International Journal of Medicine and Medical Sciences ISSN: 2167-0404 Vol. 2 (2), pp. 065-068, Febuary, 2012. Available online at www.internationalscholarsjournals.org © International Scholars Journals

Case Report

Irreducible lateral patella dislocation with associated rotation

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Received February 4, 2012; Accepted February 28, 2012

Irreducible lateral patella dislocation is an extremely rare event, documented only a handful of times in the literature. Lateral patella dislocation is usually the result of indirect trauma and is usually easily reducible, often prior to seeking medical care. We present a case of a 50 year old man with an unusual case of irreducible lateral patella dislocation with associated rotation about the long axis requiring open reduction, in a knee with degenerative changes.

Acute lateral patellar dislocation is relatively common in the younger age group, [1] and is most likely caused by indirect trauma (gymnastics, dancing etc). [2] About 10% of acute dislocations are the result of a direct blow to the medial side. [3, 4] Orthopaedic professionals usually never have opportunity to perform the reduction of the dislocated patella. [3] Most patella dislocations spontaneously reduce and others are easily reduced in emergency department. [3, 4] Irreducible patellar dislocations are rare injuries, but those that do occur are mainly directed intra-articularly.[4, 5] We report a case of irreducible lateral patellar dislocation which is of exceptional interest in that (1) an extra-articular lateral patellar dislocation occurred in an older patient with an arthritic knee; [6, 7] (2) there was no direct trauma; (3) it was associated with rotation along the long axis and impaction of patella on lateral femoral condyle (LFC) and was locked underneath an osteophytic ridge of the LFC, which needed open reduction. This injury is very unique being the first of its kind to be reported in Australia.

A 50-year-old gentleman was brought into the Emergency Department with a history of inability to walk following a fall while walking downhill. His past medical history was unremarkable. His history did not reveal any predisposing factors for patella dislocation. Examination revealed an obviously laterally dislocated patella with tenting of anterolateral skin. His knee was locked in full extension (unlike the usual mild flexion associated with lateral patellar dislocation). [6, 8] The patella was rotated about long axis with the articular surface facing posterolaterally. The patella was locked under the outer edge of the LFC **(Figure 1)**. Imaging studies confirmed clinical findings and also revealed a minor impaction fracture of the LFC with arthritic changes in the knee joint **(Figure 2)**. Standard anteroposterior and lateral views were obtained. Further imaging with a CT was performed to define the dislocation.

We attempted a closed reduction under sedation. The technique involved pushing the patella medially while keeping knee in full extension and hip in flexion (to relax quadriceps) in an attempt to unlock it. [3] Full flexion of the knee was also attempted to reduce patella, as is mentioned in literature. [8, 9] All closed reduction attempts failed and the patella was immovable. The patient was then taken to theatre for a further attempted closed reduction. Under general anaesthetic and muscle relaxation, closed reduction was again attempted without success. After appropriate preparation of skin and draping, a bone hook and tenaculum clamp were used to apply traction and attempts were made to reduce the patella over the prominent LFC, again to no avail. [3] We then proceeded to open reduction through a medial para-patellar approach. A large longitudinal tear in medial retinaculum was found **(Figure 3)** with avulsion of the attachment to the medial border of the patella. The patella was rotated approximately 70-80 degrees with the articular surface facing laterally. The medial border of the patella was hooked on the outer surface of the LFC under a prominent osteophytic ridge. The patella was pulled laterally and a wide periosteal elevator was inserted as a skid between the medial border of the patella and the LFC to unlock the patella. The patella then slipped over

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Figure 1: Lateral dislocation of the patella with rotation and obvious tenting of skin
541x722mm (72 x 72 DPI)

Figure 2: Imaging studies showing lateral dislocation of patella with rotation about the long axis, patella locked onto LFC; and insignificant impaction fracture of the LFC

the LFC and immediately after clearing the LFC the patella flipped back into its normal position. A small insignificant impaction fracture of the LFC with prominent osteophytic ridge (like a shelf) which was probably a contributing factor for the patella being locked and irreducible (in addition to rotation along the long axis). No specific treatment for the arthrtitc component of the knee was undertaken at this time. Medial structures were repaired and the knee was placed in Richard's splint in extension for two weeks whilst allowing touch weight bearing. Post-operative radiographs revealed a normal patello-femoral articulation. At two weeks, rehabilitation was commenced with gradual range of motion (ROM) was started in a ROM brace along with physiotherapy

Figure 3: Intra-operative photograph (before reduction) – tear of medial retinaculum with avulsion of medial attachments of the patella
722x541mm (72 x 72 DPI)

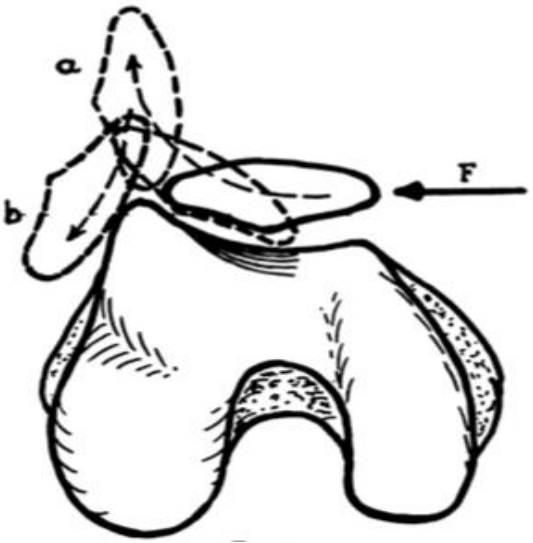

Figure 4: Sketch showing the path the patella must take for lateral dislocation with rotation about long
axis. (F): direction of dislocating force, (a): position of patella resulting from it sliding up on LFC
, (b): final position of the patella, where it gets locked, after medial edge clears lateral condyle. 3
102x124mm (72 x 72 DPI)

including quadriceps strengthening exercises. The patient achieved pain-free full active ROM by six weeks without any residual symptoms of patella instability, similar to his baseline.

Since the first description by Cooper in 1844, [8] there have been only few similar cases reported in the Orthopaedic literature. From the literature, it is apparent that this type of patella dislocation would result from a blow directly to the medial side of the knee whilst the quadriceps is taut. [3, 4] This makes the patella ride against prominent LFC (which acts as safeguard to prevent lateral displacement of patella) creating torque resulting in rotation of the patella around the longitudinal axis. If this force continues to act it will push the patella beyond the margin of the LFC, over which the medial edge will be locked (**Figure 4).** [3] A CT scan is valuable in cases of which the exact morphology of the injury is unclear. [2, 6]

It is natural to assume that attachments on medial border of patella must rupture during this type of dislocation. [3] It may be possible, though unlikely, to achieve a closed reduction of this type of injury however this may increase the risk of iatrogenic osteochondral lesions. [1, 6]

We agree with these findings from previous case reports and similarly our case required open reduction and resulted in a good functional outcome for the patient.

Therefore we prefer and recommend performing open reduction which allows us to repair the torn medial structures. We believe that this will reduce the tendency of recurrent lateral dislocation and optimally restore quadriceps strength. [3] This technique also allows inspection of the joint and removal of possible loose bodies.

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