

Surgical Removal of an Unusually Large Sialolith: A Case Report

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ABSTRACT

Sialolithiasis is a disease that is characterized by the presence of sialolith in the different parts of the salivary gland. Sialoliths are hard structures of oval shape with different size. The color varies from white to brown and has a nodular surface. Sialoliths are usually composed of an intensely calcified organic core and is surrounded by an alternative layer of organic and inorganic substance. Sialoliths occurs with a frequency of 1.2%. The most common site is the submandibular gland. Size varies from 10-15 mm. We present a case of 17-year-old female who reported to us with the complaint of pain, swelling, and discharge of pus from the right side floor of the mouth. Based on the radiographic and clinical examination a diagnosis of sialolithiasis of the right submandibular duct was made. The sialolith was removed under local anesthesia. Salivary flow is normal after 6 months of intervention.

Keywords: Saliva, Sialolith, Wharton's Duct

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INTRODUCTION

Sialolithiasis is characterized by the development of salivary stones, known as salivary calculi or sialoliths in the salivary duct or in the salivary gland. More than 80% of salivary sialoliths occur in the submandibular gland, 6-15% in the parotid gland and around 2% occur in sublingual and minor salivary gland.^{1,2} Frequency of occurrence is 1.2%, with male predominance.³

Salivary calculi develop due to deposition of mineral salts around a nidus of bacteria, desquamated cells or mucus. Sialoliths are composed of organic and inorganic substances. The organic layer is composed of condensed mucus, mucopolysaccharides, glycoproteins, cellular elements and lipids while the inorganic material is composed of calcium phosphate, calcium carbonate, and trace elements. The etiology of sialolith is assumed to be related to the specific physiological and anatomic factors of the affected gland. The incidence of sialolithiasis in the sublingual gland is very rare and in some studies absent. The chemical composition consists of microcrystalline

apatite or whitlockite.^{4,5} Submandibular stones are made up of 82% of inorganic and 18% of organic material, whereas parotid stones are formed of 49% inorganic and 51% organic material.⁶ Mostly, sialoliths measure <1 cm in size, rarely are more than 15 mm. We report a case of a salivary duct stone of unusual size in a 17-year-old female patient and discuss its surgical management.

CASE REPORT

A 17-year-old female reported with a chief complaint of swelling, pain and pus discharge from the right side floor of the mouth since 2 months. The patient's medical history was noncontributory. Pain was continuous and sharp in nature, pricking in type, radiating to the tongue with restricted tongue movement. Extraoral examination was insignificant. Intraoral examination revealed swelling along the right Wharton's duct (Figure 1). Pus discharge was noticed from the ductal orifice. Tenderness was noted in right submandibular gland. Occlusal radiograph revealed a radiopacity within the right side of Wharton's duct (Figure 2). On the basis



Figure 1: Intraoral view showing a soft, elevated lesion located in the right side floor of the mouth

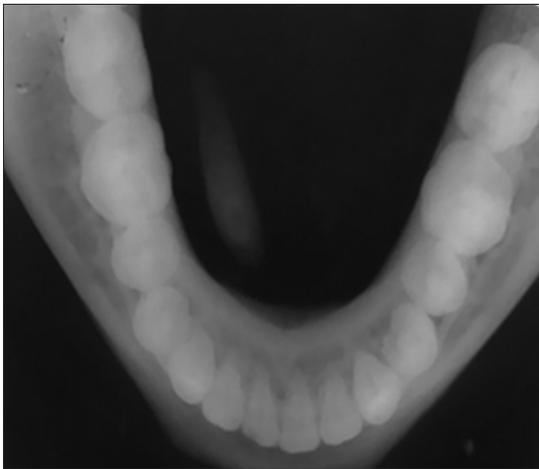


Figure 2: Occlusal radiograph showing a radiopaque and cylindrical mass near right side of the floor of mouth

of clinical and radiographic examination, diagnosis of sialolithiasis was made. Analgesics and antibiotics were given preoperatively, after which surgical removal of the sialolith from intraoral approach was planned.

Local anesthesia was administered, and sialolithotomy was performed from intraoral approach (Figure 3). Sialolith was exposed by placing an incision directly over it. A 20 mm long, cylindrical, rough, hard, yellowish colored mass was obtained (Figure 4). Patient was on the follow-up for 6 months and showed no signs or symptoms of xerostomia, and salivary flow was normal.

DISCUSSION

Sialoliths commonly measure around 5-10 mm in size and are mainly made up of calcium phosphate with small amounts of carbonates in the form of hydroxyapatite.⁷ Typical presentation of sialolithiasis is pain and swelling of the involved salivary gland caused by obstruction



Figure 3: Via transoral approach, sialolith was delivered



Figure 4: Specimen dimension: 20.1 mm

of salivary flow.⁸ A nidus, salivary stagnation and precipitation of salivary salts are necessary for the formation of sialolith. Infection, inflammation of the gland, physical trauma to the duct or orifice or presence of desquamated epithelial cells are involved in the development of salivary stones.⁹ According to Ledesma-Montes *et al.*,¹⁰ salivary proteins might also play an important role in sialolith formation. Marchal *et al.*,¹¹ observed the presence of a sphincter system in the first 3 cm of the Wharton's duct in 90% of their studied cases, and suggested that variation of such a sphincter-like mechanism in the salivary duct could be a reason for easier retrograde migration of oral materials. In our case, the sialolith was located in the submandibular gland that is most susceptible to calculus formation due to a greater concentration of calcium and phosphate, alkalinity of its saliva with higher mucus content. Moreover, it has a tortuous course, causing tendency for secretory congestion and calculus formation.⁹ Radiopacity is not a consistent feature in most of the submandibular stones; hence sialography or other imaging techniques (computed tomography scan, ultrasound) may be required for locating

them.¹² Larger sialoliths appear as radiopaque masses and are easily seen on radiographs.⁹ The treatment objective for sialolith is the re-establishment of normal salivary secretion. According to Rai and Burman⁷ a large sialolith should be removed by transoral sialolithotomy. Long-term obstruction by large sialoliths may cause salivary gland sialadenitis gland.¹³ However, our patient after 6 months of sialolithotomy, showed no signs or symptoms of xerostomia with normal salivary flow. According to Soares *et al.*,¹⁴ intraductal stones can be removed by transoral approach, and an extraoral submandibular gland excision is indicated for intraglandular stones. Treatment of sialolith of a remarkable size is challenging for the clinician. Conservative methods of treatment such as endoscopy, shockwave lithotripsy techniques should be considered as a substitute to surgical excision, especially for small calculi.¹⁵

CONCLUSION

The clinicians should carefully evaluate the swelling in the submandibular area due to sialolith that is most common in the submandibular gland and Wharton's duct. Larger submandibular sialolith should be treated by an appropriate approach to prevent complications.

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