Parotid sialolithiasis

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SUMMARY

Salivary dysfunction may be due to systemic diseases and medications. The development of sialoliths is a multifactorial event in which disturbance in secretion, microliths and bacteria may play a major role. A case of sialolith in the parotid gland of a 25-year-old man, with no relevant medical history is reported here.

BACKGROUND

Sialoliths, or salivary stones, are the most common disease of the salivary glands in middle-aged patients. More than 80% of salivary sialoliths occur in the submandibular duct or gland, 6–15% occur in the parotid gland and around 2% are in the sublingual and minor salivary glands.¹ The exact aetiology of sialolith formation remains unknown, but it is thought that the more alkaline, viscous, mucus-rich saliva, which contains a higher percentage of calcium phosphates, in addition to the long and sinuous position of Wharton's duct, contributes to stasis making the submandibular salivary system more prone to the development of sialoliths than the parotid gland.^{2 3}

It is known that systemic diseases (gout, Sjögren's), medications (anticholinergics, antisialogogues), local trauma, head and neck radiotherapy,⁴ being elderly⁵ and renal impairment⁶ also can predispose patients to sialolith formation. It is estimated that sialolithiasis affects 12 of every 1000 patients in the adult population,⁷ with men affected twice as often as women. Most salivary calculi are small and usually less than 1 cm, but megaliths or giant calculi have been reported. They are composed of mineralised debris that accumulates within the duct lumen including calcium phosphate, carbon and trace amounts of magnesium, potassium and ammonium. Salivary calculi grow by deposition at an estimated rate of 1–1.5 mm/year.⁸ In the submandibular duct, multiple salivary stones are rare.⁹ Sialoliths are most the common cause of acute and chronic infections of salivary glands. The resulting salivary stasis from stone formation allows bacterial ascent into the gland and then increases the risk of bacterial colonisation and acute salivary gland infection.¹⁰ Because stones are more common in Wharton's duct, so are acute bacterial infections of the submandibular gland versus the parotid.

CASE PRESENTATION

A 25-year-old patient came to the department of Oral & Maxillofacial Surgery with complaint of pain and swelling that gradually increases during mastication and subsides by its own for 1 year. On clinical examination, a stony hard mass was palpated in the region of the right buccal mucosa (figure 1), suggestive of possible obstruction of the parotid duct. On milking the gland, the ejection of

saliva was not as free flowing as it was on the other side, which led us to go for other definitive investigations.

INVESTIGATIONS

- ▶ Posteroanterior mandible revealed a radiopaque image on the right ramus of the mandible (figure 2).
- ▶ Complete blood count, which was unremarkable.
- ▶ Ultrasonography (USG) of the right side of the face which was suggestive of radiopaque substance in the region of the right Stensen's duct.

DIFFERENTIAL DIAGNOSIS

Differential diagnosis included viral sialadenitis—mumps, acute bacterial sialadenitis, radiation sialadenitis and Sjögren's disease, which were ruled out during clinical, radiological and histopathological examination. Palpation of the parotid papilla (at Stenson's duct) reveals little or no salivary output, whereas in the presence of a parotitis, palpation will yield suppurative material.

TREATMENT

On surgical exploration under local anaesthesia, a stone measuring about 5–6 mm in length was visible at the orifice as seen in (figure 3), which was retrieved along with another stone of about 2 mm. A stent was placed in the right Stensen's duct (figure 4) to maintain the patency of the duct and milking of gland was done to check the free flow of saliva. Closure was done with 3–0 black silk (figure 5).

OUTCOME AND FOLLOW-UP

Patient was asymptomatic on 1-year follow-up.

