What Is Your Diagnosis?

**History**

A 10-week-old female Quarter Horse foal was evaluated for a right hind limb lameness associated with severe swelling of the right stifle joint. Two weeks earlier, the foal was lame when coming off pasture with the mare. It was presumed by the owner that external trauma had caused the lameness, although no skin lesions were detected. The foal had been treated with ketoprofen (2.2 mg/kg [1 mg/lb], PO, q 12 h) for 10 days.

At the time of admission, the foal had a supporting limb lameness of the right hind limb (grade 4/5). The right femoropatellar joint had evidence of effusion. Deep palpation of the firm swelling over the lateral aspect of the stifle joint elicited signs of pain and was not well tolerated. Upon manipulation of the right hind limb, however, it was observed that the reciprocal apparatus was not functioning properly because the tarsus could readily be extended while the stifle joint was kept in a flexed position. No other abnormalities were detected on physical examination. The right stifle joint was examined further by use of digital radiography (Figure 1).

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

---

Figure 1—Lateromedial (A) and caudocranial (B) radiographic views of the right stifle joint of a 10-week-old female Quarter Horse foal evaluated for a right hind limb lameness of 2 weeks’ duration.

---

This report was submitted by Christoph Koch, Dr med vet; Sabrina H. Brounts, DVM, MS, DACVS; and Joseph J. Foerner, DVM, DACVS; from the Department of Surgical Sciences, School of Veterinary Medicine, University of Wisconsin, Madison, WI 53706.

Address correspondence to Dr. Koch.
Numerous fibrin and blood clots were removed from the femoropatellar and lateral femorotibial joints, which were in open communication. Bone fragments were probed in the lateral aspect of the joint capsule but were firmly attached to the surrounding tissues. These fragments were not removed. Articular cartilage appeared normal.

The foal recovered from general anesthesia without complications. Mare and foal were discharged from the hospital the following day. Ketoprofen (2.2 mg/kg, PO, q 12 h) administration was continued by the owner for an additional 5 days, and concurrent prophylactic medication with omeprazole (1.1 mg/kg [0.5 mg/lb], PO, q 24 h) was highly recommended. The owner was given instructions to keep the foal stall rested for at least 6 weeks. Clinical and radiographic reassessment was recommended after that time but not pursued by the owner. Six months after initial injury, the foal appeared sound while trotting and cantering and all soft tissue swelling had resolved, according to the owner.

The long digital extensor and the fibularis tertius muscle share a common tendinous origin at the extensor fossa of the femur.\(^1\) Avulsion of the origin of the fibularis tertius and long digital extensor muscles is a rare condition in horses and is usually caused by sudden, forceful hyperextension of the stifle joint. Arthroscopic evaluation of the affected joints is recommended to remove smaller, free-floating fragments and debris and thereby minimize the potential for developing degenerative arthritis.\(^1\) Bony fragments buried in the surrounding tissues do not interfere with joint motion and should therefore not predispose the joint to degenerative changes.\(^3\) During arthroscopic evaluation, any concurrent damage may also be assessed. The disruption of the membranous septum dividing the lateral femorotibial and femoropatellar joint, which was observed in this foal, has also been previously described.\(^3\)

The prognosis for return to soundness with this injury is guarded.\(^6\) The encouraging short-term outcome of this particular foal is similar to that of a foal reported by Holcombe and Bertone.\(^2\) The long-term prognosis, however, remains guarded because of the potential for development of degenerative joint disease.

---

**Radiographic Findings and Interpretation**

Radiographs of the right stifle joint reveal multiple articular bone fragments with sharp edges (Figure 2). Two fragments appear to be originating at the extensor fossa of the right femur near the transition of the lateral trochlear ridge to the lateral femoral condyle, where 2 distinct radiolucencies are visible. On the basis of the radiographic findings and clinical observations, a diagnosis of avulsion fracture at the origin of the long digital extensor and fibularis tertius muscles was made.

**Comments**

On the basis of the clinical observation alone, in which simultaneous flexion of the stifle joint and extension of the tarsus were possible, rupture of the fibularis tertius muscle or an avulsion of its origin were the main differential diagnoses to be considered. In this foal, the firm, painful swelling over the lateral aspect of the stifle joint and the severe effusion of the femoropatellar joint prompted the acquisition of radiographs as the next diagnostic procedure. Routine radiographic views of the stifle joint allowed a prompt and precise diagnosis in this foal. Other imaging modalities, including ultrasonography, could have been used alternatively or in conjunction with radiography to identify the lesion. The described disruption of the reciprocal mechanism is more commonly associated with rupture of the fibularis tertius muscle in mature horses.\(^2\) However, in young, growing horses with relatively soft bone, avulsion fractures may more likely occur after indirect injuries, which cause the muscle-tendon-bone unit to fail at the weakest point.

Once the foal was under general anesthesia and a more thorough palpation of the affected area became possible, the bone fragments and crepitus were readily palpable over the lateral aspect of the right lateral femorotibial joint. Arthroscopy was performed, after a cranialmedial approach to the lateral femorotibial joint was made. A small, loosely attached bone fragment and numerous fibrin and blood clots were removed from the femoropatellar and lateral femorotibial joints, which were in open communication. Bone fragments were probed in the lateral aspect of the joint capsule but were firmly attached to the surrounding tissues. These fragments were not removed. Articular cartilage appeared normal.

The foal recovered from general anesthesia without complications. Mare and foal were discharged from the hospital the following day. Ketoprofen (2.2 mg/kg, PO, q 12 h) administration was continued by the owner for an additional 5 days, and concurrent prophylactic medication with omeprazole (1.1 mg/kg [0.5 mg/lb], PO, q 24 h) was highly recommended. The owner was given instructions to keep the foal stall rested for at least 6 weeks. Clinical and radiographic reassessment was recommended after that time but not pursued by the owner. Six months after initial injury, the foal appeared sound while trotting and cantering and all soft tissue swelling had resolved, according to the owner.

The long digital extensor and the fibularis tertius muscle share a common tendinous origin at the extensor fossa of the femur.\(^1\) Avulsion of the origin of the fibularis tertius and long digital extensor muscles is a rare condition in horses and is usually caused by sudden, forceful hyperextension of the stifle joint. Arthroscopic evaluation of the affected joints is recommended to remove smaller, free-floating fragments and debris and thereby minimize the potential for developing degenerative arthritis.\(^1\) Bony fragments buried in the surrounding tissues do not interfere with joint motion and should therefore not predispose the joint to degenerative changes.\(^3\) During arthroscopic evaluation, any concurrent damage may also be assessed. The disruption of the membranous septum dividing the lateral femorotibial and femoropatellar joint, which was observed in this foal, has also been previously described.\(^3\)

The prognosis for return to soundness with this injury is guarded.\(^6\) The encouraging short-term outcome of this particular foal is similar to that of a foal reported by Holcombe and Bertone.\(^2\) The long-term prognosis, however, remains guarded because of the potential for development of degenerative joint disease.

---