

What Is Your Diagnosis?

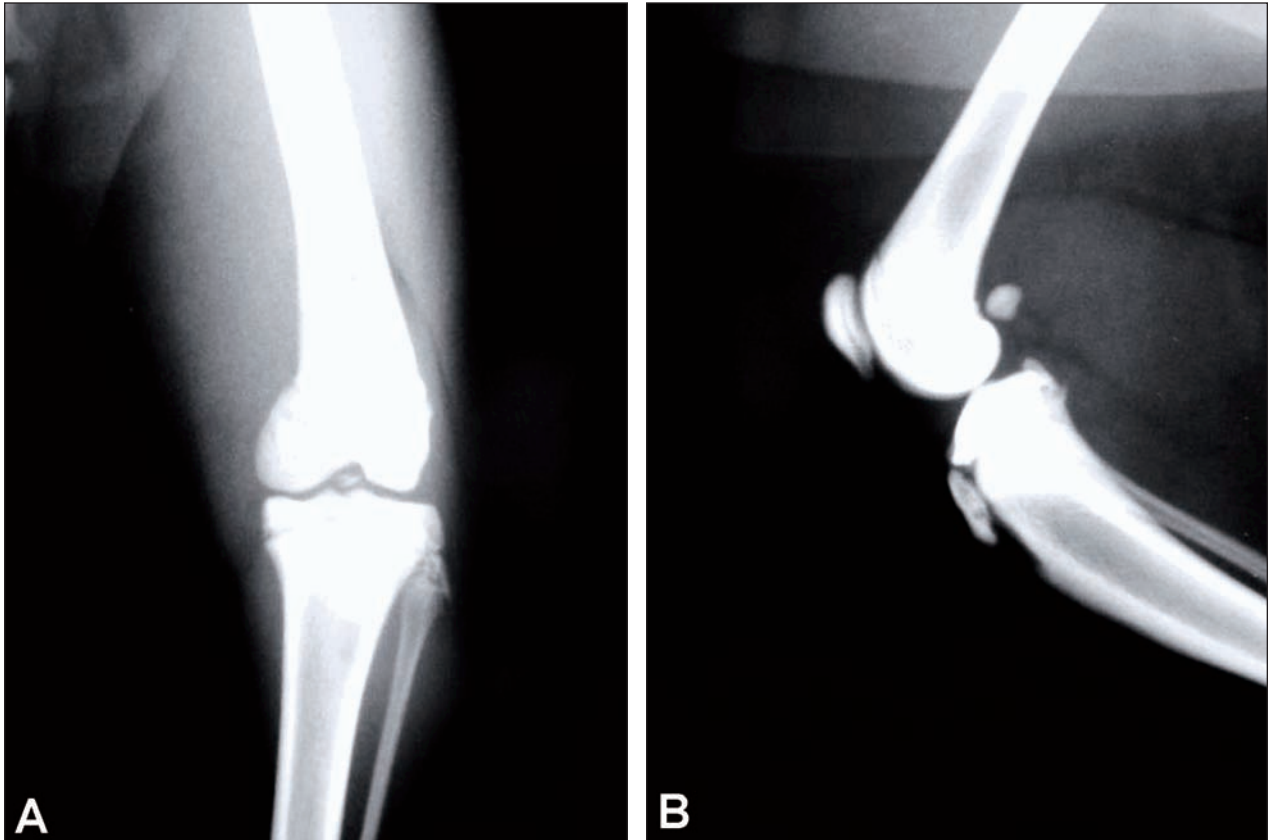


Figure 1—Lateral (A) and craniocaudal (B) radiographic views of the left stifle joint of an 8-month-old cat evaluated for lameness of the left hind limb after falling from a height of 5 m.

History

An 8-month-old sexually intact female domestic shorthair cat was referred for severe, sudden onset of lameness of the left hind limb of 1 day's duration after falling from a height of 5 m. Clinical examination revealed a weight-bearing lameness of the left hind limb with moderate swelling at the cranial aspect of the stifle joint. Signs of pain and cranial drawer movement were elicited during manipulation of the left stifle joint. Radiographs of the left stifle joint were obtained (Figure 1).

Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page ▶

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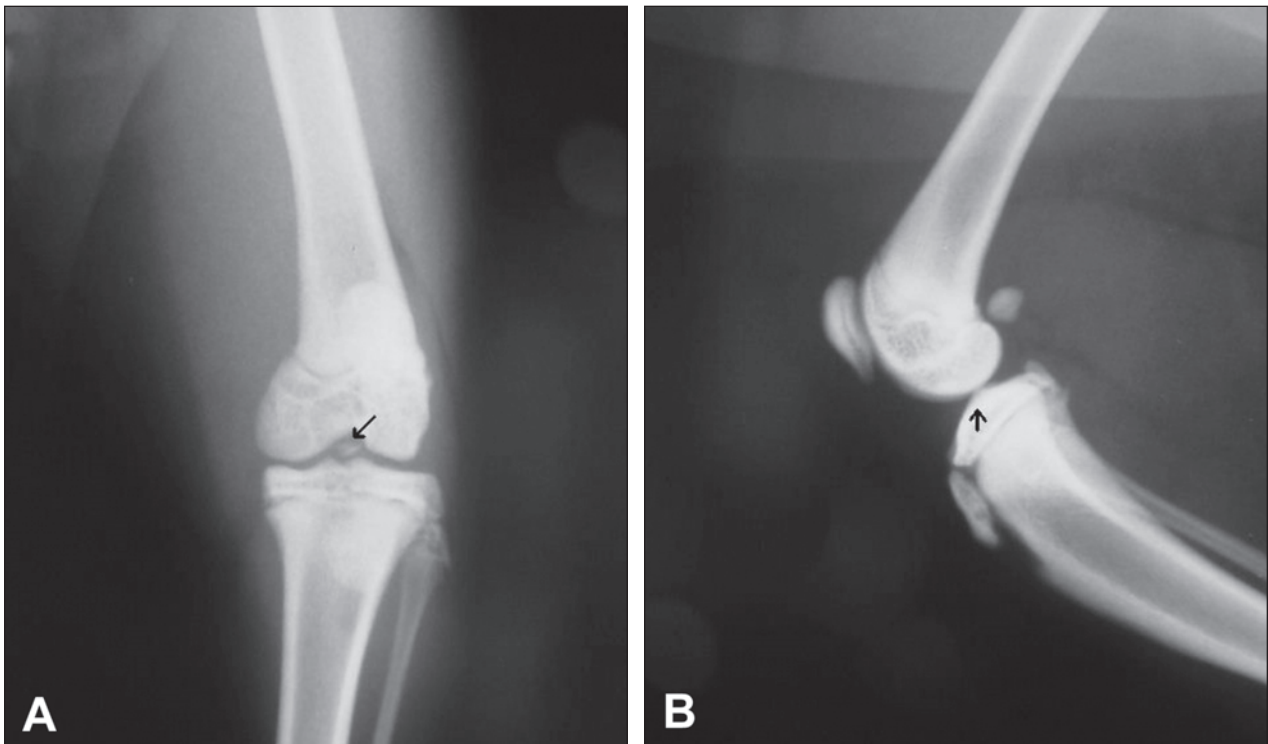


Figure 2—Same radiographic views as Figure 1. Notice the intra-articular avulsion fracture of the left tibia at the insertion of the cranial cruciate ligament (arrow).

Radiographic Findings and Interpretation

An intra-articular avulsion fracture at the tibial insertion of the cranial cruciate ligament is evident (Figure 2). Differential diagnoses included cranial cruciate ligament injury, caudal cruciate ligament injury, primary or secondary arthritis, and meniscal injury.

Comments

Ultrasonography confirmed the diagnosis. During arthroscopy, the bone fragment was clearly identified and remained attached to the band of the cranial cruciate ligament. Damage to other joint structures, including the lateral and medial menisci, caudal cruciate ligament, and collateral ligament, was not seen. The avulsed fragment was not large enough to permit reattachment; therefore, it was removed with the cranial cruciate ligament. The stifle joint was stabilized with an extracapsular suture technique, and external support was not used. After surgery, the cat's activity was restricted for 4 weeks. During the follow-up examination performed 1 month postoperatively, the cat had full use of the limb, and cranial drawer movement or signs of pain were not detected.

The cranial cruciate ligament is located intra-articularly; it originates on the caudomedial portion of the lateral femoral condyle and inserts on the cranial portion of the intercondylar eminence of the tibial plateau. It prevents hyperextension of the joint, excessive internal rotation of the tibia, and abnormal cranio-caudal movement. The caudal cruciate ligament also is located intra-articularly, originating on the lateral surface of the medial femoral condyle and inserting on the lateral edge of the popliteal notch of the tibia. Similar to the cranial cruciate ligament, the caudal cruciate ligament mainly stabilizes cranio-caudal movement. The 2 cruci-

ate ligaments cross each other in the joint and provide rotational stability by wrapping around each other.¹

The incidence of cranial cruciate ligament injuries is much lower in cats than in dogs, maybe because the cranial cruciate ligament is longer than the caudal cruciate ligament in cats, whereas in dogs and humans, the cranial cruciate ligament is shorter than the caudal cruciate ligament.^{2,3} In dogs, most cranial cruciate ligament ruptures occur secondary to chronic degenerative changes within the ligament itself, rather than from acute excessive trauma.¹

Avulsion fracture of the cranial cruciate ligament is considered rare in dogs, and to the authors' knowledge, it has not been reported in cats. In dogs, it has been suggested that avulsion of the cranial cruciate ligament, rather than tearing, most commonly results from trauma in skeletally immature patients, in which the ligaments are stronger than the bone to which they are attached and excessive strain may result in an avulsion fracture at their origin or insertion.^{4,5} This theory may explain the avulsion fracture in the skeletally immature cat of this report. Results of a study³ with dogs indicate that avulsion fragments attached to the cranial cruciate ligament most commonly originate from the tibial insertion, rather than the femoral insertion, as in the cat of this report.

1. Slatter DH. *Textbook of small animal surgery*. Philadelphia: WB Saunders Co, 2002.

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3. Tacke S, Schimke E. Zur Ruptur der Ligamenta cruciata bei der Katze. *Kleintierpraxis* 1995;40:341–350.

4. Wong WT. Caudal cruciate ligament avulsion fracture in a dog. *Aust Vet J* 1994;71:82–83.

5. Mahoney PN, Lamb CR. Articular, periarticular and juxta-articular calcified bodies in the dog and cat: a radiologic review. *Vet Radiol Ultrasound* 1996;37:3–19.