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CASE

An 11-year-old boy was referred to our orthopedic practice after injuring his left knee at football practice. The patient explained that he was hit from behind and fell on his flexed knees. The following day, he was evaluated at a local emergency department (ED). Radiographs revealed no fractures, and the patient's mother was advised to give him OTC NSAIDs for pain and to bring him to the orthopedic clinic if his symptoms did not improve.

The patient was brought to our clinic 3 days after the injury. He complained of increased pain and had a swollen knee. He reported that his symptoms were exacerbated with activity.

Physical examination The patient walked with a "toe touch" gait with a noticeable limp. His left knee was bruised and swollen, and its range of motion (ROM) was -15 degrees extension to 100 degrees flexion. He had a 2+ joint effusion, which was mildly tense and moderately painful. The ligament stress tests revealed pain but no instability. There was tenderness on palpation in the popliteal region and along the medial and lateral aspects of the supracondylar femur at the attachment points for the medial and lateral collateral ligaments. His skin was pink and warm, and he had strong, bounding dorsalis pedis and posterior tibial pulses. The ankle-brachial indices were more than 1.0 bilaterally. ROM in the hip and ankle was normal.

Imaging The ED radiographs were read as normal. Radiographs of the nonaffected right knee taken in our office also revealed no abnormalities. However, when they were compared against each other, the irregularity seen in Figure 1 was noted.

WHAT IS YOUR DIAGNOSIS?

- Pellegrini-Stieda disease
- Supracondylar femoral physeal fracture
- Osteochondral defect
- Osteochondroma

DISCUSSION

The patient suffered a Salter-Harris type I fracture to the supracondylar femur physis. The joint effusion resulted from an injury to the initial fracture. There were no bony abnormalities of the cortical structure or bony lesions. The radiographs did not indicate any injury to the articular surface of the knee (osteochondral injury), nor did they show any calcification in the medial collateral ligament (Pellegrini-Stieda disease).

Treatment The injured leg was immobilized in a long ROM brace locked in full extension, and the patient was told to keep

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FIGURE 1

Radiograph of suspected knee injury



weight off his leg for 3 weeks. On follow-up, he demonstrated less pain on palpation and still had no signs of ligament instability. Repeat radiographs showed narrowing of the medial supracondylar physis. The patient was allowed unrestricted ROM and to initiate weight-bearing activity in the brace. He was referred to a physical therapist for strengthening exercises. At 6 weeks post injury, the patient had discontinued wearing the brace and started running activities. On examination, he had full ROM but noticeable atrophy of his quadriceps muscles. The patient was again referred to a physical therapist. Three weeks later, his strength and muscle girth measurements were markedly improved. He was released to full activity without restriction. Follow-up at 3 and 6 months revealed no physical abnormalities, equal leg length, 4+/5 strength, and a normal gait. Radiographs showed no changes to the physis.

Comments The epiphysis of the distal femur and proximal tibia is the largest and fastest-growing joint in children. Injuries to this physis can lead to devastating growth irregularities. A Salter-Harris classification I fracture traverses through the physis without exiting through the metaphysis. The treatment ranges from a long leg cast to a hinged knee brace.¹ These fracture patterns are usually stable; however, we chose to keep weight off the fracture to minimize any potential shear forces at the fracture site. In these fractures, limb shortening occurs in 30% to 50% of cases. Typically, growth arrest is noticed less than 12 months after injury.¹⁻³ Therefore, these patients should be seen frequently and have serial radiographs documenting adequate bone healing.

When a patient presents with complaints of knee pain and has a suspicious history with significant pain on palpation, distal femoral physeal fracture should be suspected. □

REFERENCES

1. Edwards PH Jr, Grana WA. Physeal fractures about the knee. *J Am Acad Orthop Surg.* 1995;3(2):63-69.
2. Gray DW. Trauma to the hip and femur in children. In: Sponseller PD, ed. *Orthopaedic Knowledge Update: Pediatrics 2.* Rosemont, Ill: American Academy of Orthopaedic Surgeons; 2002:81-91.
3. Zions LE. Fractures around the knee in children. *J Am Acad Orthop Surg.* 2002;10(5):345-355.