

# Mucus Retention Cyst of the Soft Palate in a Dog

Shannon Wainberg, DVM, Barbara Powers, DVM, PhD, DACVP, Julius Liptak, BVSc, FACVSc, DACVS, DECVS, MVetClinStud

## ABSTRACT

A 10 yr old 6.6 kg (14.5 lb) castrated male Chihuahua was referred to the Alta Vista Animal Hospital for evaluation of a mass of the soft palate. The cystic structure was bluntly dissected from the soft palate submucosal tissue, and the dog recovered from surgery and anesthesia without complication. Histopathology revealed salivary tissue with a large multiloculated cyst lined by a single layer of cystic and dilated cuboidal epithelium. Follow up 7 mo after surgery revealed complete resolution of clinical signs with no evidence of local recurrence. To the authors' knowledge, this is the first confirmed report of a mucus retention cyst in a dog. (*J Am Anim Hosp Assoc* 2020; 56:34–36. DOI 10.5326/JAAHA-MS-6721)

## Introduction

Salivary gland disease of dogs and cats is divided into the following five major categories: (1) malignant neoplasia; (2) sialadenitis; (3) sialoceles (extravasation cyst) of the major salivary glands; (4) salivary gland infarction; and (5) various degenerative and benign lesions.<sup>1</sup> Salivary retention cysts have not been previously described in any of these categories and differ histologically by the presence of a unique layer of epithelial lining surrounding the cystic salivary tissue.<sup>2–4</sup> Although treatment of mucoceles and other benign lesions is generally effective with marsupialization, this form of treatment is likely to result in recurrence of a retention cyst. The following case report describes the presentation, treatment, and outcome in a dog of this unique and rare salivary gland disease.

## Case Report

A 10 yr old 6.6 kg (14.5 lb) male castrated Chihuahua was referred to Alta Vista Animal Hospital for assessment of a soft palate mass. The patient had begun snoring ~6–8 mo prior to presentation and had a history of reverse sneezing for many years; however, both his snoring and reverse sneeze worsened and had become more frequent prior to presentation. His activity levels and behavior remained unchanged throughout this time.

On presentation, the dog was bright and alert with vital parameters within reference intervals. General physical examination was unremarkable. Complete blood count and serum biochemistry

were performed, and all results were within the normal reference intervals. Oral examination was performed under general anesthesia, which revealed mild-to-moderate periodontal disease and a large, round, smooth mass originating from the soft palate, resulting in partial occlusion of the oropharynx (**Figure 1**). The mucosa was freely movable over the mass, and the mass was well circumscribed. The pharynx was packed with a gauze swab, and the oral cavity was cleaned with 0.1% chlorhexidine and 6% ethyl alcohol solution<sup>a</sup>. An incision was made in the soft palate mucosa overlying the mass. The mass, which appeared thin walled and cystic, was bluntly dissected from the soft palate submucosal tissue using scissors and cotton tipped applicators. The cystic mass ruptured towards the final stages of the dissection. The oropharynx was aspirated, and all swabs were removed. The mucosa was closed using 4-0 poliglecaprone 25 suture<sup>b</sup> in a simple continuous suture pattern. The dog recovered from surgery and anesthesia without complication. The dog was discharged the following day with a 10 day course of Meloxicam<sup>c</sup> (0.1 mg/kg *per os q* 24 hr). No antibiotics were administered post-operatively as the surgical site was considered clean contaminated, surgical time was under 90 min, and no patient factors were present that would slow healing time or increase risk of infection.

The mass was submitted for histopathology, which revealed salivary tissue with a large multiloculated cyst lined by a single layer of

From Alta Vista Hospital—VCA, Gloucester, Canada (S.W., J.L.); and Veterinary and Diagnostic Laboratories, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, Colorado (B.P.).

Accepted for publication: June 15, 2017.

Correspondence: swainber@icloud.com (S.W.)

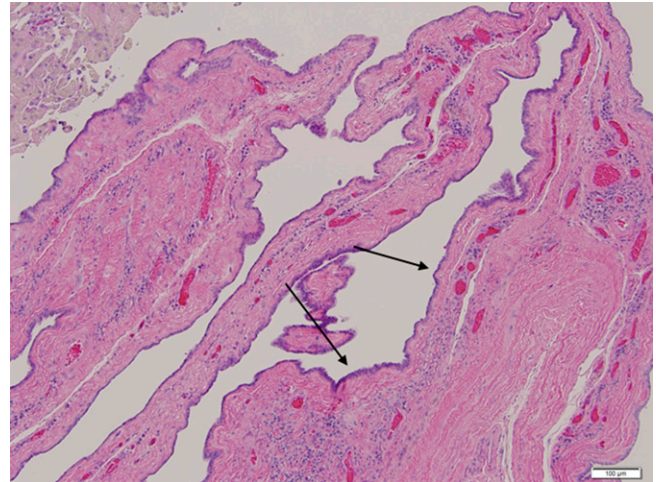


**FIGURE 1** Preoperative oral examination revealing a large mucus retention cyst originating from the soft palate resulting in partial airway obstruction.

cystic and dilated cuboidal epithelium (**Figure 2**). The lumen of the cyst contained an abundant amount of necrotic debris and inflammatory cells. Extensive cholesterol cleft formation with associated macrophages containing lipofuscin pigment was found within and around the cyst. No evidence of neoplasia was detected. The final diagnosis was a salivary mucus retention cyst. Follow-up 7 mo after surgery revealed complete resolution of clinical signs with no evidence of local recurrence.

