

Clinical Communications: Adults

RARE CAUSE OF KNEE PAIN AFTER MARTIAL ARTS DEMONSTRATION: A CASE REPORT

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Abstract—Background: Patellar dislocations are a commonly treated injury in the Emergency Department (ED), with a majority of cases involving lateral subluxation of the patella outside of the joint space. Intra-condylar dislocations of the patella are rare. Of the two types of axis rotation, vertical and horizontal, the vertical occurs five times less frequently. These injuries most often undergo open reduction or, at best, closed reduction under general anesthesia. **Objectives:** To remind Emergency Physicians to consider this injury in any patient with severe knee pain and limited mobility, even with a history that is lacking significant trauma. **Case Report:** We present a case of intra-condylar patellar dislocation with vertical axis rotation. **Conclusion:** This injury is no longer primarily attributed to the young and, barring fracture, closed reduction in the ED should be considered. © 2013 Elsevier Inc.

Keywords—vertical axis; intra-articular; intra-condylar; patellar dislocation; closed reduction

INTRODUCTION

Intra-articular dislocations of the patella are exceptionally rare. In these types of dislocations, the patella can dislocate along its vertical or horizontal axes. Of the two types, the vertical axis is significantly less common (1). To date, cases of vertical rotation reported in the literature have been due to direct blunt force trauma, with two cases resulting from contralateral rotation of the femur on the tibia during rapid extension (2,3). Before

a report by Singletary and Dobson in 1997, in which the patella was reduced by manipulation clockwise with inferomedial pressure under conscious sedation, these cases were typically treated in the operating room under general anesthesia (2). This case report illustrates a patient with an intra-condylar patellar dislocation, along the vertical axis, that underwent successful closed reduction in the Emergency Department (ED) under mild sedation.

CASE REPORT

A 33-year-old man presented to the ED via ambulance for severe right knee pain. The patient, a martial arts instructor, sustained a right knee injury while teaching a tactic referred to as a “leg bar” or “knee bar” (Figure 1). While the patient allowed the student to practice this maneuver on him, he developed severe knee pain. An obvious deformity of the knee became apparent and his leg was locked in extension. Past medical history was unremarkable, and he denied any previous injury or surgery to the affected limb.

Physical examination showed a healthy adult male in severe pain holding his right leg still and in full extension. Obvious deformity of the patellofemoral area was noted along with the patient’s inability to flex the knee (Figure 2). Distal to the injury, the leg had full range of motion with no signs of neurologic deficits or impaired perfusion.



Figure 1. Military training demonstration of a maneuver known as a “leg-bar” or “knee bar.” This is a grappling maneuver that consists of immobilizing an opponent’s leg by trapping it in between one’s own legs. The patella is pulled tight against one’s own body with the hands controlling the lower leg or ankle. Extending at the hips then maintains hyperextension of the opponent’s knee.

Radiographs taken of the knee confirmed an intra-articular dislocation of the right patella rotated 90 degrees about the vertical axis. The plain films showed the patella to be resting between the femoral condyles with its articulating surface directed laterally (Figures 3, 4). There was no evidence of fractures or disruption of the patellar or quadriceps tendons.

After review of the radiographs and consultation with the on-call orthopedic surgeon, it was decided that closed reduction under conscious sedation should be attempted.

The patient was administered intravenous fentanyl for analgesia and midazolam for mild sedation. After placing the patient in a supine position and achieving mild sedation, the patient’s leg was hyperextended by elevating it at the heel and placing downward pressure on the anterior thigh. This created enough laxity in the patellar and quadriceps tendons to allow reduction by applying minimal anterolateral pressure to the front-facing lateral edge of the patella.

Vital signs were monitored during the sedation and the patient tolerated the procedure without complication. Post-reduction radiographs confirmed successful reduc-



Figure 2. Image of both knees at time of presentation to the Emergency Department, with arrows indicating the medial (white) and lateral (black) aspects of the patella of the affected knee.



Figure 3. Anteroposterior radiograph of vertical axis rotation with lateral-facing articular surface indicated.

tion of the patella with no signs of fracture. After the procedure, the patient regained full range of motion of the knee joint and the distal leg remained well perfused with normal neurological function. He was then placed in a knee immobilizer and referred to the orthopedic clinic for follow-up.



Figure 4. Lateral radiograph of vertical axis rotation of the patella resting between the femoral condyles.

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