

Treatment Approach of “Hoffa” Fractures of the Femoral Condyle

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ABSTRACT

Background: The unicondylar tangential posterior fracture of the femur (Hoffa fracture) is an unusual injury, most commonly affecting the lateral condyle. The objective in treatment of these fractures is to achieve anatomical reduction of the articular surface and stable fixation.⁷ Hence; we planned the present study to assess treatment approach of “Hoffa” fractures of the femoral condyle.

Materials & Methods: A total of 10 patients with Hoffa fracture of the femoral condyle were included in the present study. Complete radiographic assessment of all the patients was done for evaluating the fracture healing and joint movements. Grading of the results was done into excellent, good and poor based on the time required for being unite, and presence or absence of complications.

Results: Left side of the condyle was involved in 60 percent of the cases. 90 percent of the patients in the present study had excellent prognosis. Complete union was seen in 90 percent of the cases. Delayed union and knee stiffness were found to be present in 1 patient each.

Conclusion: Hoffa fractures are uncommon intraarticular fractures that warrant precision assessment and careful treatment planning.

Key words: Hoffa, Fractures, Femoral.


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INTRODUCTION

The unicondylar tangential posterior fracture of the femur (Hoffa fracture) is an unusual injury, most commonly affecting the lateral condyle.¹ The mechanism of injury is not agreed upon, but it seems to imply an oblique transverse force resulting from the impaction of the upper part of the tibia on the femoral condyles, particularly the lateral condyle, with the knee flexed greater than 90°.²⁻⁴

Hoffa fractures are seen in the setting of high velocity, high energy trauma. The mechanism of injury has been reported to be a direct antero-posterior force to the flexed and abducted knee for lateral condylar fractures and direct impact to the medial side of the knee in flexion for a medial condylar fracture.^{5,6} The objective in treatment of these fractures is to achieve anatomical reduction of the articular surface and stable fixation.⁷ Hence; we planned the present study to assess treatment approach of “Hoffa” fractures of the femoral condyle.

MATERIALS & METHODS

The present study was conducted in the department of orthopaedic surgery, Anugrah Narayan Magadh Medical College

and Hospital, Gaya Bihar (India) and it included assessment of operative management of Hoffa fracture of the femoral condyle. Ethical approval was obtained from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. A total of 10 patients with Hoffa fracture of the femoral condyle were included in the present study. Detailed demographic was obtained from all the patients. Clinical follow-up details of all the patients were obtained. Complete radiographic assessment of all the patients was done for evaluating the fracture healing and joint movements. Grading of the results was done into excellent, good and poor based on the time required for being unite, and presence or absence of complications. Complications present, if any, were recorded. All the results were compiled and analysed by SPSS software.

RESULTS

In the present study, a total of 10 patients were included. Mean age of the patients of the present study was 32.5 years. 50 percent of the patients belonged to the age group of 25 to 45 years. 30 percent of the patients belonged to the age group of

more than 45 years. 60 percent of the patients of the present study were females while the remaining 40 percent of the patients were males. Left side of the condyle was involved in 60 percent of the cases. 90 percent of the patients in the present study had excellent prognosis. Complete union was seen in 90 percent of the cases. Delayed union and knee stiffness were found to be present in 1 patient each.

Table 1: Age-wise distribution of patients

| Age group (years) | n | % |
|-------------------|----|-----|
| Less than 25 | 2 | 20 |
| 25 to 45 | 5 | 50 |
| More than 45 | 3 | 30 |
| Total | 10 | 100 |

Table 2: Gender-wise distribution of patients

| Gender | n | % |
|---------|----|-----|
| Male | 4 | 40 |
| Females | 6 | 60 |
| Total | 10 | 100 |

Table 3: Distribution of patients according to the side of condyle involvement

| Condyle | n | % |
|---------|----|-----|
| Right | 4 | 40 |
| Left | 6 | 60 |
| Total | 10 | 100 |

