



## **Parotid Sialolithiasis and Sialadenitis: A Case Report**

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## Introduction

Sialolithiasis is an obstructive disorder of salivary ductal system caused by formation of stones within the salivary gland or its excretory duct (1). The resulting salivary flow obstruction leads to salivary ectasia, gland dilatation and ascending infection (2). The clinical symptoms are clear and allow for an easy diagnosis, whenever we take into account that pain is only one of the symptoms and that it does not occur in 17% of the cases (3). Sialolithiasis accounts for 30% of salivary diseases and it most commonly involves the submaxillary glands (83 to 94%) and less frequently the parotid (4 to 10%) and sublingual glands (1 to 7%).

Several hypotheses have been put forward to explain the etiology of calculi: mechanical, inflammatory, chemical, neurogenic, infectious, foreign bodies, etc. It seems that the combination of a variety of these factors usually provokes the precipitation of the amorphous tricalcium phosphate, which, once crystallized and transformed into hydroxyapatite becomes the initial focus. From this moment on, it acts as a catalyst that attracts and supports the proliferation of new deposits of different substances (3). Salivary calculi affecting the parotid gland are usually unilateral and are located in the duct. Their size is smaller than submaxillary sialoliths, most of them < 1 cm. (4,5). It may occur at all ages, but there is a peak incidence in the 4th, 5th and 6th decades.

Obstruction of salivary secretion by a sialolith can result in swelling and pain, as well as infection of the gland the swelling is usually correlated to meals, when salivary secretion is enhanced (6).

## Case Report

A 45-year-old female patient was presented with complaining of painful swelling in the right parotid area and low-grade fever. She had no major medical problem and was not taking any medication. Upon inspection, parotid area appeared swollen and erythematic. Oral examination revealed swelling at the right buccal mucosa. A hard, well-defined mass was palpable in the anterior portion of the Stenson's duct. A small amount of exudate was discharged from the orifice.

A panoramic radiograph revealed a small radiopaque area at the clinically palpated mass, consistent with the diagnosis of sialolithiasis in Stenson's duct of the right parotid gland. Ultrasonography (USG) of the right side of the face shows radiopaque substance in the region of the right Stensen's duct.

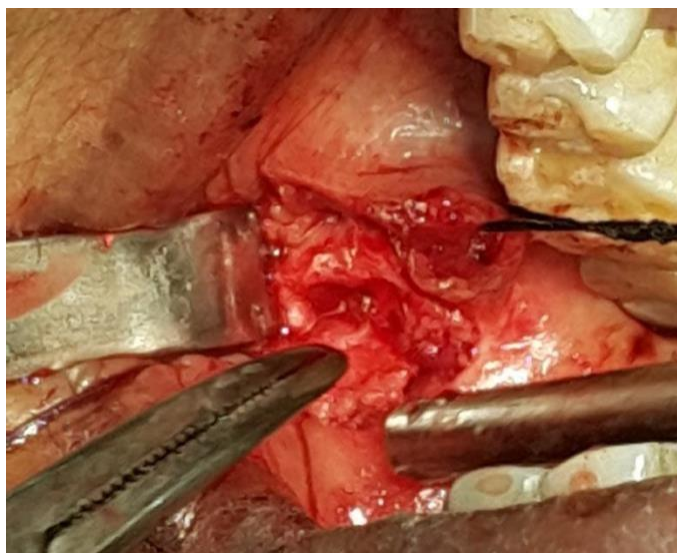
### **Differential Diagnosis**

Differential diagnosis included viral sialadenitis-mumps, acute bacterial sialadenitis, radiation sialadenitis and Sjogren's disease, which were ruled out during clinical, radiological and histopathological examination.

### **Treatment**

Surgical exploration was done under local anaesthesia. Stone was palpated near ductal orifice. stone measuring about 6 mm in length was visible at the orifice, which was retrieved (figure1). A stent was placed in the right Stensen's duct (figure 2) to maintain the patency of the duct and milking of gland was done to check the free flow of saliva (figure 3). Closure was done with 3-0 vicryl (figure 5).

