Rostral Mandibular Mass in a Dog

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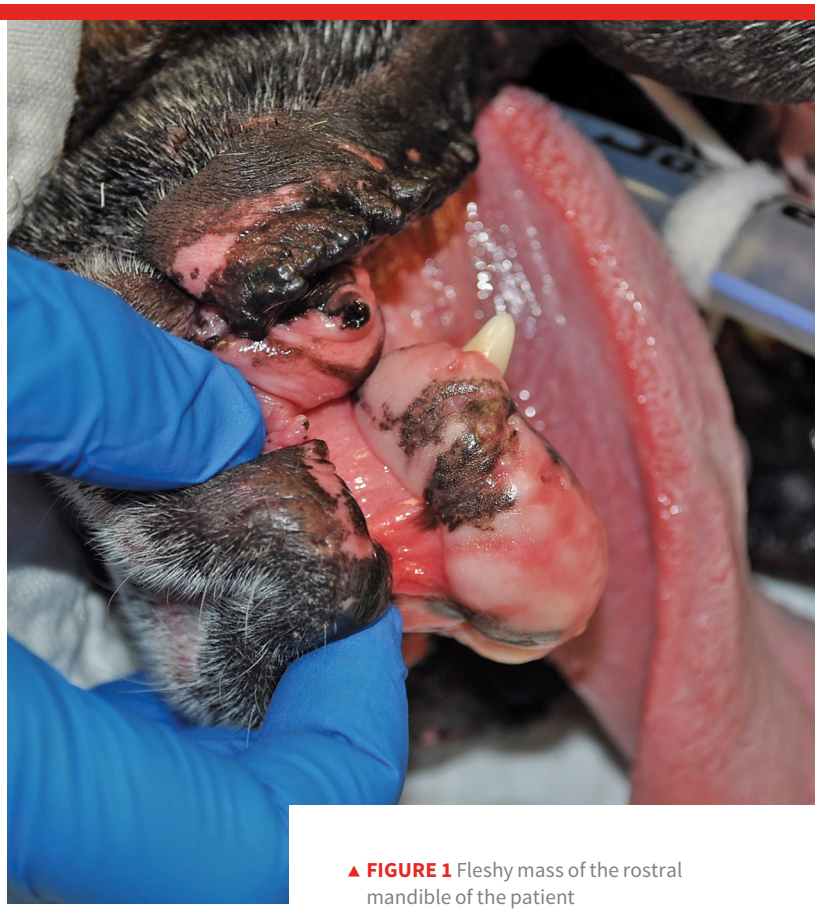


▲ **FIGURE 1** Fleshy mass of the rostral mandible of the patient

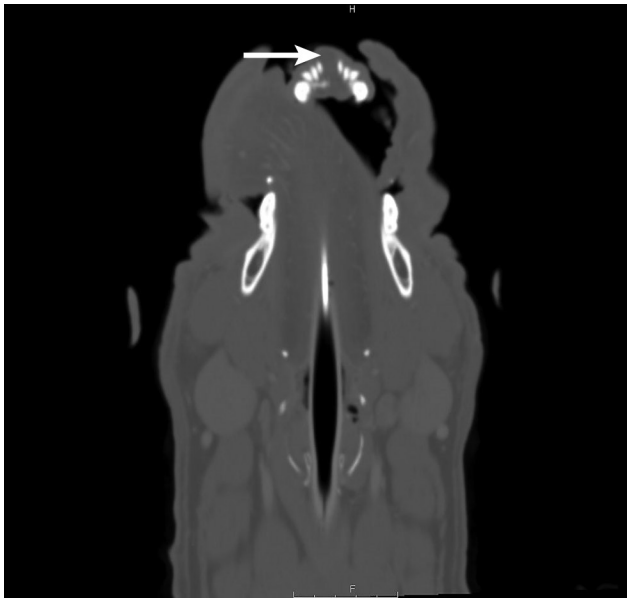
History

An 11-year-old, neutered male boxer was referred with an oral mass of several weeks' duration. No other clinical signs were present.

