

**SIALOLITHIASIS TREATMENT ON THE
SUBMANDIBULAR DUCT GLAND
A CASE REPORT**

**TRATAMENTO DE SIALOLITÍASE NO DUCTO
DA GLÂNDULA SUBMANDIBULAR
RELATO DE CASO**

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RESUMO

A sialolitíase é a doença das glândulas salivares mais comuns, sendo caracterizada, principalmente, pela obstrução da secreção salivar por cálculos no interior do ducto, ou mesmo, no parênquima glandular. Os sialólitos respondem por mais de 50% das doenças das glândulas salivares maiores sendo, portanto, a causa mais comum das infecções crônicas e agudas. A glândula submandibular ou seu ducto são afetados em mais de 80% dos casos. A maior incidência de sialolitíases envolve a glândula submandibular devido ao seu pH mais alcalino, maior concentração de cálcio e fosfato e, maior conteúdo salivar mucoso quando comparado as outras glândulas salivares maiores. Além disso, o ducto de Wharton é mais longo, e a glândula possui um fluxo salivar em direção ascendente. Análise detalhada do histórico dos sintomas e exame físico é de extrema importância no diagnóstico da sialolitíase. Dor e edema na glândula durante as refeições ou em resposta ao estímulo salivar são comuns. Radiografias oclusais da mandíbula podem evidenciar cálculos radiopacos. Existem diferentes formas de tratamento para as sialolitíases. O objetivo deste trabalho é apresentar um caso clínico de sialolitíase, em um paciente com 30 anos de idade, sendo tratado cirurgicamente. Tal procedimento mostrou-se uma alternativa segura e eficaz no tratamento de sialolitíases.

ABSTRACT

Sialolithiasis is the most common disease of salivary glands and is characterized by obstruction of salivary secretion by calculation inside the duct or even in the glandular parenchyma. Sialolithiasis account for over 50% of major salivary glands diseases and is therefore the most common cause of acute and chronic infections. The submandibular gland or its duct are affected by more than 80% of cases. The higher incidence of submandibular gland involves the more alkaline pH, higher concentrations of calcium and phosphate, and increased mucous salivary content when compared to the other major salivary glands. Furthermore, Wharton's duct is longer and has a gland salivary flow in the upward direction. Detailed analysis of the history of symptoms and physical examination are important in the diagnosis of sialolithiasis. Pain and swelling in the gland during meals or in response to salivary stimulation are common's. Jaw occlusal radiographs may show radiopaque calculations. There are different forms of treatment for sialolithiasis. The objective of this paper is to report a clinical case of sialolithiasis in a patient with 30 years of age, which was treated surgically. This procedure was a safe and effective alternative in the treatment of sialolithiasis.

UNITERMOS: Sialolitíase; Ducto de Wharton; Sialólito; Glândula salivar; Glândula submandibular.

UNITERMS: Sialolithiasis; Wharton's duct; Salivary Gland; Submandibular gland.

INTRODUCTION

The sialolithiasis is the most common disease of the salivary glands, characterized mainly by the obstruction of salivary secretion by calculations within the duct, or even, in the glandular parenchyma **(OLIVEIRA FILHO; ALMEIDA; PEREIRA, 2008 and MARZOLA, 2008)**. It is estimated that its occurrence is 12:1000 inhabitants. The male is affected in the ratio of 2: 1 compared to females.

The sialolithos account for over 50% of diseases of the major salivary glands, thus being the most common cause of chronic and acute infections. The submandibular gland or their ducts are affected by more than 80% of the cases, the parotid gland is 6%, and sublingual gland and minor salivary glands correspond to 2% **(ESCUDIER; DRAGE, 1999; LEUNG; CHOI; WAGNER, 1999; SIDDIQUI, 2002 and MARZOLA, 2008)**.

About 40% of the calculations of the parotid gland and 20% of the submandibular and are not radiopaque, sialography may be necessary to locate them **(CAWSON; ODELL, 1998 and MARZOLA, 2008)**.

The calculations are usually unilateral and are not responsible for cherostomy. Clinically are rounds or oval, rough or smooth, with a yellowish tinge. They consist mainly of calcium phosphate as hydroxyapatite with small amounts of magnesium, potassium and ammonia. Submandibular sialolithos consist of 82% inorganic and 18% organic materials. Bacterial elements were not identified in its interior **(ZENK; BENZEL; IRO, 1994; WILLIAMS, 1999 and MARZOLA, 2008)**.

