

CASE NOTE

Hoffa fracture with ipsilateral patellar dislocation resulting from household trauma

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Hoffa fracture is a rare lesion and has been reported to occur with supracondylar fracture of the femur,¹ fracture of the femoral shaft and knee dislocation.^{1,2} We report a rare case of ipsilateral Hoffa fracture and patellar dislocation, which has not been reported before.

CASE REPORT

A 27-year-old woman was seen in the emergency department, reporting pain and swelling in the right knee. While standing on a stool, she had twisted her right knee, fallen and landed on the ground on her right knee. At her local hospital, the radiologist diagnosed a patellar dislocation. The dislocation was reduced under general anesthesia; a postreduction film confirmed the correct location of the patella but revealed a small fracture in the patella and a fracture in the lateral condyle of the femur. The physician referred the patient to us.

On examination, the affected knee was swollen, and there was tenderness over the lateral condyle. The radiograph obtained at her local hospital immediately after her injury revealed patellar dislocation and a Hoffa fracture (Fig. 1a), which the radiologist probably missed. Repeat radiography revealed the Hoffa fracture and a small fracture of the patella (Fig. 1b). Using a lateral approach, we fixed the Hoffa fracture with two 6.5-mm cannulated screws (Fig. 2). Intraoperatively, we noted a rupture in the lateral retinaculum, which we repaired. We applied a cylindrical cast and allowed the patient to walk with crutches, non-weight bearing, after 2 days. Two weeks postoperatively, we applied a removable posterior knee brace and she began mobilizing the knee. We permitted full weight-bearing after 6 weeks. At follow-up 2 years postoperatively,



Fig. 1. (a) A radiograph obtained immediately after injury shows dislocation of the patella and a Hoffa fracture that was initially missed. (b) Radiograph of the knee after the patellar dislocation was reduced shows a small fracture of the patella.



Fig. 2. Postoperative radiograph after open reduction and internal fixation of the Hoffa fracture.

the knee showed good union, and the patient had regained full motion. There was no patellar dislocation at any time.

DISCUSSION

Hoffa fracture is an unusual injury, but most commonly affects the lateral femoral condyle.³ Unicondylar Hoffa fractures have been reported in isolation or with ipsilateral femoral supracondylar fractures, intercondylar fractures and fractures of the femoral neck or shaft. Associated injuries to the skeleton significantly affect the end result and must be excluded.³

The exact mechanism of injury that produces a Hoffa fracture is unknown, but Holmes and associates⁴ have postulated a shearing force on the posterior femoral condyle. The mechanism of injury in this fracture implies a force resulting from the impaction of the upper part of the tibia on the femoral condyles, particularly the lateral condyle, with the knee flexed more than 90°. The fracture results from a combination of forces: direct trauma and possibly abduction.⁵ The higher involvement of lateral condylar fractures suggests an anatomic biomechanical vulnerability due to the physiologic valgus.⁴

The patient usually presents with pain and swelling in the knee region after injury. Examination generally reveals effusion in the affected knee and tenderness over the involved condyle. The diagnosis may be missed because the fracture is obscured in the anteroposterior view by the intact anterior part of the condyle. If the fracture pattern is not confirmed and defined by standard radiographic views, computed tomography is necessary.⁴

Surgical fixation is the preferred method of treatment for a Hoffa fracture. Nonoperative management often leads to malunion, nonunion and further displacement of the

fracture fragment.^{4,5} Internal fixation of unicondylar fractures allows stable reconstruction of the distal articular surface of the femur and permits an early postoperative range of motion of the knee with very good long-term results.⁴

In this case, the physician who initially saw the patient missed the Hoffa fracture and treated the patient for a dislocated patella. Forceful manipulation under general anesthesia resulted in a small avulsion fracture of the patella. We also found a tear in the lateral retinaculum, which was repaired. Probably, the extensor retinaculum had incarcerated in the fracture fragment, and forceful manipulation resulted in the tear.

This case emphasizes the need for complete recognition of injuries before treatment. We recommend that if a Hoffa fracture is associated with a dislocated patella, closed reduction of the dislocation is contraindicated. Hoffa fracture invariably requires open reduction and internal fixation, so the dislocated patella may be reduced at the same time.

Competing interests: None declared.

References

1. Miyamoto R, Fornari E, Tejwani NC. Hoffa fragment associated with a femoral shaft fracture — a case report. *J Bone Joint Surg Am* 2006; 88:2270-4.
2. Shetty GM, Wang JH, Kim SK, et al. Incarcerated patellar tendon in Hoffa fracture: an unusual cause of irreducible knee dislocation. *Knee Surg Sports Traumatol Arthrosc* 2008;16:378-81.
3. Kumar R, Malhotra R. The Hoffa fracture: three case reports. *J Orthop Surg (Hong Kong)* 2001;9:47-51.
4. Holmes SM, Bomback D, Baumgaertner MR. Coronal fractures of the femoral condyle: a brief report of five cases. *J Orthop Trauma* 2004;18:316-9.
5. Lewis SL, Pozo JL, Muirhead-Allwood WF. Coronal fractures of the lateral femoral condyle. *J Bone Joint Surg Br* 1989;71:118-20.