## Discussion

To the authors' knowledge, this is the first confirmed report of a mucus retention cyst in a dog. One large retrospective study of 245 dogs and cats identified and categorized salivary gland disease into the following five major categories: (1) malignant neoplasm; (2) sialadenitis; (3) normal salivary gland; (4) sialocele (extravasation cyst) of the major salivary glands; and (5) salivary gland infarction.<sup>1</sup> The remaining 11% of cases included various degenerative and benign lesions, none of which were classified as a salivary cyst.<sup>1</sup> The only reported cases of soft palate tumors in dogs are a



**FIGURE 2** Histopathology of the excised salivary mass using hematoxylin and eosin stain. The cystic structure is lined by a single layer of cuboidal epithelium (arrows), diagnostic for a mucus retention cyst.

case report of a malignant salivary myoepithelioma and four cases of intraoral leiomyosarcoma.<sup>5,6</sup> Watanabe et al. described a case of a salivary mucocele arising from the palatine salivary gland resulting in obstruction of the soft palate.<sup>7</sup> This case had a more chronic and severe presentation, with recurrence 1 mo after drainage and marsupialization. Complete removal of the mucocele was performed at this time, and histopathology revealed mucus and inflammatory cells. Part of the excised tissue had a cystic wall composed of simple cuboidal epithelium and pseudostratified ciliated epithelial cells, but the remaining tissue had no cystic wall present.<sup>7</sup>

Salivary cysts (mucoceles) of the major and minor salivary glands have been reported in humans. Dogs have the following four major pairs of salivary glands: parotid, mandibular, sublingual, and zygomatic. The mandibular gland lies ventral and caudal to the parotid gland, which is just ventral to the horizontal ear canal. The sublingual gland is divided into two portions, one of which originates from the rostroventral border of the mandibular gland and the other which consists of loosely connected lobules lying directly beneath the oral mucosa. The zygomatic gland is located on the floor of the orbit ventrocaudal to the eye and medial to the zygomatic arch.<sup>8</sup> Mucus extravasation cysts are more common and result from a broken salivary gland duct, resulting in spillage of salivary mucus into the surrounding soft tissues.<sup>9,10</sup> This is the more common presentation of salivary mucoceles in dogs who have been previously reported in the literature.<sup>1,7</sup> Retention mucoceles form due to decreased or absent glandular secretion as a result of blocked salivary gland ducts.<sup>9,10</sup>

## Conclusion

Histologically, extrapolation from human medical literature defines retention cysts as having an epithelial lining, whereas extravasation cysts have no epithelial lining and are formed by a mucus pool surrounded by granulation tissue.<sup>2,3</sup> Surgical excision with removal of the accessory salivary glands is recommended as marsupialization alone typically results in local recurrence.<sup>11</sup> ■

### FOOTNOTES

- <sup>a</sup> OralDent Cleansing Solution; Phoenix Pharmaceutical, Clipper Distributing Company, St. Joseph, Missouri
- <sup>b</sup> Monocryl; Ethicon, Markham, Canada
- <sup>c</sup> Metacam; Boehringer Ingelheim Vetmedica, St. Joseph, Missouri

### REFERENCES

1. Spangler WL, Culberston MR. Salivary gland disease in dogs and cats: 245 cases (1985–1988). *J Am Vet Med Assoc* 1991;198:465–9.
2. Yamasoba T, Tayama N, Syoji M, et al. Clinicostatistical study of lower lip mucoceles. *Head Neck* 1990;12:316–20.
3. Anastassov GE, Haiavy J, Solodnik P, et al. Submandibular gland mucocele: Diagnosis and management. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2000;89:159–63.
4. Nallasivam KU, Sudha BR. Oral Mucocele: Review of literature and a case report. *J Pharm Bioallied Sci* 2015;7:731–3.
5. Faustino AM, Dias Pereira P. A salivary malignant myoepithelioma in a dog. *Vet J* 2007;173:223–6.
6. Boy SC, Van Heerden WF, Steenkamp G. Diagnosis and treatment of primary intraoral leiomyosarcomas in four dogs. *Vet Rec* 2005;156:510–3.
7. Watanabe K, Miyawaki S, Kanayama M, et al. Case of salivary mucocele originating from minor salivary gland of the soft palate in a dog. *J Vet Med Sci* 2012;74:71–4.
8. Fossum TW. Surgery of the digestive system. In: *Small Animal Surgery*. 3rd Ed. St. Louis: Mosby Elsevier; 2007:369–70.
9. Boneu-Bonet F, Vidal-Homs E, Maizcurrana-Tornil A, et al. Sub maxillary gland mucocele: Presentation of a case. *Med Oral Patol Oral Cir Bucal* 2005;10:180–4.
10. Baurmash H. The etiology of superficial oral mucoceles. *J Oral Maxillofacial Surg* 2002;60:237–8.
11. Bonder L, Tal H. Salivary gland cysts of the oral cavity: Clinical observation and surgical management. *Compend Contin Educ Pract Vet Small Anim* 1991;12:150–6.