

# VETERINARY MEDICINE TODAY

## What Is Your Diagnosis?

AVMA 08984

### Case 1

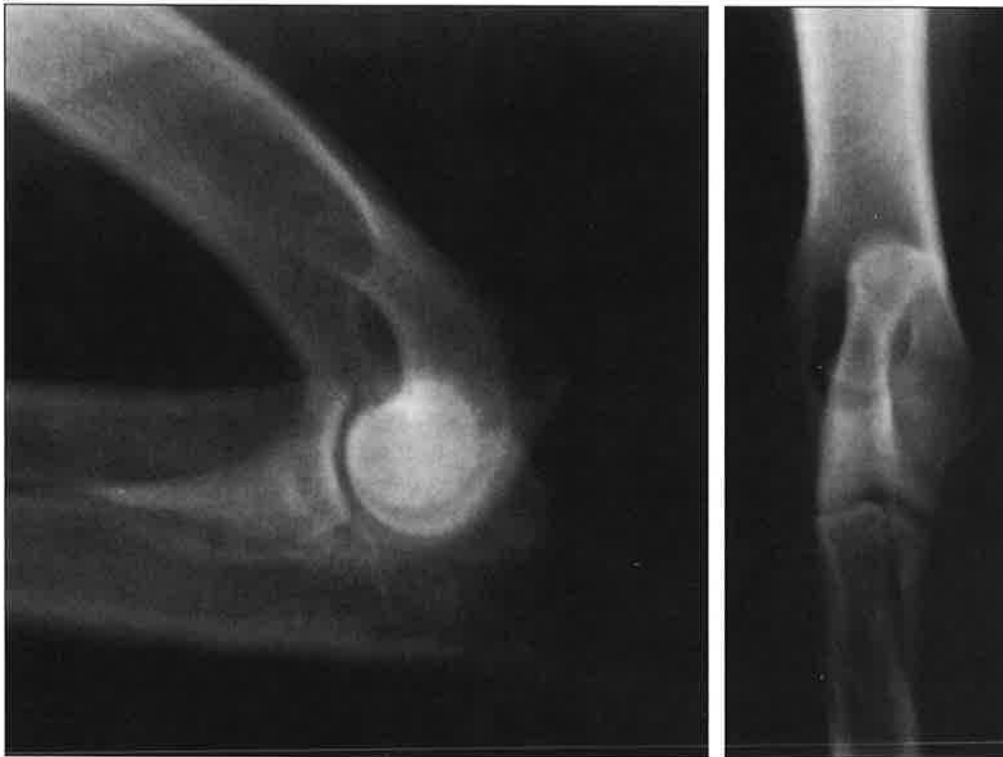


Figure 1—Flexed mediolateral (left) and cranial 15° medial-caudolateral (right) radiographic views of the right elbow of a 2.5-year-old dog.

### History

A 2.5-year-old sexually intact male Brittany was examined because of a non-weight-bearing lameness of the right forelimb. The client reported the dog had been mildly lame on the right forelimb for 3 days. On physical examination, a mild weight-bearing lameness of the right forelimb was observed during walking and trotting. Signs of pain were elicited inconsistently on hyperflexion and hyperextension of the right elbow joint. Abnormalities were not evident on radiographs of the right elbow.

On the fourth day, the dog cried and fell on its side after jumping from the back of a pickup truck. The dog would not bear weight on the right forelimb for the next 2 days. Physical examination revealed the dog would not bear weight on the right forelimb. Severe signs of pain were elicited on flexion of the right elbow joint and pronation of the antebrachium. The dog was sedated, and the right elbow was radiographed again (Fig 1).

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



Figure 2—Cranial 15° medial-caudolateral radiographic view of the right elbow, as shown in Figure 1. Notice the faint sagittal radiolucent line across the humeral condyle (arrowheads).

### Diagnosis

**Radiographic diagnosis**—Faint vertical condylar radiolucency, secondary to incomplete ossification of the humeral condyle.

