



## CASE REPORT

### Giant Sialolithiasis - A Case Report and Review

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#### ABSTRACT

Sialolithiasis or salivary gland duct calculus or salivary stones are the most common pathologies of the salivary gland. Sialolithiasis accounts for more than 50% of diseases of the major salivary glands and is the most common cause of acute and chronic infections. Sialoliths are deposits obstructing the ducts of major or minor salivary glands or its parenchyma. Salivary stones larger than 15 mm are classified as giant sialoliths. The prevalence of sialoliths varies by location. About 85% of sialoliths occur in the submandibular gland and 5-10% occurs in the parotid gland. In about 5% of cases, the sublingual gland or a minor salivary gland is affected. Sialolith in the parotid gland is less common when compared to submandibular gland. This case report describes a case of giant sialolith of submandibular salivary gland.

*Keywords: Giant sialolith, salivary gland, soft tissue laser.*

**S**ialolith belongs to the category of idiopathic dystrophic calcification.<sup>(1)</sup> Sialoliths are calcifications present within the salivary gland parenchyma or its associated ductal systems. The nucleus of mineralization are from bacterial colonies, shed ductal epithelial cells, cell remnants, mucus plugs and foreign bodies.<sup>(2)</sup> 80 to 90% of sialoliths develop in the submandibular gland due to viscous consistency of saliva, high pH, high calcium concentration and mucin content. Moreover, Wharton's duct has an antigravity flow, long irregular course and a small opening that facilitates stasis of saliva. 10–20% of sialoliths develop in parotid gland. Salivary stones can be either solitary or multiple. 1% of sialolith occurs in sublingual gland due to a dominant mucoid secretion and very short ductal tree.<sup>3</sup>

Sialoliths also presents with multiple variations in size and shape which can be round, regular or irregular.

#### Case report:

A 36 year old male patient reported with a chief complaint of painful swelling on the right side floor of the mouth region since 1 year (Figure 1). The swelling was gradual in onset, slow growing and progressively increased to the present size. The swelling was associated with continuous, non radiating, mild dull aching pain. Patient also gave history of altered taste sensation for 1 year followed by occasional pus discharge from the

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swelling. There was no dysphagia or elevation of the tongue. The patient was conscious, cooperative, moderately built, afebrile, and his vital signs were within normal limits.

Inspection revealed a solitary localized swelling measuring about 3x1.5cm on right side floor of mouth. Antero-posteriorly, it extends from lingual sulcus to mesial aspect of mandibular first molar tooth (46) and mesio distally; it extended from lingual sulcus to midline. The mucosa over the swelling was normal as the adjacent area (Figure2). On bimanual palpation, the swelling was nodular, tender, and firm to hard in consistency.

Dental examination revealed generalized attrition and dental caries in left mandibular last molar tooth (38). On the basis of the history and clinical examination, a provisional diagnosis of obstructive sialolithiasis with chronic bacterial sialadenitis was considered. A differential diagnosis of ranula, and dermoid cyst were also

considered.

Mandibular occlusal radiograph revealed a radio-opaque mass in the right submandibular region measuring 17 X 9 mm in size, conical in shape extending from distal aspect of 44 to the distal aspect of 46 (Figure 3).

Surgical excision of the left submandibular sialolith was done using soft tissue laser (Zolar photon plus, London) under local anesthesia. (Figure 4) Surgical closure was done with vicryl suture and post surgical antibiotic regimen with Augmentin and ibuprofen were given for 1 week. Adequate healing was observed during removal of sutures.

**Discussion:**

Sialolithiasis is a common disease affecting salivary glands. It is seen twice commonly in males and affects 12 in 1000 of the adult population. It involves most commonly the major salivary glands. More than 80% of the sialoliths occur in the submandibular gland or its duct, 6%



Fig 1: Pre operative extra oral swelling



Fig 2: Pre operative intra oral swelling



Fig 3: Occlusal radiograph showing conical radio opacity



Fig 4: Sialolith after surgical excision with soft tissue laser

in the parotid gland and 2% in the sublingual gland or minor salivary glands.<sup>1</sup> The etiopathogenesis of salivary calculi is unknown. They are thought to occur as a result of deposition of calcium salts around an initial organic nidus consisting of altered salivary mucins, bacteria and desquamated epithelial cells.<sup>2</sup>

Sialolith formation can occur in two phases namely the central core and a layered periphery phase. The first central core phase is formed by the precipitation of salts, which are bound by certain organic substances like various carbohydrates and amino acids. The second layered periphery phase consists of layered deposition of organic and inorganic material. Parotid stones are thought to form most often around a nidus of inflammatory cells or a foreign body whereas submandibular stones are thought to form around a nidus of mucous.<sup>(3)</sup>

According to retrograde theory, bacteria within the oral cavity might migrate into the salivary ducts and become the nidus for further calcification.<sup>(4)</sup> Salivary stagnation, increased alkalinity of saliva, infection or inflammation of the salivary duct or gland, and physical trauma to salivary duct or gland may predispose to calculus formation.<sup>(5)</sup>

