

Case Report**Medial Condylar Hoffa Fracture in Left Knee Joint: Case Report**Dr. Maruthi CV*¹, Dr. Nikhil Gupta², Dr. Venugopal N³, Dr. Nanjundappa HC⁴, Dr. Siddalingaswamy MK⁴¹Assistant Professor, Dept. of Orthopaedics, MVJ Medical College & Research Hospital, Hoskote, Bangalore -562 114, India²Post graduate student, Dept. of Orthopaedics, MVJ Medical College & Research Hospital, Hoskote, Bangalore -562 114, India³Associate Professor, Dept. of Orthopaedics, MVJ Medical College & Research Hospital, Hoskote, Bangalore -562 114, India⁴Professor, Dept. of Orthopaedics, MVJ Medical College & Research Hospital, Hoskote, Bangalore -562 114, India***Corresponding author**

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Abstract: Coronal shear fracture of the distal femoral condyle is an unusual injury. Medial condylar Hoffa fracture is a rare injury and has anecdotally been reported in the literature. We describe a rare case of medial condyle Hoffa fracture and its management. A 35-year-old female labourer presented to Orthopaedic emergency with the complaint of acute pain and swelling in her left knee following fall from moving bus. She was diagnosed to have fracture medial condyle with Hoffa's component. The fracture was fixed with anterior to posterior direction using cannulated cancellous screws; an intraarticular fragment which was involving the distal articular surface was fixed with Herbert screw under fluoroscopy control by anterior midline medial parapatellar arthrotomy. At 6 months, patient had 0°–140° of range of movements without pain and deformity. Radiographs showed no signs of avascular necrosis, osteoarthritis, or implant breakage. We described a rare case of a medial condylar Hoffa fracture managed successfully by open reduction and internal fixation with good clinical outcome at 6 months of follow-up. The anterior medial parapatellar approach allows excellent exposure of medial condyle. Anatomic reduction and rigid internal fixation using cannulated cancellous screws and any intraarticular fragments with Herbert's screw allows early mobilization and excellent long term outcome.

Keywords: Medial condyle, Hoffa fracture, knee joint

INTRODUCTION

A Hoffa fracture is a type of supracondylar distal femoral fractures and is characterized by an associated coronal plane [1]. While they are rare in absolute numbers, they can account for approximately 40 % of intercondylar fractures. It is typically seen in adults after higher-energy trauma [2]. Coronal shear fracture of the distal femoral condyle is an unusual injury. Albert Hoffa described this type of fracture in the year 1904[3]. Hoffa fragments are more commonly unicondylar and usually originate from the lateral femoral condyle. They can be occasionally bicondylar [2]. While medial condylar Hoffa fracture is a rare injury and has anecdotally been reported in the literature. We describe a rare case of medial condyle Hoffa fracture and its management.

CASE REPORT

A 35-year-old female labourer presented to Orthopaedic emergency with the complaint of acute pain and swelling in her left knee following fall from moving bus. She had direct impact on her semi flexed left knee. There were no associated injuries and the patient was hemodynamically stable. Local examination revealed a painful swollen left knee with a 3 cm × 1 cm abrasion over the posteromedial aspect of the knee. The range of movements was restricted. Plain radiographs

revealed fracture medial condyle with Hoffa's component (Fig. 1). The patient was operated in supine position under tourniquet and spinal anesthesia. The knee joint was then exposed by anterior midline medial parapatellar arthrotomy. On exposing the knee, a fracture involving medial femoral condyle was noted. Fracture was reduced and temporarily stabilized with guide wires from anterior to posterior direction and fixed with cannulated cancellous screws; an intraarticular fragment which was involving the distal articular surface was fixed with Herbert screw under fluoroscopy control (Fig. 2, 3). The wound was closed in layers. Post operatively wound healed well. After 3rd day, intermittent knee mobilization started along with isometric muscle strengthening exercises. Partial weight bearing was started at 6 weeks postoperatively and full weight bearing at 3 months when the fracture had united radiologically. At 6 months, patient had 0°–140° of range of movements without pain and deformity (Fig. 4). Radiographs showed no signs of avascular necrosis, osteoarthritis, or implant breakage (Fig. 4).

DISCUSSION

Hoffa fractures are intra-articular and are characterized by a fracture in the coronal plane [2].

