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Patellar Sleeve Fracture

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PRESENTATION

A 10 year-old male presented to the ED with knee pain after falling off his bicycle. He landed on his flexed knee with an audible “pop.” He could not extend his knee or walk. Physical examination revealed an effusion and high riding patella with a palpable inferior pole defect. He was neurovascularly intact, and the remaining examination of his lower extremity was unremarkable. His radiographs are shown in Figure 1.

DIAGNOSIS / DISCUSSION

Patellar Sleeve Fracture (PSF)

Patellar fracture and tendon rupture are uncommon occurrences in skeletally immature children. In this population, the most common form of this injury is the PSF, which should be considered in patients with an exam concerning for patellar tendon rupture.¹ During secondary ossification, the patella is surrounded in a layer of protective cartilage. Forced loads on the contracted quadriceps with knee flexion results in an avulsion fracture. Since much of the fragment is unossified peripheral

cartilage, these sleeve fractures are difficult to detect on radiographs. If there is clinical suspicion for PSF, magnetic resonance imaging can visualize this fragment.² Identifying sleeve fractures is critical as prompt surgical correction is required for recovery of function.³ Delay may result in complications such as reduced knee flexion, ectopic bone formation, or avascular necrosis.^{3,4}

This patient’s x-rays (Figure 1) reveal patella alta and a 1.3cm ossific fragment representing an avulsion with partial rupture of the patellar sleeve. He had an ORIF the next day. At 15 week follow up, his patellar tendon remained intact and he was progressing in physical therapy. His post-operative radiograph is displayed in Figure 2.



Figure 1. This is the initial lateral view of the patient’s knee demonstrating patella alta and a 1.3cm ossific fragment representing an avulsion with partial rupture of the patellar sleeve.



Figure 2. This is the post-surgical fixation lateral view of the patient’s knee demonstrating resolution of patella alta and fixation of the ossific fragment.

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