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Case Report

Femoral condyle osteochondral fracture treated with bone suture after acute patellar dislocation: a case report☆

Camila Maftoum Cavalheiro[a,*], *Riccardo Gomes Gobbi*[a], *Betina Bremer Hinckel*[a], *Marco Kawamura Demange*[a], *José Ricardo Pécora*[a], *Gilberto Luis Camanho*[b]

[a] *Universidade de São Paulo, Faculdade de Medicina, Hospital das Clínicas, São Paulo, SP, Brazil*
[b] *Universidade de São Paulo, Faculdade de Medicina, Departamento de Ortopedia e Traumatologia, São Paulo, SP, Brazil*

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ABSTRACT

Osteochondral fracture after acute patellar dislocation in teenagers is relatively common (up to 60% of cases of patellar dislocation), but poorly diagnosed. There are several treatments proposed for this type of injury, but none well defined in the literature.

A male patient, 13 years old, with a diagnosis of osteochondral fracture of the lateral femoral condyle after acute dislocation of the right patella. He underwent surgical treatment of the chondral injury, which consisted of suturing of the chondral fragment to the cartilage defect and, in a second approach, reconstruction of the medial patellotibial ligament and medial patellofemoral ligament with autologous flexor graft. Currently, the patient has been followed up for 16 months postoperatively for the suture of the chondral fragment and for 8 months for the ligament reconstruction. He has been evaluated through functional scores and T2 weighted magnetic resonance imaging. Acute fixation through direct bone suturing of a purely chondral fragment can be considered in special situations.

Lesão condral do fêmur tratada com sutura óssea após luxação aguda de patela: um relato de caso

Palavras-chave:
Fraturas ósseas
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RESUMO

A fratura osteocondral após luxação aguda de patela em adolescentes é relativamente comum (até 60% dos casos de luxação patelar), porém pouco diagnosticada. Existem diversos tratamentos propostos para esse tipo de lesão, mas nenhum está bem definido na literatura. Paciente do sexo masculino, 13 anos, com diagnóstico de fratura osteocondral do côndilo femoral lateral, após luxação aguda da patela direita. Foi submetido a tratamento

☆ Study conducted at Universidade de São Paulo, Faculdade de Medicina, Hospital das Clínicas, Instituto de Ortopedia e Traumatologia, Grupo de Joelho, São Paulo, SP, Brazil.

* *Corresponding author.*
E-mail: camilamaftoum@yahoo.com.br (C.M. Cavalheiro).

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cirúrgico da lesão condral, que consistiu em sutura do fragmento condral ao defeito da cartilagem e, em um segundo tempo, a reconstrução do ligamento patelotibial medial (LPTM) e reconstrução do ligamento patelofemoral medial (LPFM) com enxerto autólogo de flexores. Atualmente o paciente encontra-se com o seguimento de 16 meses de pós-operatório da sutura do fragmento condral e oito meses da reconstrução ligamentar, foi avaliado através de escores funcionais e ressonância magnética com mapeamento de T2. Em casos especiais, pode-se considerar o uso de fixação aguda por sutura óssea direta de um fragmento puramente condral.

Introduction

A lateral patellofemoral dislocation is a relatively common injury in children and young adults; it is frequently associated with chondral or osteochondral injuries of the femur and/or patella.[1,2] These injuries may occur in up to 60% of cases[3] and are usually located in non-weight-bearing areas, such as the lateral region of the trochlea or the lateral femoral condyle, or the medial facet of the patella; the mechanism of trauma is impaction.[4,5] Less commonly, they may occur in the weight-bearing area of the lateral femoral condyle, when a dislocation occurs with the knee in flexion.[1,6]

Several treatments have been proposed for injuries with osteochondral fragments, such as fixation with metallic or absorbable materials, autologous osteochondral transplantation, and simple debridement.[1,7,8] However, in some rare cases, the injuries are solely cartilaginous or have minimal underlying subchondral bone, preventing the use of bone fixation. In addition to the technical difficulty of the fixation, the healing potential is lower in cartilage than in bone. Few successful cases of fragment reintegration have been reported for this type of injury.[2,6,9]

The authors present a case of acute patellar dislocation associated with a predominantly chondral fracture in the lateral femoral condyle weight-bearing area, secured with a transosseous suture and presenting good functional results. To the best of the authors' knowledge, this is the first report of reinsertion of an extensive chondral fragment with this fixation technique.

Case report

A 13-year-old male patient, with no previous clinical history and no comorbidities, suffered a sprain to his left knee after a fall during a football match. He reported knee dislocation and severe pain. He was taken to the emergency room, where the initial assessment indicated the presence of important pain and edema of the left knee, and a fixed position of knee flexion. The anteroposterior and lateral view radiographs demonstrated an articular bone fragment, and that suggested the diagnosis of acute patellofemoral dislocation. He was then referred to the knee service of the Hospital das Clínicas.

During the physical examination at the referral service (three days after the trauma), it was observed that there persisted pain on knee palpation, especially in the lateral region; effusion and movement restriction were also observed (range of motion: 20–110°), and the patient was unable to reach full extension. The patellar apprehension test was positive. No other ligament instabilities were observed; the muscle tone was normal and the extensor mechanism was intact. The radiographs showed an immature skeleton with unclosed physis and a bone fragment in the joint. A computed tomography of the knee was made for complementary evaluation, and associated injuries were excluded. The presence of an osteochondral fragment from the weight-bearing area of the lateral femoral condyle (Fig. 1A) was confirmed, as well as an increased patellar tilt (29°) and Dejour's grade B trochlear dysplasia (Fig. 1B).

The limb was immobilized with an inguino-malleolar splint with maximal extension to await surgical intervention, which was indicated due to the presence of a free osteochondral fragment and articular blockage.

The patient was operated 15 days after the trauma, on April 14, 2015; the surgical plan was to first assess and treat the cartilage injury. The lateral parapatellar access was used, which allowed the removal of the detached fragments and a good visualization of the fracture site. The injury involved almost the entire weight-bearing area of the lateral femoral condyle (Fig. 2A) and was 3.0 cm long by 1.5 cm wide, at a depth of 0.3 cm (cartilage depth). The removed loose bodies (Fig. 2B) had a small piece of subchondral bone attached to them, predominantly chondral. Due to the size and location of the chondral defect, the appearance of healthy fragments, and the age of the patient, the authors decided to reduce and secure the detached cartilage to the surface of origin.

The soft tissue at the fracture site was debrided. As loose cartilage in the joint became swollen in contact with the synovial fluid, the fragment exceeded the size of the lesion. Therefore, it was cut to match the surface of the injury. The fragment was secured with transosseous sutures and PDS II suture stitches (polydioxanone, Ethicon), and its borders were sealed with fibrin glue (Fig. 3).

Patellofemoral instability correction was performed in a second surgery, in order to reduce the risk of joint stiffness, since the chondral suture requires a prolonged immobilization.

Postoperatively, the knee was maintained in extension with use of an immobilizer brace for four weeks, and weight-bearing was not permitted for six weeks. After four weeks,