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Pictorial essay: The acutely painful swollen knee following injury

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ARTICLE INFO

Article history:
Received 21 August 2015
Accepted 4 November 2015
Available online 8 December 2015

Keywords:
Knee
Injury
Fracture
Imaging
Educational

ABSTRACT

A pictorial essay based on a case study entitled: The acutely painful and swollen knee following injury.

Aim: This is an educational article with the following learning objectives: To familiarise oneself with the main causes of an acutely painful and swollen knee following injury; to highlight the importance of plain knee radiographs in assessment of knee injury; to raise awareness of osteochondral fractures and the importance of prompt diagnosis; exploration of treatment options for traumatic patellar dislocation with and without osteochondral fractures.

1. Case study

1.1. Introduction

A 36-year-old GP registrar suffered an injury to his left knee while playing football with his colleagues. The knee gave way following a twisting movement with an excruciating popping sensation. He could not bear weight and noticed immediate knee swelling. There was no significant past medical history or previous significant injury to the knee. He enjoyed playing football twice weekly. During the initial assessment in the accident and emergency, there was swelling of the knee, tenderness medial to the patella and in the lateral femoral condyle. Passive and active knee movements were restricted by discomfort. On the contralateral uninjured knee, there was genu recurvatum. Plain radiograph of the knee (Fig. 1) was performed and a routine referral to Knee Clinic was then arranged.

1.2. Initial management

Unfortunately, the significance of an osteochondral fragment was not initially recognised. The patient received physiotherapy and was not seen by an Orthopaedic Consultant until 12 weeks after injury. During that period, mobility and knee movement were reduced due to swelling and pain. Knee MRI was carried out to confirm his injury of patellar dislocation and osteochondral fracture (Figs. 2 and 3).

Following the discussion of management options, the patient underwent arthroscopic surgery to fix the osteochondral fragment. The procedure was complicated by extensive and chronic scar tissue, particularly around the osteochondral fragment. Significant chondral injury to the patellar articular

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http://dx.doi.org/10.1016/j.jajs.2015.11.002

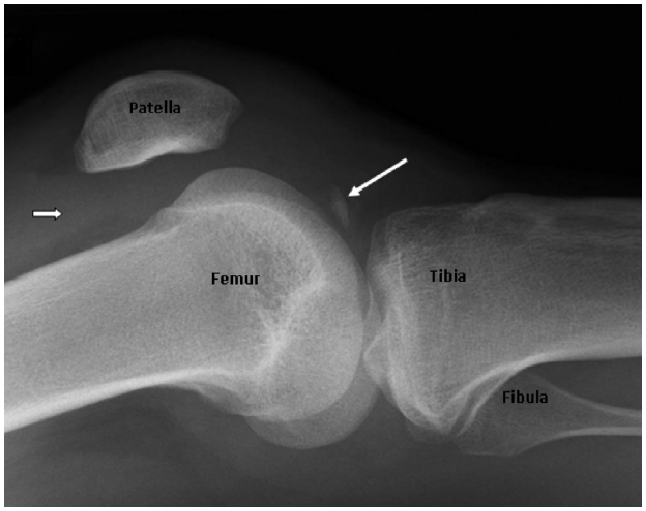

Fig. 1 – Lateral X-ray left knee. Short arrow: suprapatellar pouch effusion, Long arrow: osteochondral fracture fragment.

surface was also found (Fig. 3). The fragment was fixed to the lateral femoral condyle using multiple bioabsorbable pins.

Postoperatively, the patient was in a functional knee brace, non-weight bearing for 4 weeks, with a range of movement of −10–90°. Following intensive physiotherapy, he regained full range of movement of the knee.

Eight months postoperatively, although able to carry out day-to-day activities, the patient is still struggling to partake in sporting activities due to pain. He has painless crepitus in all knee movements originating from the patellofemoral joint, suggesting patellofemoral degeneration. The patient experiences occasional low-grade achiness in the knee, especially after long distance walking.

Fig. 2 – MRI coronal view left knee showing an osteochondral defect (arrow) at the lateral femoral condyle.

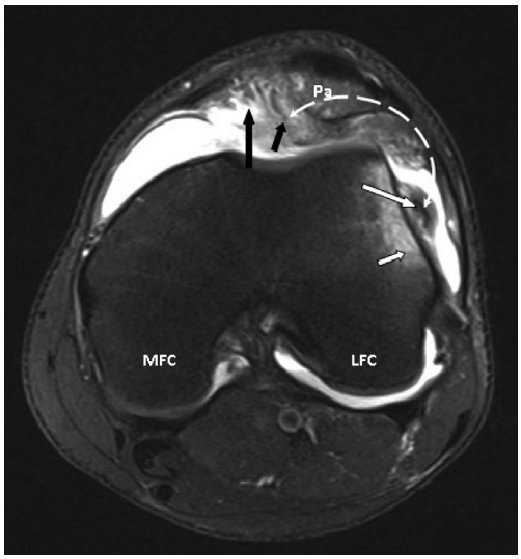

Fig. 3 – Knee MRI axial proton density fat suppressed view showing evidence of lateral patellar dislocation and osteochondral fracture of lateral femoral condyle from re-entry injury. Pa – patella (laterally subluxed); MFC – medial femoral condyle; LFC – lateral femoral condyle; long black arrow – MPFL tear; short white arrow – bone; oedema lateral femoral condyle; long white arrow – displaced osteochondral fragment; short black arrow – bone oedema inferomedial patella; double ended dashed curved arrow – direction of lateral patellar dislocation and relocation resulting in 're-entry injury'; 're-entry injury' – patella dislocates laterally. As it relocates tangentially over the lateral femoral condyle, both the lateral femoral condyle and inferomedial medial border of patella are at risk of chondral damage on impact.

2. Discussion

The above case emphasises the importance of early and accurate diagnosis in traumatic patellar dislocation with osteochondral fragment.

It is important to be aware of the main causes of an acutely painful, swollen knee following injury, so as to ensure accurate and speedy diagnosis and treatment. Clinicians should have high index of suspicion in patients presenting with acute knee injury. Early identification of these injuries allows early accurate diagnosis, counselling and appropriate rehabilitation to prevent prolonged morbidity and secondary damage to cartilage or meniscus.[1–4]

Acute traumatic knee swelling is a result of haemarthrosis and should be regarded as a serious injury until proven otherwise.[2] If aspirated, presence of fat globules in the aspirated knee fluid (lipohaemarthrosis) suggests intra-articular fracture.

Common causes of haemarthrosis following injury are:

1. Intraarticular ligament damage (40%), most commonly anterior cruciate ligament injury (47% of ligamentous injury)
2. Patellar dislocation (20%)