Table 4: Outcome of Hoffa fracture of femoral condyle

| Outcome | n | % |
|-----------|----|-----|
| Excellent | 9 | 90 |
| Good | 1 | 10 |
| Poor | 0 | 0 |
| Total | 10 | 100 |

Table 5: Distribution of cases who had unions, malunions, delayed unions, or nonunions

| Parameter | n | % |
|---------------|----|-----|
| Union | 9 | 90 |
| Malunion | 0 | 0 |
| Delayed union | 1 | 10 |
| Non-union | 0 | 0 |
| Total | 10 | 100 |

Table 6: Complications

| Complications | n | % |
|----------------|---|-----|
| Delayed union | 1 | 50 |
| Knee stiffness | 1 | 50 |
| Total | 2 | 100 |

DISCUSSION

The Hoffa fracture is an uncommon, coronally-oriented fracture which extends through either the medial or lateral condyle. Although there is preponderance for lateral condyle, medial condyle involvement is not as uncommon as previously suspected. These uncommon coronal fractures have not been accorded due interest in past, which is evident by the fact that only few case reports and case series describing the nature of this fracture and its management have been presented. The long term consequences of malunion, nonunion and degenerative changes of a major joint require serious consideration. Open reduction and internal fixation is mandatory for good outcomes.⁷⁻⁹ Hence; we planned the present study to assess treatment approach of "Hoffa" fractures of the femoral condyle.

A total of 10 patients were included in the present study. Mean age of the patients of the present study was 32.5 years. 50 percent of the patients belonged to the age group of 25 to 45 years. 30 percent of the patients belonged to the age group of more than 45 years.

Sahu RL et al prospectively analysed the clinico-radiological and functional outcome following open surgical treatment. Complications were stiffness and pain in one patient, collateral laxity in one patient and progression of arthritis in one patient. The results were excellent in 90.90% and good in 9.09% patients. Finally, they conclude that the early anatomical reduction and rigid fixation with screws provide best results and minimal complications.¹⁰

60 percent of the patients of the present study were females while the remaining 40 percent of the patients were males. Left side of the condyle was involved in 60 percent of the cases. 90 percent of the patients in the present study had excellent prognosis. Complete union was seen in 90 percent of the cases. Delayed union and knee stiffness were found to be present in 1 patient each. Gavaskar AS et al analysed the clinico-radiological and functional outcome following open surgical treatment. A total of 18 isolated Hoffa fractures were identified during the study period spanning 29 months. Union was achieved in all patients. The articular surface was reduced anatomically in all but one patient. There was no loss of reduction or fixation. Functional outcome measures showed a continuous significant improvement in function over the 1-year follow up period. Complications include stiffness and pain in one patient, collateral laxity in two patients and progression of arthritis in one patient. Hoffa fractures are intra-articular and are best treated by anatomical reduction and rigid fixation followed by early mobilisation.¹¹

In another previous study conducted by Trikha V et al, authors assessed radiologic and functional outcome in operatively treated Hoffa fractures. They retrospectively reviewed 32 patients of isolated Hoffa fracture from January 2010 to March 2015. All were treated with open reduction and internal fixation using lateral approach for lateral Hoffa and medial approach for medial Hoffa fracture. Cancellous screws in lag mode and/or antiglide plate were employed for fixation in accordance with fracture anatomy. All fractures united by mean time of 11.56 ± 1.5 weeks. No evidence of subsequent displacement or fixation failure, arthritis, avascular necrosis (AVN) of femoral condyle was elicited in any of the patients. Operative treatment of Hoffa fractures yields fairly good functional outcome.¹² Liebergall et al recommended the straight lateral parapatellar approach, with osteotomy of Gerdy's

tubercle and reflection of the iliotibial tract. They argued that this provides excellent exposure of the lateral femoral condyle and permits anatomic reduction of the fragments without violating the articular surface. It also allows the harvest of a local bone graft from the tibial metaphysis.¹³

CONCLUSION

Under the light of above obtained results, the authors conclude that Hoffa fractures are uncommon intraarticular fractures that warrant precision assessment and careful treatment planning. However, further studies are recommended.

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