

What Is Your Diagnosis?

In cooperation with



Figure 1—Lateral (A) and dorsopalmar (B) radiographic views of the right carpus and dorsopalmar (C) radiographic view of the left carpus of a 7-year-old Borzoi evaluated for acute lameness of the right forelimb.

History

A 7-year-old castrated male Borzoi was evaluated for acute lameness of the right forelimb, which was noticed after running in the owner's yard. The dog was treated by the referring veterinarian with anti-inflammatory medication and 8 weeks of rest without improvement.

On physical examination, an intermittent non-weight-bearing lameness was detected in the right forelimb. Evaluation of range of motion of the right carpus and application of pressure to the medial aspect of the carpus elicited signs of pain. Radiographs of the right and left carpus were obtained (Figure 1).

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

This report was submitted by Farrah B. Horowitz, DVM, and Katherine L. Wells, DVM; from the Dallas Veterinary Surgical Center, 4444 Trinity Mills Rd, Ste 203, Dallas, TX 75287. Dr. Horowitz's present address is the Department of Small Animal Clinical Sciences, Virginia-Maryland College of Veterinary Medicine, Virginia Tech and University of Maryland, Blacksburg, VA 24061-0442. Address correspondence to Dr. Horowitz.



Figure 2—Same radiographic views of the right carpus as in Figure 1. Notice dorsomedial displacement of the second carpal bone and medial displacement of the proximal portion of the second metacarpal bone (white arrow).

Radiographic Findings and Interpretation

Dorsomedial avulsion of the right second carpal bone with medial displacement of the proximal portion of the second metacarpal bone is evident (Figure 2).

Comments

In addition to avulsion of the right second carpal bone, there was a high probability that the dog sustained substantial injury to the medial collateral, intercarpal, and carpometacarpal ligaments. Avulsion of the accessory carpal bone has been well documented in racing Greyhounds. This type of injury most commonly occurs in the right forelimb and is attributable to racing counterclockwise around a track. Excess tension of the flexor muscles and palmar carpal ligaments is thought to cause the avulsion fractures of this bone. First described in 1950 by Batemen,¹ early surgical techniques for correction of this type of injury included resection of the abductor digiti quinti muscle or removal of the fragment in the hope of returning the dog to racing function.¹⁻⁶ In 1 study,⁷ avulsion of the accessory carpal bone was repaired by use of internal screw fixation placed via a palmarolateral open surgical approach between the fourth and fifth accessorimetacarpal ligaments. In that study,⁷ repair by use of 1.5- or 2.0-mm cortical screws resulted in 10 of 12 dogs being returned to racing, with 5 dogs winning races. Pancarpal arthrodesis with accessory carpal bone excision was used successfully in 1 Greyhound, although whether the dog returned to racing was not reported.⁸ In addition, soft tissue complications developed and remained after recovery.⁸



Figure 3—Dorsopalmar radiographic view of the right carpus of the dog in Figure 1 after stabilization of the second carpal bone with two 0.035-inch Kirschner wires engaging the radial and third carpal bones (black arrows).

To the authors' knowledge, avulsion of the second carpal bone in dogs has not been reported. In the dog of this report, avulsion of the second carpal bone was not precipitated by trauma but resulted from normal running activity. Manual reduction of the avulsed bone (confirmed with fluoroscopy) permitted closed stabilization with two 0.035-inch Kirschner wires. The wires were fluoroscopically guided through the second carpal bone to engage the radial and third carpal bone (Figure 3). Primary repair of ligament injuries was not attempted. The limb was placed in a splint, and the dog underwent cage rest for 8 weeks. Radiography performed 8 weeks after surgery revealed migration of 1 wire medially toward the soft tissue. Range of motion of the carpal area was considered excellent, and lameness was not detected. The displaced wire may require removal in the future but was left in place because complications associated with migration of the wire were not detected. Pancarpal arthrodesis would have been considered if the fixation had not been successful. However, fixation performed in the dog permitted stabilization, resulting in fewer complications secondary to soft tissue trauma and maintenance of range of motion in the joint.

1. Bateman JK. Fracture of the accessory carpal bone (pisiform) in the racing Greyhound and its repair. *Vet Rec* 1950;62:155.
2. Bateman JK. The racing Greyhound. *Vet Rec* 1960;72:893-897.
3. Davis PE. Track injuries in racing Greyhounds. *Aust Vet J* 1967;43:180-191.
4. Gannon JR. Stress fractures in the Greyhound. *Aust Vet J* 1972;48:244-250.
5. Hickman J. Greyhound injuries. *J Small Anim Pract* 1975;16:455-460.
6. Prole JHB. A survey of racing injuries in the Greyhound. *J Small Anim Pract* 1976;17:207-218.
7. Johnson KA, Dee JF, Piermattei DL. Screw fixation of accessory carpal bone fractures in racing Greyhounds: 12 cases (1981-1986). *J Am Vet Med Assoc* 1989;194:1618-1625.
8. Guilliard MJ. Accessory carpal bone displacement in two dogs. *J Small Anim Pract* 2001;42:603-606.