

CASE REPORT

Companion or pet animals

Infected parotid sialocele treated by vegetal foreign body removal in a dog

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Abstract

An 11-month-old French bulldog was presented for a recurrent fluid-filled mass located ventral to the right pinna. An infected parotid sialocele was diagnosed using ultrasonography, computed tomographic sialography and cytological analysis of the fluid. The dog also had a superficial corneal ulcer because of iatrogenic right facial nerve paralysis secondary to previous attempts by the referring veterinarian to excise the mass surgically. Vegetal foreign bodies (grass awns barbs) were found at the entrance to the right parotid canal and were removed with iris forceps. Bacteriology was positive for *Streptococcus canis*. Conservative management was initiated after grass awn removal, and the dog was discharged with oral antibiotics (amoxicillin-clavulate orally), ophthalmic antibiotic ointment and artificial tears. Clinical signs related to parotid sialocele resolved, and permanent partial temporal tarsorrhaphy was performed 2 months later. At the 3-year follow-up, the dog had no signs of recurrence of the parotid sialocele, but facial paralysis was still present.

BACKGROUND

Sialocele, or salivary mucocele, is a collection of saliva within the subcutaneous tissue, caused by a leakage from a salivary gland or duct. It is the most common condition of salivary glands in dogs and cats. Different aetiologies have been reported, such as foreign body, neoplasia, sialolithiasis, trauma, salivary gland lipomatosis and, most frequently, idiopathic.^{1–8} A salivary mucocele can arise from any salivary gland, although cervical sialoceles occur more frequently than pharyngeal or zygomatic sialoceles. Mandibular and sublingual glands are most frequently involved in cervical sialoceles; because conservative treatment (drainage or incision) is associated with a high recurrence rate, surgical removal of these glands is recommended. Parotidectomy is usually required for parotid sialoceles, but ligation of the parotid duct or anatomical repair of parotid duct defects have also been reported.^{2,9–11} Parotidectomy is a technically demanding procedure because of the difficulty associated with dissection of the parotid capsule, which is adherent to surrounding structures (the fascia around the parotid salivary gland blends with the superficial fascia of the head, neck and ear), including the facial nerve. Complications associated with parotidectomy are reported in 36% of cases,⁷ the most common being facial nerve palsy, seroma, haemorrhage, and dehiscence. To the authors' knowledge, foreign body removal alone has not been reported as a successful treatment of a sialocele caused

by a foreign body. This case report describes the treatment of an infected parotid sialocele by vegetal foreign body removal.

CASE PRESENTATION

An 11-month-old, female, neutered French bulldog was initially presented to the referring veterinarian with a recurrent fluid-filled mass located ventral to the right pinna. Conservative treatment was attempted with a non-steroidal anti-inflammatory drug (NSAID) (meloxicam 0.1 mg/kg orally [PO] once a day for 7 days) without resolution, 2 months before presentation in our clinic. Local lateral resection of the mass was then performed 2 weeks after apparition of the mass. Antibiotics (amoxicillin-clavulanate 20 mg/kg PO twice a day) and a NSAID (meloxicam 0.1 mg/kg PO once a day) were administered for 7 days, but the fluid-filled mass recurred. A second surgical resection was attempted 1 month before presentation, which resulted in right facial nerve paralysis and recurrence of the mass.

The dog was then referred to the Veterinary Teaching Hospital of the University of Liège. On clinical examination, a non-painful subcutaneous swelling (3 × 2 cm approximately) at the level of the right parotid gland, a drooping right upper lip and absence of a right palpebral reflex were noted, and no abnormalities were found on examination of the oral cavity.

Iatrogenic right facial nerve paralysis was diagnosed. Examination of the right eye revealed an absent oculopalpebral reflex, hyperaemic palpebral and bulbar conjunctivae and a dull cornea; a large corneal epithelial ulcer was noted with fluorescein stain uptake.

INVESTIGATIONS

Regional ultrasonography was performed to evaluate the relationship of the swelling with the surrounding tissues; this showed an anechoic fluid-filled cavity with distal acoustic enhancement, delimited by an echoic wall. The cavity was continuous with an avascular anechoic tube that was presumed to be the parotid salivary duct (Figure 1). A serohaemorrhagic mucoid liquid was collected by fine-needle aspiration, and accumulations of blue staining mucus, red blood cells, macrophages, polynuclear neutrophils and extracellular cocci were noted on cytological examination, consistent with the clinical suspicion of infected sialocele. Bacteriological culture of the fluid yielded a multisensitive *Streptococcus canis*.