Hoffa fracture usually results from high energy trauma [1]. The Hoffa fracture is typically seen in the setting of a motor vehicle accident or a fall from a height [4, 5]. The specific mechanism of injury that produces Hoffa fracture is not known. Though a shearing force to the posterior femoral condyle has been postulated, both direct impact and vertical shear with twisting mechanisms have also been proposed and a single mechanism is not agreed upon [6].



Fig. 1: X-ray showing Hoffa fracture

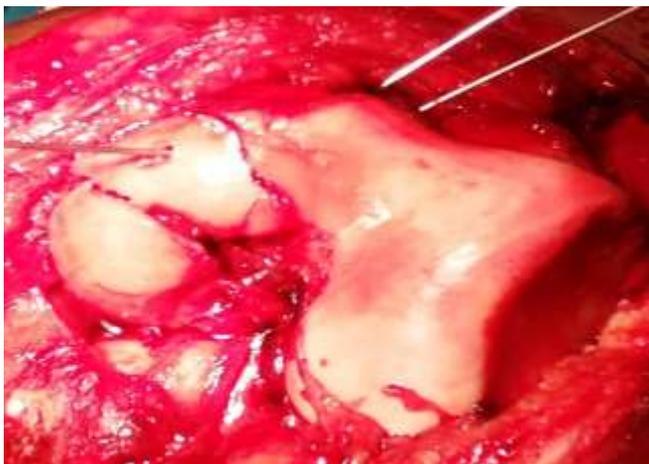


Fig. 2: Intra op showing Hoffa fracture fixation with guide wires *in situ*



Fig. 3: Immediate Post operative X-ray



Fig. 4: 6 months Post operative X-ray

Because of the physiological genu valgum, the lateral femoral condyle is more likely to sustain a direct shearing force, and hence is more likely to get fractured. It is usually caused when knee is hyperflexed at the time of impact; e.g. during driving motorcycle [7]. Our patient had sustained an injury due to fall from a moving bus with direct impact on his semiflexed left knee, as evident by a small lacerated wound, probably with varus component. If the knee had been flexed more, it would have resulted in a Hoffa fracture with two separate fragments with the fracture line being nearer to the posterior cortex.

The diagnosis of Hoffa fracture on plain radiographs may be difficult, because the fracture is obscured in the anteroposterior view by the intact anterior part of the femoral condyle. In case of minimal displacement, the fracture may also be difficult to define in the lateral view. If the lateral view is not taken in a standard position, it becomes further difficult to interpret whether it is the medial or the lateral condyle that is fractured. It may result in the injury being missed on initial imaging [14, 15]. Oblique radiographs have an important role both preoperatively and also intraoperatively for evaluation of the reduction, screw length, and condyle identification [15].

Surgical fixation is the recommended method of treatment for Hoffa fractures [8-10]. Internal fixation of unicondylar fractures allows stable reconstruction of the distal articular surface of the femur and permits early postoperative motion of the knee [10]. Conversely, nonoperative management often leads to non-union, loss of extension, instability, joint contracture, and deformity [4, 11, 12]. For open reduction of medial condylar Hoffa fracture, most authors have used a medial approach. In most studies on the treatment of knee fractures, anterior, medial, and lateral approaches have been used [13].

However, we used an anterior midline medial parapatellar arthotomy approach. This allowed us to expose the back of femoral condyle on medial side and facilitated unhindered anatomic reduction of the fracture fragments. Although there is no consensus, there is some suggestion that posterior to anterior directed screws may be better. However, in our case, the unusual fracture pattern required that we use an anterior midline medial parapatellar arthotomy approach by which medial condyle could be exposed adequately and to fix the fracture from anterior to posterior direction under direct vision and an intraarticular fragment with Herbert screw.

CONCLUSION

We described a rare case of a medial condylar Hoffa fracture managed successfully by open reduction and internal fixation with good clinical outcome at 6 months of follow-up. We feel that a medial condylar Hoffa fracture occurs when the flexed knee is subjected to a posterior and upward directed force with varus component and that the proximity of the fracture line and its obliquity depends upon the degree of knee flexion at the time of impact. Radiographs helps in defining the exact pattern of injury but also is valuable in the surgical planning. The anterior medial parapatellar approach allows excellent exposure of medial condyle. Anatomic reduction and rigid internal fixation using cannulated cancellous screws and any intraarticular fragments with Herbert's screw allows early mobilization and excellent long term outcome.

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