### Comments

The age and breed of this dog, and the severity of signs of pain in the elbow joint after minor trauma, are consistent with incomplete ossification of the right humeral condyle at the junction of the 2 condylar ossification centers.<sup>1</sup> This suspicion was confirmed by identification of a faint radiolucent line across the humeral condyle on the cranial 15° medial-caudolateral radiographic view (Fig 2).

Computed tomographic images of the right elbow were obtained with the dog under general anesthesia. A linear area of hypoattenuation was evident across the humeral condyle (Fig 3).

This hypoattenuation is characteristic of incomplete ossification of the humeral condyle. Diffuse hyperattenuation was evident adjacent to the line of separation of the 2 parts of the condyle, indicating that chronic bony changes (ie, sclerosis) had taken place. A radiolucency was not identified on the initial radiographic study because the area of incomplete ossification separating the parts of the condyle was narrow and the x-ray beam failed to strike the defect in a parallel orientation. The humerus must be positioned so the radiographic beam is exactly aligned with the defect. This is achieved when the trochlear notch is equidistant to the medial and lateral cortex of the ulna. Computed tomography is more sensitive and accurate than radiography in detecting incomplete ossification of the humeral condyle.<sup>1</sup>

Acute lameness and signs of pain on manipulation of the right elbow joint in this dog were probably secondary to partial mechanical failure of the humeral condyle without major displacement of the medial or lateral fragments. Pain also may have resulted from con-

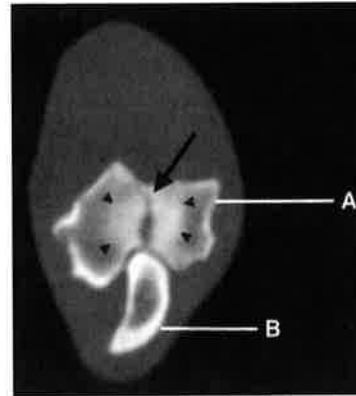


Figure 3—Computed tomographic image of the right elbow through the humeral condyle (A) and the olecranon (B). Incomplete ossification of the condyle (arrow), and adjacent areas of sclerotic bone (arrowheads) are evident.

tact between synovial fluid and subchondral bone after rupture of the articular cartilage of the condyle. Severe clinical signs are unusual without complete humeral condylar fracture. Thirty-nine adult spaniels with incomplete ossification of the humeral condyle have been treated by the authors. Only 3 (8%) spaniels did not have humeral condylar fractures. Humeral condylar fractures in the remaining 36 spaniels were caused by minor trauma in 26 (72%) dogs and cause was not determined for 10 (28%) dogs. A diagnosis of incomplete ossification of the humeral condyle often is made after a humeral condylar fracture caused by minor or unidentified trauma.

Treatment consisted of a 4.5-mm cortical bone screw placed across the right humeral condyle. Only mild lameness in the right forelimb was observed the next morning; lameness resolved 5 days after surgery. Preliminary results indicate transcondylar bone screws can be used in incompletely ossified humeral condyles without supracondylar fractures<sup>2,3,\*</sup> to relieve clinical signs, although incompletely ossified humeral condyles may not heal after placement of a transcondylar screw. Long-term benefits of using these screws have not been evaluated.

In affected dogs, incomplete ossification of the humeral condyle most often is bilateral.<sup>1</sup> The contralateral humeral condyle of this dog was evaluated with radiography and computed tomography and incomplete ossification was diagnosed. A transcondylar screw also was placed across this condyle.

\*Meutstege FJ. Incomplete condylar fracture in the canine humerus as a cause of obscure elbow lameness (abstr), in *Proceedings, Vet Orthop Soc* 1989;11.

1. Marcellin-Little DJ, DeYoung DJ, Ferris KK, et al. Incomplete ossification of the humeral condyle in spaniels. *Vet Surg* 1994; 23:475-487.

2. Miller A. Letter to the editor. *Vet Surg* 1995;24:176.

3. Kaderly RE, Lamothe M. Incomplete humeral condylar fracture due to minor trauma in a mature Cocker Spaniel. *J Am Anim Hosp Assoc* 1992;28:361-364.

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