Salivary Mucocele Surgery

Salivary Mucocele

• There are 8 salivary glands in the dog and cat.
• The sublingual salivary gland is generally responsible for cervical mucocele formation.
• Removal of the sublingual and mandibular salivary glands are necessary because of their close association.
• Accumulated saliva should be drained because it irritates surrounding tissue.

Salivary Mucocele

Salivary mucocele formation is the most common disease of the salivary gland in the dog and cat. The mucocele is formed from secretion of saliva from a defect in the gland or duct system. The most commonly affected glands are the mandibular and sublingual, with the sublingual gland being the most frequent source of saliva. The lining of the mucocele consists of inflammatory tissue surrounded by granulation tissue. There is no evidence of a secretory lining present in the mucocele and therefore cannot be considered a true "cyst".

There are three major classifications of salivary mucoceles depending upon their location:

1. Cervical mucocele,
2. Pharyngeal mucocele, and
3. Ranula

1. Cervical mucoceles are generally located on the lateral aspect of the head and neck from the level of the mandibular and sublingual salivary glands to the intermandibular space.The majority of patients present with mucoceles in the intermandibular region.

2. Pharyngeal mucoceles: A less common location for salivary mucoceles is the pharynx. Pharyngeal mucoceles appear as a fluctuant, smooth, domed-shaped swelling in the lateral pharyngeal wall.

3. Ranulas are formed from an accumulation of saliva along the base of the tongue.

The cause of salivary mucoceles (cervical mucocele, pharyngeal mucocele and ranula) is generally unknown, but things such as trauma, inflammation, sialoliths, foreign bodies, and iatrogenic damage during surgery have been implicated. It is generally felt that mucoceles result from damage to the duct or gland tissue with leakage of saliva into the tissues. The monostomatic (cervical mucocele) and polystomatic (pharyngeal mucocele and ranula) portions of the sublingual salivary gland are felt to be the most commonly involved. Poodles and German shepherds are reportedly the most common breeds affected, but many breeds have been reported to have developed salivary mucoceles.

What are the signs?

Dogs with a salivary mucocele usually develop a soft fluctuant swelling that will enlarge over time. If a needle aspirate is done or the swelling is drained, the character of the fluid tends to be very thick and stringy (like saliva) and is sometimes blood tinged. If the zygomatic gland is affected, they will have a swelling under the eye and the eye may look like it is being pushed a bit. If the sublingual glands are affected, there will be a swelling under the tongue (called a ranula), and they can also demonstrate respiratory distress if the swelling is in the back of the mouth—a pharyngeal mucocele.

1. Cervical Mucocele

Diagnosis is based on history, physical examination, palpation and aspiration of a blood tinged saliva.

Differential diagnosis includes cervical abscess, neoplasia, enlarged mandibular lymph nodes and draining tract secondary to foreign body migration. Sialography may be attempted, but is time consuming and difficult with questionable results in many cases.

The **treatment of choice** for cervical mucocele is removal of the mandibular and sublingual salivary glands and ducts on the affected side and ventral drainage of the accumulated saliva. Quite often, the patient with a cervical mucocele will present with a midline, intermandibular cervical mass making lateralization difficult.

Determination of the glands involved, right side vs. left side, can be accomplished by the following methods:

1. Careful historical evaluation may reveal the side that was initially involved.
2. Careful oral examination for the presence of a ranula or pharyngeal mucocele.
3. Gently force the saliva into the intermandibular space and see if the saliva tends to move toward the right or left side of the head and neck.
4. After the patient has been anesthetized and clipped for surgery and placed in dorsal recumbency, manipulate the salivary mucocele to determine the affected side. The saliva will tend to accumulate toward the affected glands.

5. With the patient anesthetized and in dorsal recumbency, inject contrast into the mucocele, massage gently and take a ventrodorsal x-ray. The contrast may be seen more toward one side or the other indicating the affected glands.
6. Sialography: This technique is only necessary in a small percentage (5%) of cases. The technique involves injecting contrast material retrograde in the ductal openings in the frenulum. Reflux will determine the side. This procedure is time consuming and can be technically difficult to perform.

If the above techniques fail and you still have doubts about lateralization, you can usually operate on the suspected side and if no communication with the mucocele is found, operate the other side. Bilateral mandibular and sublingual salivary gland resection is generally faster than the time necessary to perform sialography.

