International Journal of Research in Orthopaedics
*Bose G et al. Int J Res Orthop. 2024 May;10(3):655-658*
http://www.ijoro.org

DOI: https://dx.doi.org/10.18203/issn.2455-4510.IntJResOrthop20241117

**Case Series**

# Functional outcome of patients presenting with isolated medial condyle fractures of femur in a tertiary care hospital

**Gourab Bose[1]*, Rahul Roy[2], Saptarshi Mukherjee[2], Sunandan Datta[3]**

[1]Department of Orthopaedics, Howrah District Hospital, West Bengal, India
[2]Department of Orthopaedics, Calcutta National Medical College, Kolkata, India
[3]Department of Trauma and Orthopaedics, Queens Medical Centre, Birmingham, UK

**Received:** 03 March 2024
**Revised:** 04 April 2024
**Accepted:** 05 April 2024

***Correspondence:**
Dr. Gourab Bose,
E-mail: gourabpurulia@gmail.com



## ABSTRACT

Isolated medial condyle fractures of the femur with an intact lateral condyle are a rare entity. These fractures require prompt diagnosis and anatomical restoration of joint surface to prevent post traumatic arthritis. Till date no suitable implant is available for fixation of these fractures. In this study we have used 4.5 recon plates and CC screws to fix these fractures. We aim to study the functional outcome of these fractures in a group of patients fixed with the above implants. The study was conducted in a group of patients presenting with isolated medial condyle fractures of femur in a tertiary care hospital. An ORIF was done and fractures were fixed with recon plates and lag screws and various parameters were evaluated such as range of motion of knee, average time to weight bearing, Lysholm knee scores, pain perception etc 20 patients were evaluated in the age group of 20-70 in a 5 year period. Majority of the patients had a very good functional range of motion of the knee and nearly 75% achieved union by 12-16 weeks. 70% of the patients had a low VAS score. Overall early diagnosis and prompt anatomical restoration of joint surface in isolated medial condyle fractures of femur led to favourable range of motion of knee, early radiological healing and low VAS score.

**Keywords:** Isolated medial condyle, Lysholm knee score, ORIF, Anatomical restoration, VAS score

## INTRODUCTION

Fractures of the distal femur comprise a majority of high velocity injuries. Medial condyle can be involved as a part of comminuted intra articular distal femoral fractures. But isolated medial condyle fracture with an intact lateral condyle is an extremely rare entity.[1] This fracture has a specific significance because of the proximity of the fracture to the knee joint. Improper anatomical restoration could compromise full knee range of motion and function. Henceforth it is necessary to obtain full anatomical reduction of these fractures for optimum functional outcome.[2] But anatomically pre-contoured plates for medial condyle of femur are not available.[3] In this study we used 4.5 mm recon plates with cancellous cannulated screws for fixation of medial condyle. We aim to study the functional outcome of these fractures and document various parameters pertaining to pain perception, knee scores, range of motion of knee etc.

## CASE SERIES

After necessary approval from the institutional ethics committee the study was conducted in a group of patients attending our hospital. It was conducted on 20 patients presenting with isolated medial condyle fractures of femur in the age group of 20-70 years. This was a prospective study conducted from August 2018 to August 2023.The inclusion criteria comprised of patients presenting with isolated medial condyle fractures of femur without any

extension to the lateral condyle. Open fractures, fractures with any Hoffa component, fractures with any distal neurovascular deficit were kept in the exclusion criteria.

***Surgical technique***

Patients presenting with isolated medial condyle fractures of femur were initially admitted and taken up for pre operative workup. A preoperative CT scan of the knee joint was done to delineate the articular geometry and understand the anatomy of the fracture.