Etiology

The exact etiology of salivary calculi is unknown. Its origin lies in the relative stagnation of saliva rich in calcium. It is believed that they are formed from the deposition of calcium salts around an initial organic focus formed by the salivary mucin, desquamated epithelial cells and bacteria. The most widely accepted hypothesis is that the salivary stasis produces a change in the mucous saliva element which forms a gel. This gel produces a framework for deposition of salts and organic substances, forming the sialolitho **(ZARZAR; AGURTO; REYES, 2002; GRACES; SANTIAGO; SIMONET, 2003 and ALKURT; PEKER, 2009)**.

The sialolithiasis usually causes pain and swelling in the salivary gland region involved by obstruction of salivary secretion during feeding. Calculations can cause salivary stasis, allowing bacteria reach the parenchyma of the gland, causing pain, swelling and infection. Some cases may be asymptomatic until the calculation is traveling can be felt or seen near the orifice of the duct. In other cases, clogging cannot be complete and obstructions in the long term, with no infection can cause glandular atrophy and fibrosis due to lack of secretion **(LEUNG; CHOI; WAGNER, 1999 and WILLIAMS, 1999)**.

Diagnosis

Detailed analysis of the history of symptoms and physical examination is of utmost importance in the diagnosis of sialolithiasis. Pain and swelling in the gland during meals or in response to the stimulus are relevant salivate. Complete obstruction causes pain, and swelling, drainage of pus can be observed through the duct, and signs of systemic infection may be present. Bi palpation of the floor of mouth, from posterior to anterior, manual calculation reveals palpable in most sialolithiasis submandibular gland (**MANDEL; ALFI, 2012**).

Imaging tests are useful for diagnostic of sialolithiasis. Mandibular occlusal radiographs may show radiopaque calculations. There is rarely a combination of radiolucent and radiopaque sialolithos. In cases showing signs of sialadenitis associated with radiolucent sialolithos submandibular or deep, sialography may be useful. However, it is contraindicated in cases of acute infections or in patients who are allergic to contrast (**LANDGRAF; ASSIS; KLUPPELL, 2006; MARZOLA, 2008 and MANDEL; ALFI, 2012**).

Treatment

The treatment may be conservative, particularly if the calculation is small. The patient should be well hydrated, having to apply moist heat and massage the gland while sialagogues' can be used to increase the production of saliva, causing the sialolitho be expelled out of the duct (**GABRIELLI; PALEARI; CONTENETO, 2008; MARZOLA, 2008 and YU; YANG; ZHENG, 2008**).

Almost half of submandibular stones are found in the distal duct and can be removed through an incision in the mouth floor without major complications (**MCGURK; ESUDIER, 1995 and MARZOLA, 2008**). If the calculation is the anterior, can be expressed and manipulated through the orifice of the duct with the aid of dilating lacrimal probes or to open the duct. Once opened, the calculation can be identified, expressed and removed (**WILLIAMS, 1999; GABRIELLI; PALEARI; CONTENETO, 2008 and MARZOLA, 2008**).

Other techniques that have gained ground in the treatment of Sialolithiasis are the intra and extracorporeal lithotripsy. These alternative methods are based on the piezoelectric principle, in which shock waves are applied directly to the surface without the calculation of the adjacent tissue from being damaged (**IRO; SCHNEIDER; FODRA, 1992**).

CASE RELATE

Female patient, 30 years, presented to the *Maxillofacial Surgery Service, Base Hospital in Bauru / SP*, with a history of painful symptoms in the right submandibular region two weeks ago. The intraoral physical examination revealed swelling in the floor of the mouth on the right side, referring to the accentuation of the frame when edema during meals (**Figure 1**). Palpation observed a mobile node and hard consistency, the milking

sublingual and submandibular glands that showed a small amount of saliva secretion being performed. We requested an occlusal radiograph of the jaw, in which radiopaque mass was observed on the duct corresponding to the right submandibular gland (**Figure 2**). Based on clinical and radiographic examination, established the diagnosis of sialolithiasis.



Figure 1 - Initial appearance of the lesion.

Source: Collection of the Department of Oral and Maxillofacial Surgery, Hospital de Base - Bauru - SP (FAMESP).

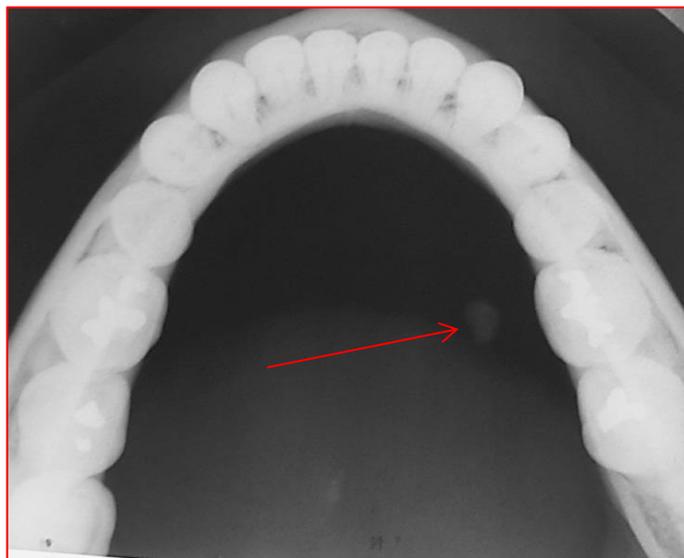


Figure 2 - Occlusal radiograph showing radiopaque right jaw injury.

