



## Sialolith Excision in Submandibular Gland: Case Report with 14 Years Follow-Up

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### Abstract

Sialolithiasis is a relatively common pathology in dental practice that affects mainly the major salivary glands. The submandibular glands are more affected, in young adults, between the third and fourth decades of life. Clinical and sometimes radiographic features determine the diagnosis, leading to appropriate treatment, particularly surgical. The purpose of this article is to report the case of a patient who presented painful symptoms caused by a sialolith located in the submandibular duct, treated by surgical excision. The case has been followed for 14 years. The diagnosis, therapeutic modalities and prognosis were discussed.

**Keywords:** Salivary Gland Calculi; Salivary Duct Calculi; Salivary Gland Diseases; Oral Pathology; Oral Surgery

### Introduction

The sialolith, salivary calculus or sialolithiasis, is a relatively frequent pathology in clinical stomatology, characterized by obstruction of the salivary ducts caused by calcified concretions in the parenchyma or ductal system of the major or minor salivary glands. It most commonly affects the submandibular salivary glands. It is usually unrelated to systemic changes [1-8].

Clinically, the sialolith presents itself by swelling of the oral floor, characterized by enlargement of the gland, by salivary retention; xerostomia; sometimes with purulent discharge through the ductal orifice when associated with infection; painful symptomatology with greater intensity during meals, varying the degree of intensity according to the duct obstruction. The sialolith is considered the major cause of unilateral diffuse edema of the parotid and submandibular glands [1-10].

The sialoliths are rigid calcified masses of varied appearance (cylindrical, spindle-shaped or spherical), predominantly yellowish in color, usually solitary, although they can be found in multiple calculations in the parenchyma of the gland, or bilaterally in the ducts of Warton. This situation can occur in both the major and minor salivary glands, either within the ducts or in the gland

parenchyma itself. They may be symptomatic or asymptomatic. The size of the sialolith is variable, and may reach 30mm [1-10].

These stones are made up of two distinct components - organic and inorganic. The organic portion is composed of glycoproteins, mucopolysaccharides, lipids, and cellular debris. The inorganic portion is composed of carbonaceous apatite, calcium salts, and phosphates such as iron, zinc, copper, and magnesium [1,2,4-9].

The etiopathogenic mechanisms still remain unknown, although predisposing factors such as anatomical features of the gland, location, salivary nature, ionic and pH imbalance are known [2,3,5-10].

The purpose of this article is to report the case of a patient who presented painful symptoms caused by a sialolith located in the submandibular duct, treated by surgical excision. The case has been followed for 14 years.

### Case Reports

A Caucasian male patient, 30 years old, came to a private clinic complaining of symptoms on the oral floor.

Clinically, a whitish nodule was observed, underlying the mucosa, slightly erythematous with inflammatory aspect, resistant to palpation, with a diagnostic hypothesis of sialolith in the duct of the submandibular gland (Figure 1).



**Figure 1:** Sialolith localized in the duct of the submandibular gland.

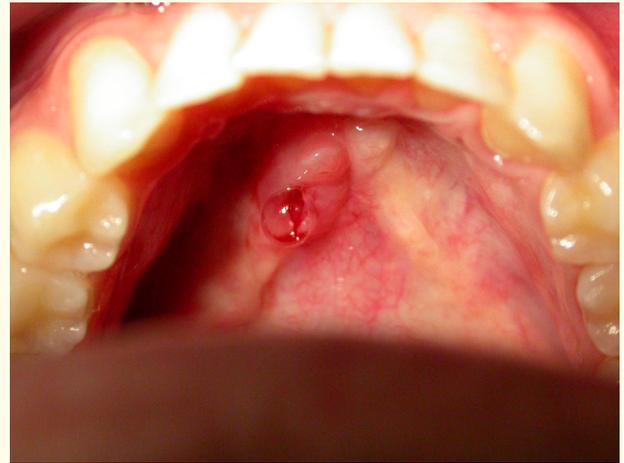
A occlusal radiograph was taken, showing a radiopaque image on the oral floor, defining the diagnosis of sialolith (Figure 2).



**Figure 2:** Radiopaque image located on the oral floor, suggestive of sialolith.

Surgery to excise the sialolith was indicated, since there was no response in the removal of the calculus by stimulation with lemon juice and manual milking, recommended to the patient as an initial therapeutic option. Under local infiltrative anesthesia, a superficial mucosal incision was made over the sialolith, exposing it. After removal of two fragments (Figure 3), we observed the salivary flow, which was obstructed (Figure 4). The mucosa was sutured (Figure 5), and removed after 10 days. No complaints or post-surgical complications were reported.

