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Bicondylar Hoffa fracture with patellar entrapment and extensor tendon rupture: A rare case report

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Abstract
Hoffa fractures, particularly bicondylar variants, are rare intra-articular injuries of the distal femur. We present a case of a 22-year-old male who sustained a bicondylar Hoffa fracture with patellar entrapment and complete rupture of the extensor mechanism following a high-energy trauma. The patient underwent open reduction and internal fixation with a distal femur locking plate, two cancellous cannulated screws (CCS), and a Herbert screw. The ruptured extensor mechanism was repaired using nonabsorbable Krakow sutures. Postoperative rehabilitation included knee immobilization with passive range-of-motion exercises limited to 90 degrees for 4 weeks, non-weight-bearing (NWB) for 6 weeks, and isometric quadriceps strengthening.

Keywords: Bicondylar Hoffa fracture, patellar entrapment, extensor tendon rupture, distal femur, open reduction and internal fixation, high-energy trauma, Krakow sutures, rare case report

Introduction

Hoffa fractures involve a coronal split of the distal femoral condyle and are often missed on initial imaging. Bicondylar Hoffa fractures, accounting for less than 0.5% of all femoral fractures, are even more uncommon and typically result from high-energy trauma such as motor vehicle accidents [1]. Associated soft tissue injuries, including extensor tendon rupture and patellar entrapment, further complicate management and prognosis [2].

Case Presentation

A 22-year-old male presented to the emergency department following a motorbike collision. Clinical examination revealed significant knee swelling, an inability to extend the leg, and tenderness over the distal femur. Plain radiographs suggested an intra-articular fracture of the distal femur.

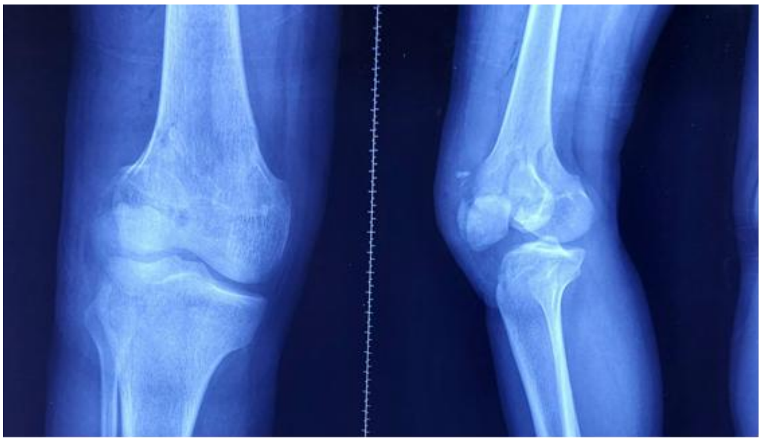

Image 1: Preoperative Xray

CT imaging confirmed a bicondylar Hoffa fracture involving both the medial and lateral condyles. The patella was found entrapped between the fractured condyles, and intraoperative assessment revealed a complete rupture of the quadriceps tendon.

Surgical Management

An anterolateral parapatellar approach was used to expose the distal femur.

Image 2: (Lateral Parapatellar Arthrotomy)

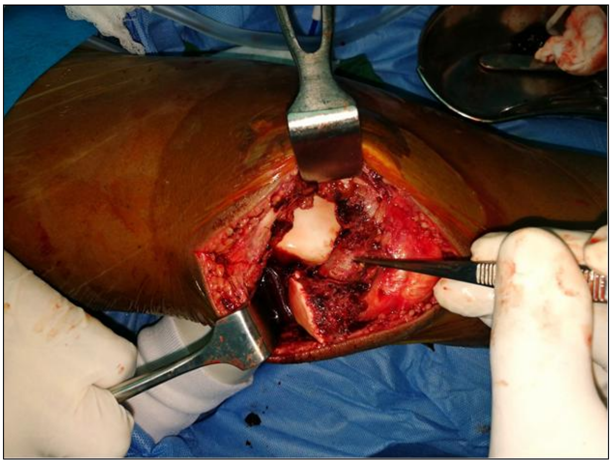

Image 3: (Hoffa fractre with Entrapped Patella and extensor Apparatus Rupture)

The bicondylar Hoffa fracture was anatomically reduced and stabilized with a distal femur locking plate, two 6.5 mm cancellous cannulated screws placed anteroposteriorly, and a Herbert screw for compression across the medial condyle.

Image 4: (Intraoperative Reduction using temporary K wires)

The entrapped patella was released carefully without compromising articular cartilage.

Image 5: (Entrapped Patella released)

The ruptured quadriceps tendon was repaired using nonabsorbable Krakow sutures anchored to the superior pole of the patella

Image 6: (Extensor Appartus Repair using non absorbable Suture)

Stability and range of motion were tested intraoperatively

Image 7: PostOperative Xray

Postoperative Rehabilitation

The knee was immobilized in extension using a hinged knee brace.

Passive range of motion (ROM) exercises were started on postoperative day 2, limited to 90 degrees for the first 4 weeks.

Isometric quadriceps exercises were initiated immediately to preserve muscle tone. The patient remained non-weight-bearing (NWB) for 6 weeks, followed by gradual weight-bearing as tolerated.

At 3 months, the patient achieved 110 degrees of flexion with full extension and independent ambulation.

Discussion

Bicondylar Hoffa fractures require high suspicion and appropriate imaging, particularly CT scans, for diagnosis [3]. Surgical fixation is essential for restoring the joint surface and ensuring knee stability [4]. The use of a locking plate combined with lag screws allows for stable fixation in comminuted intra-articular fractures [5]. Patellar entrapment, though rare, can hinder reduction and must be addressed intraoperatively. Quadriceps tendon repair using Krakow sutures has demonstrated good outcomes in restoring extensor function [6]. Early mobilization with a protective ROM protocol and delayed weight-bearing promotes healing while preventing joint stiffness [7].

Conclusion

This case highlights the complexity of managing bicondylar Hoffa fractures, especially when compounded by soft tissue injuries like patellar entrapment and extensor mechanism rupture. Timely diagnosis, meticulous surgical repair, and structured rehabilitation are critical to restoring knee function.

Conflict of Interest

Not available

Financial Support

Not available

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