Case report

Avulsion of the common origin of the medial collateral and medial patello-femoral ligaments

SP Trikha, D Acton, J Bell

Department of Orthopaedic Surgery, Kingston NHS Trust, Surrey, UK

This study documents for the first time avulsion of the common origin of the medial collateral and medial patello-femoral ligaments.

Key words: Medial collateral ligament – Medial patello-femoral ligament

Acute medial collateral ligament (MCL) injuries can be associated with extension of the injury into the vastus medialis muscle and lateral dislocation of the patella.¹ The major ligamentous restraint to acute lateral dislocation of the patella is the medial patello-femoral ligament (MPFL).² This has an attachment to the adductor tubercle in common with the MCL.

Case report

A 16-year-old girl attended our hospital describing a history of acute traumatic dislocation of her patella after sustaining a heavy fall whilst dancing. There was no previous history of patella dislocation. On examination, the patella had spontaneously reduced, although there was swelling and bruising on the medial aspect of her knee with tenderness at the adductor tubercle. An anteroposterior radiograph (Fig. 1) revealed a displaced sliver of bone beside the medial femoral condyle, and on the lateral view an impaction fracture of the femoral condyle articular surface was noted (Fig. 2). The knee was otherwise normal with no radiographic evidence of abnormal congenital anatomy associated with recurrent patella instability. In particular, there was no shallowing or dysplasia of the trochlea,³ and the patella height⁴ was within normal limits.

Figure 1 AP radiograph showing displaced sliver of bone corresponding to the avulsed common origin of the MCL and MPFL.

Correspondence to: Mr SP Trikha, Flat 3, 9 Grange Road, Kingston-upon-Thames, Surrey KT1 2QU, UK

Tel: +44 (0)20 8974 6787; E-mail: ptrikha@doctors.org.uk

Figure 2 Lateral radiograph of the same patient showing an impaction fracture of the femoral condyle articular surface.

An examination under anaesthesia was performed. The patella could be dislocated at 30° of flexion; however, the contralateral side was stable. A valgus force opened the knee more than 10 mm with no solid end-point.

After washout of the haemarthrosis, arthroscopy revealed a blistered area of cartilage on the edge of the lateral femoral condyle with flattening of this region and bruising was visible deep to the synovium in the medial gutter.

A medial incision was used to expose the medial femoral condyle and adductor tubercle. It was confirmed that the MCL and MPFL both attached to the avulsed fragment of bone noted radiographically. Reduction and fixation with a lag screw and washer restored stability to the patella and the MCL.

Postoperatively, she was protected in a brace and quadriceps rehabilitation was begun immediately with physiotherapist supervision and encouragement. At 2 years' follow-up, there have been no further dislocations, with no clinical evidence of instability.

Discussion

Non-operative management of isolated acute MCL injuries with a hinged knee brace is standard. Acute patella

dislocation in the emergency department is treated with reduction of the dislocated patella as necessary and often immobilisation in a cylinder plaster of Paris or 'cricket pad' sprint which can lead to stiffness, muscle wasting and delayed rehabilitation. Diagnosis for either injury in isolation is usually made on clinical grounds and radiographs are often not taken. The patients are not usually referred acutely and are generally seen in the orthopaedic clinic.

Acute lateral dislocation of the patella has been associated with disruption of the medial restraints of the patella and, following non-operative management, a re-dislocation rate of up to 44%.¹ The MPFL is recognised as an important stabiliser of the patella^{2,5} and is found in the second layer of the medial knee running from the medial epicondyle to the medial patella with attachments to the vastus medialis obliquus (VMO) and the adductor tubercle.^{2,5,6} Recent reports have identified a high incidence of avulsion of the femoral origin of the MPFL at the adductor tubercle and it has been suggested that results could improve if this component of the injury was addressed.^{7,8} Injuries of the MCL most commonly occur at the femoral insertion of the ligament.

Chronic MCL injuries are associated with calcification at the medial femoral condyle insertion (Pellegrini-Stieda sign) with a similar radiographic appearance to this case. The injury in the case described may, therefore, easily be missed even with radiographs. Conventional T1-weighted axial MR images accurately depict both the extent and location of MPFL injury following transient patellar dislocation.⁹ The differentiation of detachment from the adductor tubercle from peri-patellar ruptures allows the surgeon to plan the surgical approach to repair the injury. MRI is not always readily available, and in our unit we have recently shown that ultrasound shows the state of the soft tissue restraints of the patella following lateral dislocation.¹⁰ In this case, no further imaging was sought as there was a clear anatomical abnormality warranting operative repair.

Conclusion

To our knowledge, avulsion of the common origin of the MCL and the MPFL has not been previously described. It is important to recognise this injury not only because the amount of displacement may be underestimated radiographically but also reduction and fixation of this fragment may help to restore medial patello-femoral biomechanics.

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