and Supracondylar femur fracture with neurovascular injury or other congenital anomaly

On follow up axial alignment was assessed and functional analysis was quantified using Neer's rating system. Radiographs was analyzed for correction, maintenance of position or loss of reduction .Fracture was defined as united when patient was able to bear full weight on the injured limb without pain and without support and when radiographs showed bridging callus in at least 3 cortices.

RESULT

In our study 30 patients with supracondylar & distal femoral fractures based on AO Classification on MULLER ET AL underwent retrograde supracondylar nail, long term final result were rated using NEER'S RATING SCORE , which gives

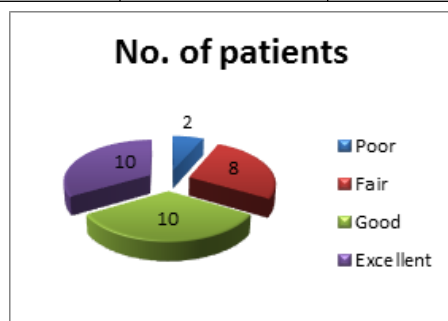
point for pain, function, working, joint movement ,gross and radiological appearance.

- 1) Age of patient range from 18 to 75 yrs with an average of 23.33 yrs, majority of patient is from age 60-70 yrs.
- 2) The total 30 patients operated with retrograde nailing , there were 20 male patients accounting 66.67% of total patients and female were 10 patients accounting 33.33 % of total patients.
- 3) FUNCTIONAL RATING AS PER NEER'S RATING SCORE long term final result were rated using NEER'S RATING SCORE , which gives point for pain, function, working, joint movement ,gross and radiological appearance.

NEER'S score assigned for each patient after 24 weeks of follow up. After accessing this score out of total 30 patients, 10 have excellent score, 10 have good score, 8 have fair score and next 2 have poor score.

Table 1:

Neers R.S.	No. of patients	Percentage
Poor	2	6.67
Fair	8	26.67
Good	10	33.33
Excellent	10	33.33
Total	30	100.00



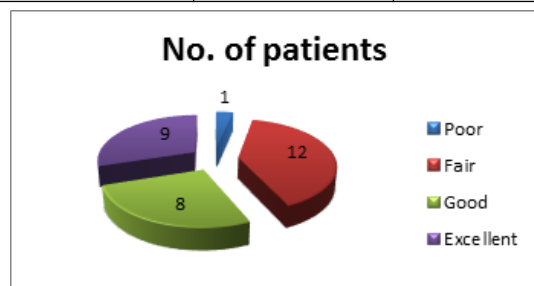
4) RATING ON BASIS OF Schatzker and Lambert Criteria

another rating criteria used in this study is schatzker and lambert criteria which measures the flexion/extension , varus/valgus deformity , joint congruency and pain in operated patients.

out of 30 patients 9 patients have an excellent result , 8 have good , 12 have fair and only 1 patient have poor result.

Table 2:

Schatzker & Lambert	No. of patients	Percentage
Poor	1	3.33
Fair	12	40.00
Good	8	26.67
Excellent	9	30.00
Total	30	100.00



5) TIME OF UNION

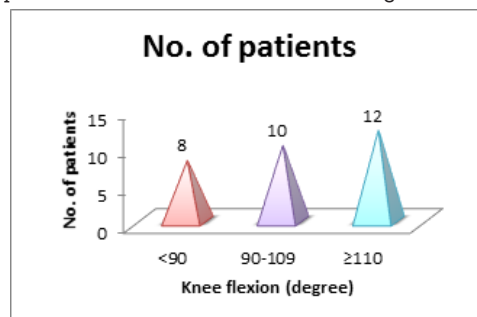
average time required for union is 4.5 months , there was 1 case of delayed union and no case on non union. None of patient require bone grafting.

Table 3:

Time of union (months)	No. of patients	Percentage
<4	8	26.67
4-4.5	13	43.33
4.5-5	1	3.33
5-5.5	1	3.33
5.5-6	6	20.00
>6	1	3.33
Total	30	100.00

6) KNEE FLEXION

average flexion in this study as was more than 100 degree with 40 % patients have flexion more than > 110 degree .



DISCUSSION

Fractures of distal femur are complex injuries that can be difficult to manage and have the potential to produce significant long term morbidity. Operative treatment is the treatment of choice in these injuries nowadays, resulting in anatomic reduction and early mobilization combined with early weight bearing. Previously stabilization was usually achieved with a condylar screw and plate. Retrograde intramedullary nailing has been developed in order to address some of the previous problems associated with distal femur fractures.

In our study, younger patients regained higher range of motion than the elderly similar to other studies^{35,33}. The cause of knee stiffness could be due to prolonged immobilization after surgery with a knee brace done 65 based on fracture patterns stability, delay in taking up patients for surgery, lack of patient compliance regarding knee mobilization & presence of associated injuries. In our study, patients with stable fixation were mobilized in the third postoperative week. Static quadriceps exercises and knee mobilisation exercises were taught. In some patients with less stable fixation, knee was immobilised in a knee brace for 3 weeks. No continuous passive motion was tried in our patients. The main problem encountered was non compliance of patients regarding physiotherapy exercises at home possibly due to lack of awareness regarding its importance or may be due to fear. summary, retrograde supracondylar nailing is a excellent technique with good union rates in the management of supracondylar fractures. However in view of some of the complications associated with it, less invasive stabilization system and locking plates has been gaining popularity nowadays.

CONCLUSION

Distal femoral fracture poses a challenging problem to the orthopedics surgeon as it occurs in young with high velocity and elderly with low velocity trauma. Early internal fixation and mobilization of the patients is of paramount importance. Presence of osteoporotic bone and presence of other injuries around the knee complicate the problem further. Retrograde supracondylar nail has evolved to address some of the problem in fixation of these fractures. It has benefits of less periosteal stripping, reduced blood loss, decreased hospital stay and operating time. Based on our study, we conclude that early surgical intervention and mobilisation of patients will

give better results. Moreover, closed method of reduction should be done wherever possible and percutaneous nailing should be advocated to yield better results. The retrograde intramedullary locked nail provides the surgeon with a different option in treatment of specific supracondylar fracture patterns. It offers a practical advantages of simple and efficient technique for patients with polytrauma, floating knee injuries and in elderly. However proper selection of patients and fracture patterns should be done in other cases and cautious use of retrograde supracondylar nailing in diaphyseal fractures should be exercised. Further studies comparing with other alternative methods of fixation are required to validate the outcome. this technique is easy and adds to armamentarium of every orthopedic surgeon. Finally , we conclude that this technique is very useful in distal femur fracture where antegrade nailing does not provide stability and also where plate fixation is not suitable due to soft tissue condition.

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