



## CASE REPORT

# Open Medial Hoffa Fracture with Ipsilateral Femoral Shaft Fracture: Case Report

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### Abstract

Hoffa fracture is coronal plane fracture of the femoral condyle that affects the lateral femoral condyle much more than the medial. The combination of medial femoral condyle Hoffa fracture with ipsilateral femoral shaft fracture is very rare combination with only 3 cases was reported previously. This fracture type usually require high energy trauma and it was reported following a motor injury. We reported a 53-year-old male, who was riding a motor cycle when he was hit by car and presented to the emergency trauma care as a polytrauma patient with open medial Hoffa fracture, ipsilateral femoral shaft fracture and knee ligamentous injury in addition to other injuries in his wrist, ankle and spine. The patient was treated for his fractures and ligamentous injuries followed by early mobilization.

### Keywords

Hoffa fracture, Femoral condyle fracture, Intra-articular knee fracture, Femoral shaft fracture, Trauma, Knee injury

## Introduction

Hoffa fracture was first described by Albert Hoffa in 1904 as a coronal shear fracture affecting the distal femoral condyle, more likely to be unicondylar type than bicondylar, also three times more likely to affect the lateral condyle rather than the medial condyle [1,2]. Hoffa fracture is considered as type 33-B3 according to AO/OTA fracture classification. The reported mechanism for medial Hoffa fracture is due to direct impact on the medial femoral condyle while the knee is in flexed position. Stable internal fixation is prerequisite to start early range of motion of the injured knee otherwise there is high chance of non-union, joint stiffness,

instability and deformity with non-operative management [3,4]. In this case report we describe unique case of open medial Hoffa fracture with associated injuries.

## Case Report

Our patient is 53-year-old male, previously healthy, was brought to trauma room in the emergency department of Hamad General Hospital, as a case of motor cyclist who was hit by a car from the left side. The patient was complaining of left body side pain including thigh, knee, leg, ankle and wrist pain. He was also complaining of upper lumbar back pain. No past medical or surgical history. He was conscious, oriented. His left wrist was swollen, tender with friction burn on the anteromedial aspect. Left thigh showed moderate swelling and tenderness, Left knee open lacerated wound 10 cm Gustillo type III a on the medial side, tenderness, unstable knee on gentle valgus stress with bloody oozing from the wound, Left ankle abrasions and tenderness over the medial malleolus, log-rolling was done to examine his back and revealed tenderness over the upper lumbar spine. Radiological investigations showed: Simple oblique left femur shaft fracture type AO 32-A2, left medial Hoffa fracture type AO 33-B3 as shown in [Figure 1](#), left distal radius styloid fracture AO 23-B1, left ankle fracture and L1 mild compression spine fracture. In the emergency department, the patient was managed by washing of the wound, antibiotic, analgesia, intravenous fluids and intramuscular tetanus toxoid. Close reduction and backslab plasters were applied for his left wrist and left ankle fractures. In addition skin traction applied for the left femur shaft



**Figure 1:** Left knee and femur X-rays at presentation.



**Figure 2:** Left Knee and femur X-Rays postoperatively.

fracture. The patient was then transferred to the operating room where he underwent proper debridement of his left medial wound, exploration was done and wound extended using medial para-patellar approach for the medial femoral condyle, it was found that the patient had sustained medial collateral ligament (MCL) tear and tear for the anteromedial bundle of the anterior cruciate ligament (ACL). Open Reduction and Internal Fixation (ORIF) for the medial Hoffa fracture was done using two cortical screws 3.5 mm diameter in antero-posterior direction through non-articulating part of the condyle which was stable when tested after fixation. The avulsion of the femoral attachment of the anteromedial bundle of the ACL was repair and its attachment was reconstructed by passing the sutures through the lateral femoral condyle, tightened and secured on a plastic button over the lateral surface of the left distal femur. The lacerated MCL was repaired and its femoral attachment was reconstructed and tightened over a screw. This was followed by antegrade nailing for the left femoral shaft fracture in the same session as shown in [Figure 2](#). The patient was taken the later on another day to fix his left wrist and ankle. Postoperatively his recovery was smooth and his wounds healed without complications. He was started on left touch weight bearing ambulation

using Canadian frame while he was in the hospital. The patient was followed up in the clinic and his fractures are healed and the patient is ambulating unaided however his knee ROM is 8-123 on the left side compared to 0-132 on the right side.

## Discussion

Hoffa Fracture is coronal plane fracture of the femoral condyle [1]. This fracture configuration is more commonly affecting the lateral femoral condyle due mechanical configuration and the normal valgus knee alignment following a high energy trauma like road traffic accident or fall [5,6]. This case is very rare and after reviewing the English literature we found three patients who sustained medial Hoffa fracture with ipsilateral femoral shaft fracture in two similar reports, and by now, this is the fourth patient. The previously reported 3 cases were closed fractures but this patient had an open injury, also none of them have reported similar associated ligament injuries [7,8].

Medial Hoffa fracture with ipsilateral femoral shaft fracture is very easily missed on initial presentation and might be discovered after application of skeletal traction or after femoral shaft fixation as reported in other cases. CT scan might be needed if there is any suspi-

cion of knee injury that is not clear on plain radiograph. Anteroposterior and lateral radiograph of the knee is diagnostic in about 70% of the cases only [7-9]. It was advised that Hoffa fracture is to be treated operatively even if they are not displaced as they are liable for displacement [5,10]. Sometimes the typical anterior-posterior screws fixation alone for the Hoffa fracture is not sufficient when the fracture has metaphyseal extension which might need an additional buttress plate fixation but in our case it was not required as the fracture did not have a metaphyseal extension [5,10-12]. In this patient antero-posterior screws was used for ease of access due to the patient other injuries rather than the biomechanically stronger postero-anterior screws [13].

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### Consent

The patient gave his consent to the publication of this case.

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### Conflict of Interest

No conflict of Interest.

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