

Superior Patella Dislocation: A Case Report

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ABSTRACT

Superior patellar dislocation is a rare condition and is often misdiagnosed as patellar tendon rupture because of similar clinical features. We report the case of a 60-year-old woman with known left knee osteoarthritis who presented acutely with the left knee locked in extension, associated with pain and effusion. Examination revealed an infrapatellar dimple, and plain radiographs demonstrated patella alta with tilting of the patella. Magnetic resonance imaging (MRI) confirmed superior patellar dislocation caused by an inferior patellar osteophyte locked against the superior trochlea. The patellar tendon was intact. Closed manipulation and reduction under sedation were successfully performed. A review of the literature identified hyperextension and direct trauma as the most common mechanisms of injury, with osteoarthritis recognised as an important risk factor. Closed reduction, performed under various forms of anaesthesia, was successful in the vast majority of cases. Rare recurrences were managed either by open surgery or arthroscopic intervention.

Keywords:

locking, effusion, patella tendon, reduction, instability

INTRODUCTION

Patellar dislocations commonly occur in younger, physically active individuals and may result in significant morbidity. Lateral patella dislocation is the most common presentation, but rarer forms of patella dislocations such as superior dislocations can also occur¹. In superior dislocations of the patella, patients typically present with acute knee pain, effusion, loss of active knee flexion and an inability to weight-bear^{2,3}. Due to its similar physical presentation, superior dislocations of the patella can be often confused with an acute rupture of the patella tendon^{2,3}. Prompt identification of this condition through a thorough history and physical examination is vital in preventing misdiagnosis and erroneous treatment.

We describe a case of a 60-year-old female who presented with a superior patella dislocation. A review of the existing literature for characteristics and ideal treatment for superior patella dislocations is also presented.

CASE REPORT

A 60-year-old Chinese woman with a background of moderate (Kellgren Lawrence III) left knee osteoarthritis presented with sudden left knee pain. She reported that this sudden onset of pain occurred as she was leaning across a knee-height bench. There was an immediate effusion, with the knee locked in full extension and an inability to actively flex the knee. She reported severe tenderness over the knee (visual analogue scale [VAS] score of 9/10) and was unable to bear weight.

On physical examination, the left knee was locked in extension, and this was not passively correctable. There was a marked knee effusion, an infrapatellar skin dimple, and bruising over the patellar tendon insertion, suggesting a localised injury in this region, and a bruise over the insertion of the patella tendon suggestive of a localised injury at the patella tendon insertion (Fig. 1).

Plain radiographs of the left knee revealed patella alta with a tilted patella. Features of tricompartmental osteoarthritis were also present (Fig. 2). As the initial impression by the emergency department was a patella tendon rupture, a magnetic resonance imaging (MRI) scan of the left knee was performed. This confirmed an intact patellar tendon and showed the patella perched on the superior aspect of the trochlear groove due to engagement of a prominent inferior patellar osteophyte (Fig. 3).

The patient was treated with a closed manipulation and reduction under sedation in the operating theatre. The reduction manoeuvre was performed by placing a large roll under the left ankle and producing hyperextension of the

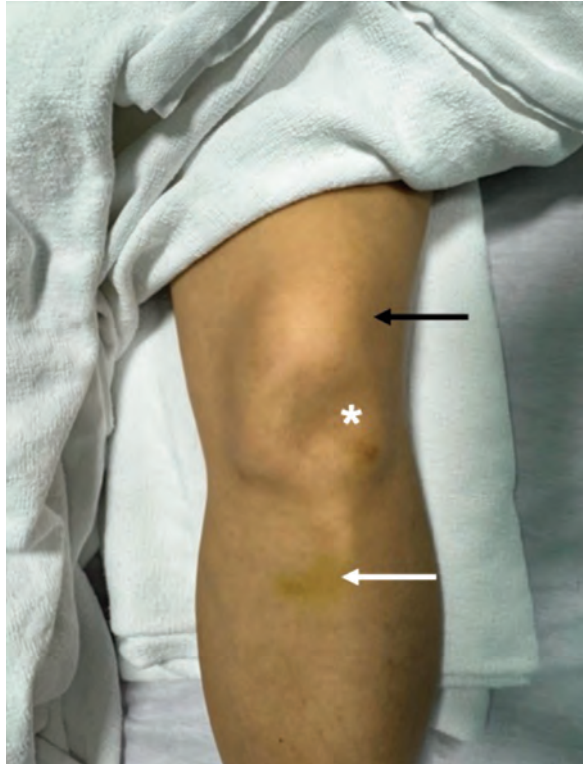


Fig. 1: Clinical image of the left knee in a supine position. There is upward translation of the patella (black arrow), dimpling at the infrapatellar region (*), and bruising over the tibial tuberosity (white arrow)



Fig. 2: Lateral plain radiograph of the left knee showing extension of the left knee associated with a tilted patella in a superior position.

