

Giant Sialolithiasis In Submandibular Duct- A Case Report And Review Of Literature

Dr. Rushit Patel¹, Dr. Shailesh Menat¹, Dr. Kishan Ravaliya¹, Dr. Nirav Patel², Dr. Khushboo Changani²

Reader¹, Professor¹, Post Graduate¹, Post Graduate²

Dept of Oral and Maxillofacial Surgery, Narsinhbhai Patel Dental College and Hospital, Visnagar, Gujarat, India

Post Graduate, Narsinhbhai Patel Dental College & Hospital- Visnagar

Corresponding Author: Dr. Kishan Ravaliya, Post Graduate, Narsinhbhai Patel Dental College & Hospital- Visnagar.

Type of Publication: Case report

Conflicts of Interest: Nil

Abstract

Sialolithiasis is the formation of calculi in the salivary duct or the gland which causes the obstruction of salivary flow. Sialolith occurs more in submandibular gland because of the composition of saliva from this gland and several other anatomic factors. Sialolith longer than 15 mm in length is considered as 'giant'. Here we report, an unusual case of giant sialolith in submandibular duct. A 33-year-old female was referred with complaints of pain and swelling in the right submandibular area. Occlusal radiograph revealed a radiopaque mass in right submandibular region extending from first premolar to second molar area. Ultra sonography shows a calcified mass of 21mm length present near external opening of distal end of right submandibular duct. Excision was performed in the submandibular duct and a giant sialolith was located. Postoperatively the patient was fully recovered without any complication.

Keywords Giant sialolith, Ultra sonography, Sialendoscopy.

Introduction

Sialolithiasis is the formation of sialolith in the salivary duct or the gland resulting in the obstruction of salivary flow. 90% of sialolith is form in the submandibular gland. Why submandibular gland forms more stones because Wharton's duct is large and long, Salivary flow is slow

and against gravity, Saliva is more alkaline with mucin and calcium content. Long and curved wharton's duct has increased the chance of entrapment of organic debris, plus the secretion of this gland is higher in calcium content and thick in consistency and the position of gland increase the chances for stagnation of saliva. **Sialolith:** it is a calcified mass with laminated layers of the inorganic material. It results from the crystallization of salivary solutes. The sialolith is yellowish white in color, single or multiple, may be round, ovoid or elongated having the size of 2 cm or more in diameter. The minerals are various forms of calcium phosphate like hydroxyapatite and octacalcium phosphate etc. Calcium and phosphorus ions are deposited on the organic nidus. Which may be desquamated epithelial cells, bacteria, foreign particle or product of bacterial decomposition. It is said that the sialoliths grow at the rate of 1 mm/year.

Case Report

A 33 year old female patient reported to dept. of OMFS with chief complain of pain and swelling and pus discharge in lower right back teeth region since 15 days. Pain was dull, intermittent in nature and aggravated while swallowing food and relieved by on its own. She also complained of increasing swelling at meal time. Intraorally, single swelling was present at right side floor of mouth [Figure 1]. The swelling was approximately 2x2

cm in size, movable with tongue movement, pus discharge present from right submandibular duct opening. Floor of the mouth was raised. Swelling was tender on palpation, extending from 43 to 46 teeth region. Radiographically, OPG shows a radiopaque lesion on lower right canine to 1st molar region, which was approximately 2cm × 7 mm in size [Figure 2]. Mandibular occlusal radiograph shows well defined radiopaque tooth shape lesion on right side [Figure 3]. Based on the clinical and radiographic findings, a provisional diagnosis of sialolith in right submandibular gland was made. After that patient was sent for Ultra sonography, which shows 21mm calculus near external opening distal end of right sub mandibular duct [Figure 4]. After the preoperative preparation patient was operated under 2% lignocaine hydrochloride with 1:8000 adrenaline. Single suture was taken at distal end of sialolith [Figure 5]. Incision was given at opening of duct and blunt dissection was carried out [Figure 6]. After exposure of sialolith, it was removed with curved artery forceps [Figure 7]. Length of sialolith was 21mm and weight of sialolith was 2.10 gm [Figure 8].