Surgical technique:

Removal of the mandibular and sublingual salivary glands is performed by first positioning the dog in lateral recumbency with the affected side uppermost.

The neck and jaw should be positioned slightly obliquely and towels or sand bags placed under the neck to elevate the surgical site for better visualization of the bifurcation of the jugular vein.

The incision is made from the ramus of the mandible cranially to the bifurcation of the jugular vein caudally ; occlusion of the jugular vein prior to incision will facilitate visualization of landmarks. Dissection is carried into the capsule of the mandibular and sublingual salivary glands. An intracapsular dissection commences and the glands are removed from the capsule.

The ducts of the mandibular and sublingual salivary glands are followed craniomedially to the mandible. If you are on the correct side, you should encounter saliva from the mucocele oozing into the incision. In some cases a dilation of the duct can be visualized. Aspiration of the dilated duct will produce saliva of similar color and consistency as that aspirated during diagnosis

The ducts are followed as far cranially as possible and ligated or stripped out to complete the resection An incision is made at the most dependant point of the cervical mucocele (when the animal is standing!) and a penrose drain is placed to facilitate postoperative drainage of saliva Platisma muscle, subcutaneous tissues and skin are closed in a routine fashion and

The drain is removed two to three days postoperatively. If the salivary glandular tissue has an unusual appearance at the time of resection, it should be submitted for histopathologic evaluation.

Complications; Complications associated with salivary gland resection are few, but may include:

1) Lymph node removal instead of the salivary gland
2) Operating the wrong side
3) Infection - if a patient has an infected mucocele prior to surgery,do not operate until the infection has resolved.
4) Recurrence - wrong side operated

5) Recurrence-incomplete removal

Re-exploration of the previous surgery should be done to accurately determine the cause and most appropriate therapy.;

:

2. Pharyngeal Mucocele

Patients with pharyngeal mucocele may present with signs related to upper airway obstruction, since the swelling eventually becomes large enough to occlude the laryngeal orifice. Affected patients may have a history of noisy respiration progressing to intermittent dyspnea, cyanosis, and syncope in severe cases.

A **presumptive diagnosis** can be made by careful oral examination. The pharyngeal mucocele appears as a fluctuant, smooth, dome-shaped swelling in the lateral pharyngeal wall. Aspiration of a blood-tinged saliva is diagnostic, and is generally performed when the patient is under anesthesia to avoid unnecessary stress.

Pharyngeal mucoceles can be **treated several ways**. Initial treatment consists of opening and draining the mucocele, partially excising the overlying pharyngeal mucosa and suturing the cut edges of the mucosa to the adjacent pharyngeal wall (marsupialization). Another technique is to dissect the mucocele free from the surrounding tissue and remove it en bloc.

The pharnyngeal wall is allowed to heal by granulation. Either procedure generally gives rewarding results. Recurrence is rare, but ipsilateral, mandibular and sublingual salivary gland resection should be done if recurrence does occur (see operative description above).

3. Ranula

A ranula is a thin walled linear swelling that results from ruptured sublingual or mandibular salivary ducts below the oral mucosa next to the tongue or rupture of the polystomatic portion of the sublingual gland.. Rannulas have been reported in cats.

Diagnosis is based on history, oral examination, palpation and aspiration of the mass. Blood tinged saliva on aspiration is diagnostic.

Surgical technique

Marsupialization or excision as for pharyngeal mucocele are the treatments of choice for ranulas. For marsupialization incise the rannula with a scalpel blade. Next, empty the contents of the ranula. Finally, suture the mucous membrane of the ranula to the oral mucosa. Use a multfilament synthetic absorbable suture of 3-0 size. An alternate technique is to incise the ranula as described above but resect it instead of marsupialize it.

If recurrence occurs, or if the ranula is associated with a cervical mucocele, the mandibular and sublingual salivary glands on the affected side should be removed along with excision or marsupialization of the ranula.

Zygomatic mucocele

This is a very rare kind of mucocele. Surgeon must approach surgery with care since the zygomatic salivary glands, located under a dog's eye, are tiny. Affected dogs typically experience swelling of the eye. In some cases, the eye actually bulges out of the socket.

Prognosis

The prognosis for patients with cervical, pharyngeal, ranula or a combination is favorable if the surgeon can identify the involved side and if all salivary tissue is successfully removed.