



A PROSPECTIVE ANALYSIS OF FUNCTIONAL OUTCOME OF DISTAL FEMORAL FRACTURES FIXATION USING LOCKING COMPRESSION PLATES

Orthopaedics

Dr Ved Prakash Anchal

PGJR, Muzaffarnagar Medical College & Hospital, Muzaffarnagar (UP)

Dr Gaurav Jain

Professor, Muzaffarnagar Medical College & Hospital, Muzaffarnagar (UP)

ABSTRACT

Introduction: Fractures of Distal Femur are common due to increased Road traffic accidents and fall from height because of increased construction activities. These fractures are quite disabling. So, these fractures necessitate early stabilization of fractures. **Aim & Objectives:** 1 To evaluate the functional outcome in patients of distal femur fractures managed with locking compression plates, 2 To evaluate the functional outcomes with respect to NEER'S Score. **Methods:** The study was conducted at the Department of Orthopaedic Muzaffarnagar Medical College & Hospital, Muzaffarnagar during 2020-2022 period. A total of 30 patients were admitted and open reduction and internal fixation with distal femur locking compression plate was done. All patients were followed up for a minimum of 6 months and outcome assessed with NEER'S Score. **Results:** On evaluation according to Neer's criteria our results were as follows – Out of 30 patients 13(43%) had excellent, 15(50%) had satisfactory and 2(7%) had unsatisfactory result. **Conclusion:** we conclude that open reduction and internal fixation of supracondylar femur fracture by locking condylar plate in perspective of increasing severity of trauma have a distinct advantage in terms of - Nil or occasional pain, Early mobilization and Partial weight bearing, Good range of movement, Less limitation of activity, Less persisting deformity, Early bony union.

KEYWORDS

locking compression plate, distal femur fracture.

INTRODUCTION:

The most common cause of distal femur fractures in young and middle-aged people is high-speed car accidents, while in the elderly population; particularly women, it occurs by low energy trauma such as a fall at home due to osteoporosis [1].

Fractures in the distal portion of the femur are challenging to manage and difficult to treat.

Due to articular incongruity and poor stabilisation of articular fragments in these fractures, pain, reduced range of motion, and limited knee joint function are common issues [2].

Most recently locking condylar plate with screws that are locked to the plate has been used which avoid the varus angulation that is present with a medial femoral defect and can be used in osteoporotic bones and in multifragmenting fractures. [3]

Advantage of locking condylar plate is that it provides stable fixation in the small articular block.

AIM & OBJECTIVES:

1 To evaluate the functional outcome in patients of distal femur fractures managed with locking compression plates, 2 To evaluate the functional outcomes with respect to NEER'S Score.

METHODS:

The study was conducted at the Department of Orthopaedic Muzaffarnagar Medical College & Hospital, Muzaffarnagar. The study was conducted during 2020-2022.

Inclusion Criteria:

Patients with distal femur fractures, all skeletal mature patients (>18years), Patients willing to give consent.

Exclusion Criteria:

Patients with open distal femur fractures, Polytrauma patients & injury to ipsilateral lower limb, Patients with pathological fractures, Patient not willing for surgery, medically unfit patients, Children less than 18 years of age, Patients managed conservatively for other medical reasons.

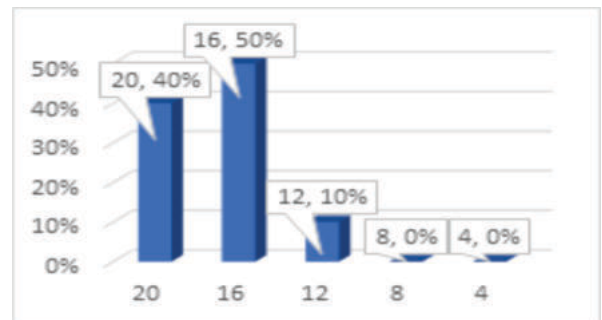
Patients included in this study was kept on balanced below knee skin traction and limb put over bohler braun cradle till waiting for fixation.

