

Sialolithiasis of Submandibular Gland: A Case Report.

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Abstract:

Sialoliths are calcified structures located in the parenchyma or ductal systems of the salivary glands. More than 80% of salivary sialoliths occur in the submandibular duct or gland, 6-15% occur in the parotid gland and around 2% are in the sublingual and minor salivary glands. Sialoliths are usually 5-10 mm in size and the stones more than 10 mm are termed sialoliths of unusual size or giant sialolith. This case report describes one such "Giant sialolith" measuring approximately 25mm in length and 2.98gm in weight in right submandibular gland of 65 years old patient, operated by excision of sialolith along with removal of right submandibular gland under GA. This report also focus on the various treatment modalities in management of Giant sialolith

Key words: Giant sialolith, Submandibular gland.

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INTRODUCTION

Sialoliths are the calcified structures located in parenchyma or ductal system of the salivary glands.¹ It is one of the most common disease of the salivary glands and stands a major etiology in dysfunction of salivary glands. It has incidence of 0.12% of adult population and usually appears between the age group of 30-60 years with male predominance.² 80%-95% of sialoliths occur in the submandibular gland, 5% to 20% are seen in the parotid gland. 1%-2% are found in the sublingual gland and minor salivary glands.³ Sialoliths are usually 5-10 mm in size and the one which are above 10 mm are termed as Giant Sialolith (sialoliths of unusual size)⁴

Factors that tend to favor formation of submandibular sialolith are: 1) Longer and wide diameter duct with slower flow rates; 2) Flow of saliva against gravity; 3) Submandibular gland saliva is more alkaline in nature with high mucin and calcium content of saliva.⁵

Systemic diseases such as gout, Sjogrens syndrome, medications such as anticholinergics, antisialogogues, trauma to the submandibular gland, head and neck radiotherapy, systemic renal impairment and old age can predispose patients to submandibular gland sialolith formation.⁶

Sialolith of submandibular gland consist of 82% inorganic and 18% organic contents.⁴ The inorganic contents of sialolith are mainly calcium phosphate and carbonate along with magnesium, potassium and ammonium in small amounts and organic matrix mainly composed of by the carbohydrates and amino acids.¹

Many researcher explained the salivary gland sialolith formation by by different way like calcification around foreign bodies, desquamated epithelial cells and microorganisms in the duct.⁷ Recently, Marchal et al. proposed a retrograde theory

of sialolith formation, according to which a retrograde migration of foods, bacteria or foreign bodies from the oral cavity to the duct system may lead to sialolith formation.^{1,6}

CASE REPORT

A 65 year old man reported to our department of oral & maxillofacial surgery with a complaints of pain and swelling in the right lower submandibular region of jaw since 15 days. There were episodes of pain in the same region for last 6 months but of moderate variety that the patient could tolerate. Presently, his pain was localised in nature, continuous in character, pricking type and sometimes radiating to the temporal region of same side. Pain use to aggravate during mastication, relieve by rest. Swelling was gradual in onset, progressing to the present size. There were occasions of mild swelling during meals for the last 3 months, which the patient had been ignoring.

On extraoral examination, the patient showed the diffuse swelling over the right submandibular region measuring approximately 2×3 cm with normal overlying skin (Fig.1).

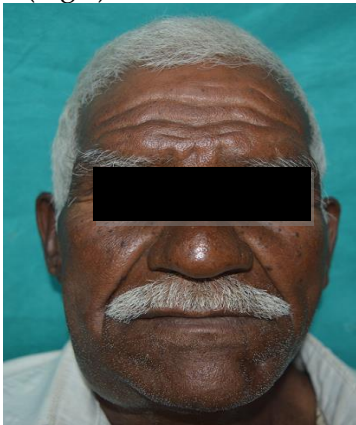


Fig.1 Preoperative front view showing swelling in right submandibular region

The swelling was warm and tender on palpation with firm in consistency. Intraoral examination revealed, inflammation of right floor of mouth with almost no salivary flow from right Wharton's duct orifice. The right submandibular gland was enlarged

and tender on bimanual palpation. Orthopantomogram revealed a solitary large oval calcified mass at right submandibular region measuring approximately 2×2cm in dimensions.(Fig.2) Computed tomography revealed the single radiodense mass measuring 2×2cm in diameter in right submandibular gland. (Fig.2)



Fig.2 Preoperative radiographs showing sialolith on right submandibular gland

Ultrasonography of the right submandibular gland revealed the linear calcified density in the submandibular gland measuring approximately 2×2cm in diameter. All the other lab investigations were within normal limits.

