

Contents lists available at ScienceDirect

Injury Extra

journal homepage: www.elsevier.com/locate/inext

Case report

Intra-articular dislocation of the patella: A case report and review of the literature

Anthony Theodorides*, Shigong Guo, Ruth Case

Department of Trauma & Orthopaedic Surgery, Weston General Hospital, Grange Road, Weston-super-Mare, BS23 4TQ, UK

ARTICLE INFO

Article history:
Accepted 9 June 2010

1. Introduction

Acute dislocation of the patella is common and most often occurs laterally. This type usually reduces easily by closed manipulation in the emergency setting. Intra-articular dislocation is a rare condition and occurs when the patella becomes locked within the joint after usually rotating around its horizontal axis or rarely its vertical axis. Most have occurred in adolescents and required open reduction. We report a case of an elderly man with previous bilateral patella tendon repair with neutralisation wires and hypertrophic osteoarthritis, who sustained an intra-articular patella dislocation following a minor fall onto his knee.

2. Case report

An 83-year-old man sustained a mechanical fall in the kitchen of his sheltered accommodation. He fell directly onto his left knee resulting in immediate pain and was unable to stand or walk. He was taken to the emergency department where it was noted that his left knee was locked at 90° of flexion. Past medical history included bilateral patella tendon repair with figure of eight neutralisation wires 12 years previously, insulin dependent diabetes, and stomach and bowel cancer for which he has refused chemotherapy. Palpation of his knee revealed a non-tender but wedged patella with the impression of a quadriceps tendon rupture. Any attempt at passively moving his knee produced severe pain and vigorous resistance. Radiographs of his knee (Fig. 1) showed an intra-articular dislocation of the left patella with horizontal rotation such that the articular surface was pointing inferiorly. Hypertrophic osteoarthritis was noted in the knee with osteophytes in the superior pole of the patella and a broken figure of eight neutralisation wire of the patella tendon.

Closed reduction with sedation was attempted in the emergency department but failed. He was taken to theatre where closed manipulation under anaesthesia failed again. A medial parapetallar approach was used and the patella was found wedged under the lateral femoral condyle. Reduction was achieved by unhinging the superior pole and putting pressure on the inferior pole. The wedging had caused an osteochondral fracture of the lateral femoral condyle measuring 2 cm × 2 cm. Protruding wires around the inferior pole of the patella from his previous repair were trimmed. The extensor mechanism was found to be intact with only a few muscle fibre tears from the superior pole of the patella. The cruciate ligaments were intact. The joint was washed and closed in layers. He was placed in a posterior (cricket pad) splint and allowed to partially weight bear. Post-operative radiographs were taken (Fig. 2) with the lateral radiograph showing the osteochondral fracture. Due to his frailty he was unable to comply with partial weight bearing. At one month follow-up in clinic he was mobilising fully weight bearing with one stick and had a range of motion between 0° and 100° of flexion.

3. Discussion

Intra-articular dislocation of the patella is a rare traumatic condition that was first described by Midelfart¹¹ in 1887 and occurs when the patella becomes locked within the joint. It is subdivided according to the axis of rotation of the patella: horizontal^{4,6,14,16,17} and vertical.^{9,10} The more common horizontal type occurs usually as a result of a force to the upper pole of the patella with the knee flexed, wedging the superior pole into the intercondylar notch and with the articular surface facing inferiorly.⁷ Our case had dislocated horizontally and rotated inferiorly but to our knowledge this is the first report where the wedging was under the lateral femoral condyle. Previous case reports confirm that the extensor mechanism usually remains intact as in our case,^{1,6} but there can be varying degrees of quadriceps tendon avulsion.^{5,15} Less frequently the patella can rotate the other way with the articular surface facing superiorly and occurs when the patella tendon is avulsed.¹³ The inferiorly facing type is more common with a ratio of approximately 7:1. The tension of the quadriceps muscle on the patella pulls it strongly superiorly towards the intercondylar notch thus hindering closed reduction such that only 9 cases have been reduced closed thus far.¹²

In the vertical type, the patella rotates around its vertical axis with its articular surface facing either medially or laterally. It occurs around five times less frequently than the horizontal type. Corso et al.³ describe an extra-articular dislocation of the patella

* Corresponding author. Tel.: +44 1934 636363; fax: +44 1934 647219.
E-mail address: a.theodorides@gmail.com (A. Theodorides).