Patients was called up at 3 weeks, 6 weeks, 12 weeks and 6 months. At each follow up visit, progress of the patients was recorded in accordance with Neer's criteria. [4]

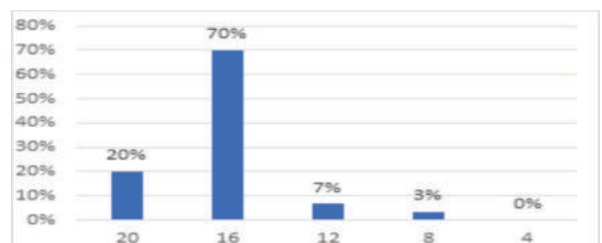
Functional (70 points)		Anatomical (30 points)	
A) Pain (20 points)		A) Gross anatomy (15 points)	
No pain	20	Thickening only	15
Intermittent	16	5 degree angulation or 0.5 cm shortening	12
With fatigue	12	10 degree angulation or rotation, 2 cm shortening	09
Limit function	8	15 degree angulation or rotation, 3 cm shortening	06
Constant or at exertion	4	Healed with considerable deformity	03
B) Walking capacity (20 points)		Non-union or chronic infection	
Same as before accident	20	B) Roentgenogram (15 points)	
Mild restriction	16	None normal	15
Restricted stair side ways	12	5 degree angulation or 0.5 cm displacement	12
Use crutches or other walking aids	4	10 degree angulation or 1 cm displacement	09
C) Joint movement (20 points)		15 degree angulation or 2 cm displacement	
Normal or 135 degrees	20	Union but with greater deformity, spreading of condyles and osteoarthritis	03
Up to 100 degrees	16	Non-union or chronic infection	
Up to 90 degrees	12		
Up to 80 degrees	8		
Up to 70 degrees	4		
Up to 20 degrees	0		
D) Work capacity (10 points)		Excellent - More than 85 points	
Same as before accident	10	Good - 70 to 85 points	
Repeat but with load up	8	Fair - 55 to 69 points	
After work	6	Poor - Less than 55 points	
Light work	4	Total -	
No work	2		

RESULTS:

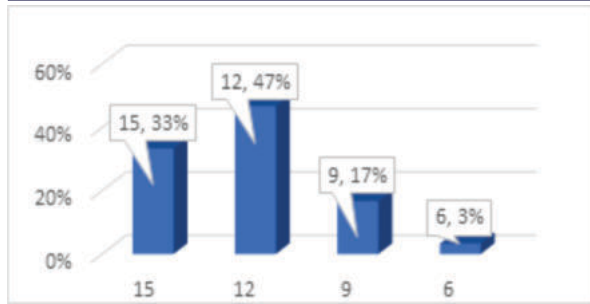
Thirty cases of distal femur fracture were included in our study after fulfilling inclusion criteria.