Source: Collection of the Department of Oral and Maxillofacial Surgery, Hospital de Base - Bauru - SP (FAMESP).

If opted for surgical removal, in an outpatient setting under local anesthesia. An intravenous catheter of 0.7 mm diameter was inserted into the duct, to facilitate location and duct manipulation (**Figure 3**). The catheter also serves as a blowing duct can permit the removal of small sialoliths and near the orifice of the duct.



Figure 3 - Use of intravenous catheter through the ductal orifice.

Source: Collection of the Department of Oral and Maxillofacial Surgery, Hospital de Base - Bauru - SP (FAMESP).

Incision and dilatation was performed on the floor of the mouth to the duct is located and dissected for careful removal of calculus (**Figure 4**).

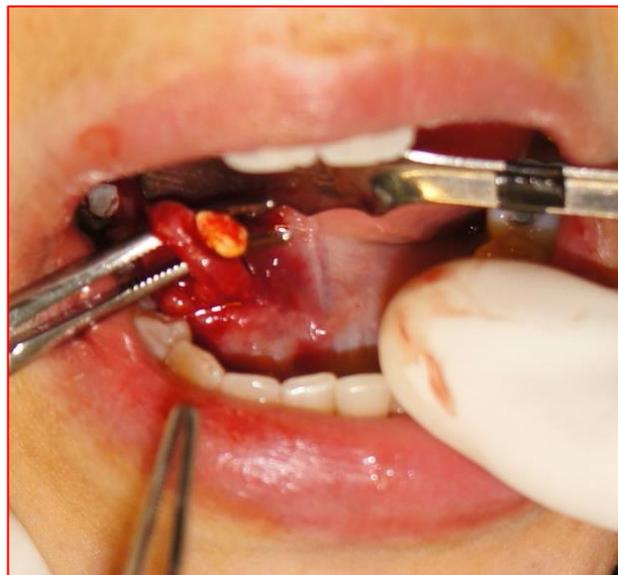


Figure 4 - Dissection of Wharton's duct and removal of sialolitho.

Source: Collection of the Department of Oral and Maxillofacial Surgery, Hospital de Base - Bauru - SP (FAMESP).

The sialolitho had about 3 mm X 6 mm (**Figure 5**).

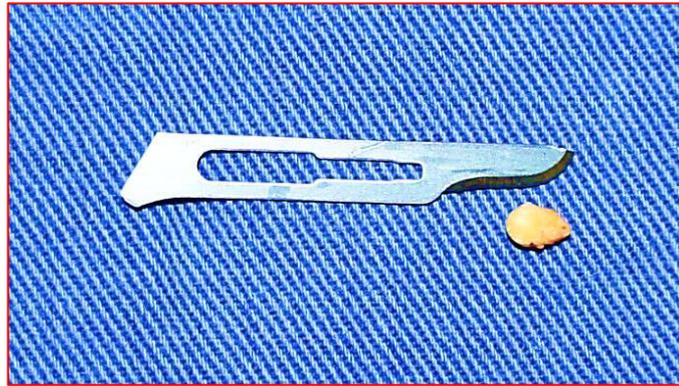


Figure 5 - Sialolitho measuring approximately 3 mm x 6 mm.

Source: Collection of the Department of Oral and Maxillofacial Surgery, Hospital de Base - Bauru - SP (FAMESP).

After cleaning of the field, followed with saline irrigation, hemostasis and suture (**Figure 6**). During suturing, the intravascular catheter was temporarily reinserted inside the duct, avoiding its collapse during suturing, and formation of new retention process saliva postoperative period.

