Case Report

Inferior Patella Dislocation due to Impaction in the Femoral Trochlea

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Keywords

Inferior patella dislocation · Femoral trochlea · Patella osteophyte · Osteoarthritis

Abstract

Acute inferior dislocation of the patella is a rare presentation in trauma and orthopaedics. Type II is caused by direct upward force on the inferior pole of the patella when the knee is flexed impacting the superior pole osteophyte into the intercondylar notch. Impaction in the femoral trochlea is rarely reported. A 92-year-old lady presented with locked knee held in 85° of flexion with an abnormal knee contour. Radiographs demonstrated that the upper pole of the patella was impacted in the femoral trochlea with a fracture of a superior pole osteophyte. The extensor mechanism was intact. Closed reduction is achieved under strong opioid pain relief. The patient returned to her baseline knee function within 6 weeks. Closed reduction of an inferior patellar dislocation in elderly patients is aided by superior pole osteophyte fracture and facilitates early mobilization, and avoidance of general anaesthesia.

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Introduction

Acute inferior dislocation of the patella, also known as central intra-articular dislocation, is a rare presentation in orthopaedics which having been first reported by Midelfart in 1887. The patella is stabilized passively by ligaments and bony structures and dynamically by the extensor mechanism. There are 2 types of inferior patella dislocation, type I which occurs in young patients and type II which affects elderly population. This case demonstrates a rare subtype of an inferior patellar dislocation in the femoral trochlea with intact extensor mechanism, in which osteophyte fracture had aided a closed reduction.

Case Report/Case Presentation

A 92-year-old lady with background of dementia tripped and fell in her nursing home landing directly on her left flexed knee. She struggled to move her knee and presented after 1 day. On examination, the left knee was held in 85° of flexion with an abnormal knee contour. The knee was swollen, there was bruising over the inferior pole of the patella, and the patellar tendon had a lax feel. Radiographs demonstrated that the upper pole of the patella was impacted in the femoral trochlea with fracture of a superior pole osteophyte (shown in Fig. 1a, b). There was no rotational malalignment of the patella in any plane. Rupture of the extensor mechanism was suspected but there was no palpable gap in the quadriceps tendon. A computer tomography scan confirmed the diagnosis of inferior patella dislocation (shown in Fig. 1c) with no associated fracture. Following opioid analgesia, the patella was reduced with hyperflexion of the knee and superior pressure on the superior pole of the patella. Patella reduction was confirmed clinically and with plain radiographs (shown in Fig. 2) which also showed evidence of patella-femoral degenerative disease. Ultrasound examination showed an intact extensor mechanism. The knee was rested in a removable extension splint, and full weight bearing was allowed after 24 h when the pain is controlled. The splint was retained for 3 weeks, and at 6 weeks, the patient had regained her baseline range of knee movement.

Fig. 1. **a** Plain radiograph shows inferior patella dislocation. **b** Posterior-anterior plain radiograph of the same patient. **c** Sagittal CT scan confirms inferior patella dislocation, superior pole osteophyte fracture, and impaction in the femoral trochlea.

Fig. 2. Plain radiograph confirms post-manipulation patella reduction.

Discussion/Conclusion

Banks and Eastwood described 2 types of inferior patella dislocation [1]. Type II occurs in elderly females and is characterized by hyperflexion injury in the presence of superior pole osteophytes and the extensor mechanism is usually intact. There are 2 postulated mechanisms that lead to inferior patellar dislocation [2]. The first describes a direct upward force on the inferior pole of the patella when the knee is flexed, impacting the superior pole osteophyte into the intercondylar notch. The second mechanism described is a forceful quadriceps contraction when the knee is flexed, leading to traction of the patella and hence causing entrapment of its superior pole into the intercondylar notch. When the extensor mechanism is intact, it stabilizes the patella in the horizontal plane. In this case, the patella became impacted in the trochlea rather than the intercondylar notch. This can be explained by the fact that in osteoporotic bone direct upward blow to the patella when the knee is flexed caused its impaction at the point of femur contact. There is only 1 reported case of inferior patella dislocation due to patella impaction in the trochlea [3]. Nielsen reported an intraoperative finding of femur condylar bone depression in an 87-year-old lady presented with inferior patellar dislocation, indicating that patella impaction has led to the osteoporotic femur condyle dent [4]. The recommended treatment of type II inferior patella dislocation is closed reduction [5]. Various reduction techniques have been described [6, 7]. In this case, fracture of the superior patella osteophyte made the closed reduction to be easily performed under strong oral pain relief. In case of failure of closed reduction under simple analgesia, attempt under general anaesthesia is advocated [8]. Osteophyte impaction may hinder closed reduction and necessitates osteophyte resection arthroscopically or open reduction [4, 9]. There are conflicting reports of the recurrence of the inferior patella dislocation. The group which reported recurrence of the dislocation advocates surgical resection of the superior osteophyte [9]. In this case, the superior osteophyte was already fractured and it highlights the importance of its role in the mechanism of dislocation.

Conclusion

Inferior patella dislocation is a rare presentation in trauma. Closed reduction of an inferior patellar dislocation in elderly patients is aided by superior pole osteophyte fracture. Closed reduction method facilitates early mobilization, avoidance of general anaesthesia and surgery, and fast return to original institution.

Statement of Ethics

The study was performed in accordance with the ethical standards of the 1964 Declaration of Helsinki as revised in 2000. The patient has dementia and cannot be consented due to lack of capacity. However, an informed written consent was obtained from the patient next of kin for publication of this study and any accompanying images.

Conflict of Interest Statement

The authors have no conflict of interests to disclose.

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Author Contributions

A.F.: manuscript writing, literature review, and patient management; R.G.: manuscript editing and patient management. All authors approved the final version of the manuscript and are responsible for all aspects of the study.

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