

phosphorous, and essential mineral elements. As an energy source, the value of recycled wastes would be of limited value; however, it may be of some value in a situation of roughage replacement. Two other related advantages would be pollution control and waste disposal.

There are many disadvantages at the present time but with research and experience, recycling will certainly prove to have economic value. As stated in the article, cooperation among animal science people, nutritionists, and veterinarians will certainly be beneficial in implementing recycling.

In regard to disease control and making recycling available to the smaller operations, veterinarians have an excellent opportunity to be of service.

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# Mandibular Sialoadenectomy

by

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The two indications for a sialoadenectomy are in cases where there is either a sialocele (cervical salivary gland cyst or mucocoele) or a sialadenitis where medical treatment has not been successful. These two conditions will be discussed in depth separately.

### **Sialadenitis**

Sialadenitis is an inflammation of the salivary glands. This condition is rare in dogs and cats, as the salivary glands rarely become infected.

Sialadenitis can be due to several dif-

ferent causes. It can be due to trauma to the head and neck, oftentimes due to bite wounds. Or the infection may spread as an ascending infection from the mouth, or it could be as a result of a migrating foreign object.<sup>7</sup>

The glands most commonly infected are the zygomatic, parotid and mandibular glands.

The clinical signs associated with a sialadenitis would be a swelling over the gland region with a corresponding increase in body temperature. Also noted would be pain when the animal eats.<sup>3</sup> If the zygomatic gland were involved, there would be a characteristic swelling of the eye region.

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Non-surgical treatment is first attempted. This would include letting the abscess mature, then lancing it. Follow this up with systemic antibiotics. It will take 7-10 days for the healing to begin. The healing must occur from inside to out.

**Sialocele (cervical salivary cyst)**

The characteristic symptoms associated with a cervical salivary cyst are a gradual fluctuating swelling over the gland region; usually this swelling begins unilaterally. At this time a ranula may be present. Contents are often initially clear but later may be blood-tinged to bloody or extremely mucoid to gelatinous.<sup>3,7</sup>

In chronic stages, an inflammatory response to the saliva is seen. An extensive granulation tissue-lined connective tissue sac is found within the cyst itself, and contains many sialoliths. The etiology of a sialocele is most often trauma, especially a contusion.<sup>7</sup> Sialoliths occur usually after the gland or duct has ruptured.<sup>3</sup>

For diagnosis, several methods can be

used. Aspiration of contents will aid in diagnosis. Also, sialography can be utilized. This is accomplished by infusing six to ten c.c. of radio-opaque solution up the duct. However, oftentimes the only way to diagnose is to excise the involved gland.

There is no medical treatment for this condition. We do not lance or inject drugs or sclerosing agents, as response to these is only temporary and it makes later surgery much more difficult.<sup>7</sup>

Occasionally associated with a sialocele is a ranula, which is a transparent, fluctuating cyst on the floor of the mouth. The probable cause of this condition is trauma by a foreign body or contusion to papilla, ducts or sublingual glands.<sup>7</sup>

Recommended treatment for this condition is marsupialization of the ranula. Excise the roof of the cyst and evacuate the contents. Suture the base of the cyst to normal adjoining mucous membrane with catgut. If this condition persists, removal of the mandibular and sublingual glands is indicated.<sup>5</sup>

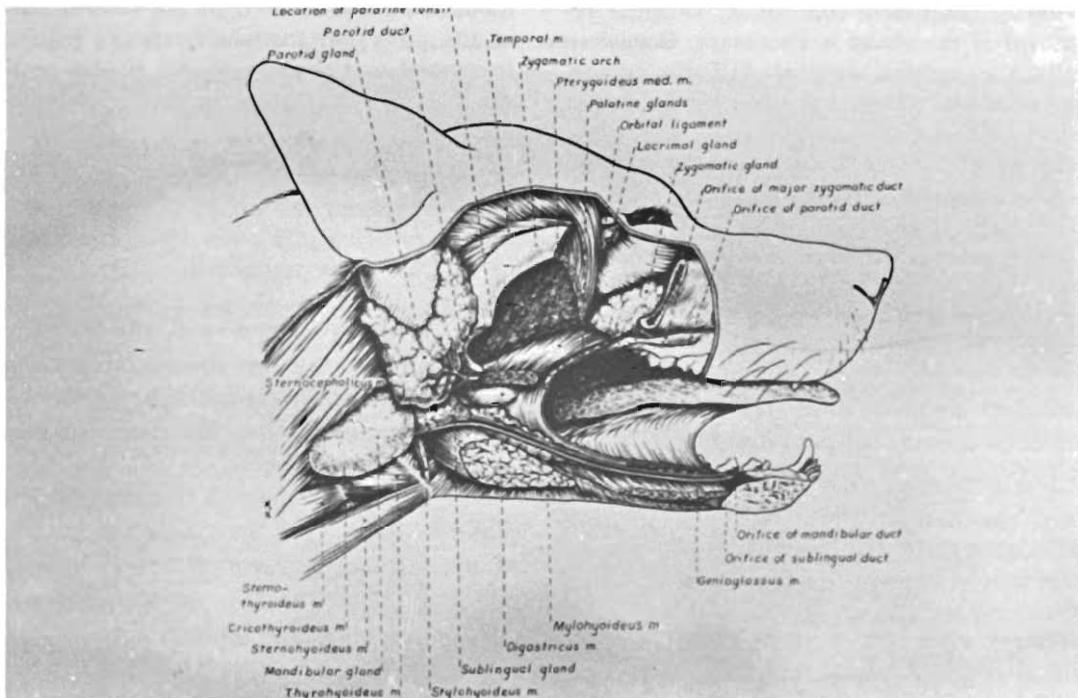


Figure 1. Salivary glands (from Miller's Guide to the Dissection of the Dog)