Clinically, sialoliths are round or ovoid in shape, rough or smooth in texture and yellowish in color. Submandibular sialoliths consist of 82% inorganic material and 18% organic material, whereas parotid stones are composed of 49% inorganic and 51% organic material.<sup>(6)</sup> The inorganic material comprises of calcium phosphate, smaller amounts of carbonates in the form of hydroxyapatite and smaller amounts of magnesium, potassium, ammonia, whereas organic material consists of various carbohydrates and amino acids.<sup>(7)</sup>

The wider and longer Wharton's duct along with

antigravity flow of saliva, high alkaline pH, high mucin, high Calcium and phosphate content in submandibular saliva are the contributing factors to the development of submandibular sialolithiasis.<sup>8</sup>

Careful history and examination play a key role in the diagnosis of sialolithiasis. Pain and swelling of the concerned gland at mealtimes and in response to other salivary stimuli are important symptoms. Complete obstruction causes constant pain and swelling.<sup>(9)</sup>

Imaging modalities, both conventional and advanced are very useful in diagnosing sialolithiasis. Plain film radiography of the major salivary glands is advised in order to visualize possible radiopaque sialoliths. Sialoliths obstructing the submandibular gland can be visualized by panoramic, occlusal, or lateral oblique views. A standard occlusal film can be placed intraorally adjacent to the parotid duct to visualize a stone close to the gland orifice. Ultrasonography is best at differentiating between intra and extraglandular masses, as well as between cystic and solid lesions. Calcified structures are better visualized by CT. This modality is especially useful for the evaluation of inflammatory conditions that are associated with sialoliths.<sup>(10)</sup>

Sialography is the recommended method for evaluating intrinsic and acquired abnormalities of the ductal system because it provides the clearest visualization of the branching ducts and acinar end pieces. Ductal obstruction, whether by a sialolith, tumor, or stricture, can be easily recognized by sialography.<sup>(10)</sup>

In the present case, based on history, clinical and radiological examination, the final diagnosis was obstructive giant sialolith with chronic suppurative

sialoadnitis. Differential diagnosis of ranula and dermoid cyst were also considered. The color of mucosa over the swelling and the consistency were not favourable for ranula, which appears bluish and soft in consistency. Dermoid cyst is a developmental swelling with yellowish to white colored mucosa.

The size of the sialolith shows considerable variations ranging from 0.2 to 2.5cm. In the present case the size of the sialolith is 17 X 9 mm which can be graded as giant sialoliths. Rust and Messerly removed a unusually large sialolith of 51 mm long that occupied the entire length of Stensen's duct.<sup>(8)</sup>

Management of sialoliths depends on the size of

the sialolith, its localization and duration of the symptoms. Small and peripherally located sialoliths are removed with gentle manipulation of the gland. However, majority of the cases require surgical excision of the sialolith. Surgical excision of the gland may be necessary for large and deeply located sialolith. Other treatment options are sialendoscopy and lithotripsy. Occasionally, spontaneous exfoliation of the sialolith occurs through the ductal orifice.<sup>(11)</sup> Use of the 810 nm laser is safe for surgical removal of sialolith and is a valid alternative to traditional surgery. It is indicated as the procedure of choice in cases of sialoliths located in the duct with an overall success rate of 92%.<sup>(11)</sup>

#### REFERENCE:

1. Chandra Mouli Sialolith: A Case Report with Review of Literature. Indian Journal of Multidisciplinary Dentistry. 2012;(1):2
2. Liao G, Su Y, et al. Sialoendoscopic secondary intervention after failure of open sialolithectomy. J Oral Maxillofac Surg. 2010;68(2):313-318
3. Kiran J shinde unusual presentation of submandibular duct and gland calculi: case report. Otolaryngology online journal. 2013;3(1)
4. Marchal F, Kurt AM, Dulguerov P, Lehmann W. Retrograde theory in sialolithiasis formation. Arch Otolaryngology Head Neck Surg. 2001;127(1):66-8.
5. Leung AK, Choi MC, Wagner GA. Multiple sialoliths and a sialolith of unusual size in the submandibular duct: a case report, Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1999;87(3):331-3.
6. Zenk J, Benzel W, Iro H. New modalities in the management of human sialolithiasis: Minimal Invas Ther Allied Technol. 1994;3(5):275-84.
7. Williams MF. Sialolithiasis: Otolaryngology Clin North Am. 1999;32(5):819-34.
8. Ledesma-Montes, Giant Sialolith: Case Report and Review of the Literature. J Oral Maxillofac Surg. 2007;65:128-130
9. Pollack CV Jr, Severance HW Jr. Sialolithiasis case studies and review. J Emerg Med. 1990;8:561-565.
10. Martin S. Greenberg, Burket's oral medicine, 11th edition; pg 191-223.
11. Angiero F, Benedicenti S, Romanos GE, Crippa R. Clinical and histopathological findings of sialoliths. Brazilian Journal of Oral Sciences. 2005;15(4):899-903.

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