

A Case of Neglected Patella Dislocation Related to Tibial Plateau Fracture

Tibial Plato Kırığı Sonucu Gelişen İhmal Edilmiş Patella Çıkığı Olgusu

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ABSTRACT

Acute dislocation of the patella is a common orthopaedic emergency. The dislocated patella commonly reduces spontaneously or is reduced by a physician as an emergency. Rarely, open reduction is needed. Osteochondral fragments that detach from the patella or medial femoral condyle might interfere with patellar reduction, and sometimes osteophytes can interfere with reduction. Therefore, arthroscopic or, rarely, open reduction can be necessary. We present an unusual case of a locked knee related to a tibial plateau fracture. An osteochondral fragment that originated from the tibial plateau inhibited reduction of the patella. Such a fracture related to permanent patella dislocation has not previously been reported.

Key Words: Patella, dislocation, neglected, osteochondral

ÖZET

Akut patella çıkığı sık görülen ortopedik acillerdendir. Çıkan patella genellikle kendiliğinden ya da hekim tarafından redükte edilmektedir. Nadiren açık redüksiyon gerekebilmektedir. Patella ya da medial femoral kondilden detache olan kondral fragmanlar ya da osteofitler bazen patellanın redüksiyonuna engel olabilmektedir. Bu durumda açık ya da artroskopik olarak redüksiyon gereklidir. Bu yazımızda tibial plato kırığı sonrası gelişen bir kilitli diz olgusunu ele aldık. Kırık plato tibiadan detache olan bir kondral fragman patellanın redüksiyonuna engel olmaktadır. Bu şekilde bir kırık sonrası gelişen kalıcı patella çıkığı olgusu daha önce literatürde bildirilmemiştir.

Anahtar Sözcükler: Patella, çıkık, ihmal edilmiş, osteokondral

Introduction

Acute dislocation of the patella is common and usually diagnosed easily. The dislocated patella might reduce spontaneously or it might require reduction by a physician. Osteochondral fragments that detach from the articular surface can interfere with patellar reduction, necessitating arthroscopic or open reduction. Regardless, in all circumstances, patellar dislocation is an emergency and it must be reduced as soon as possible. The literature has reported osteochondral fragments originating from the patella or femoral condyles. This paper presents an unusual case of a knee that locked as a result of osteochondral fragments that originated from the tibial plateau and prevented reduction of the patella. This is the first report of such a fracture-related, neglected patellar dislocation.

Case Report

A 30-year-old male with a bilateral cruris fracture presented to another hospital after a motorcycle accident. An Ilizarov external fixator was applied for the right cruris fracture and an anatomic proximal tibia plate fixation was applied for the left proximal tibia Schatzker type 5 intra-articular fracture (Figure 1a, b). The patellar dislocation on the left was missed (Figure 1c). The patient was referred to our clinic 4 months postoperatively and we diagnosed neglected patella dislocation. There was no pain or stiffness in his right knee and flexion was nearly 90 degrees without impaired extension. There was marked pain in the left knee joint at the fracture site and the knee was locked in an extended position. We planned sur-

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Figure 1. Lateral (a), and antero-posterior (b) x-ray views of operated plateau tibial fracture. Pre-operative axial CT scan of knee joint (c); dislocated patella and osteochondral fragment preventing the reduction of the patella into the trochlear sulcus. Post-operative MR (d) and CT imaging of patella at normal reduced position (e)

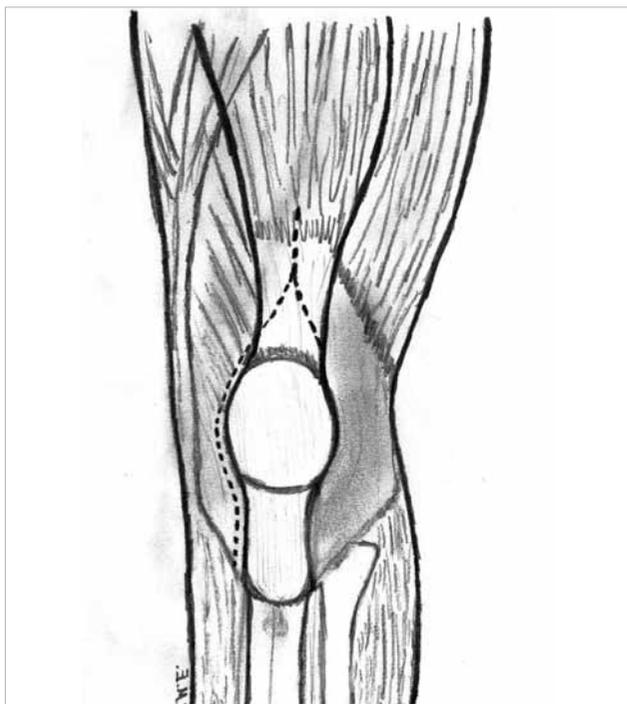


Figure 2. An illustration that shows the V-Y quadricepsplasty

gical reduction and started preoperative quadriceps exercises; the patient was allowed to walk to maintain muscle strength before surgery.