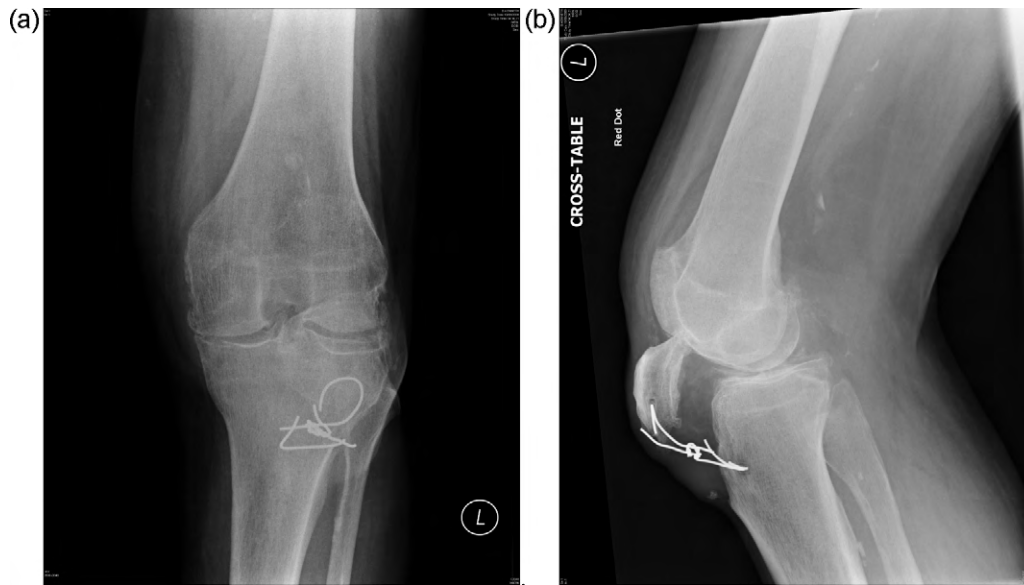


Fig. 1. Initial post-traumatic (a) anteroposterior and (b) lateral radiographs; showing impaction of the patella under the lateral femoral condyle and previous wire fixation of the patella ligament.

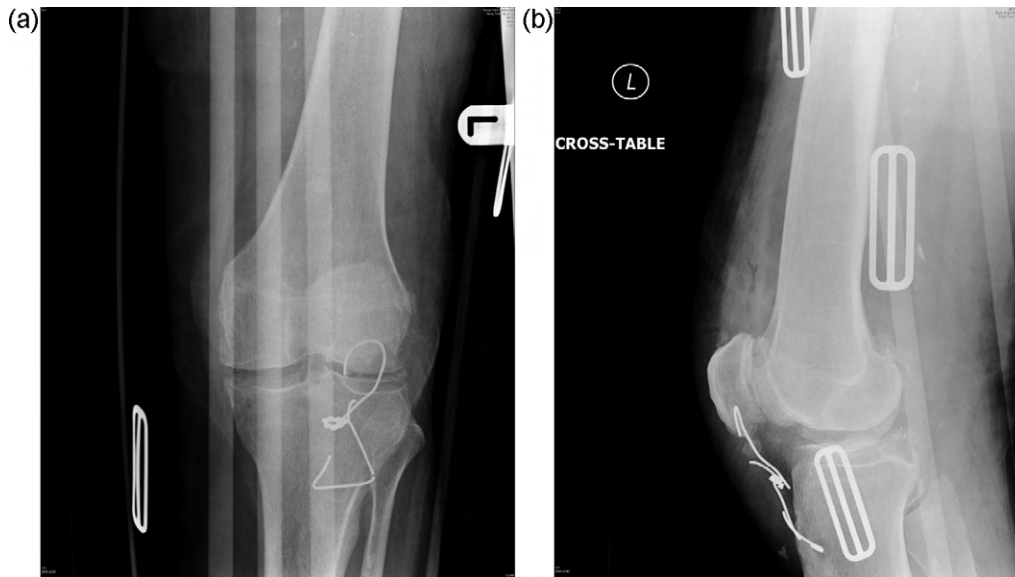


Fig. 2. Post-operative (a) anteroposterior and (b) lateral radiographs of the knee showing reduction of the patella.

which has rotated 90° on its vertical axis and wedged laterally to the lateral femoral condyle.

