

## Radiology Extra Credit

By Jessica Lau

**Signalment:** 6 year old, MN, Husky

**History:** Previously healthy patient but recently began limping on right forelimb for past 2-3 weeks. Patient is very active and lives in house with stairs so veterinarian thought limping was just due to minor soft tissue injury. No radiographs were taken at the time and owners were told to monitor patient.

**Presenting complaint:** Patient presented for acute worsening of pain and limping of right forelimb. Patient would not bear weight on the leg.

**Physical exam:** Mild swelling and pain palpated at distal radius

**Blood work abnormalities:** None noted

**Radiographs:**



**Radiographic findings:** There is a focal area of increased lucency with margins that appear mildly irregular within the distal caudolateral aspect of the right radius. This lytic area extends from the distal metaphyseal to distal epiphyseal region. All other structures are within normal limits.

Top differential diagnosis: Primary bone tumor, most likely osteosarcoma

Other considerations: chondrosarcoma, metastatic neoplasia, infectious bone lesion (i.e. fungal osteomyelitis)

**Follow-up:** No significant findings on thoracic radiographs. Owners elected to not have amputation performed.

**Canine osteosarcoma** is the most common primary skeletal tumor found in dogs, especially those of large breed. The disease has a bimodal age distribution and is seen at ~2 years of age and more commonly later in adult life (median of 6 years). Lesions are usually single, begin at the metaphyseal region, and can be associated with any bone. However, the disease is especially common at the proximal humerus and distal radius (away from the elbow) and distal femur and proximal tibia (towards the knee). Presenting complaints include subtle to obvious swelling of the leg, pain, acute lameness, and/or recurring lameness. Definitive diagnosis is made by biopsy of the center of the lesion and histopathology. The treatment goals are to alleviate pain by controlling the primary tumor and to control or slow down metastasis. These goals are usually attained through amputation or limb sparing surgeries and chemotherapy. Median survival time without treatment or with amputation alone is 4-6 months and 1 year with both tumor removal and chemotherapy.

Radiographic findings are used to support the diagnosis. Two orthogonal views should be taken to include the opposing limb. Radiographic findings can vary from lytic to sclerotic to mixed with periosteal new bone varying from smooth to aggressive and irregularly marginated ("sunburst" appearance). Other findings may also include pathologic fractures or Codman's triangle, an area of proliferation that lifts periosteum off the bone. Osteosarcoma usually does not cross joints or invade other bones until it is later in the disease process. Clinical staging should include 3-view thoracic radiographs to assess metastasis to the lungs.