In view of the suspicion of sialocele, the dog underwent a computed tomography (CT) scan and CT-sialography under general anaesthesia. It was premedicated with butorphanol (0.2 mg/kg intravenously [IV]; Butomidor, Eucuphar, Belgium). Anaesthesia was induced with midazolam (0.2 mg/kg IV; Midazolam Mylan; Mylan, Belgium) and propofol (4 mg/kg IV; PropoVet; Zoetis, Belgium). A cuffed endotracheal tube was placed, and anaesthesia was maintained with inhaled isoflurane in 100% oxygen to allow image acquisition with a 16-slice CT scanner (Siemens, Somatom). CT was performed pre- and post-intravenous injection of contrast medium (Iohexol, 300 mg/ml Omnipaque; GE Healthcare, Belgium). Lymphadenopathy of the right mandibular and medial retropharyngeal lymph nodes were noted on the CT scan. A bilobed fluid-filled cavity measuring 2.5 × 1.5 × 0.7 cm (length × width × height), with a wall 2.5-mm thick that enhanced after injection of iohexol, was visualised lateral to the right parotid gland. The right parotid salivary gland was heterogenous, irregular and ill-defined compared with the left one. CT-sialography was performed by catheterisation of the right parotid papilla, identified at the level of tooth 108, with a 26-gauge catheter (Surflo-W IV Catheter, winged), and by injection of 4 ml of iohexol into the catheter (Figure 2). Vegetal foreign bodies were seen at the most distal part of the parotid canal during catheterisation, and grass awns (small barbs) were removed with blunt iris forceps, after which purulent discharge was noted. CT-sialography demonstrated the filling of the parotid duct and the bilobed mass, highlighting their communication (Figure 2). One of the divisions of the parotid duct was noted communicating directly with the bilobed fluid-filled cavity (Figure 3).

TREATMENT

The vegetal foreign bodies were presumed to be obstructing the parotid duct, causing the sialocele and secondary infection. As foreign bodies were identified and removed, and considering the complications associated with parotidectomy, medical treatment of the infected sialocele was attempted. Amoxicillin-clavulanate (20 mg/kg PO twice a day for 10 days)

LEARNING POINTS/TAKE-HOME MESSAGES

- Conservative treatment of sialocele is associated with high recurrence rate; surgical removal of affected salivary glands is usually recommended.
- Computed tomography-sialography allows three-dimensional visualisation of the parotid gland and duct; it may help in surgical planning and may identify the origin of the sialocele.
- Foreign body removal should be attempted first as the sialocele may resolve without the need for sialadenectomy.

was prescribed based on bacterial culture. Ophthalmic antibiotic ointment (oxytetracycline chlorhydrate-polymyxin B sulfate, every 6 hours until the recheck visit) and artificial tears VitA-POS ointment (vitamin A 250 IU/g, paraffin, lanoline and petroleum jelly) were prescribed to treat the corneal ulcer that had arisen secondary to right facial nerve palsy.

OUTCOME AND FOLLOW-UP

At follow-up evaluation 10 days later, the cervical swelling had resolved and the corneal ulcer had healed. The oculopalpebral reflex remained absent. Treatment of the right eye with artificial tears was continued in order to avoid re-ulceration of the cornea, and permanent temporal partial tarsorrhaphy was strongly recommended to protect the cornea as much as possible.

Two months after discontinuation of treatment with antibiotics and NSAID, the dog remained asymptomatic except for right facial paralysis. A permanent partial temporal tarsorrhaphy was therefore performed.

At long-term follow-up 3 years after first presentation, no recurrence of the right parotid sialocele was noted. Right facial nerve paralysis was still present, with absence of the oculopalpebral reflex and no motor responses in the temporal, zygomatic and periorbital regions.

DISCUSSION

To the authors' knowledge, this case report is the first description of non-surgical treatment of a parotid sialocele secondary to obstruction by vegetal foreign bodies exclusively.