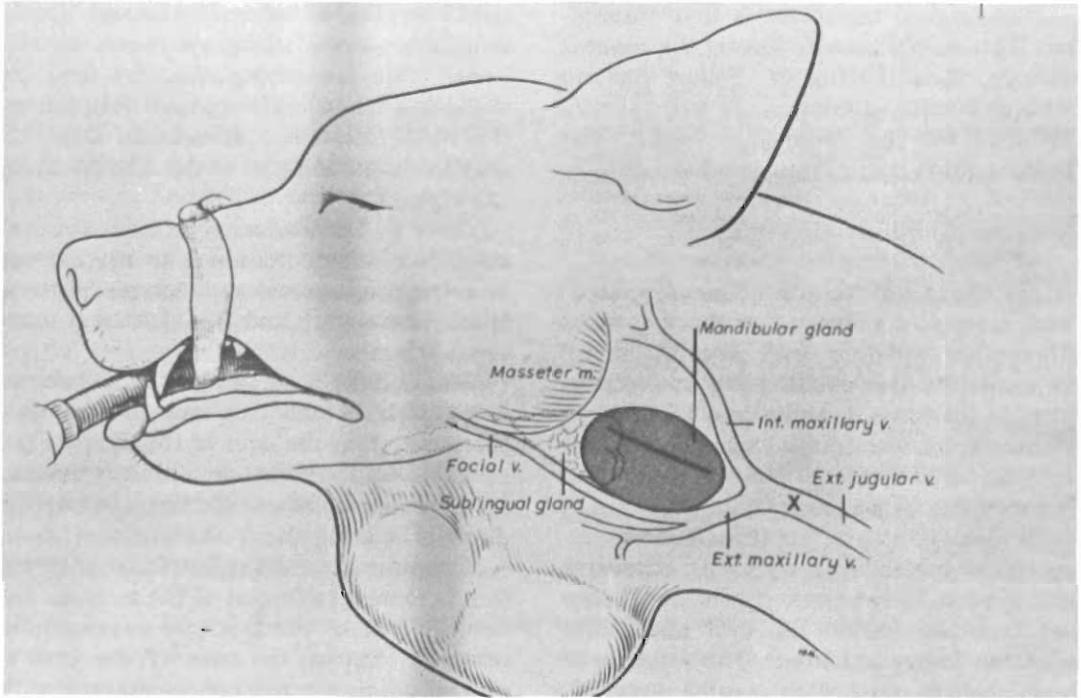


Figure 2. Site of incision (from *Fundamentals of Small Animal Surgery* by Leonard)

If medical treatment fails for the previously discussed conditions, surgical removal of the gland is necessary. Occasionally a recurrent cervical sialocele occurs. If there is no improvement after seven days, removal of the gland on the opposite side is indicated. There have been cases in which the glands on the opposite side became involved or were concurrently involved at the time of surgery. Resection of bilateral sets of salivary glands does not result in "dry mouth," contrary to what many people think.<sup>1,7</sup>

#### **Surgical Anatomy (Fig. 1)**

The dog has four paired salivary glands, all opening into the oral cavity.

A. The parotid gland is a pale, loosely lobulated gland lying mainly at the base of the ear. Its ventral aspect extends over the dorso-lateral surface of the mandibular salivary gland. The parotid duct crosses the superficial face of the masseter muscle and enters the mouth opposite the upper fourth premolar.

B. The zygomatic salivary gland is a well lobulated mass located in the rostral part of the pterygoid fossa. The duct's papilla is ventral and slightly caudal to the parotid duct opening near the last upper molar.

C. The mandibular salivary gland lies largely between the external and internal maxillary veins just posterior to the angle of the jaw. The mandibular gland and a portion of the sublingual gland are contained within a heavy fibrous capsule. The mandibular duct leaves the medial surface of the gland and runs antero-medially lying in close relation to the medial aspect of the sublingual glands.

The arterial supply to the mandibular gland is mainly by the glandular branch of the facial artery and enters the gland where the duct leaves it. Along the dorsal surface of the gland enter some small branches of the auricular artery. The venous drainage is mainly to the lingual veins and then to the external maxillary.

D. The sublingual gland is an aggregation of two to four masses extending along the mandibular duct which extends anterioromedially between the masseter muscle and the digastric muscle. A separate portion of the sublingual glands lies under the mucosa extending from the jaw to the tongue. They are very small and enter the main sublingual duct. The sublingual duct and mandibular duct course together between the genioglossal and mylohyoid muscles. In two-thirds of the dogs separate openings of the two glands are seen with the mandibular papilla lying anterior to the sublingual papilla at the anterior edge of the frenulum near the symphysis of the mandibles. The arterial supply to the sublingual glands is via the glandular portion of the facial artery.

