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Mandibular and Sublingual Sialoadenectomy to Treat Cervical Sialocele in Dogs

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ABSTRACT

Background: Cervical sialocele is one of the most common type of mucoceles. It results from continuous leakage of saliva from the injured duct and/or gland and it is characterized by a gradually growing, fluctuating and painless swelling in the inter-mandibular region or ventrally along the proximal cervical region. Aspiration and drainage are usually inadequate treatments; therefore, surgical ablation of the affected glands along with duct is recommended. Scanty literature on the occurrence and surgical management of cervical sialcocele is traceable in Indian conditions. This clinical study describes mandibular and sublingual sialoadenectomy to treat idiopathic cervical sialocele in dogs.

Methods: This clinical study included seven cases of cervical sialocele in adult dogs. Five cases had unilateral while in two it appeared bilateral. The condition was diagnosed on the basis of history, clinical and cytological findings. Unilateral or bilateral sialoadenectomy of the mandibular and sublingual salivary glands, using lateral surgical approach, was done under general anaesthesia.

Result: Lateral surgical approach was found adequate without any intra-operative complications. Histopathology of the resected glands showed normal architecture suggesting possibility of physical trauma as an etiology. All cases recovered uneventfully with no recurrence on the same or contralateral side on follow up of 1 year. This clinical study demonstrated that unilateral or bilateral mandibular and sublingual sialoadenectomy using lateral surgical approach may be done safely for the successful management of cervical sialocele in dogs.

Key words: Canine, Facial swelling, Mucocele, Salivary gland, Sialoadenectomy.

INTRODUCTION

A salivary mucocele or sialocele is a surgical ailment in which continuous leakage of saliva from an injured salivary gland or duct accumulates in the dependent tissues (Tobias, 2010). Cervical mucocele is one of the most common type of mucocele characterized by a gradually growing, fluctuating and painless swelling in the inter-mandibular, upper neck or ventrally along the proximal cervical region (Bellenger and Simpson, 1992). In majority of the instances, it is not possible to identify the etiology and / or leakage site. Aspiration and drainage are usually inadequate as treatment options and are associated with recurrence of mucocele (Bellenger and Simpson, 1992); therefore, surgical ablation of the affected glands along with duct is recommended. Scanty literature on the occurrence and surgical management of cervical sialcocele is traceable in Indian conditions. This clinical study describes mandibular and sublingual sialoadenectomy to treat idiopathic cervical sialocele in dogs.

MATERIALS AND METHODS

This study included seven adult dogs (5 male and 2 female) with a mean ± SD age of 6.05 ±0.45 (range 2.5 to 8.0) year, presented at the University Veterinary Hospital during the period (2017 to 2019) with a primary complaint of chronic swelling in the mandibular region (Fig 1a, b, c) since one to six months. All dogs were active with normal appetite and involved Daschund (n=3), Labrador (n=2) and one each of Pitbull and Spitz breeds. These swellings were refractory to conservative therapy and one or more drainages with needle and/or by stab incision (n=4). Besides three dogs had history of scratching with paw associated with mild skin disease.

On presentation, a soft, fluctuating and painless welling was appreciable either on the one side (n=5) or in the inter-mandibular region (n=2) and appeared involving both sides. Needle aspiration yielded blood tinged sticky mucoid fluid (Fig 2) suspecting it to a sialocele or mucocele. Thin smears were prepared on microscopic slides and stained with Giemsa for cytology that revealed low cell and mucus suggestive of salivary contents. Based on the typical clinical presentation and cytological findings, the condition was diagnosed as cervical sialocele. As the condition was

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Fig 1: Photograph showing soft fluctuating swelling in the mandibular region in Pitbull (a), Daschund (b) and Labrador (c).

refractory to conservative or surgical drainage, it was advised for surgical excision of both mandibular and sublingual salivary glands.

In 5 dogs with unilateral swelling, the side (left or right) involved was clearly appreciable (Fig 1b). However, to find out left or right side involvement in two dogs with diffuse inter-mandibular space, each dog was placed on its back with its head and neck straight (Fig 3) as described previously (Tobias, 2010). But it could not help in determining the side involved, so it was considered bilateral gland involvement. With the consents of the owner, the unilateral or bilateral mandibular and sublingual sialoadenectomy was advised under general anaesthesia.