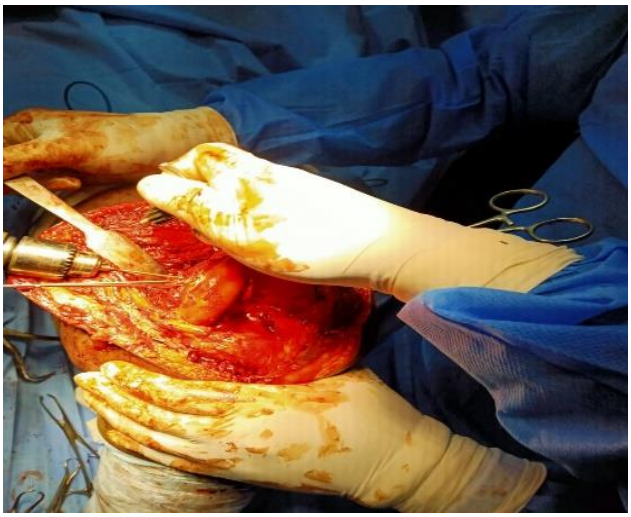

**Figure 1: Medial condyle fracture of femur fixed with lag screws via medial approach.**

In most of the cases patients were placed in a supine position and the medial condyle was approached through a medial approach. An open reduction internal fixation (ORIF) was done and the fracture was fixed with a 4.5 mm recon plate which acted as a buttress and 2 cancellous cannulated screws which fixed the medial condyle to the rest of the femoral condyle.

***Post operative followup and assessment***

Post operatively the limb was immobilized in a long leg slab, gradual progressive range of motion of knee joint was commenced on 3rd day. Patient was advised strict non weight bearing and static quadriceps exercises and knee bending were taught. Patient was followed up at 4, 6, 8, 12 and 16 weeks and 6 month duration.

During each followup the following parameters of the study were accounted for-1) Range of motion of knee joint, 2) Lysholm knee score, 3) Ability to squat or cross-leg sit, 4) Pain perception of patient by analysing VAS score and 5) Presence of other complications (if any).

Radiological assessment was also done at each followup and partial weight bearing with axillary crutches was advised and full weight bearing was commenced subsequently.


**Figure 2 (A and B): Isolated medial condyle fracture of femur fixed with 4.5 mm recon plate and cc screws.**

***Results***

The present study was conducted in a group of 20 patients presenting with isolated medial condyle fractures of femur in the age group of 20-70 years in a 5 year period.

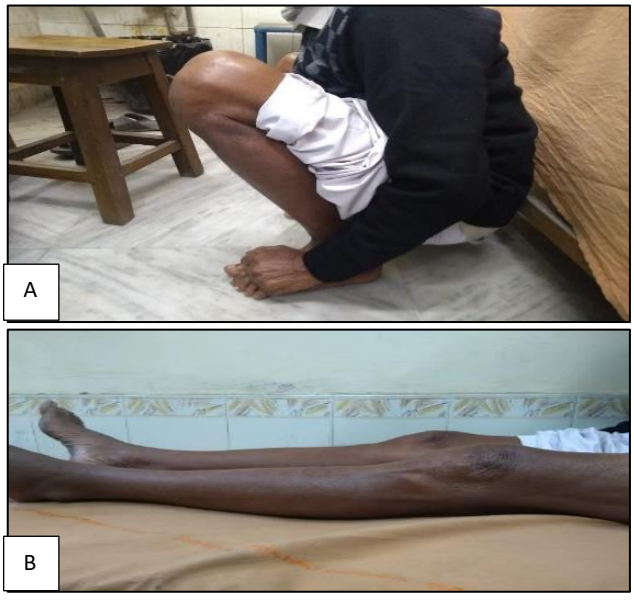


**Figure 3 (A and B): Full range of motion of knee joint at 1 year of followup.**

**Table 1: Lysholm knee score.**

| Lysholm knee score | N | Percentages (%) |
|---|---|---|
| **84-92 (good to excellent)** | 14 | 70 |
| **65-83 (fair)** | 4 | 20 |
| **<65 (poor)** | 2 | 1O |
| **Total** | 20 | 100 |