The lymphatic drainage of the mandibular and sublingual glands is to the medial retropharyngeal lymph nodes.<sup>2,6</sup>

#### ***Surgical Procedure***

The surgical procedure to remove the affected salivary gland(s) (sialoadenecto-

my) is as follows for treatment of a cervical salivary cyst.

The mandibular and/or sublingual glands are those most often seen clinically as cyst producing, thus the surgery will be directed at removal of these glands.

Under general anesthesia, the patient is placed in dorsal lateral recumbency and draped such that a six to eight cm. longitudinal incision may be made caudally from the bifurcation of the external jugular vein and extending rostrally. (Fig. 2) The incision is made in a rostral to caudal direction. The fibers of the platysma muscle are separated with a scissors, but many times this step is not necessary as the fibers of the platysma run in the same general direction as the skin incision. In certain cases, the depressor auricularis muscle may need to be incised to assure adequate exposure of the mandibular gland. These two muscles are very thin and incised easily.

After exposure of the mandibular gland capsule, it is incised. The glandular tissue is bluntly dissected from the capsular wall. The blood supply on the medial sur-

**Figure 3. Lateral-medial sialograph of mandibular salivary gland**

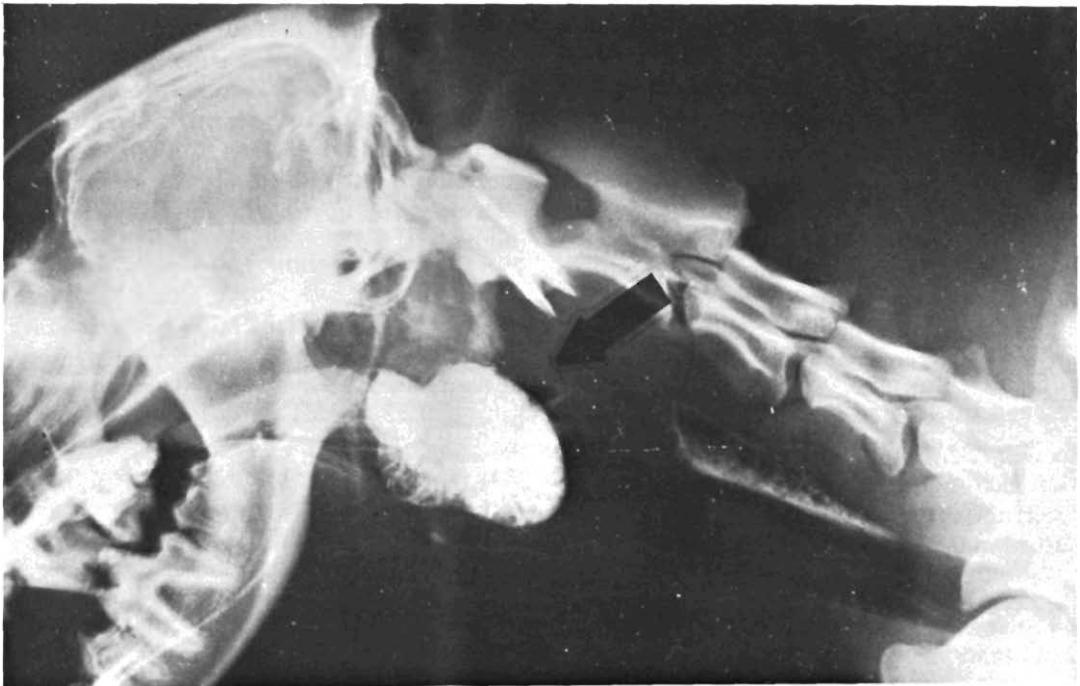




Figure 4. Ventral-dorsal sialograph of mandibular salivary gland.

face of the gland is ligated before further removal. The mandibular gland is then gently lifted from the capsule and the duct is bluntly dissected free as it passes rostrally. The sublingual salivary glands will come into view as the dissection proceeds. When the chain of sublingual glands are freed from adjacent tissues, a ligature is placed around the salivary duct, as far rostral as possible and will usually be just medial to the ramus of the mandible. The duct is then transected caudal to the ligature and the mandibular and sublingual glands are removed.

The dead spaces are closed with 2-0 chromic catgut. As much as possible of the cystic sac and redundant skin is resected. A drainage tube is inserted and the skin is closed around the tube, by a simple interrupted pattern of fine non-absorbable suture material.<sup>1,5,7</sup>

#### *Post-Operative Care*

A moderate compression bandage is

placed on the neck covering the incision site and area of redundant skin. An antibiotic/cortico-steroid preparation is indicated for three to four days. Drainage tubes should be pulled when active draining ceases, usually around four to five days. Occasionally extensive swelling appears at around 48 hours. Moderate compression bandaging, diuretics and cortico-steroid therapy will usually relieve signs.<sup>1,5,7</sup>

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