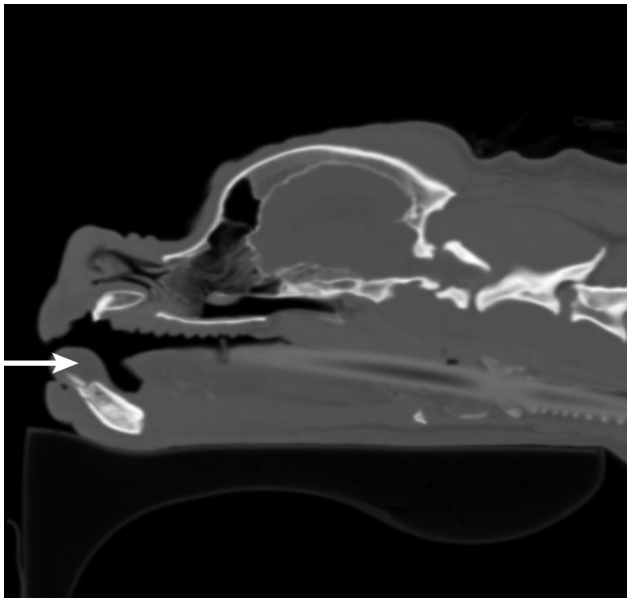
Physical Examination

General physical examination revealed no abnormalities. Vital signs were within normal limits. Oral examination disclosed a firm, fleshy mass ≈2.5 cm in diameter on the rostral mandible at the level of the incisors (***Figure 1***). Palpation of the mandible elicited no apparent pain. Except for 103, all lower incisors were missing or could not be visualized.

The CT scan showed a well-defined, 2.2 × 2.5 × 1.4-cm noncontrast-enhancing, soft-tissue–attenuating mass on the rostral dorsal aspect of the mandible at the level of the incisor teeth.



▲ **FIGURE 2** Axial CT image of the head showing an oral mass (**arrow**) of the rostral mandible. Note the mild lysis of the mandible and widening of the interdental space between the left and right mandibular first incisors.



▲ **FIGURE 3** Sagittal CT image of the head showing an oral mass (**arrow**) of the rostral mandible

Diagnostics

CBC and serum chemistry profile were within normal limits. Three-view thoracic radiographs were negative for metastatic disease. The patient was anesthetized, and CT of the head and thorax and an incisional biopsy were pursued in the same anesthetic period. The CT scan showed a well-defined, 2.2 × 2.5 × 1.4-cm noncontrast-enhancing, soft-tissue–attenuating mass on the rostral dorsal aspect of the mandible at the level of the incisor teeth, with mild lysis of the mandible and widening of the interdental space at the mandibular symphysis (***Figures 2*** and ***3***). The mandibular and retropharyngeal lymph nodes (the most important lymphatic centers for a tumor in this region) and other lymph nodes of the head and neck appeared normal.

The surgeon used an intraoral approach to obtain a wedge biopsy from the center of the mass. The tissues around the mass were undisturbed, and the oral mucosa was closed using 3-0 PDS in a simple interrupted pattern.

ASK YOURSELF

QUESTION 1
What are the most common oral tumors diagnosed in dogs, and what is the best method to diagnose them?

QUESTION 2
If this were a malignant tumor (ie, any oral tumor other than an acanthomatous ameloblastoma), what additional diagnostic test should be performed as part of tumor staging?

QUESTION 3
What is the prognosis for an acanthomatous ameloblastoma that is excised with clean margins?

QUESTION 4
Why does bone need to be removed for excision of oral tumors?

Diagnosis

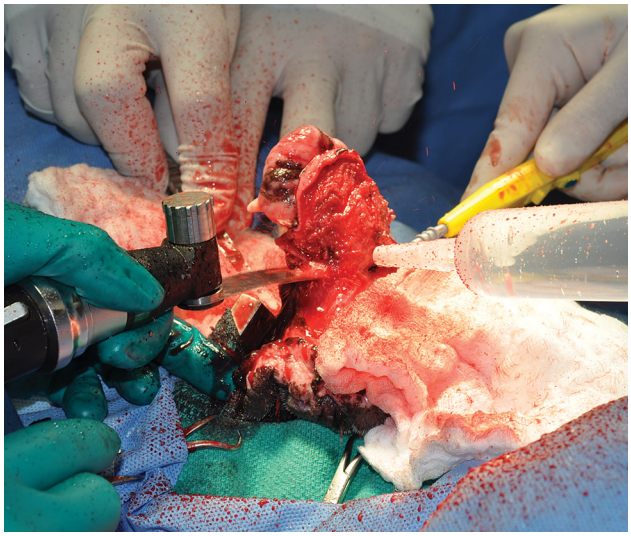
Histopathology of the incisional biopsy specimen was consistent with an acanthomatous ameloblastoma, a tumor that often has locally invasive behavior but does not have metastatic potential.[1,2]

Treatment

Treatment options, including surgery and radiation therapy, were discussed with the owner. Although radiation therapy can effectively treat a tumor in the mandible, surgery is considered the gold standard treatment for a small tumor with a rostral location. Surgery is more likely to provide local control with the shortest treatment period, and the cost is approximately half that of radiation therapy.[1] Radiation therapy may also cause mucositis, which can be markedly painful, in the oral cavity.[2] Intralesional bleomycin has also been used to treat this tumor type and may lead to long-term control.[3]

The following week, the patient underwent wide excision of the mass with 2-cm margins based on the visible tumor mass and CT scan findings.

▲ **FIGURE 4** Preoperative positioning of the patient in dorsal recumbency. Pharyngeal swabs have been placed to prevent aspiration of blood; blue synthetic fibers assist with removal of swabs.