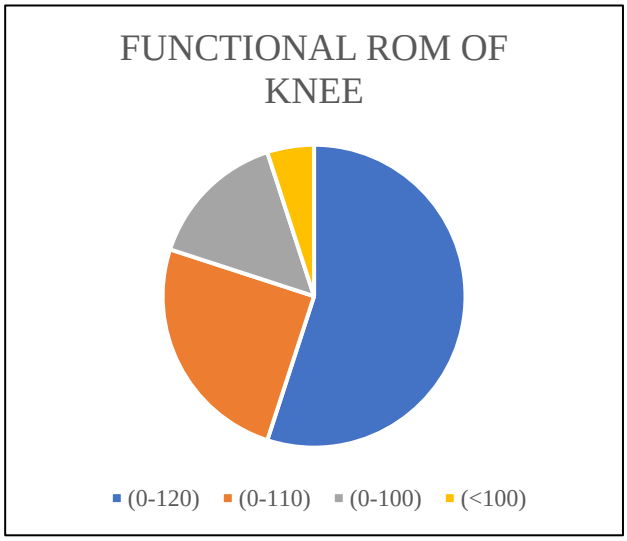


**Figure 4: Functional rom of knee joint.**

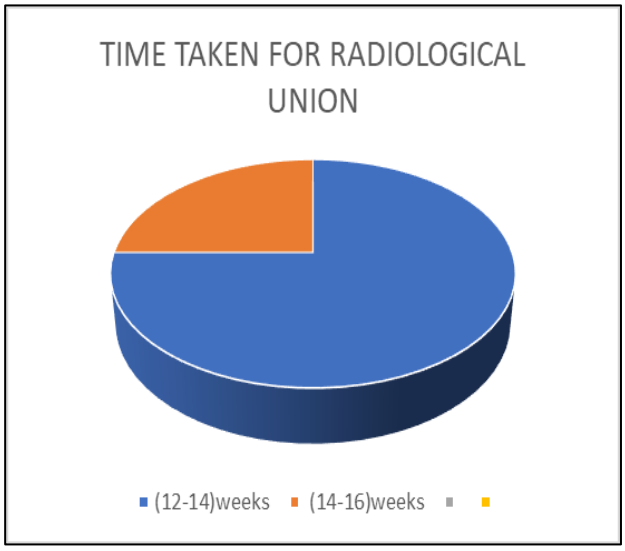


**Figure 5: Time taken for radiological union.**

Majority of the patients had a very good functional range of motion of knee at 6 months i.e. nearly above 100°. Lysholm knee scores assessed at 1 year of followup revealed good to excellent knee scores.

The 75% of patients achieved radiological union by 12-16 weeks. Nearly from that time onwards partial weight bearing with bilateral axillary crutches were given and gradually unsupported full weight bearing was commenced.

Post operatively pain perception of the patient was assessed using the VAS (Visual analogue scale) score.Majority of the patients (70%) had a low VAS score (<5).

**Table 2: VAS score.**

| Vas score | N | Percentages (%) |
|---|---|---|
| **<5** | 14 | 70 |
| **5-7** | 4 | 20 |
| **>7** | 2 | 10 |
| **Total** | 20 | 100 |

## DISCUSSION

Isolated medial condyle fracture of the femur with an intact lateral condyle is an extremely rare entity which is mainly caused by an impact on the flexed knee during weight bearing.[2] Stable reduction and rigid anatomical fixation is the mainstay of management of these fractures to enable a quick and uneventful recovery. The ultimate aim of surgical management is to promote early knee motion while restoring the articular congruity, maintaining limb length and alignment, preservation of soft tissue envelope that allows functional recovery during bone healing.[3] Till date no consensus have been reached regarding the ideal management of these fractures.[4] Past reports have shown the possibility of screw fixation plating for these fractures. This has been further complicated by the fact that anatomically recontoured plates for unicondylar fractures of distal femur are not available in the market.[5] Fixation of these fractures entails usage of lag screws and sometimes buttress plate. In some studies, published earlier proximal tibial plates were used as buttress plates.[5]

In order to understand the articular geometry better a preoperative CT scan was done in all cases. This also helped to decide the approach, plan the surgery better.

