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## Short term outcome of intra-articular distal femur fracture treated with distal femur locking plates

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#### Abstract

**Objective:** to study short term outcome of intra-articular distal femur fracture treated with distal femur locking plates.

**Introduction:** Open reduction and internal fixation is the 'Gold Standard' treatment for the intra-articular distal femur fractures. Vehicular accidents and fall from height are common mode of injury. The goal of surgery is restoration of a stable limb for functional, pain free ambulation, maintaining anatomic alignment, length and preventing stiffness and to restore the function of the knee joint. Use of locking compression plate gives excellent functional outcome.

**Methodology:** A cohort of 20 intra-articular distal femur fracture patients, treated with open reduction and internal fixation using locking compression plates between September 2015 and June 2016.

**Results:** Out of 20 patients, 3 excellent (15%), 8 good (40%), 5 fair (25%) and 4 (20%) poor results were obtained using 'TEGNER LYSHOLM' scoring system.

**Keywords:** Intra-articular Distal Femur Fracture, Distal Femur Locking Compression Plating, Tegner Lysholm Scoring System

#### Introduction

Supracondylar and intercondylar femur fractures are the fractures that involve the distal 9 cm of femur including the distal femoral metaphysis (supracondylar) and the articular surface of the distal femur (intercondylar). The distal femur is funnel shaped and the area where the stronger diaphysis bone meets the thinner and weaker metaphyseal bone is prone to fracture with direct and indirect trauma [1]. There is a bimodal distribution of fractures based on age and gender. The incidence is highest in females over the age of 75 years and in males between the age of 15 to 24 years [2]. The goal in treating supracondylar and intercondylar femur fractures, as with any periarticular fracture in weight bearing bone, is restoration of a stable limb for functional, pain free ambulation, maintaining anatomic alignment, length and preventing stiffness and to restore the function of knee joint [1, 3]. Compression and intra articular reduction can be achieved with good hold and can be applied in LISS technique to restore fracture hematoma. The purpose of this study is to evaluate the outcome of operated cases of supracondylar with intercondylar femur fracture with open reduction and internal fixation with locking compression plates.

#### Methods

This study focuses on short term outcome of intra-articular distal femur fractures treated with distal femur locking plates assessed using Tegner Lysholm score. This prospective study was conducted at tertiary care hospital during the period of September 2015 to June 2016.

#### We included in our study

- Patients with type C fractures of distal end of femur.

#### We excluded from our study

- Patient with type A and type B fracture
- Conservatively treated patients.

- Patients treated with any other modality than extramedullary fixation with plates.
- Patients having vascular injuries

Radiographs were taken and fracture was classified according to AO classification. Pre operative workup including blood investigation, x-ray, electrocardiogram and pre-anaesthetic check-up was done. CT scan was done for detailed understanding of fracture and planning. Pre-operatively antibiotics were given as per hospital protocols. All patients were operated for open reduction and internal fixation using lateral parapatellar approach and distal femur locking plates

and intercondylar lag screws were needed. Post operative care inclusive of antibiotic support and dressing was done. Patients were started C.P.M. from 15<sup>th</sup> post operative day and partial weight bearing was started from 45<sup>th</sup> post operative day. Regular follow-up was done at 8 weeks and 16 weeks and radiographs were taken. The functional outcome was assessed using Tegner Lysholm score including following 8 points- limp, use of cane, locking sensation, giving way sensation, pain, swelling, climbing stairs, squatting. All patients who had a minimum follow-up of atleast 6 months were included in the study.



**Observation and analysis**

20 patients with intra-articular distal end femur fractures were included in study. Among this 5 patients were below 30 years of age, 6 patients were between 31-50 years of age and 9 patients were 51-70 years of age. Average age was 45.65 years in our study. Among 20 patients 18 were male and 2 were female. Among 20 patients 14 patients had vehicular accidents and 6 patients had fall from height.

Type of fracture

Type	Patients	Percentage (%)
Closed	11	55
Open	9	45
Open Grade – I	2	10
Open Grade – II	7	35
Open Grade – III	0	0
TOTAL	20	100

Fracture pattern (According to AO/OTA)

Fracture Pattern	Patients	Percentage (%)
Intraarticular		
C1	0	0
C2	4	20
C3	16	80
TOTAL	40	100

Results (Evaluated by Tegner-Lysholm Score).

Results	Patients	Percentage (%)
Excellent	3	15
Good	8	40
Fair	5	25
Poor	4	20
TOTAL	20	100

Complications (related to fracture treatment)

Complications	Patients	Percentage (%)
Non-union	0	0
Mal-union/ deformity	0	0
Implant Failure	0	0
Infection	3	15
Joint Stiffness	7	35
No. Complication	10	50
TOTAL	20	100

**Discussion**

Owing to the increase in vehicular accidents and high velocity trauma not only increases the number of distal femoral fractures (account for about 7% of all femoral fractures) but also their complexity. Fractures of distal femur are difficult to reduce, align and stabilize as they are usually comminuted and readily deformed by the muscle forces acting on the distal fragment. In our study 70% fractures were associated with high energy vehicular trauma & 30% Fractures were associated with history of fall from height. Among them 8(40%) patients were treated with single lateral plating and 12(60%) patients were treated with dual buttress plating. Intercondylar lag screw were used in 11(55%) patients. All (100%) fractures healed uneventfully. Average union time was 17.20 weeks (range 15-20 weeks). There were no cases of non-union or malunion. However knee stiffness was seen in 35% of patients. 65% of our patients had difficulty in squatting and 50% patients had difficulty in sitting cross legged. 4 patients (20%) were unable to squat and sit cross legged. 55% of patients could walk normally and 70% of patients had returned to their pre-injury life style without any modification. “Tegner-Lysholm Score” showed, 3 excellent (15%), 8 good (40%), 5 fair (25%) and 4 (20%) poor results.

### **Conclusion**

Majority of patients were in the age group of 51-70 with vehicular accident and history of fall down as common mode of trauma. No major complication were recorded during follow-up period and 80% patients had satisfactory results at final follow-up. Limitations of this study were small population (20 patients) and short term follow-up period (6 months). To conclude A good soft tissue handling and accurate reduction along with stable fixation are key points to good outcome. Anatomical distal femur locking plate appears to be good surgical options for treatment of Supracondylar Intercondylar Distal Femur fracture.

### **References**

1. M-Hosam Nagy, Emad El-Mehy. Khaled Issa on condylar buttress plating in treatment of Intercondylar supracondylar fractures of distal femur during February 1999 to December 2003, in orthopaedics department, Tanta university, Egypt, (Pan Arab J. Orth. Trauma, 2007, 11.
2. Campbell's. Operative Orthopaedics, 12th edition. 3.
3. Rockwood, Green. Fractures in adults, 5th edition, 2001.
4. Gray's Anatomy. 37th edition. Page No. 788.
5. Frank Netter's H. Atlas of human anatomy, 6<sup>th</sup> edition, 547-553.
6. Ayman El-Sayed Khalil, Mostafa Ahmed Ayoub. Double plating via modified Olerud extensile approach in treatment of unstable complex Type C3 distal femur fracture, J. Orthopaed Traumatol. 2012; 13:179-188.