▲ **FIGURE 5** Dissection of the soft tissue from the rostral mandible and mandibulectomy using 2-cm margins with an oscillating saw. Saline flushes were used to prevent overheating of the bone with the oscillating saw.

Cross-match and blood typing were performed preoperatively, and a mandibular nerve block was administered bilaterally before the procedure. The surgeon used an oscillating bone saw to perform a bilateral rostral mandibulectomy (***Figures 4*** and ***5***). For closure, the gingival mucosa was attached to the lingual mucosa with an absorbable suture in a simple continuous suture pattern. A triangle of skin was excised from the midline to remove redundant tissue from the chin. Subcutaneous tissue was closed over the ends of the mandible to prevent protrusion through the closure. The skin was closed maintaining the continuity of the mucocutaneous junction.

The patient recovered without incident and was admitted to the ICU for supportive care with IV fluids and meloxicam (0.1 mg/kg IV once a day) and hydromorphone (0.1 mg/kg IV every 4-6 hours) for pain control. The surgical margins were inked, and the entire specimen was submitted for histopathology and margin assessment (***Figure 6***). Histopathology confirmed acanthomatous ameloblastoma. The margins of excision were considered clean, with no evidence of tumor cells within >10 mm of the inked surgical margins.

Outcome

The patient was eating soft food within 24 hours of surgery and was discharged 48 hours postoperatively. The owner was advised to feed the patient canned food, as well as avoid offering toys or hard treats, for 1 month.

At suture removal 12 days postoperatively, the patient showed no abnormalities and was eating without difficulty. Cosmesis and function were considered excellent (***Figure 7***).

Surgery is the gold standard treatment for a small tumor with a rostral location.

▲ **FIGURE 6** The biopsy specimen postoperatively. The cut edges of the mandible are inked with yellow tissue ink for evaluation of the margins of excision.

▲ **FIGURE 7** The patient at suture removal 12 days postoperatively

DID YOU ANSWER?

QUESTION 1

What are the most common oral tumors diagnosed in dogs, and what is the best method to diagnose them?

The most common oral tumors in dogs are malignant melanoma, squamous cell carcinoma, odontogenic tumors (eg, acanthomatous ameloblastoma, epulides), fibrosarcoma, and osteosarcoma.[4,5] Oral masses are discovered through owner observation of halitosis, drooling, inappetence, reluctance to eat hard food, oral pain, or bloody oral discharge or on routine dental examination and prophylaxis; an incisional punch or wedge biopsy specimen should be obtained during these procedures. To ensure that definitive excision is based on the known extent of the tumor, the tumor should be left intact and its architecture not disrupted. Oral tumors should be biopsied via incisional biopsy in the oral cavity and not through the lip or skin of the cheek. Depending on the animal and the mass location, biopsy sometimes can be performed using only heavy sedation because the tumor tissue lacks sensation. The masses should not be shaved or cytoreduced to the point that their original location and extent cannot be determined. Oral mucosa can heal quickly; healing after marginal excision of an oral mass may make it difficult to determine the original tumor location and hinder planning of the clean margins required for successful excision.

QUESTION 2

If this were a malignant tumor (ie, any oral tumor other than an acanthomatous ameloblastoma), what additional diagnostic test should be performed as part of tumor staging?

The draining lymph nodes (ie, mandibular and retropharyngeal) are potential sites of metastasis, with the mandibular being the most accessible and often aspirated for cytology. During the same anesthetic period as the mandibulectomy, the author typically removes the draining lymph nodes for histopathology. Histopathology may be more sensitive for diagnosing lymph node metastasis in oral tumors than is cytology, which can yield false-negative results.[6] Because the retropharyngeal lymph nodes may be clinically significant in oral tumors and because contralateral metastasis is possible,[7] assessment should not be limited to the ipsilateral mandibular lymph center.[7]

QUESTION 3

What is the prognosis for an acanthomatous ameloblastoma that is excised with clean margins?

Because this tumor type is locally aggressive but does not have metastatic potential, and because the margins of excision are complete, the prognosis for this dog is excellent with a high chance of cure. See ***Table*** for the 1-year survival rates reported for dogs with common oral tumors.

QUESTION 4

Why does bone need to be removed for excision of oral tumors?

Bone must be removed for a successful excision of an oral tumor with bone invasion either because the bone acts as the deep fascial margin or, in most cases, because the bone has been invaded by or arises from the tumor. The functional outcome for most mandibulectomies and maxillectomies in dogs is excellent.

TABLE

1-YEAR SURVIVAL RATES OF DOGS WITH COMMON ORAL TUMORS[4,5]

Tumor Type	1-Year Survival Rate (%)
Acanthomatous ameloblastoma	98-100
Squamous cell carcinoma	80-91
Osteosarcoma	35-71
Fibrosarcoma	23-50
Malignant melanoma	21

References

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