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Acute Forelimb Lameness in a Greyhound

Sophie, a 14-month-old, 32kg, intact female greyhound presented with acute right forelimb lameness.

History. There was no history of former trauma or injury. Two days before initial presentation, Sophie began exhibiting intermittent lameness of the right forelimb. The lameness was acute after exercise, but gradually improved until it was no longer noticeable after a few hours.

A complete physical examination was performed by the primary veterinarian. Temperature and respiratory rate were unremarkable; spinal reflexes, withdrawal, and conscious proprioception were normal. The orthopedic examination revealed a very mild pain response during flexion of the right carpal joint, but no instability was detected. Standard dorsopalmar and lateral radiographs appeared to be unremarkable.

A mild sprain of a non-well-defined carpal ligament was diagnosed and Sophie was prescribed carprofen (50 mg Q 12 H for 5 days); rest and controlled activity were recommended for a week. Since Sophie did not show any sign of lameness after a week, her owner allowed her to resume normal activities but she became lame again on the same limb. Sophie was referred to a specialist for further examination.

Physical Examination. Nine days after initial onset of clinical signs, Sophie was walking normally. General physical and neurological examinations were unremarkable. The orthopedic examination confirmed a mild pain response during flexion of the right carpus. A very mild

decreased range of motion was noted during flexion-the cranial translation movement at 90° of flexion of the affected carpal joint was decreased when compared with the contralateral carpal joint.

A very mild swelling was detected on the dorsomedial aspect of the proximal carpal joint between the dorsal articular margin of the radius and the ulnar carpal bone. Direct finger pressure exerted on the articular margin of the radius at the swollen area elicited a pain response. Joint effusion and crepitus were absent. The carpal joint was stable in both flexion and forced extension; collateral stability was normal in extension and flexion.

Radiographic Examination. Radiographic examination included standard orthogonal and oblique views of the carpus. Flex oblique views were also taken (Figure 1).

ASK YOURSELF...

- What are the possible causes of forelimb lameness affecting the carpal region in a large breed, skeletally mature dog?
- What views would you include during the radiographic examination of the carpal region?
- Are there any dedicated radiographic views that can be considered highly sensitive for the possible cause of this forelimb lameness?



Diagnosis: Fracture avulsion of the origin of the dorsal radiocarpal ligament

Diagnosis. The standard dorsopalmar, mediolateral, mediolateral flex, and dorsopalmar oblique radiographic views were not diagnostic; however, the palmaromedial dorsolateral hyperflexed oblique view identified a short fracture line with a subchondral defect affecting the dorsal articular margin of the radius (Figure 1). A skyline view (Figure 2) confirmed the diagnosis and established the exact location and size of the bone fragment.

Fractures of the dorsal articular margin of the radius are most commonly located at the origin of the dorsal radiocarpal ligament that runs in a distolateral direction and inserts on the ulnar carpal bone. These lesions are probably caused by a combination of compressive and torsional forces acting on the bones during hyperextension of the carpal joint. They were first described by Ferguson in racing greyhounds¹ and, though not common in the canine pet population, have been described in other breeds involved in sports.

Treatment/Outcome. Conservative treatment is not advisable for intraarticular fractures and will invariably lead to development of degenerative joint disease. The surgical options include removing small, unfixable fragments and curettage of the area or, in case of a sufficiently large fragment, fracture reduction and fixation with a lag screw. Small fragments can also be removed arthroscopically.

In this case, open reduction and rigid, "gapfree" internal fixation was performed. The fracture was exposed with a small incision made directly between the extensor carpi radialis and the common digital extensor tendons. The fragment was reduced and fixed with a 1.5-mm lag screw (Figure 3). The head of the screw was countersunk to avoid irritation of the surrounding soft tissues or interferences with the proximal carpal bones during extension of the joint. After the surgery a light bandage was applied to



Palmaromedial dorsolateral hyperflexed oblique view indicating a short fracture line with a subchondral defect affecting the dorsal articular margin of the radius (arrows)

the carpus for 10 days. After suture removal, a light bandage was reapplied for another 7 days and light exercise and physiotherapy were encouraged. Eight weeks after surgery, radiographs showed signs of bone healing. Ten weeks after the surgery, Sophie was back to full activity.

See Aids & Resources, back page, for references, contacts, and appendices.



Skyline view indicating a small chip fracture avulsion of the origin of the dorsal radiocarpal ligament (arrows)



Postoperative skyline view. The fracture has been reduced and fixed with a 1.5 mm lag screw.

DID YOU ANSWER...

- Ligamentous instability/hyperextension, trauma (fracture, avulsion fracture), subluxation caused by premature physeal closure, degenerative joint disease, inflammatory joint disease with or without instability
- Although in most cases clinical signs and an accurate orthopedic examination sufficiently localize the area of probable injury, a complete radiographic examination is necessary to verify the diagnosis and visualize the damage. Routine projections include mediolateral, dorsopalmar, dorsolateral palmaromedial 45° oblique, and dorsomedial palmarolateral 45° oblique. Additional projections include the mediolateral flex views. Stress views are indicated whenever joint instability is suspected: mediolateral hyperextended view, dorsopalmar views with application of lateral or medial stress, and weight-bearing mediolateral view.
- Fractures of the dorsal articular margin of the distal radius can be very subtle and difficult to visualize with the standard and oblique views. These fractures often require special dedicated views to highlight the size and location of the fragment: palmaromedial dorsolateral hyperflexed oblique view and palmarolateral dorsomedial hyperflexed oblique view. Skyline or tangent views are invaluable for a complete evaluation of the dorsal aspect of the radius. These views can be associated with other views to confirm a fracture or chip affecting this region. They may also be the only way to detect incomplete fractures and small chips. (Look for a companion article on positioning for such specialized radiographs and the resulting images in a future issue of *Clinician's Brief*.)

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