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What's Your Radiographic Diagnosis?

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Presentation

A 3 year old Maine Anjou/Angus cross bull presented for evaluation of a swelling on the right lower jaw. The mass was first noticed 3 months ago and was small. The bull had since been turned out with cows and the owner had noted that the mass would vary in size. The bull weighed 2000 lbs. On physical examination the mass was located on the ventrolateral aspect of the right half of the mandible. The mass was approximately 10 inches in size, non-movable, and had an ulcerated surface. At oral digital examination, several of the right mandibular teeth were loose. The mass could be felt to bulge from the gingiva. Mucopurulent exudate was evident from the oral cavity and the ulcerated surface of the mass. Radiographs were taken to evaluate the extent of bone involvement. See Figures 1 and 2.

Radiographic findings

The soft tissue mass is apparent and has a craterous surface. An approximately 9 cm region of mixed osteolysis and new bone formation is present on the right half of the mandible in the region of cheek teeth 2-4 (PM2-4). The cranial and caudal regions of the new bone are smooth and remodeled. The central region is active and irregular. The central-ventral region of the new bone is incomplete with an opening into the central portion of the lytic cavity. The lysis surrounds the roots of PM4.

Figure 1: Lateral image of the mandible of a 3 year old, mixed breed bull is mandibular swelling.

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Radiographic diagnosis

Changes consistent with chronic osteomyelitis. Location is typical of osteomyelitis due to *Actinomyces bovis* infection.

**Discussion**

*Actinomyces bovis* is a Gram-positive anaerobe that is a normal inhabitant of the mucous membranes of the oral cavity, upper respiratory tract, and digestive tract. *A. bovis* infection becomes clinical when there is trauma to the oral mucosa and chronic suppurative inflammation becomes established. A granuloma develops that invades the bone causing cavitary osteolysis and surrounding reactive new bone formation. Draining tracts frequently develop. As the mass enlarges it can displace the teeth or cause pathological fracture of the eroded bone. Progression of the lesion leads to painful mastication. The mandible is the most frequent site of involvement with occasional lesions reported in the maxilla and soft tissues. If the initial granuloma is located in the intermandibular space it is difficult to see. Cattle aged 2-5 are most commonly affected and eruption of the permanent teeth has been associated with the establishment of infection. Trauma from ingested wires or other sharp objects has also been incriminated. The infection typically is very localized with regional lymph nodes remaining uninvolved. Treatment is frequently unrewarding when the mass is large and osteomyelitis is established.

**References**