Parotid sialocele is an uncommon condition in dogs. In one article, 14 cases were reported in 7 years in six referral centres.⁷ Parotidectomy is considered the treatment of choice; however, this procedure is challenging and is associated with a relatively high rate of major postoperative complications (5/14), such as permanent facial nerve paralysis (14%).⁷ Nevertheless, recurrence did not occur in any of the dogs after 14 months of follow-up. Techniques have been developed to reduce this particularly high complication rate. A recent study reported the use of methylene blue injection into the parotid duct or the parotid gland to allow better visualisation of the parotid gland, help in dissection and possibly reduce the risk of facial nerve lesions¹²; in this study, none of the seven dogs had facial paralysis after surgery.

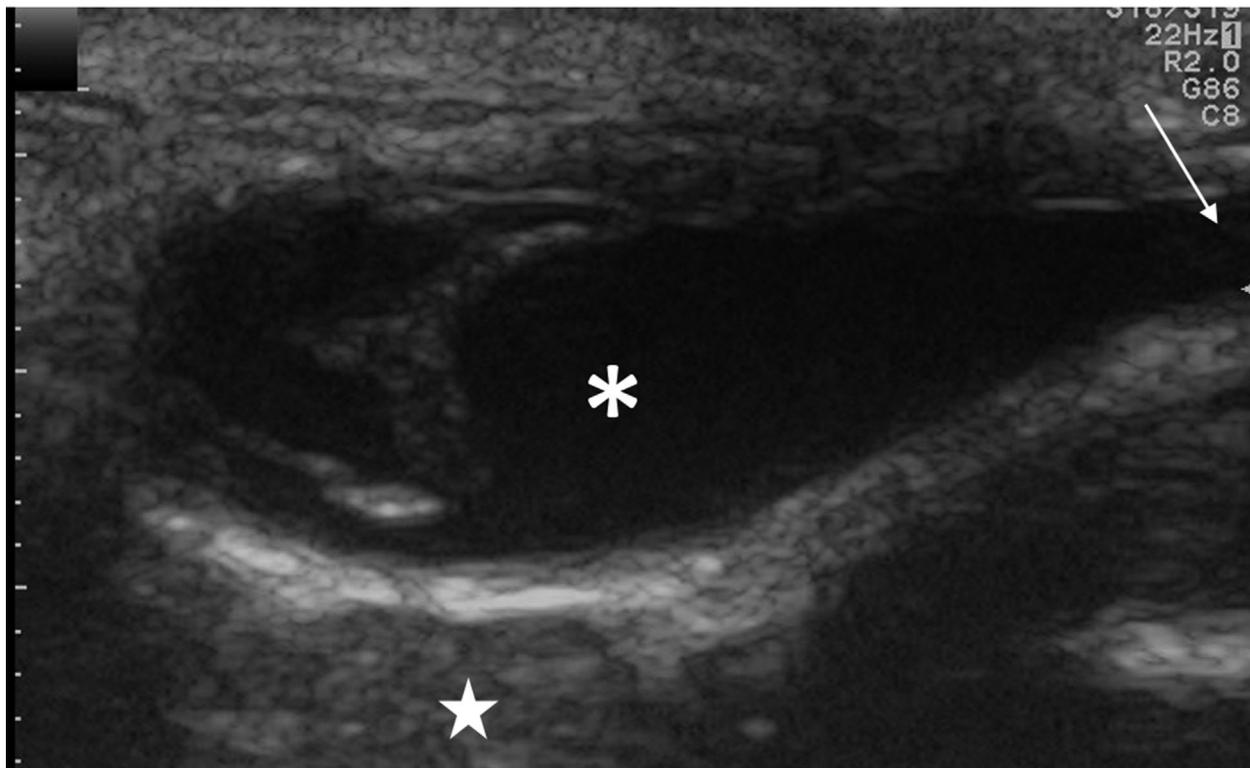


FIGURE 1 Longitudinal ultrasonographic image of the right parotid region. An anechoic fluid cavity (*) with distal enhancement (★) delimited by an echogenic wall is noted. This cavity is continuous with an avascular anechoic tube (white arrow), the parotid salivary duct. *: Anechoic fluid cavity; ★: distal enhancement; white arrow: parotid salivary duct.