Patient was taken under general anaesthesia by nasotracheal intubation. Incision was marked on lateral part of neck on right side. 2% lignocain with 1:80,000 adrenaline injected along the marked incision line. Following lateral extraoral transcervical approach skin incision was made & layer wise dissection was performed through subcutaneous tissue, fascia platysma to expose deep cervical fascia(Fig3). Facial vessels were identified and clamped cut and ligated. Gland was separated from surrounding structures by preserving lingual and hypoglossal nerve. Wharton's duct was identified and cut close to floor of mouth. Entire gland duct along with sialolith was excised. Sialolith recovered measured approximately 25mm in length and 2.98gm in weight (Fig 4 and 5).

DISCUSSION

Sialoliths accounts for one third of all salivary gland disorders, which is mainly characterised by the obstruction of the salivary secretion.¹



Fig.3 Lateral transcervical approach skin incision



Fig.4 Right submandibular gland with sialolith



Fig.5 Sialolith measured 22mm in length and 2.98gm in weight

Zenk et al.²² and Teymoortash A. et al.²³ found that, 80-90% sialolith occurs in submandibular gland duct and 10% occurs in gland itself. Lustmann et al.⁷ found that, 50.3% sialoliths were located in the anterior portion of duct, 18.7% were in the posterior portion and 31% in the hilus and in the gland itself. Whereas in our case the sialolith was present within gland.

Levy DM et al.⁸ and McGurk M et al.⁹ found that pain and swelling during mealtime which remains for few hours and followed by long episodes of remission up to weeks or months are the characteristic features of sialolithiasis. Ellies M. et al.¹⁶ 59% patient were painful swelling, 29% were painless swelling and 12% were only pain. S. Kraaij et al.¹⁰ found that 90% patients of salivary stone, infection of affected gland present and in 12-18% a purulent discharge is seen. Whereas our patient had a presentation of pain and swelling since a month,

where size of the swelling had no relation with mealtime.

Sialolith measuring over the 10mm are termed as giant sialolith.²⁴ Manjunath Rai⁵ reported a giant sialolith of 72mm and 45.8gm, whereas Cavina et al.²⁵ reported giant sialolith of 70mm and 18gm whereas K. V. Arunkumar⁴ reported sialolith of 20mm and 5.2gm.

Careful history and physical examination is the basis for the diagnosis of sialolithiasis.¹ Imaging modalities like Occlusal radiography, Orthopantomogram(OPG), Computed tomography(CT), Ultrasonography, Sialography, Sialendoscopy or MRI scans can be used to confirm the diagnosis. Sialography is also important diagnostic modalities, it is considered as gold standard for the the diagnosis of sialolithiasis.¹⁷ Sialography is contraindicated in acute infection or in patients who have allergy to contrast dye material.¹⁰ Sialendoscopy is new non-invasive imaging modality

emerged which allows the almost complete exploration of the ductal system, including the main duct, secondary and tertiary branches.¹⁷

Differential diagnosis for sialolithiasis includes submandibular space infection, acute bacterial sialadenitis, warthin's tumour, pleomorphic adenoma, acinic cell carcinoma, Sjogren's syndrome, calcified cervical lymphadenopathy, hypothyroidism, sarcoidosis and haemangioma.⁶

Williams et al.¹ proposed that, If stone is small, the treatment of choice should be conservative treatment, it includes local heat application, massage the gland as well as use sialogogues and patient should be well hydrated. Leung et al.¹⁸ stated that, in cases of giant sialolith, if stone palpated intraorally, then remove the stone by intraoral approach.¹⁸ Yoshimura Y. et al.¹⁹ stated that, if there is large sialolith within the gland which is not accessible intraorally then only excision of submandibular gland done for removal of sialolith, which was also done in our case.

Other treatment modalities includes extracorporeal shock wave lithotripsy and endoscopic intracorporeal shock wave lithotripsy, in these technique shockwaves are directed to the surface of sialolith without damaging surrounding structures and small fragments are produced of approximately 0.7mm to remove from duct. Nahlieli O. et al.²¹ found that, endoscopically treated sialolithiasis has success rate up to 83% .

Following transoral excision Lustman et al.⁷ found 8.9% of recurrence rate in his study, Levy et al.⁸ found 18% recurrence rate, Ellis M. et al.¹² found recurrence rate up to 2.7% in patients in which complete sialodenectomy of submandibular gland done for removal of sialolith. Cunning DM et al.²⁰ reported xerostomia after submandibular gland excision in his 57% of patients. Ellies M et al.¹⁶ reported that submandibular gland excision carries 0-8% risk of permanent marginal mandibular nerve palsy. Other postoperative complications includes the hematoma, unacceptable scar and infection. Our patient was followed up for 2 years and did not report any complications.

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