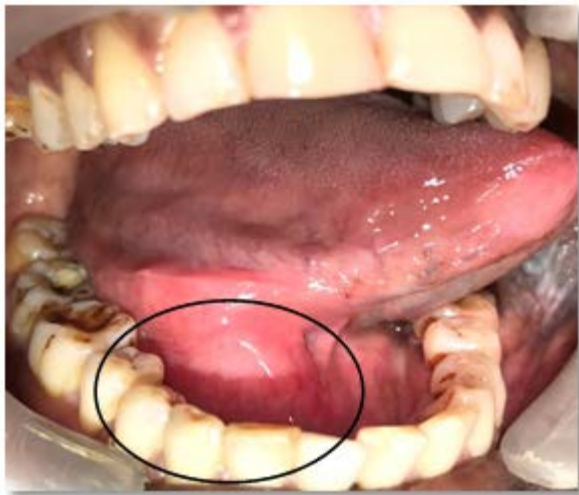


Figure 1: Swelling on right side floor of mouth.

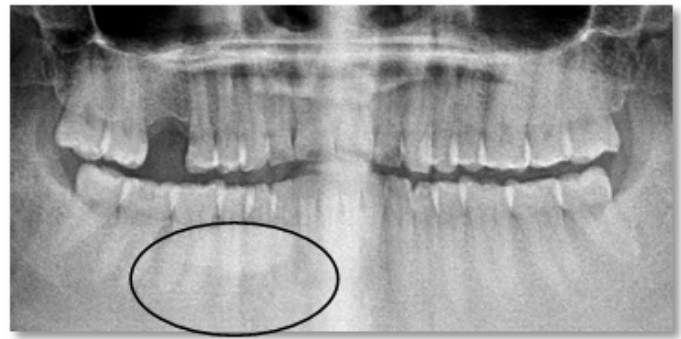


Figure 2: OPG shows oval shape radio opaque lesion on lower right canine to molar region.

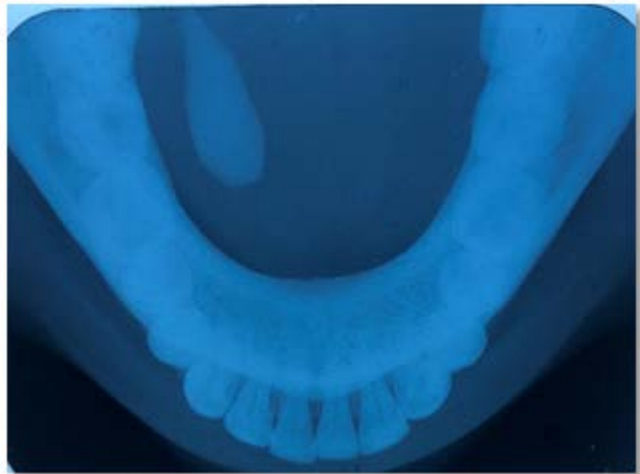


Figure 3: Occlusal radiograph shows well defined radiopaque tooth shape lesion on right side.

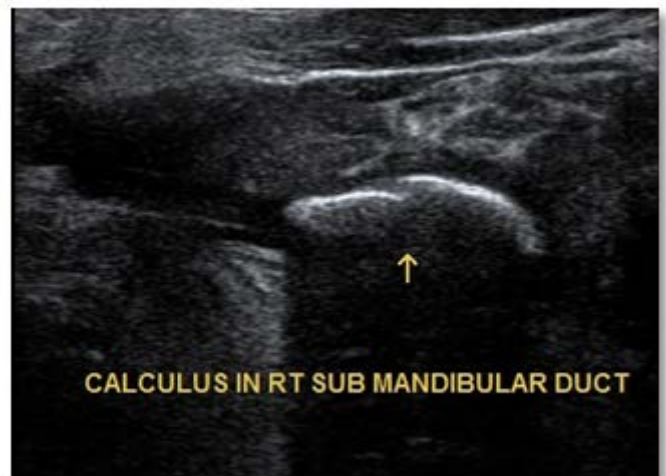


Figure 4: USG shows calculus near external opening distal end of right sub mandibular duct.



Figure 5: single suture taken at distal end of sialolith.

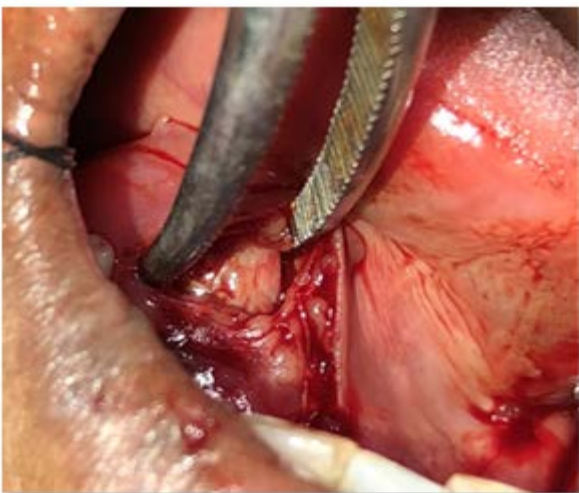


Figure 6: incision was given at opening of duct and blunt dissection was carried out.