DISCUSSION

Some sialoliths may be asymptomatic and identified incidentally during jaw imaging. Approximately 30% of the time, submandibular sialolithiasis presents with painless swelling, but the classic symptoms are secondary to duct obstruction and include pain and swelling of the involved gland during eating when saliva production is at its maximum and salivary flow is forced against a fixed obstruction. Subsequent gradual reduction of the swelling can occur, but as salivary flow is stimulated, painful symptoms can recur. Patients may have waxing and waning symptoms of episodic swelling and discomfort, or may have more persistent symptoms as salivary fluid accumulates within the duct. Occasionally, stones can be palpated with digital examination; they feel like hard small pebbles. Less commonly, they are seen as granular masses at the gland duct entrance. To identify the degree of obstruction, the

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Figure 1 A stone-like mass palpated on the right buccal mucosa.

emergency physician can try to squeeze saliva from the gland to see if it is blocked.

Severe obstruction of the gland is shown by exquisite tenderness, intraoral and/or extraoral swelling and the absence of saliva on palpation. The differential diagnosis of salivary calculi includes infections (bacterial and viral), inflammatory conditions (Sjögren's, sarcoidosis, radiotherapy reaction) and masses (neoplastic and nonneoplastic). Diagnostic imaging to identify presumed salivary calculi include conventional radiography, sialography and USG. But currently, high-resolution non-contrast CT scanning is the imaging modality of choice for the evaluation of salivary stones. This is because many calcified sialoliths are not detected by conventional radiography until they are 60–70% calcified with at least 20% of submandibular and 50% of parotid stones not identifiable on intraoral and panoramic radiography. However, owing to the non-availability of this facility in this region we were not able to obtain a CT image.

In sialography, a dye is injected into the duct, and it can demonstrate obstruction as a filling defect in the duct and duct stenosis. It cannot, however, demonstrate small secretion plugs or secretion plaques, and it is contraindicated in acute infection or in patients with a significant contrast allergy. USG identifies calculus as white echogenic structures with glandular inflammatory changes of the salivary gland, but it is unable to diagnose any other aetiology of gland swelling. Small calibre endoscopy was developed to treat obstructive disorders of the salivary

Figure 2 Posteroanterior mandible showing radiopaque object in the right ramal region.

Figure 3 Salivary stone of approximately 5–6 mm in length after retrieval.

gland duct system. It is both diagnostic and therapeutic, and has the benefit of differentiating between obstructive inflammatory conditions and calculi. Despite most sialoliths being composed of calcium elements, they are not associated with systemic calcium abnormalities, so a serum calcium level is not needed. Sialoendoscopy, fluoroscopy-guided wire basket extraction, lithotripsy and surgical removal are other options when expectant management fails or is inappropriate. The decision about which technique to utilise depends on stone size, location and procedure availability. The stone will stay in the gland until it is removed. Typically, stones less than 2 mm in diameter can be treated without surgical intervention.

A conservative approach, including oral analgesia, hydration, local warm heat therapy, massage to 'milk' out the stone, sialogogues (ie, tart hard candies) to promote ductal secretions, and discontinuation of anticholinergic medications when possible are recommended. In most cases, removing the stone will relieve pain except when an associated infection exists. Antibiotics covering oral flora for gland superinfection are recommended. Severe obstruction usually requires surgical intervention, especially when the obstruction is close to the gland. This patient

Figure 4 Stent in place with respect to the right Stensen's duct, salivary flow can be appreciated.

Figure 5 Closure with 3-0 black silk.

was found to have a 6 mm right parotid stone that was surgically removed at the chair side using local anaesthesia. He tolerated the procedure well and was discharged. The patient was asymptomatic after 1-year follow-up.

Learning points

- ▶ The diagnosis, clinical and radiological assessment is a useful tool in the management of sialolithiasis.
- ▶ The presence of renal disease or systemic disease that may alter salivary function may be a predisposing feature for salivary calculi formation, which should be ruled out on careful diagnostic evaluation.
- ▶ Ultrasonography is an important tool in the diagnosis of any pathology and that was correlated in this case.
- ▶ This case report highlights the importance of taking a detailed medical and dental history along with panoramic radiography, followed by a more selective, individualised radiographic assessment as necessary. More specifically, the general practitioner should routinely and systematically analyse radiographs to identify any variation from normal.
- ▶ The dental practitioner has an important role to play in the management and possible treatment of sialolithiasis.

Competing interests None.

Patient consent Obtained.

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