Most of the intra-articular patella dislocations occur in adolescents with a mean age of 16 years. Frangakis⁷ reports that this is most likely due to the laxity of the ligaments at that age allowing for greater mobility of the patella. There have been rare reports of intra-articular dislocations in the elderly^{2,8} but to our knowledge this is the first of a patient with a previous patella tendon repair. So due to the growing reports of these dislocations in the elderly we hope to highlight the importance of considering this as a differential diagnosis of a locked knee in the elderly. The presence of osteophytes in the superior patella pole predisposed this patient to the wedging of his patella. The position of the neutralisation wire may have pulled the patella more laterally thus causing the patella to wedge under the lateral femoral condyle.

Brady and Russell¹ first advocated the need for all such dislocations to be reduced open as the excessive force required if

done closed, will likely cause further damage. In fact all but 10 cases in the literature required open reduction. Choudhary and Tice² suggest that closed reduction is more likely with incomplete rotation of the patella, perhaps because it is less likely to be wedged in as much. Other scenarios where closed reduction is more likely to be successful have been reported to be the elderly where the dislocation is likely to be held by interlocking osteophytes and when the knee is held in extension and thus the patella less forcefully impacted.⁸

4. Summary

This report aims to highlight that intra-articular patella dislocations whilst being rare and even more so in the elderly, do occur and should be borne in mind in cases of locked knees. This particular case of horizontal axis dislocation is unique in that it occurred in an elderly patient who previously had patella ligament repair, and the patella caused an osteochondral fracture in the

lateral femoral condyle where it was wedged. This confirms the need for open reduction of intra-articular dislocations so as to (a) determine the extent of possible disruption to the extensor mechanism and repair it when needed (b) reduce the dislocation without causing further damage to the joint and (c) to visualise any intra-articular damage caused by the dislocation and make better judgement as to the management of the patient.

References

1. Brady TA, Russell D. Interarticular horizontal dislocation of the patella: a case report. *J Bone Joint Surg* 1965;47(7):1393–6.
2. Choudhary RK, Tice JWS. Intra-articular dislocation of the patella with incomplete rotation – two case reports and a review of the literature. *Knee* 2003;11(2):125–7.
3. Corso SJ, Thal R, Forman D. Locked patellar dislocation with vertical axis rotation. A case report. *Clin J Sports Med* 1997;7(2):126–8.
4. Dimentberg RA. Intra-articular dislocation of the patella: case report and literature review. *Clin J Sports Med* 1997;7(2):126–8.
5. Donelson RG, Tomaiuolo M. Intra-articular dislocation of the patella: a case report. *J Bone Joint Surg* 1979;61(4):615–6.
6. Fenely RCL. Intra-articular dislocation of the patella. Report of a case. *J Bone Joint Surg* 1968;50B(3):653–5.
7. Frangakis EK. Intra-articular dislocation of the patella: a case report. *J Bone Joint Surg* 1974;56(2):423–4.
8. Garner JP, Pike JM, George CD. Intra-articular dislocation of the patella: two cases and literature review. *J Trauma* 1999;47(4):780–3.
9. Gidden DJ, Bell KM. An unusual case of irreducible intra-articular patellar dislocation with vertical axis rotation. *Injury* 1995;643–4.
10. Kaufman I, Habermann ET. Intercondylar vertical dislocation of the patella. A case report. *Bull Hosp Joint Dis* 1973;34(2):222–5.
11. Midelfart V. En sjelden luxation of patella. *Norsk Magazin for Laegevidenskaben* 1887;4:588.
12. Nanda R, Yadav RS, Thakur M. Intra-articular dislocation of the patella. *J Trauma* 2000;48(1):159–60.
13. Packer GJ, Owen RJ. Intra-articular dislocation of the patella. *Arch Emerg Med* 1992;9:244–5.
14. Sarkar AD. Central dislocation of the patella. *J Trauma* 1981;21(5):409–10.
15. Schulte KR, Tearse DS. Intraarticular dislocation of the patella. *Iowa Orthop J* 1993;13:226–8.
16. Yoshino N, Takai S, Nakamura S, Manabe T, Hirasawa Y. Recurrent horizontal dislocation of the patella in the sagittal plane. A case report. *J Bone Joint Surg (Am)* 1996;78A(2):278–80.
17. Yuguero M, Gonzalez JA, Carma A, Huguet J. Intra-articular patellar dislocation. *Orthopaedics* 2003;26(5):517–8.