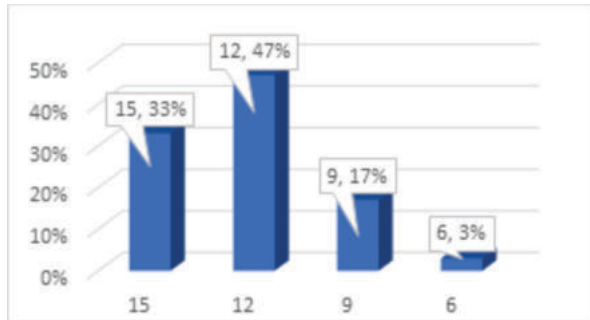
Graph 1: Pain distribution in patients



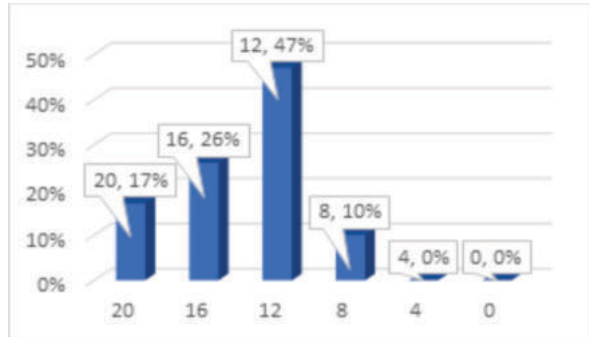
Graph 2: Function of patients



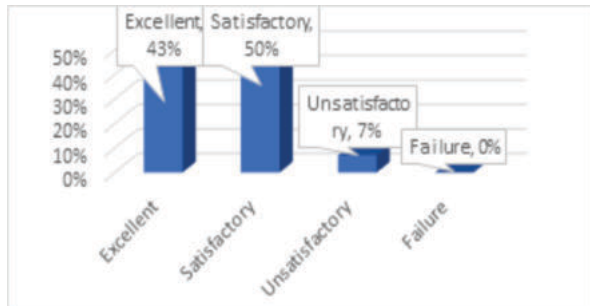
Graph 3: Gross anatomy of patients



Graph 4: Radiological finding of the patients

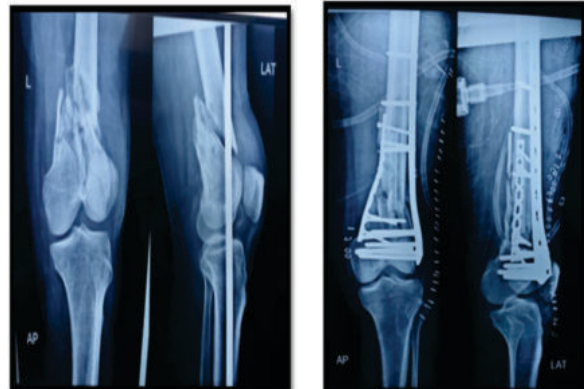


Graph 5: Joint movement of patients



Graph 6: Result of patients

Case – 1



Case – 2



DISCUSSION:

With the introduction of locking compression plates the results are encouraging, as it increases the rigidity of fixation in osteoporotic bone and in presence of periarticular or juxta-articular comminution. [5] By virtue of this study, we have attempted to evaluate the efficacy of locking condylar plate in treatment of distal femur fractures prospectively. Cases in our study were classified as per AO classification A3 is most common in 40% cases followed by C2 in 30%. Indicating that high energy trauma is on rise. In our study intermittent pain is most common in 50% followed by no pain in 40%, which is similar to observation by Ketterl R, Kostler W, Wittwer W. (1997)[6] in which of 50% patient has no pain and 40% has occasional pain. Mild restriction of function is most common in 70% patients followed by functioning as before fracture in 20% patients. Angulation <50 shortening <0.5 cm is the most common in 47% patients. A similar observation was found where 50% patient has leg length discrepancy (12.5 cm) and 15% patients has valgus deformity of 10°. While joint movement of range (80-90) is most common in 47% cases. Similar observation studied by Weight M, Colling C. et al, (2004)[7] where average range of motion was 5-114°. In our study cases 50% has satisfactory results, 43% has excellent results, while unsatisfactory in 7% were found. This is similar to the observation done by Ketterl, Kostler W., Wittwer W. (1997)[6] where satisfactory results were found in 55%, excellent results in 40% and unsatisfactory in 5%.

CONCLUSION:

In our study we conclude that open reduction and internal fixation of supracondylar femur fracture by locking condylar plate in perspective of increasing severity of trauma have a distinct advantage in terms of- Nil or occasional pain, Early mobilization and Partial weight bearing, Good range of movement, Less limitation of activity, Less persisting deformity, Early bony union, Decreased limb length discrepancy.

REFERENCES:

- Martinet O, Cordey J, Harder Y. The epidemiology of fractures of the distal femur. *Injury*. 2000;31:62-63.
- Brett D, Crist MD, Gregory J, Della R, Yvonne M. Treatment of acute distal femur fractures. *Orthopedics*. 2008;31(7):681-90.
- Stoffel K, Dieter U, Stachowiak G, Gächter A, Kuster MS. Biomechanical testing of the LCP - how can stability in locked internal fixators be controlled?. *Injury* 2003; 34(2):1119.
- Neer CS II, Grantham SA, Shelton ML. Supracondylar Fracture of the Adult Femur – A Study of One Hundred and Ten Cases. *JBJS Am* 1967 June; 49-A(4): 591-613.
- Egol KA, Kubiak EN, Fulkerson E, Kummer FJ, Koval KJ. Biomechanics of Locked Plates and Screws. *J Orthop Trauma* 2004 Sept; 18(8): 488-493.
- Ketterl R, Köstler W, Wittwer W, Stübinger B. [5-year results of dia-/supracondylar femoral fractures, managed with the dynamic condylar screw]. *Zentralblatt für Chirurgie*. 1997;122(11):1033-1039. PMID: 9480597
- Weight M, Collinge C. Early results of the less invasive stabilization system for mechanically unstable fractures of the distal femur (AO/OTA types A2, A3, C2, and C3). *J Orthop Trauma*. 2004 Sep;18(8):503-8. doi: 10.1097/00005131-200409000-00005. PMID: 15475845.