All dogs were fasted for 12 hours and premedicated with an intramuscular (IM) combination of inj. butorphanol @ 0.2 mg/kg, acepromazine @ 0.05 mg/kg and glycopyrrolate @ 0.01 mg/kg. Anaesthesia was induced with inj. propofol @ 4 mg/kg, intravenously, till effect. Following endotracheal intubation, anesthesia was maintained on isoflurane + oxygen mixture using partial rebreathing system. Dogs were placed in lateral recumbency with the affected site up. In cases of bilateral sialoadenectomy, the side of the dog was changed following completion of surgery on the one side. Surgical site was prepared, aseptically, by clipping hair from the mid mandible to mid-cervical region and from the base of the ear to all over sialocele. The sialoadenectomy was carried out as per procedure described by Tobias (2010).

A 5-6 cm long skin incision was made starting just caudal to the angle of mandible and extending over the jugular bifurcation (Fig 4). Subcutaneous fascia was dissected bluntly using fine artery forceps to isolate capsule of mandibular salivary gland. Care was exercised to protect major blood vessels in this region. Capsule was incised and mandibular gland was grasped with Allis tissue forceps (Fig 5). Gentle pulling of the gland and blunt dissection rostro-medially facilitated exteriorization of the whole mandibular, monostomatic sublingual gland and duct to a maximum possible extent by gentle pulling (Fig 6). Hemostasis was achieved by ligating a small branch of the facial artery supplying gland. Duct was clamped at the most rostral extent, at the level of lingual nerve and was ligated with Vicryl (polyglactin 910) 2-0 before transection (Fig 7). Surgical wound was flushed with normal saline solution. Gland capsule was sutured with continuous suture pattern using vicryl 2-0 followed by subcuticular and skin suturing in a routine manner. In case of bilateral sialoadenectomy, the same procedure was repeated on the other side under aseptic preparation to resect mandibular and sublingual glands. A stab incision was also made on the most ventral aspect of the sialocele to drain accumulated salivary contents (Fig 8). The cavity was flushed with normal saline and povidone iodine solution. A biopsy sample of glandular tissue were submitted for histopathological examination.

Postoperatively, all dogs were administered inj. cefotaxime @ 20 mg/kg, twice daily, IM, for 5 days, inj. meloxicam @ 0.2 mg/kg, once daily for 3 days, antiseptic dressing of surgical wound and daily flushing of sialocele cavity. All dogs evaluated for wound healing and recovery on day 12 and later on at various time intervals. Skin suture removed on 12th day of surgery.

RESULTS AND DISCUSSION

In this study all the affected dogs were adult with a mean age of 6.05 ±0.45 (range 2.5 to 8.0) year. All the dogs operated for unilateral (n=5) or bilateral (2) sialoadenectomy recovered uneventfully (Fig 9a and 9b) without any recurrence on long term follow up of 1 year. Histopathology of the mandibular and sublingual glands revealed normal histological architecture of gland with no significant abnormality (Fig 10).

The sialoceles induced by choke collars, bite wounds, or chewing on foreign materials have been reported in dogs, irrespective of breed or age groups (Ritter *et al.* 2006).



Fig 2: Photograph showing needle aspirated sticky sero-sanguineus fluid.



Fig 3: Photograph showing placing the dog in ventro-dorsal position with neck straight to ascertain the side involved.



Fig 4: Photograph depicting skin incision (dotted red line) in Spitz.

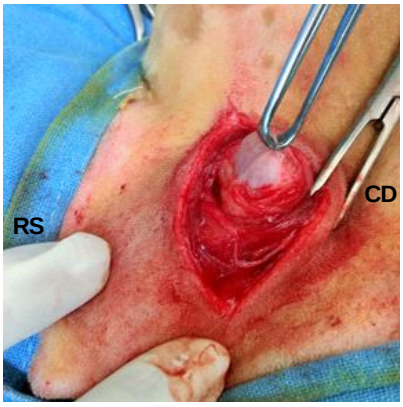


Fig 5: Photograph depicting blunt dissection and isolated joint capsule held with Allis tissue forceps. RS (Rostral), CD (Caudal).

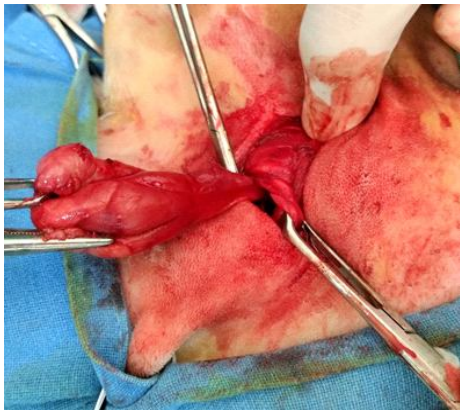


Fig 6: Photograph showing blunt dissection and pulling to exteriorize mandibular and sublingual gland.