Foreign body is a rare aetiology of parotid sialocele, with only five cases reported in the literature.^{7,11,13,14} All dogs were treated surgically (four by parotidectomy and one by removal of the parotid duct en bloc with the foreign body). Interestingly, in order to reduce morbidity, one dog underwent a surgical ligation and removal of the parotid duct along with the foreign body, without parotidectomy; no complication was reported 12 months postoperatively.¹¹ Ligation of the parotid duct as a sole procedure has also been described as a treatment for parotid sialocele and was associated with atrophy of the parotid gland.^{9,15}

Sialography with orthogonal radiographs is commonly used to determine the affected side of cervical sialoceles.⁷ In this case, ultrasound examination identified a dilated duct (presumed to be the parotid salivary duct), but the vegetal foreign bodies were not seen in the duct. This may be because the terminal part of the duct was not assessed directly in the oral cavity and due to the small size of the foreign bodies. Acoustic shadowing was not always associated with vegetal foreign body, making the detection more difficult.¹⁷ The sensitivity of ultrasound may also have played a role: the sensitivity of ultrasound to detect migrating foreign bodies in dogs varies from 82% to 88%.^{16,17} In this case, CT also failed to visualise the foreign body. The sensitivity of CT to identify migrating foreign bodies has been reported to be up to 75%.¹⁸

The use of CT-sialography has been described in cadavers¹⁹ and was elected in this case to allow better three-dimensional visualisation of the parotid gland and duct and to plan a possible surgery. Use of this technique highlighted the communication between the parotid duct and the bilobed fluid-filled cavity and confirmed that the parotid gland was the origin of the sialocele.

The dog described here had already undergone two surgeries by the referring veterinarian and the sialocele had recurred twice. Those surgeries consisted of removal of only the salivary mucocele lined by inflammatory tissue; parotid duct excision with or without parotidectomy was not performed. Because the probable cause of the sialocele (obstructing vegetal foreign bodies) had been removed and the presence of an infection, conservative treatment was initiated in our clinic. The presence of an infected salivary mucocele may increase the difficulty of the parotidectomy procedure due to excessive inflammation and potential additional adhesions between the parotid gland and surrounding soft tissues. Parotidectomy of an infected gland may also increase the risk of postoperative surgical site complications, such as infection, wound dehiscence or abscess formation.

Trauma to the auriculopalpebral part of the facial nerve in this dog resulted in impairment of the blink reflex, neuroparalytic keratitis and corneal ulceration. A permanent lateral partial tarsorrhaphy was performed because of the prolonged absence of the palpebral reflex. This technique of reduction of the eyelid opening is indicated to protect the cornea and reduce the risk of corneal trauma/ulceration in the future. Long-term lubrication of the cornea as well as regular rechecks for corneal ulceration are required, especially in brachycephalic breeds.

We herein report the successful treatment of a parotid sialocele by removal of grass seeds. CT-sialography allowed identification of the aetiology of the sialocele. When foreign bodies can be identified as the likely cause of obstruction of the parotid duct, their extraction may be an alternative to parotidectomy. This procedure is minimally invasive and