The patient was operated on under general anaesthesia in a supine position without a tourniquet. An anteromedial incision

was made after antibiotic prophylaxis and draping. A midline incision was lengthened and a V-Y plasty of the rectus femoris was added (Figure 2). An osteochondral fragment originating from the tibial plateau measuring 3×3×2 cm was noted at the medial condylar surface of the femur (Figure 3a). This was excised completely, allowing the patella to be reduced. The quadriceps was repaired with No. 5 Ethibond (Ethicon, Johnson and Johnson, NJ, USA) with the patella in a reduced position in trochlear sulcus and the knee joint at 130° of flexion (Figure 3b, c). Extensor expansions of the knee were released on both sides of the patella and fibrotic adhesions were released by dissection. With gentle manipulation, we achieved more than 130° of knee flexion during the operation (Figure 3c). A hinged external fixator was added after skin closure to preserve the quadricepsplasty and early passive range of motion (Figure 3b, c). On the first three postoperative days, flexion and extension physiotherapy was applied under controlled epidural analgesia. Knee joint physiotherapy started on the first postoperative day with 0-110° of flexion. The patient was advised regarding active assisted quadriceps exercises. After discharge from the hospital, a physiotherapist encouraged flexion and quadriceps strengthening exercises at home. The knee joint range of movement was 110° at the 15th postoperative day, and the patient could walk with two crutches. The external fixator was removed 2 months after surgery and the patient was allowed to walk with crutches. The reduction of the patellofemoral joint was monitored using magnetic resonance imaging (MRI) and computed tomography (CT) (Figure 1d, e). All these details and figures of the case are shared here after informed consent signed by the patient.

Results

After 1 year, the patient can flex the left knee 90° and extend it fully. The patient’s quadriceps strength is 4/5. The Oxford Knee Score is 38 and the International Knee Documentation Committee (IKDC) score is 69.

Discussion

Acute patellar luxation is a common orthopaedic emergency that can reduce spontaneously or with easy manipulation. It is easy to diagnose patellar dislocation and it always necessitates early treatment. Patients with this condition can be neglected in cases of polytrauma. When examining a traumatic knee, orthopaedic surgeons should consider possible intra-articular pathologies. In all circumstances, there must be a correlation between imaging studies and the patient’s pain. Severe pain, swelling, and inability to bear weight accompany the chondral defects of a traumatic knee injury. The literature does not discuss any specific signs of osteochondral problems after trauma (1).

The two main mechanisms for chondral or osteochondral fractures are related to knee trauma-chondral impacts after trauma and osteochondral fractures after shearing forces after rotation and flexion trauma (2). This is also the mechanism of



Figure 3. Peri-operative photos; osteochondral fragment adhering to medial femoral condyle (a), hinged external fixator application for early controlled physiotherapy (b) and patella at normal reduced position (c)

patellar dislocation. The osteochondral fracture rate in acute patellar luxation is 25-57% (2, 3). Our patient had a history of flexion and internal rotation trauma that resulted in tibial plateau fracture and patellar luxation.

These fractures generally originate from the medial facet of the patella or the lateral condyle of the femur. Kayaoglu and Binnet (4) classified patellar luxation according to the origin of the osteochondral fracture. The main pathology originated from an osteochondral fragment detached from the tibial plateau. If the osteochondral fragment is smaller than 1 cm, it should be removed arthroscopically (5, 6). The fragment should be repaired if it is larger than 1 cm and located at the weight-bearing surface of the joint (4, 7, 8). Kayaoglu et al. (4) perform fixation in all cases to prevent early changes to the joint surface. Despite the relevant literature, we removed the fragment completely because the defective surface had been filled with fibrous tissue during the approximately 5 months period after the accident.

According to Ofluoglu et al. (9) the patella commonly dislocates laterally and it is extra-articular. Rotational trauma increases the Q angle and forces the patella laterally, resulting in dislocation of the patella laterally (10). Reduction is almost always spontaneous. Irreducible lateral dislocations of the patella are rare. Irreducible intra articular patellar dislocations are associated with rotation on the horizontal or vertical axis (11).

Open reduction is indicated when patellar luxation persists and closed reduction is impossible (12). McWilliams and Binns (13) performed open reduction with an arthrotomy, and Nomura et al. (14) used arthroscopic reduction in those cases. We preferred open reduction for our case because it had been dislocated for 4 months.

The success of quadricepsplasty and the knee flexion range depends on the surgeon's proficiency, as well as the patient's willingness to participate in postoperative rehabilitation. Postoperative active knee exercises are very important for pre-

serving and increasing knee flexion and decreasing the chance of extensor lag. One possible unwanted, postoperative result of this procedure is a quadriceps rupture.

We performed V-Y quadricepsplasty instead of the Thompson or Judet quadricepsplasties to increase the range of motion with tendon lengthening. Our aim was to achieve a normal inclination of the patella and to prevent its redislocation.

Conclusion

There are many reports of patellar dislocation, mechanisms of injury, side of dislocation, and treatment methods, but we wished to discuss an unusual case that was not reduced until 4 months after the patient's accident. Polytrauma patients should be carefully examined and treated to prevent further complications.

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