Dermoid cyst in the tongue of a dog

JM LIPTAK\textsuperscript{a}, PJ CANFIELD\textsuperscript{b} and GB HUNT\textsuperscript{a}

A 4-year-old, 32 kg, female neutered German Shepherd Dog presented with a swelling in the intermandibular area and frenulum of the tongue. The swelling had grown slowly over a 12 month period. Incision by the referring veterinarian resulted in extrusion of a thick, dark brown discharge composed of amorphous granular viscid material mixed with a few keratinised squamous epithelial cells. A scar-like lesion was observed on the dorsal midline of the tongue. The swelling recurred 4 months later and bled intermittently 7 d before the dog was referred for further evaluation.

On presentation, the dog had a scab overlying a ventral swelling on the midline of the intermandibular area. The swelling was fluctuant and not painful. Greenish fluid aspirated from the mass was submitted for cytology and bacterial culture and susceptibility testing. Cytological examination revealed numerous keratinised squamous epithelial cells, acellular debris, occasional inflammatory cells with pyknotic nuclei and many mixed forms of extracellular bacteria (Figure 1).

The dog was anaesthetised to examine the oral cavity. The lingual frenulum was mildly swollen and a scar was present on the dorsal midline of the tongue. A probe inserted through the draining sinus in the ventral midline of the intermandibular area could be advanced into the frenulum of the tongue (Figure 2).

The draining sinus was incised to reveal an epithelium-lined cyst. Hairs could be seen growing from the inner lining of the cyst near its junction with intermandibular skin. The cyst was traced along the ventral midline of the tongue from the caudal third to the rostral tip. It then turned 180° to extend along the dorsal midline approximately a third to half the length of the tongue (Figure 3). The lyssa was grossly normal and was not contiguous with the cyst. The cyst was incised and removed using a combination of sharp and blunt dissection (Figure 4). The mucosa of the frenulum was sutured with 3-0 polyglactin in a single interrupted pattern and the intermandibular sinus tract was left open for dependent drainage.

Histopathology of the cyst lining revealed keratinised stratified squamous epithelium and severe chronic inflammatory changes consistent with a dermoid cyst and secondary infection. Haemorrhagic discharge from the draining sinus stopped 36 h following surgery. Culture of the cystic fluid showed a heavy mixed growth of Staphylococcus intermedius and coliforms and, on the basis of susceptibility results, the dog was treated with amoxycillin-clavulanate (500 mg orally every 8 h) for 7 d. The draining sinus healed without complication and the cyst has not recurred 16 months postoperatively.

Discussion

Developmental cysts have not previously been reported in the tongue of the dog. However, a variety of conditions are known to affect the tongue of human patients. These include foreign body, follicular cyst, dermoid cyst, thyroglossal duct cyst, branchial cleft or lymphoepithelial cyst, ranula, congenital cystic choristoma, hydatid cyst, bronchogenic cyst, and cystic hygroma.\textsuperscript{1}

\textsuperscript{a}Department of Veterinary Clinical Sciences, The University of Sydney, New South Wales 2006
\textsuperscript{b}Department of Veterinary Anatomy and Pathology, The University of Sydney, New South Wales 2006
Cysts can be differentiated histologically on the basis of their lining. But the diagnosis can be complicated by chronic inflammation and infection which results in metaplasia of the epithelial lining and formation of fibrovascular tissue. Ranulas do not have an epithelial lining. Foregut cysts result from duplication of the embryonic alimentary tract and are lined by a mucous membrane of enteric origin. The lining of thyroglossal duct cysts consists of stratified squamous epithelium and lymphoepithelial cysts are characterised by a stratified squamous epithelial lining with lymphocytic infiltration.

Dermoid cysts are usually lined by stratified squamous epithelium and adnexal structures and filled with keratinous material. The dermoid cyst in the present case was lined by stratified keratinised squamous epithelium and granulation tissue with severe chronic inflammatory changes. Adnexal structures (hair) arose from the lining near its junction with the skin.

Intralingual dermoid cysts result from entrapment of epithelial debris during midline closure of the first and second branchial arches or ectodermal entrapment during embryonic closure of the lateral swellings of the branchial arches and the tuberculum impar. Hence, such cysts are usually located in a midline position. In humans, the head and neck is the third most common site accounting for 7% of cases. A quarter of these involve the floor of the mouth and submandibular space.

Dermoid cysts reported in the intermandibular area of a donkey and a calf did not extend into the tongue. The most common dermoid cyst in dogs is the dermoid or pilonidal sinus which is an inherited cyst occurring along the dorsal midline between the occipital crest and sacrum. Similar to the dermoid cyst in the present case, dermoid sinuses have a midline position as a result of an abnormality in embryogenesis. Palpation is not painful unless infection is present and the squamous epithelial lining has adnexal structures and occasional chronic inflammatory changes caused by a foreign body reaction to extruded cyst material and hair follicles. Excision is usually curative.

Canine dermoid cysts have also been reported in the nasopharynx, cranial cavity, and retrobulbar space. Lingual cysts are diagnosed in humans by palpation, ultrasonography, computed tomography scans, and nuclear scintigraphy. Aspiration is recommended for cytological analysis of fluid but can result in sinus tract formation and secondary infection. The fluid is usually mucinous and hence can be difficult to differentiate from a ranula. The cyst in the present case was probably infected as a result of extruded cyst material, needle aspiration, and previous surgery. A presumptive diagnosis of dermoid cyst was based on incision and inspection of the cyst lining with subsequent surgical exploration.

Rapid healing with excellent functional and cosmetic results are achieved with surgical enucleation of developmental lingual cysts regardless of their origin. Recurrence is due to incomplete surgical excision and is usually evident within 1 month of surgery. There has been no evidence of recurrence in this dog 16 months following surgical excision.

Acknowledgments
The authors thank Dr Fiona Phillips for referring this case and Dr Elizabeth Dill-Macky for assistance with case management.

References

Accepted for publication 3 November 1999