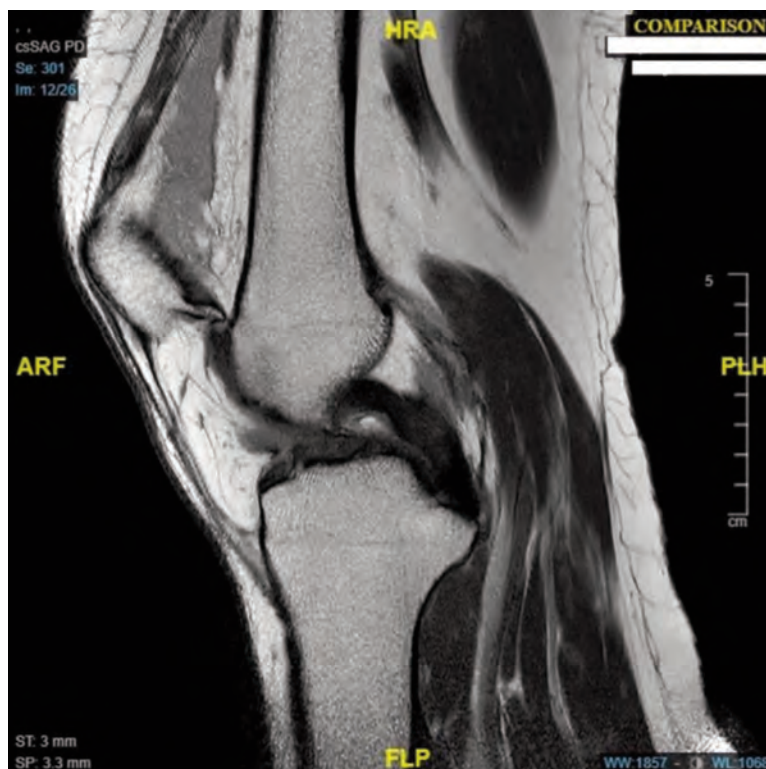


Fig. 1: T1-weighted sagittal MRI of the left knee showing inferior osteophyte of the patella perched onto the trochlear, resulting in a superior dislocation of the patella.

knee. The patella reduced easily under this manoeuvre. Intra-operative radiographs confirmed successful reduction. The knee was ranged from full extension to full flexion to ensure there was no recurrence. A knee brace which allowed motion ranging from 30° to 120° was applied for one week. At one week, the brace was removed. The patient was assessed at 3 months 38 post injury. She has gone back to her full activities with no recurrence.

DISCUSSION

Superior patellar dislocation is an uncommon condition that may closely mimic patellar tendon rupture. Clinicians should be aware of several distinguishing features. First, the mechanism of injury in superior patellar dislocation typically involves knee hyperextension, whereas patellar tendon rupture usually occurs during forceful quadriceps contraction with the knee flexed^{2,4}. Secondly, superior patella dislocations result in a knee locked in extension, whilst in patella tendon ruptures, patients can flex the knee but are unable to have full active extension. Finally, the presence of an infrapatellar skin dimple is a characteristic clinical sign of superior patellar dislocation.^{2,3} The diagnosis is primarily clinical. In terms of imaging, plain radiographs will reveal a tilted patella “alta”. Advanced imaging, such as MRIs, may clearly delineate the prominent inferior osteophyte perched onto the trochlea^{2,3}.

Based on an existing literature review on superior patella dislocations by Read *et al*⁵, majority of the affected patients are middle-aged females. The primary mechanism of injury is hyperextension and direct trauma, with both occurring at relatively equal frequencies. Other causes noted were a combination of trauma and hyper-extension, as well as insidious, or spontaneous dislocations, both of which occurred to a smaller extent. A large majority of cases were resolved with closed reduction, with only a single case out of forty-one requiring open reduction. Closed reduction methods mostly required sedation or were completed without anesthesia. A smaller number of cases required intra-articular

anesthesia, general anesthesia, intra-muscular anesthesia, or regional blocks. A small number, three, cases also managed to achieve spontaneous reduction.

The management of superior patella dislocations involves early recognition and reduction of the patella. Closed reduction under sedation appears to be fairly effective, with the majority of the cases treated in this manner⁵. The authors recommend our technique for easy reduction which involves sedation and placement of a large roll under the ankle of the affected limb to accentuate a hyper-extension deformity. The patella can then be slowly massaged inferiorly and should reduce with a clunk. Forceful manipulation and flexion of the knee is not advisable as there is a risk of iatrogenic fracture and injury to the patella tendon. Post-reduction, patients should be braced to avoid hyper-extension. The long-term outcomes of this condition are positive, with relatively few patients known to have an episode of a recurring dislocation. For such patients, arthroscopic or open procedures typically to remove bony fragments, were sufficient for definitive treatment.

The population most at risk appears to consist of middle-aged women with underlying osteoarthritis who sustain a hyperextension injury, with or without direct trauma. Osteoarthritis is considered a significant contributing factor because interlocking osteophytes between the patella and femur predispose to mechanical engagement.

In conclusion, superior patellar dislocation is a rare but important condition that may be mistaken for patellar tendon rupture. Patients typically present with severe knee pain, a knee locked in extension, and an infrapatellar skin dimple. Treatment consists of closed manipulation and reduction under sedation. Awareness of this condition is essential to facilitate prompt diagnosis and appropriate management.

CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

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