

DIAGNOSIS AND MANAGEMENT OF SUBMANDIBULAR DUCT SIALOLITHS: REPORT OF 2 CASES

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Abstract:

Sialolithiasis refers to the formation of calcareous concentration or sialoliths in the salivary duct leading to obstruction of the salivary flow, resulting in salivary ectasia, sometimes even dialation of the salivary gland. Sialolithiasis are the most common diseases of the major salivary glands after mumps. Submandibular salivary gland is commonly involved. The exact etiology and pathogenesis of salivary calculi is not well known. Sialoliths are usually small and measure from 1 mm to less than 1 cm in size. In this paper, we present two cases of submandibular duct sialolith with their diagnosis and surgical management.

Key words: Submandibular salivary gland, sialolith, surgical

Introduction:

The presence of saliva is vital to the maintenance of healthy hard and soft oral tissues. Severe reduction of salivary output not only results in a rapid deterioration in oral health but also has an adverse effect on the overall quality of life for the sufferer. One such condition which causes immense discomfort is sialolithiasis. Sialolithiasis refers to the formation of calcareous concentration or sialoliths in the salivary duct leading to obstruction of the salivary flow, resulting in salivary ectasia, sometimes even dialation of the salivary gland.¹ Sialolithiasis are the most common diseases of the major salivary glands after mumps. It accounts for approximately 30% of all salivary disorders and about 0.01- 1.0% of the population is affected, with a higher tendency in males ranging between 30 to 60 years.² Sialolithiasis most commonly involves the submandibular glands(83-94%) and

less frequently the parotid (4-10%) and the sublingual glands (1-7%). Submandibular salivary gland is commonly involved because of its anatomic location, long tortuous duct with a narrow orifice in contrast to the main portion of duct. Alkaline saliva rich in mucin also contributes to the stone formation. Intraductal sialoliths are more common when compared to intraglandular sialoliths.³ Calculi generally consist of a mixture of distinct calcium phosphates (mainly hydroxyl-apatite and carbonate apatite) with an organic matrix.⁴The organic matrix is formed by various carbohydrates and amino acids. No bacterial elements have been identified at the core of the sialolith. The exact etiology and pathogenesis of salivary calculi is not well known. Sialoliths are usually small and measure from 1 mm to less than 1 cm in size.⁵ Clinically they are round or ovoid, rough or smooth and yellowish in colour.⁴ The clinical symptoms are characteristic and aid in early diagnosis, however pain is only one of the feature and it does not occur

in 17% of cases.⁵ Two cases of submandibular duct sialolith are reported with their diagnosis and surgical management.

Case Report 1:

A 50 year old female patient presented with pain and swelling in the left submandibular region from past 15 days. Swelling was painful in nature and intensifies during mealtime and become less intense during the rest of the day. There was no discharge associated with swelling either intraorally or extraorally. Patient's medical and dental history was not significant. Clinically, there was a visible swelling in the left submandibular triangle, which was oval in shape, was not attached to underlying structures. The overlying skin did not show erythema or a temperature difference. Submandibular lymph nodes were not palpable. Intraorally the left floor of the mouth was oedematous and multi-nodular enlargement of the submandibular duct with two presumed calcifications palpable. Opening of wharton's duct appeared to be dry with minimal expression of saliva. Bimanual palpation of left submandibular gland was done which revealed hard swelling of approximately 1.5 cm in length and was tender. Radiographic investigations were done to confirm the clinical findings. Mandibular occlusal radiograph revealed 2 well defined round radiopaque mass of approximately 5 mm in size each in the left side of the floor of the mouth. After the clinical and radiographic findings, we came to final diagnosis of left anterior submandibular duct sialolithiasis. As the sialolith was palpable bimanually, we elected to remove the sialolith surgically under local anaesthesia. Zank et al found that transoral removal is the treatment of choice for submandibular sialolithiasis which can be bimanually palpated. After local infiltration, a stay suture was placed behind the palpated stone to prevent its backward movement. Then incision was placed directly over the sialolith to expose it. Blunt dissection was carried out. Tissues were displaced. After sufficient mobilizing the sialolith, it was delivered through the ductal opening. Sialolith were removed with the help of forcep. The bimanual palpation was done after sialolith removal and suppurative discharge was coming out through the ductal opening which was previously blocked. Then a cannula was passed into the duct and was secured with sutures and the other end of the cannula was attached to a suction to drain extra mucin with negative pressure. Then betadine solution was flushed through the cannula. Cannula was then cut short according to the patient comfort and left in situ to maintain the patency of wharton's duct for 10 days. Postoperatively,

the intraoral opening was regularly irrigated. The obtained sialolith of 5mm *5mm each in size. Rough in surface and round was forwarded for histopathological evaluation. Postoperative radiograph showed no sialolith. Cannula was removed after 10 days with no fresh complaints.

