Eklem Hastalıkları ve Cerrahisi
Joint Diseases and Related Surgery

Case Report / *Olgu Sunumu*

Joint Dis Rel Surg
2007;18(3):139-142

Transchondral patellar fracture: a case report

Transkondral patella kırığı: Olgu sunumu

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Osteochondral patellar fractures are usually associated with acute patellar dislocations and are often overlooked because of difficulty to detect on plain radiograms. These fractures should be anatomically reduced and fixed in order to prevent patellofemoral arthritis. A 20-year-old male patient complained of pain and swelling of the left knee after a rotational trauma during a football game, that resulted in patellar dislocation. A direct radiogram of the knee showed an osteochondral free fragment. Computed tomography of the knee showed hemarthrosis, a vertical patellar osteochondral defect involving the medial facet, and a free osteochondral fragment adjacent to the lateral wall of the lateral femoral condyle. At surgery, the fragment measured 33x25x7 mm and had a very thin bony portion. The fragment was reduced anatomically and fixed using three K-wires placed parallel to the articular surface. At the latest follow-up 1.5 years after the operation, the patient had full range of motion and normal knee radiograms. He returned to his pretrauma activity level.

Key words: Cartilage, articular/injuries; fracture fixation, internal/methods; knee injuries/surgery; patella/injuries.

Osteokondral patella kırıkları genellikle akut patella çıkıkları ile beraberlik gösterir ve düz grafilerde tanınması zor olduğundan tanıda sıklıkla atlanırlar. Patellofemoral artritin önlenmesi için bu kırıkların anatomik redüksiyonu ve stabil fiksasyonu gerekmektedir. Yirmi yaşındaki erkek hasta, futbol oynama sırasında meydana gelen rotasyonel travmaya bağlı patella çıkığı nedeniyle, sol dizinde ağrı ve şişlik yakınmalarıyla başvurdu. Dizin düz grafisinde osteokondral serbest fragman görüldü. Bilgisayarlı tomografide hemartroz, medial yüzeyde dikey bir osteokondral patella defekti ve lateral femoral kondilin lateral duvarına komşu serbest osteokondral fragman izlendi. Cerrahi sırasında fragmanın 33x25x7 mm boyutlarında olduğu ve çok ince bir kemik içerdiği görüldü. Kopan parçanın anatomik redüksiyonu yapıldı ve eklem yüzeyine paralel gönderilen üç adet K-teliyle tespiti sağlandı. Ameliyattan 1.5 yıl sonraki son kontrolde hareket açıklığı tam ve radyografileri normal bulunan hasta yaralanma öncesindeki aktivite düzeyine kavuşmuştu.

Anahtar sözcükler: Kıkırdak, eklem/yaralanma; kırık tespiti, internal/yöntem; diz yaralanması/cerrahi; patella/yaralanma.

Patellar fractures account for approximately 1% of all skeletal injuries.[1] Osteochondral factures occur most commonly in adolescents and young adults during an acute patellar dislocation or a twisting injury leading to a shearing force.[1] Osteochondral patellar fractures occur in 5% of acute patellar dislocations in adolescents.[1] Hemarthrosis and medial tenderness on the retinaculum are common. Locking or a loose body sensation may be present.[1] For radiological evaluation, anteroposterior, lateral, tunnel and skyline radiograms of good quality and CT scans should be obtained. Treatment should be performed as soon as possible in order to prevent further articular damage.

CASE REPORT

A 20-year-old male was admitted with pain and swelling of the left knee after a rotational trauma during a football game that resulted in patellar dislocation. He also had a previous history of patellar dislocation in both knees at different times during strenuous sports activities. Physical examination revealed tenderness on the medial side of the patella and ballottement of the patellofemoral joint.

• *Received: May 17, 2007 Accepted: October 10, 2007*

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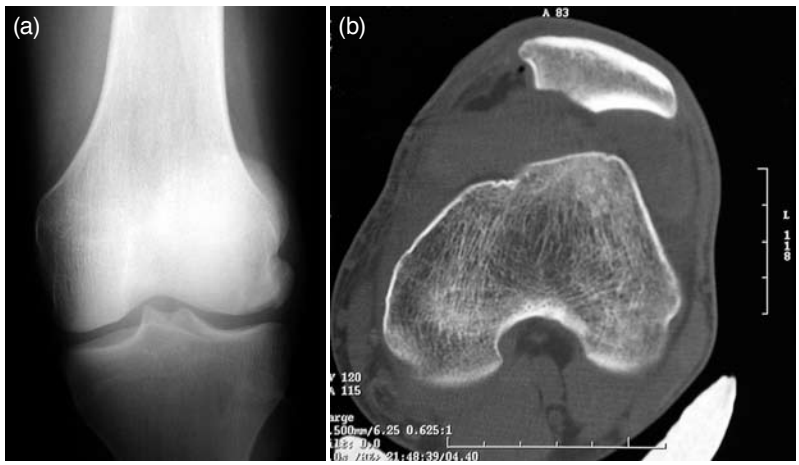

Fig. 1. (a) An anteroposterior view shows a free osteochondral fragment at the lower lateral pole of the patella. **(b)** A computed tomography scan showing a medial osteochondral defect with intact anterior patellar cortex.