Fig 7: Photograph showing resected mandibular and sublingual gland.



Fig 8. Photograph showing ventral stab incision to drain accumulated mucocele contents.

Cervical sialocele are usually unilateral and their diagnosis is straightforward based on history, clinical signs, needle aspiration and cytology findings. In chronic cases, due to continuous leakage of the saliva, cervical sialocele may enlarge and involve inter-mandibular region and under such instances the unilaterally involved cases may resemble as being bilateral. However, accurate history in such cases may help to identify the side involved. It is proposed that emptying of the accumulated contents may help in ascertain the side involved. The clinical signs suggestive of systemic involvement are rarely observed in the cases of cervical sialocele; however may include dysphagia, anorexia, excessive salivation and protrusion of tongue (Shivaraju *et al.* 2018) depending upon severity of swelling or region involved (King and Waldron, 2014). However, in the current study, no case had dysphagia or excessive salivation which might be due to the chronic course of the disease condition.

Physical examination of the affected pets in dorsal recumbency with head straight often allows the mucocele to gravitate towards the affected side. If the affected side



Fig 9: Photographs showing completely recovered Pitbull (a) and Daschund (b) (which are same dogs as shown in Fig 1a and 1b).

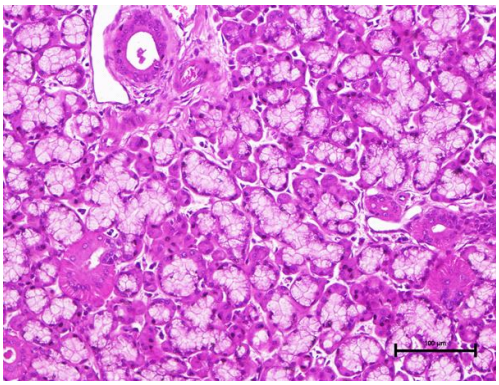


Fig 10: Microscopic photograph showing normal histological echotexture of mandibular salivary gland.

cannot be ascertained, bilateral sialoadenectomy of the mandibular and sublingual glands is recommended without any adverse effects (Tobias, 2010). In two cases, of the current study, it was not possible to distinguish the side affected, thus these dogs were treated considering bilateral involvement. Surgical extirpation of bilateral mandibular and sublingual salivary glands has been reported to be safe without any deleterious effects on the dog (King and Waldron, 2014) which corroborate to findings of the current study. All the cases in the current study recovered uneventfully without any complication related to either surgical wound or recurrence of the condition; however, minor postoperative complications such as bleeding and seroma formation may occur (Bellenger and Simpson, 1992; Kaiser *et al.* 2016).

The surgical removal of the both mandibular and sublingual salivary glands, on the side of the mucocele, are recommend because the duct of the mandibular gland travels through the sublingual gland and removal of one gland would inevitably traumatize the other (King and Waldron, 2014). Mandibular and sublingual sialoadenectomy is also recommended to treat sublingual mucoceles, combined with marsupialization to facilitate drainage into the oral cavity (Shivaraju *et al.* 2018). In the current study, lateral approach was used, successfully, for the removal of mandibular and sublingual salivary glands which corroborate to earlier studies (Kulkarni *et al.* 2018; Shivaraju *et al.* 2018); however, ventral approach has been reported superior for complete excision, particularly, of the rostral sublingual glandular tissue and duct (Ritter *et al.* 2006).

Cervical sialocele may occur with or without associated with ranula (Tobias, 2010; Shivaraju *et al*. 2018). In the current study, no case of cervical sialocele was associated with ranula. Daschunds were over expressed in the current study which corroborated to earlier findings (Bellenger and Simpson, 1992). Sialoceles should be differentiated from tumors and abscesses. In the current study, cytology helped to rule out abscess or tumor and along with clinical findings it helped in diagnosing cervical sialocele.

In this study, presence of no significant pathological abnormalities, histopathologically, pointed out the possibility of physical trauma as an etiological factor for the development of sialocele. Earlier studies reported mild atrophy and hemorrhage of glandular tissue on histology in dogs with salivary mucocele (Kazemi *et al.* 2012; Shivaraju *et al.* 2018).

CONCLUSION

This clinical study demonstrated unilateral or bilateral mandibular and sublingual sialoadenectomy for the successful management of cervical sialocele in seven dogs. All cases recovered uneventfully with no recurrence on the same or contralateral side follow up of 1 year.

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