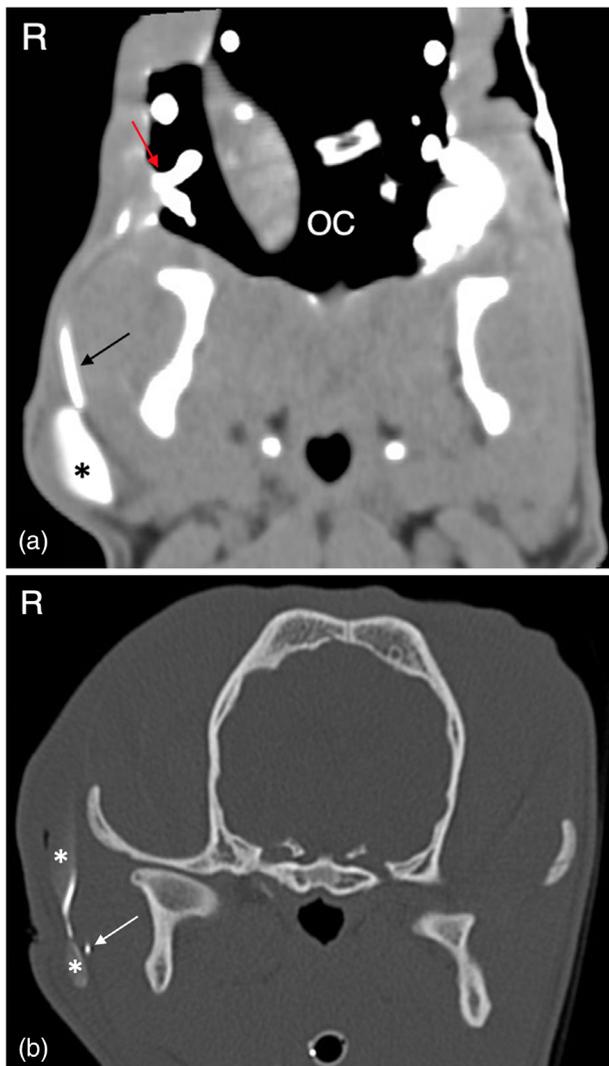


FIGURE 2 Computed tomography images with right parotid sialography. Dorsal (a) and transverse (B) multiplanar reconstruction, displayed in soft tissue (a) and bone windows (b), at the level of bilobed fluid-filled cavity (*) near the parotid duct; black arrow in (a), white arrow in (b). In (a), contrast material is visualised in the oral cavity at the orifice of the right parotid duct (red arrow). OC: oral cavity; R: right. (a) Rostral at the top of image; (b) dorsal at the top of image.

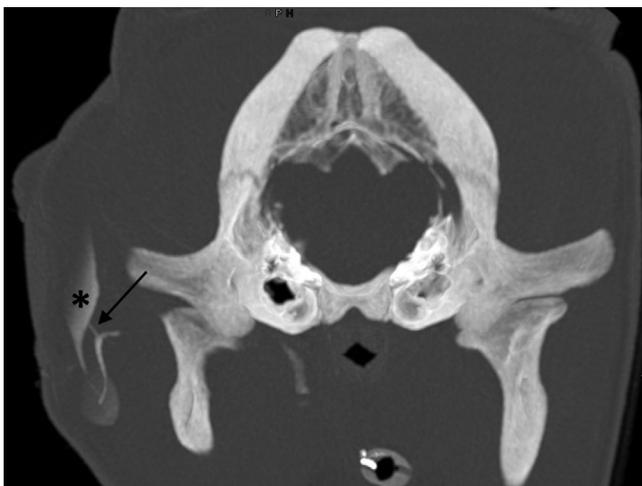


FIGURE 3 Reconstructed transverse plane maximum-intensity projection image of computed tomography with right parotid sialography. The communication of one of the divisions of the right parotid salivary duct directly with the fluid-filled cavity (*) is visualised (black arrow). R: right, dorsal to the top.

avoids the potential complications associated with parotidectomy.

AUTHOR CONTRIBUTION STATEMENT

P. Picavet, M. Grauwels, A.-L. Etienne and S. Claeys contributed to diagnosis and case management. Charles Porsmoguer, P. Picavet, A.-L. Etienne, M. Grauwels and S. Claeys participated in the writing and editing of the manuscript. All authors contributed to the article and approved the submitted version.

ACKNOWLEDGEMENTS

The authors would like to thank Emilie Pierrot for reviewing manuscript language.

CONFLICT OF INTEREST STATEMENT

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

ETHICS STATEMENT

The dog presented here was non-experimental, and oral informed consent was obtained from the owners for the participation of their animal in this study. Therefore, ethical approval was not required or obtained.

FUNDING INFORMATION

The authors received no specific funding for this work.

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How to cite this article: Porsmoguer C, Picavet PP, Etienne A-L, Grauwels M, Claeys S. Infected parotid sialocele treated by vegetal foreign body removal in a dog. *Vet Rec Case Rep.* 2023;e588.
<https://doi.org/10.1002/vrc2.588>

MULTIPLE-CHOICE QUESTION

What are the possible diagnostic methods available for sialocele?

POSSIBLE ANSWERS TO MULTIPLE-CHOICE QUESTION

1. 1 Radiographic sialography
2. 2 Regional ultrasound of salivary gland
3. 3 CT-sialography
4. 4 All of these

CORRECT ANSWER

All of these.

In some cases, regional ultrasound alone may be sufficient if a clear communication is established between the sialocele and a salivary gland or duct. In other cases, sialography is recommended and CT-sialography allows better 3D visualisation and may help surgical planning.