All the fractures were fixed using the medial approach to femur and in most of the cases a 4.5 mm reconstruction plate which was pre-bent was used as a buttress plate and 1 or 2 cancellous cannulated screws with washer were used. Till date no effective anatomically pre-contoured plates for femoral condyles are available and henceforth in our cases reconstruction plates were used.[6] Buttress plates coupled with screws provided strong anatomical fixation than screws alone.[7] In one study calcaneal plates were used to fix the medial femoral condyle.[8] In a study published in Japan same concept of Buttress plating was used as in this study.[9] In that case proximal tibial plates in reverse mode were used as anti-glide plate to counteract the vertical and shearing forces. This plate also required bending earlier to fit along the bone surface but in our experience proximal tibial plate bending is difficult and often in most cases does not realign anatomically to the condyles. Pre-bent 4.5 mm Recon plates could be used to overcome this difficulty.

Post operatively passive range of motion exercises were commenced early along with quadriceps strengthening

exercises. This led to favourable knee scores. In a case series published in the journal of musculoskeletal research by Pradeep et al, where T buttress plates were used for fixation in the final followup, out of 12 patients 11 had good functional outcome according to 'IKS Knee and function score' and 'Kolmert functional score.[3] In our study series out of 20 patients, 18 patients had satisfactory Lysholm knee scores. Most of the cases achieved radiological union by 10 weeks. This can be attributed to the fact that rigid fixation with lag screws and buttress plate enabled a rapid healing. Strong internal fixation allowed early rehabilitation therapy. Earlier studies also emphasized on this aspect.[2,4,6]

The study had it's own limitations also. Sample size was small, study period was less etc.

## CONCLUSION

Isolated medial condyle fractures of the femur require prompt diagnosis and management. Rigid anatomical fixation and maintenance of articular congruity is the key to attain early radiological healing and favourable knee scores.

*Funding: No funding sources*
*Conflict of interest: None declared*
*Ethical approval: Not required*

## REFERENCES

1. Dhillon MS, Mootha AK, Bali K, Prabhakar S, Dhatt SS, Kumar V. Coronal fractures of the medial femoral condyle: a series of 6 cases and review of literature. Musculoskelet Surg. 2012;96(1):49-54.
2. Kodama H, Saku I, Shin T. Department of Orthopaedic Surgery, Yaizu City Hospital, Shizuoka Surgical treatment of femoral medial condyle fracture with lag screws and proximal tibial plate: A case report. Int J Surg Case Rep. 2020;70:101-5.
3. Choudhary P, Saxena M, Jain H, Bharwani N, Bhati M. Functional outcome of isolated medial femoral condyle fractures managed with plate osteosynthesis-a case series. J Musculoskelet Res. 2024;27(01):2350012.
4. Bel JC, Court C, Cogan A, Chantelot C, Piétu G, Vandenbussche E; SoFCOT. Unicondylar fractures of the distal femur. Orthop Traumatol Surg Res. 2014;100(8):873-7.
5. Mahajan PN, Mhatre JA, Modi N. Case Report of Surgical Treatment of Spiral Fracture of Medial Femoral Condyle by ORIF Using Lag Screws and Posterior Buttress Tibial Plate in Elderly Lady and Review of Literature. Integr J Orthop Traumatol. 2022;5(1):1-4.
6. Buruian A, Carvalho A, Corte J, Carvalhais RP. Complex distal femoral fracture treated with interfragmentary screws and medial buttress plating. BMJ Case Rep. 2022;15(12):e250817.
7. McDonald TC, Lambert JJ, Hulick RM, Graves ML, Russell GV, Spitler CA. Treatment of distal femur fractures with the DePuy-Synthes variable angle locking compression plate. J Orthop Trauma. 2019;33:432-7.
8. Silva R, Moreira E, Branco R, Ferreira F, Areias M, Oliveira C, et al. Calcaneal Plate for Medial Femoral Condyle Fractures-Is This It? A Clinical Case. Surg J (N Y). 2021;7(2):e59-e61.
9. Kiyono M, Noda T, Nagano H, Maehara T, Yamakawa Y, Mochizuki Y. Clinical outcomes of treatment with locking compression plates for distal femoral fractures in a retrospective cohort. J Orthop Surg Res. 2019;14:384.

**Cite this article as:** Bose G, Roy R, Mukherjee S, Datta S. Functional outcome of patients presenting with isolated medial condyle fractures of femur in a tertiary care hospital. Int J Res Orthop 2024;10:655-8.