



MANAGEMENT OF SIALOLITH OF SUBMANDIBULAR DUCT

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ABSTRACT

The great majority of salivary calculi (80%) occur in the submandibular gland duct. Ten percent occur in the parotid gland and the remaining 10% in the sublingual gland and the minor salivary glands. The exact cause and pathogenesis are still unknown. Men have a slight predilection for occurrence, usually after the age of 40 years. A 48 years old female patient reported to the department of oral and maxillofacial Surgery, PGIDS, Rohtak with complaint of swelling and associated pain below the tongue since 6-7 months was managed under local anesthesia in day care. Salivary calculi are usually small and measure from 1 mm to less than 1 cm. They rarely measure more than 1.5 cm. Mean size is reported as 6 to 9 mm. Large and giant calculi may perforate the floor of the mouth by ulcerating the duct or may result in a skin fistula by causing a suppurative infection. Different treatment options may be selected according to the size and location of the sialolith. Small sialolith of the major salivary glands sometimes can be treated conservatively but larger sialoliths usually need to be removed surgically. If significant inflammatory damage has occurred within the feeding gland, the gland may need to be removed.

INTRODUCTION

Sialoliths are the most common diseases of the salivary glands. They may occur in any of the salivary gland ducts but are most common in Wharton's duct and the submandibular gland. The great majority of salivary calculi (80%) occur in the submandibular gland duct. Ten percent occur in the parotid gland and the remaining 10% in the sublingual gland and the minor salivary glands [1]. Flow of saliva against gravity, its more alkaline pH, the high mucin and calcium content could explain the preferential stone formation in the submandibular gland. The exact cause and pathogenesis are still unknown. Men have a slight predilection for occurrence, usually after the age of 40 years.

Patients have pain, discomfort and swelling before or during meals. They often mention recurrent submandibular swelling. Between 75 to 80% of all salivary gland calculi are radiopaque, however the majority of parotid calculi are radiolucent [2]. In the anterior floor of mouth, an occlusal radiograph may reveal the calculus. In

small and radiolucent calculi, radiographic finding may be negative and sialography may be the examination of choice, although displacement of the calculus toward the gland cannot always be avoided.

Case report

A 48 years old female patient reported to the department of Oral and Maxillofacial Surgery PGIDS Rohtak with chief complaint of swelling and associated pain below the tongue for the last 6-7 months. She was having treatment from a local dentist but she could not get any relief. Patient had pain; discomfort and swelling before or during meals. She also reported recurrence of swelling. Medical history of the patient was not remarkable. Extraoral examination revealed no swelling and no palpable mass. In intraoral examination, bimanual palpation revealed a hard elongated mass with whitish color along the right Wharton's duct and a grayish-white mass was observed at the orifice of right submandibular



gland. Occlusal radiograph was obtained for radiographical examination. The radioopaque sialolith could not be observed in right Wharton's duct on mandibular occlusal radiograph. The patient was reexamined by the clinician after radiographical examination. The lesion moved and surprisingly felt with some pus flow into the floor of the

mouth while the clinician was checking the salivary flux by slight pressure to the submandibular region. The lesion was excised surgically. On the basis of clinical and histopathological findings, the lesion was diagnosed as submandibular duct sialolith.

Figure 1. Occlusal radiograph with no evidence of sialolith

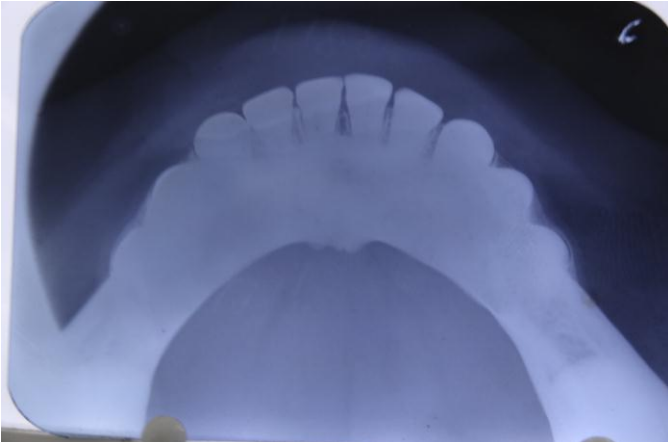


Figure 2. Intraoral photograph showing swelling and inflammation around the right ductal opening



Figure 3. Intraoral photograph showing sialoliths at the anterior end of duct



Figure 4. Postoperative photograph showing patency of duct



Figure 5. Removed sialoliths measuring with calibrated probe



DISCUSSION

Sialoliths are calcified structures that develop within the salivary ductal system. They are believed to arise from deposition of calcium salts around a nidus of debris within the duct lumen. This debris may include inspissated mucus, bacteria, ductal epithelial cells or foreign bodies. The cause of sialoliths is unclear, but their formation can be promoted by chronic sialadenitis and partial obstruction. Their development is not related to any systemic derangement in calcium and phosphorus metabolism. Salivary calculi are usually small and measure from 1 mm to less than 1 cm. They rarely measure more than 1.5 cm. Mean size is reported as 6 to 9 mm. Giant sialoliths are rare and defined as the size of 3.5 cm or larger [3,4]. Major gland sialoliths most frequently cause episodic pain or swelling of the affected gland, especially at meal time. The severity of the symptoms varies, depending on the degree of obstruction and the amount of resultant back pressure produced within the gland [5]. If the stone is located toward the terminal portion of the duct, a hard mass may be palpated beneath the mucosa. Sialoliths typically appear as radiopaque masses on radiographic examination. However, not all stones are visible on standard radiographs (perhaps because of the degree of calcification of some lesions). They may be discovered anywhere along the length of the duct or within the gland itself. Stones in the terminal portion of the submandibular duct are best demonstrated with an occlusal radiograph. On panoramic or periapical radiographs, the

calcifications may appear superimposed on the mandible and care must be exercised not to confuse it with an intrabony lesion. Multiple parotid stones radiographically can mimic calcified parotid lymph nodes. Sialography, ultrasound and computed tomography scanning may be helpful additional imaging studies for sialoliths [6].

Different treatment options may be selected according to the size and location of the sialolith. Small stones often may be “milked out” through the ductal orifice using bimanual palpation. If the stone is too large or located in the proximal duct, piezoelectric extracorporeal shock wave lithotripsy or surgical removal of the stone or gland may be required. Sialoendoscopy is a new way and minimally invasive technique for treating obstructions of the ductal system and can be used with operation in large salivary stones [7-9]. Recurrent or continuous obstruction of the salivary duct may lead to acute or chronic sialadenitis or even to the perforation of the oral mucosa.

CONCLUSION

Diagnosis is mainly done by palpation and digital manipulation. Sialography plays an important role in identifying the location of calculus. The clinicians should evaluate carefully the painful or a painless swelling in submandibular area due to sialolith is the most common disease in submandibular gland and Wharton’s duct. Large submandibular sialoliths should be treated by appropriate approach to prevent possible severe complications.

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