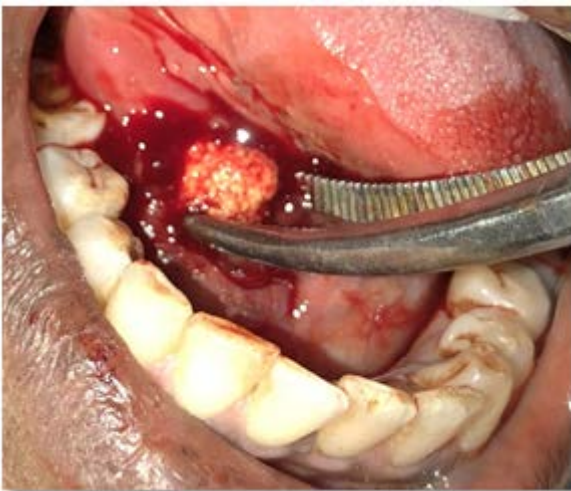


Figure 7: After exposing of sialolith, removed it with artery forceps.



Figure 8: Photograph shows length & weight of sialolith.

Discussion

Sialolithiasis is the most common salivary gland disease. Sialolithiasis affects the Submandibular gland 83% followed by the Parotid 10%, Sublingual and Minor salivary glands 7%.^[1] Sialolithiasis is seen in 12 per 1000 adult population each year. Sialolithiasis is seen more in males than females (2:1).^[1-3] Sialolithiasis affects both sides equally. Bilateral stones are less common. 88% of sialolithiasis are smaller than 10 mm in size.^[4] Sialoliths with size greater than 15 mm are considered as the giant one, occurrence of which is rare.^[5] The salivary gland stones are seen in any age group. But it is mainly seen in third and fourth decades of life.^[3] Children are rarely affected.^[4-6] The specific etiology of salivary stone is still unknown but certain hypothesis are presented which includes the agglomeration of sialomicrooliths, anatomical variations of the salivary ducts and an altered biochemical composition of saliva. It is considered that salivary stasis or decreased salivary flow contributes to the precipitation of calcium.^[14] Sialolithiasis patient presents with pain and swelling due to obstruction of the salivary ducts classically at the time of meal. So, it's called "Mealtime syndrome".^[1,2] The ability of a calculus to grow and become a giant sialolith depends mainly on the reaction of the affected duct. The growing stone causes increasing obstruction of salivary secretion, which leads to swelling,

pain, and infection of the gland and eventually to medical intervention.

If the duct adjacent to the sialolith is able to dilate, allowing nearly normal secretion of saliva around the stone, it might be asymptomatic for a long period and eventually a giant calculus will be created. As the stone increases in size beyond the ability of the duct to dilate, a sialooral fistula will occur and the sialolith will partially protrude into the oral cavity. The affected gland may take advantage of the fistula to improve salivary secretion, allowing further enlargement of the stone. Proper history taking and examination will tell the diagnosis. 80-90% of Submandibular stones are radio-opaque due to their high content of calcium and magnesium carbonates & phosphates leading to their easy diagnosis on x-rays. On examination, the stone can be palpated, if it is present at the peripheral aspect of the duct. Other diagnostic methods include Sialography, USG, CT Scan and Sialendoscopy.^[4] Sialography demonstrates anatomy of the ductal system with the presence of stone if any and degree of glandular damage by chronic disease. Sialography carries risk of radiation and chances of ductal perforation and retrograde displacement of the stone with injection.^[7] USG is non-invasive method of detecting sialoliths. Stones > 15 mm size particularly with high mineral content are easily detected. USG may detect radio-lucent stones.^[8] CT scan will tell about the exact location of stone of any size. But, it is an expensive tool. Sialendoscopy is both diagnostic and therapeutic modality. It detects stone even when x-ray and USG fail.^[9]