He had no skin lesions. A direct radiogram of the knee showed an osteochondral free fragment on the lateral side (Fig. 1a). Computed tomography of the knee showed hemarthrosis, a vertical patellar osteochondral defect involving the medial facet, and a free osteochondral fragment adjacent to the lateral wall of the lateral femoral condyle (Fig. 1b). The anterior patellar cortex was intact.

Fig. 2. Intraoperative views: **(a)** the defect, **(b)** thin bony portion of the free fragment, **(c)** after anatomical reduction and K-wire fixation. **(d)** Early postoperative view.

Fig. 3. (a) Follow-up radiograms at 1.5 years postoperatively.

A midline skin incision was used to provide access to the patella. The medial retinaculum was completely and lateral retinaculum was partially torn. To find the osteochondral free fragment, defect in the lateral retinaculum was extended proximodistally by sharp dissection and the patellar articular surface was exposed (Fig. 2a). The fragment measured 33x25x7 mm and had a very thin bony portion (Fig. 2b). The fragment was reduced anatomically and fixed using three K-wires placed parallel to the articular surface (Fig. 2c, d). During retinacular repair, adjustments were made to achieve a smooth patellofemoral tracking and to prevent subluxation. The knee was immobilized in a long leg brace for six weeks. Active and passive exercises were begun thereafter. Four months later, at a time when the patient was asymptomatic, he requested implant removal. Two of the K-wires were removed percutaneously under fluoroscopic control. The other one was buried deeply and retained for the sake of articular cartilage. At the latest follow-up 1.5 years after the operation, the patient had full range of motion, had no extensor lag or any complaint and had normal knee radiograms (Fig 3). He returned to his pretrauma activity level.

DISCUSSION

Osteochondral fractures of the knee occur most commonly in adolescents and young adults and are often associated with acute patellar dislocation or a twisting injury to the knee. Usually femoral condyles or medial facet of the patella are affected. Osteochondral fractures without a patellar body fracture are rare.[1] In most of these fractures, the bony portion of the fragment is smaller than the overlying cartilage, making a stable fixation difficult. Many techniques have been described for fixation including pins, screws, bone pegs, biodegradable pins, and suture fixation.[1-6] The fixation device must not protrude through the articular surface into the joint. K-wires are the cheapest and most readily found implant material for fixation. Difficulty in implant removal has been reported for metallic implants.[1,2,6] Although biodegradable implants are offered as an alternative,[4] they are expensive and some of them may be associated with severe synovitis.[7] Suture fixation was also used for smaller defects measuring 7x7 mm to 15x15 mm.[5] In our case the fragment was larger and we preferred K-wire fixation for a more stable fixation. In selected cases, K-wire fixation of osteochondral patellar fractures is simple, inexpensive and reliable.

REFERENCES

1. Hammerle CP, Jacob RP. Chondral and osteochondral fractures after luxation of the patella and their treatment. Arch Orthop Trauma Surg 1980;97:207-11.
2. Aichroth P. Osteochondritis dissecans of the knee. A clinical survey. J Bone Joint Surg [Br] 1971;53:440-7.
3. Kanamiya T, Naito M, Cho K, Kitamura T, Takeda T, Goto E, et al. Unicortical transverse osteochondral fracture of the patella: a case report. Knee 2006;13: 167-9.
4. Matsusue Y, Nakamura T, Suzuki S, Iwasaki R. Biodegradable pin fixation of osteochondral fragments of the knee. Clin Orthop Relat Res 1996;(322): 166-73.
5. Pritsch M, Velkes S, Levy O, Greental A. Suture fixa-

tion of osteochondral fractures of the patella. J Bone Joint Surg [Br] 1995;77:154-5.
6. Thomson NL. Osteochondritis dissecans and osteochondral fragments managed by Herbert compression screw fixation. Clin Orthop Relat Res 1987;(224):71-8.
7. Friden T, Rydholm U. Severe aseptic synovitis of the knee after biodegradable internal fixation. A case report. Acta Orthop Scand 1992;63:94-7.