After 30 days post-surgery, the patient was evaluated, showing satisfactory repair and healing, as well as constant and normal salivary flow (Figure 6).



**Figure 3:** Salivary flow after excision of sialolith.



**Figure 4:** Fragments of the sialolith removed.



**Figure 5:** Suturing the surgical wound.



**Figure 6:** Post-surgery (30 days) showing satisfactory tissue repair.

The case has been followed for 14 years, with annual evaluations, with no signs of recurrence of the lesion.



**Figure 7:** Clinical evaluation after 14 years, with no signs of recurrence of the lesion.

## Discussion

For the correct diagnosis of sialolith, maneuvers of inspection, palpation and milking of the ductal portion are necessary, in order to assess salivary ejection both qualitatively and quantitatively on the affected side. Occlusal, oblique lateral mandibular and telero-radiographic radiographs allow visualization of the sialolith - both located inside the ducts and in the glandular parenchyma - which presents itself radiographically as a radiopaque image, with defined contours and circumscribed in the ductal or parenchymal path of the salivary gland to be studied. Panoramic and periapical radiographs are contraindicated because they can simulate intraosseous lesions by superimposing images, making it difficult to diagnose sialolithiasis. In the present report, an occlusal radiographic technique was used, which was elucidative in the diagnosis. It was possible to observe a radiopaque image in the path of Warton's duct. Computed tomography, ultrasound, sialoendoscopy, scintigraphy and sialography can be used, favoring the diagnosis of sialolithiasis. However, because of the high cost compared to occlusal radiography, they are not recommended [1-8,10,11].

The differential diagnosis of sialolithiasis includes obstructive sialadenitis, endemic parotitis, and salivary gland tumors; calcified lymph nodes, phleboliths, or even tuberculosis of the lymph nodes with vascular calcifications, mandibular torus, ossifying myositis, and osteoma [1,2].

On microscopic analysis, the sialoliths present concentric laminations. When found associated with the duct, they are metaplastic in any of the epithelial layers, whether squamous, mucous or oncocyctic cells, showing periductal inflammation [9].

Sialolithiasis most often affects the major salivary glands, with the submandibular gland being the most affected (83% to 90%), parotid (4% to 10%), sublingual and minor salivary glands that are rarely affected (1% to 2%). Similarly, in the present report, the involvement of the excretory duct of the left submandibular gland

is observed, which reinforces the epidemiological characteristic of the lesion with higher prevalence in submandibular glands. Besides the location, the occurrence of sialolithiasis is frequent in adults aged between 30 and 40 years, which can also be observed in this case of a patient in the third decade of life [1,2,5-7,12].

Among the therapeutic modalities, milking or stimulation with lemon juice (or sialogogues, which induce increased salivary secretion and promote the expulsion of sialolith from within the ductal lumen) can be employed when the sialolith is found in the distal and end portion of the duct; or surgical treatment, when its removal is not possible by milking. The use of a sialogogue agent (or lemon juice) as well as milking of the ductal portion were also employed in the present case. However, despite the sialolith being in the most distal portion of the duct, which would favor its removal, a satisfactory result was not observed, and surgical intervention was then performed. In cases where the sialolith is located inside the glandular parenchyma, exeresis of the gland should be considered. Techniques such as shock wave lithotripsy, laser surgery (CO<sub>2</sub>) and marsupialization of the duct with placement of catheters inside have been reported and have a satisfactory post-surgical outcome. The catheter should be removed with the sutures seven days after placement. The advantages are the repair and healing of the duct without the formation of stenosis or total obstruction of its lumen by fibrous scar tissue [1-4,6,8,10,12].

The application of botulinum toxin has been advocated when the patient, for some reason, cannot undergo surgery, thus reducing the production and excretion of saliva [12,13].

The recurrence rate is relative and depends on the type of therapeutic approach employed, ranging from 1 to 10% of cases [3,8,11].

## Conclusion

The sialolithiasis is a relatively frequent pathology of the major salivary glands, with higher incidence in the submandibular glands, affecting young adults, with ages between the third and fourth decades of life. The accurate diagnosis, besides the knowledge of the clinical characteristics of the disease, are a *sine qua non* condition for the correct and adequate treatment. Conservative treatments, such as the use of sialogogues, lemon juice, and manual milking are therapeutic options for the expulsion of salivary calculus from the ductal interior. However, when these methods are not effective, surgical intervention becomes necessary to resolve the case. The prognosis is satisfactory.

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