Case Report 2:

Another case of 24 year old, male patient with a chief complaint of pain on his left side below the tongue; since last 3-4 years associated with purulent discharge since last 1 week. Pain intensifies during mealtime and subsided during the rest of the day. He had a history of renal stones 15 years ago and was treated with medication for the same. There was no extraoral swelling, no asymmetry was present. Intraoral palpation revealed a hard swelling on left side of the floor of the mouth. Mandibular occlusal radiograph revealed a well-defined radioaque mass existing in the left side of the floor of the mouth. After clinical and radiographic findings, we came to final diagnosis of left anterior submandibular duct sialolithiasis. Same surgical procedure was performed. Sialolith of 1 cm* 0.5 cm size was removed in the same way as first case and was sent for histopathological evaluation.

Case 1:



Fig 1: Extraoral swelling present



Fig 2: Intraoral edematous in left floor of mouth



Fig 3: Mandibular occlusal radiograph reveal 2 well defined radiopaque mass



Fig 7: Sialolith 5mm*5mm



Fig 4: Stay suture

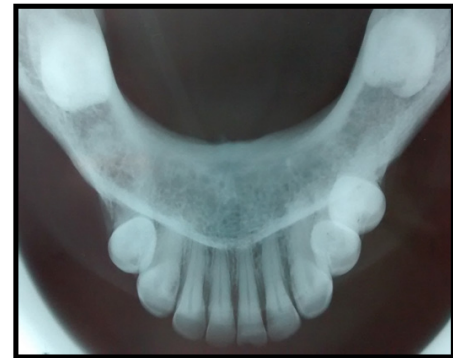


Fig 8: Postop radiograph



Fig 5: Intraoral incision

Case 2:



Fig 9: Mandibular occlusal showing single radiopaque mass



Fig 6: Cannula left in situ



Fig 10: Sialolith measuring 10mm* 5mm

Discussion:

Most cases of submandibular sialolithiasis are asymptomatic. Pain and swelling may be the cardinal signs and symptoms which are aggravated on anticipation of food due to the obstruction of salivary flow.⁶ Careful history and clinical examination are key in the diagnosis of sialoliths. Bimanual palpation of the floor of the mouth, in a posterior to anterior direction, tells a palpable stone in a large number of cases of submandibular calculi formation. Imaging studies are very useful for diagnosing sialolith. The well advised view for visualizing radiopaque stones is a standard mandibular occlusal radiograph. All salivary stones cannot be detected through conventional radiograph because a few of them are hypomineralized and are superposed by other radiodense tissues. In these cases other advanced imaging modalities should be considered which include sialography, ultrasound, scintigraphy and computed tomography. Currently, magnetic resonance sialography obtained in 2 or 3 dimensional images is suggested for diagnosis of sialoliths. Sialoendoscopic system was developed in 1990's as an endoscopic technique. It helps to examine the ductal system completely and can be used for both diagnostic and treatment purposes.⁷ The treatment objective for sialoliths is restoration of normal salivary secretion.³ Stones present for longer period and particularly those with an irregular external surface may give rise to main inflammatory reaction within the duct wall which results to scarring and enhanced obstruction.⁸ Thus, early management is needed. Specific surgical management is based on the location of the sialolith in relation to the salivary gland and its duct. When it is located in the anterior third or in the middle portion of the duct, dilation of the duct and/or sialolithotomy is usually the treatment of choice (Timosco et al 1976). If the calculus is located in the posterior third of the duct or the gland, treatment consists of sialolithotomy or sialoadnectomy (Reuther and Hausamen 1976; Timosca et al. 1976).⁹ Alternative methods of treatment have been developed such as the use of extracorporeal shock wave lithotripsy (ESWL) and newly the use of endoscopic intracorporeal shock wave lithotripsy (EISWL), in which shockwaves are delivered straight to the surface of the stone within the duct without damaging adjacent tissue. Transoral CO₂ laser sialolithectomy can also be used with a low incidence of complications.³

Conclusion:

In spite of the fact that various advanced diagnostic and treatment methods have emerged in the management of sialoliths, the conventional method still have their popularity to date. Reported here are two cases of submandibular sialolithiasis which were detected clinically and radiographically and treated with no postoperative complications.

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