If stone is small, treatment remains conservative. Maintaining hydration, prescribing sialogogues and massage can be helpful. Antibiotics are added whenever necessary.^[10] Submandibular stones can be removed surgically through either intraoral or an extraoral

approach. If stones located entirely in the duct and close to the papillae then intraoral approach is sufficient. Incision is made longitudinally over the Wharton's duct, taking care of lingual nerve which is closely related to it. A small pressure exerted at the level of the distal ligature will provoke the discharge of the sialolith through the incision. Stone is then removed and duct left open it's called Sialodochotomy or sutured with the surrounding mucosa it's called Sialodochoplasty. Complication of this procedure include infection and bleeding. In this procedure there is the risk of duct scarring resulting in recurrent gland swelling. Extra oral approach is indicated for intra glandular stones and stones embedded in the hilum of gland. But, an external approach risks marginal mandibular nerve injury.^[7,11]

Sialendoscopy is performed under local anesthesia. Appropriate size sialendoscope is introduced after dilatation of salivary papilla. Small stones can be removed with a wire basket. Larger stones are fragmented with fiber optic laser lithotripsy. Intervention can be performed under direct vision by this technique. Sialendoscopy has risk of ductal perforation which can be minimized by adequate training.^[8]

Conclusion

Occurrence of giant sialolithiasis is rare. Ultra sonography is a noninvasive and highly effective investigation. There are various treatment modalities available depending upon the size and location of sialoliths. The submandibular gland needs to be excised if large stones present and stones embedded within the gland. Sialendoscopy is a newer tool for diagnostic as well as therapeutic modality.

References

1. Porter S, Non-neoplastic salivary gland diseases. In: Scott Brown's Otorhinolaryngology, Head and Neck surgery Seventh ed. Hodder Arnold; 2008 P. 1898-1920.

2. Fowell C, Macbean A. Giant salivary calculi of the submandibular gland. *JSCR* 2012;9(6):1-4.
3. Probst R, Grevers G, Iro H. Salivary Glands. In: *Basic Otorhinolaryngology- A step by step learning guide*. Thieme publications New York 2006. P. 132- 149.
4. Lustman J, Regev E, Melamed Y. Sialolithiasis: a survey on 245 patients and review of the literature. *Int J Oral Maxillofac Surg* 1990;19:135-8.
5. Gupta A, Rattan D, Gupta R. Giant sialoliths of submandibular gland duct: Report of two cases with unusual shape. *Contemp Clin Dent* 2013; 4:78-80.
6. Siddiqui SJ. Sialolithiasis: An unusually large submandibular salivary stone. *Br Dent J* 2002; 193:89-91.
7. Ledesma-Montes C, Garces Ortiz, Salcido Garcia J, Hernandez Flores F, Hernandez-Geurrero H, Giant Sialolith, Case report and review of literature. *J Oral Maxillofac surg.* 2007;65:128-30.
8. Yoshimura Y, Inoue Y, Odagawa T. Sonographic examination of sialolithiasis. *J Oral Maxillofac Surg* 1989;47:907-12.
9. Nahlieli O, Baruchin A M. Sialendoscopy: three years experience as a diagnostic and treatment modality. *J Oral Maxillofac Surg* 1997;55: 912-18.
10. Williams M F. Sialolithiasis. *Otolaryngologic Clinics of North America* 1999;32:819-34.
11. Emegoakor CD, Chianakwana GU, Ugonado MC, Madubogwu CI, Ilobachie IBC, Akam ACO. An Unusually Large Submandibular Gland Stone. A Case Report. *Nigerian Journal of Surgery* 2009;12(15):15-17.
12. *ORAL SURGERY ORAL MEDICINE ORAL PATHOLOGY* Volume 94, Number 3
13. *Journal of Pharmacy and Bioallied Sciences* July-September 2013 Vol 5 Issue 3
14. Marchal F, Kurt A M, Dulguerov P, Lehmann W. Retrograde theory in sialolithiasis formation. *Arch Otolaryngol Head Neck Surg* 2001; **127**: 66–68.
15. *BRITISH DENTAL JOURNAL* VOLUME 193 NO. 2 JULY 27 2002
16. *The Journal of Medical Research* 2015; 1(1): 05-07
17. *AC TA oto rhinolaryngologica italica* 2007;27:161-172
18. *SQU Medical Journal*, December 2010, Volume 10, Issue 3
19. *European Review for Medical and Pharmacological Sciences*, 2005;9:67-68
20. *World J Stomatology* 2015 May 20; 4(2): 56-71
21. Gadve V, Mohite A, Bang K, Sheno SR. Unusual giant sialolith of Wharton's duct. *Indian J Dent* 2016;7:162-4.
22. *Oral and maxillofacial surgery- neelima malik Peterson's principles of oral & maxillofacial surgery 3rd edition.*