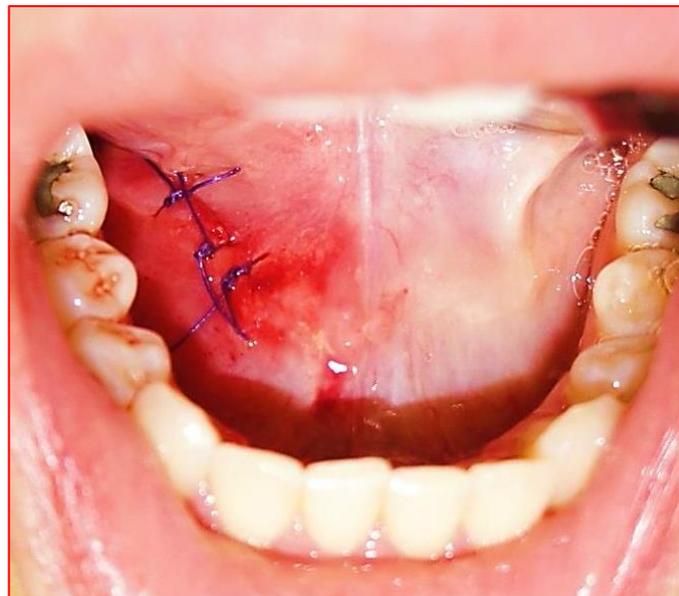


Figure 6 - Suture.

Source: Collection of the Department of Oral and Maxillofacial Surgery, Hospital de Base - Bauru - SP (FAMESP).

Seven days after the surgery, the patient returned for suture removal presenting healing aspect within the normal range (**Figure 7**). It is currently one year of follow up, adequate salivary flow and no signs of recurrence.



Figure 7 - Postoperative seven days.

Source: Collection of the Department of Oral and Maxillofacial Surgery, Hospital de Base - Bauru - SP (FAMESP).

DISCUSSION

The lithiasis of the salivary glands are conditions characterized by obstruction of a salivary gland or its excretory duct, due to the formation of a calcified or sialolitho mass, which results in salivary ecstasies and may even cause gland duct dilatation and usually causing pain and swelling in the salivary gland region involved by obstruction of salivary secretion during feeding (**LEUNG; CHOI; WAGNER, 1999; WAGNER, 1999; WILLIAMS, 1999; JORGE; REGO; SANTOS, 2006 and MARZOLA, 2008**). These symptomatology were referred to the case presented by the patient.

This sialolitho has a predilection for males being affected in the ratio of 2:1 compared to females. The sialolithos account for over 50% of diseases of major salivary glands, thus being the most common cause of acute and chronic infections. The submandibular gland or its duct is affected by more than 80% of the cases, the parotid gland is 6%, and sublingual gland and minor salivary glands correspond to 2% (**ESCUDIER; DRAGE, 1999; LEUNG; CHOI; WAGNER, 1999; SIDDIQUI, 2002 and MARZOLA, 2008**). Being a patient of this study was female, but in the majority of cases described being one duct sialolithiasis in the submandibular gland.

Among the tests ordered for the patient was present hematological tests, and occlusal Rx jaw and such tests are essential for safe and accurate procedure radiopaque calculations. In cases with signs of sialadenitis associated with radiolucent sialolithos submandibular or deep, sialography can be useful. However, it is contraindicated in cases of acute infections or in patients who are allergic to contrast (**LANDGRAF; ASSIS; KLUPPELL, 2006; MARZOLA, 2008 and MANDEL; ALFI, 2012**).

The stagnation saliva, increasing the alkalinity of the saliva, infection or inflammation of the salivary gland duct or can predispose to calculus formation. The highest incidence of submandibular gland involves

sialolithiasis due to the more alkaline pH, higher concentrations of calcium and phosphate, and increased mucous salivary content when compared to the other major salivary glands. Furthermore, Wharton's duct is longer and has a gland salivary flow in the upward direction. The deposit of salivary calculi is not related to systemic changes in calcium metabolism (**BRANCO; CARDOSO; CAUBI, 2003; FREITAS; ROSA; SOUZA, 2004 and MARZOLA, 2008**).

The duct may require removal opening for the calculation. This maneuver involves an intraoral access to the incision is made directly over the sialolitho. Thus, the subsequent calculations of 1 to 2 cm after the duct can be removed by direct incision of the duct in its longitudinal direction. One should take caution with the lingual nerve that despite lying deep lies in intimate position with the posterior region of Wharton's duct. Then, the calculation is grasped and removed. The site needs to be sutured, remaining open for drainage (**MARZOLA, 2008 and ARAÚJO; FARIAS JUNIOR; LANDIM, 2011**). What differs from the present case for the synthesis performed in the duct after your plumbing,

Situations in which the gland is damaged by recurrent infections, fibrosis or where the calculus is located within the gland may require removal of the same (**NAHLIELI; BARUCHIN, 1997 and MARZOLA, 2008**).

CONCLUSIONS

The ideal choice for sialolithos treatment should be based on its size, location and the affected gland. The sialolithos duct of submandibular gland can be treated effectively through relatively simple intraoral surgical approach and, without major trans or postoperative complications.

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