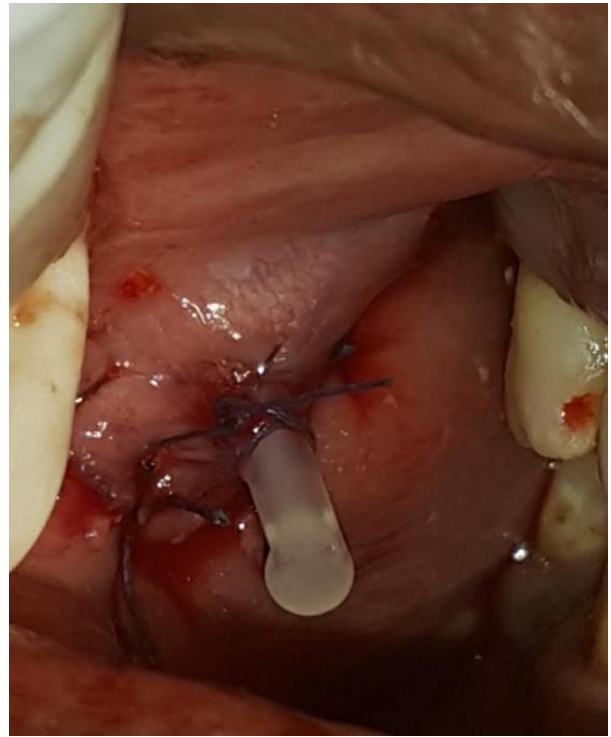
The calculi had irregular borders and a yellowish color with 6\*3 mm (figure 4).



**Figure 1**



**Figure 2**



**Figure 3**



**Figure 4**

The patient was kept on parenteral antibiotics for 2 days and switched to an oral alternative when discharged from the hospital. On one week follow-up, the swelling was almost normalized without any further problems and the patient was prescribed 5 additional days of oral antibiotics.

## Discussion

Parotid calculi are considered rare as compared to those of the submandibular gland both in children and adults (Horie et al., 1995) (7). The higher incidence of sialolithiasis as the patients grow older (Lustman et al, 1990) can be due to reduced secretory activity, alterations of electrolyte concentrations and impairment of glycoprotein synthesis of the salivary glands; all of which could result from structural deterioration of cell membranes during aging (Bodner and Gorsky, 1996)(8). Zenk et al. (9) found that only 6.1% of 635 patients with sialolithiasis were younger than 20 years and among these there were two cases of a solitary parotid gland stone in a 4-year-old girl and a 2-year old boy.

Several theories have been suggested as to the pathogenesis of sialolithiasis but none have yet been firmly established. The sialolith is assumed to be formed by the deposition of organic and inorganic materials around a central core. The central core is composed of the precipitation of calcium salts around an initial organic nidus that consists of altered salivary mucins, bacteria and desquamated epithelial cells. The organic layers are composed of various carbohydrates and amino acids and the inorganic layers consist of calcium phosphate, a small quantity of carbonates in the form of hydroxyapatite, and a small amount of magnesium and ammonia). Other factors that have been suggested were alkalinization of saliva, physical trauma, stagnation of saliva, gout and nephrolithiasis. The ratio of organic to inorganic material in a submandibular stone is 18:82, whereas that in a parotid stone is 51:49(10). Grossly, the sialolith has a round or ovoid shape, a porous texture and a pale-yellow color, measuring from 1 mm to less than 1 cm in general. Examples larger than 15 mm are considered giant calculi, of which only a handful of cases have been reported.

The presentation of parotid sialolithiasis varies in different stages. During acute infection phases, patient may present with pain, swelling, redness and discharge from the duct, which can be precipitated by meals. However, in the chronic phase, the patient may present with recurrent painful swelling or non-resolving infections of the gland which usually reduce in size. In our case, patient was

symptomatic and shows signs of infection. 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. We couldn't perform CT scan as patient rejected to doing the same. USG shows radiopaque mass near duct. 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.

Small caliber endoscopy was developed to treat obstructive disorders of the salivary 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 mandatory.

Sialo endoscopy, 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 utilize depends on stone size, location and procedure availability. The stone will stay in the gland until it is removed.

A conservative approach, including oral analgesia, hydration, local warm heat therapy, massage to 'milk' out the stone, sialogogues 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. Our patient was found to have a 7 mm right parotid stone that was surgically removed at the chair side using local anesthesia. She tolerated the procedure well and was discharged. The patient was asymptomatic after 1-year follow-up.

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