

Transoral Removal of a Giant Submandibular Sialolith: A Case Report

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Abstract: Submandibular salivary glands are commonly affected by sialolith (calculus), with patients suffering pain and swelling, especially at mealtime. Sialoliths and giant calculi larger than 15 mm are rarely reported. This case report presents a 28 mm sialolith which was removed successfully intraorally under local anesthesia (transoral approach; sialolithotomy). There were no complications either during the operation or postoperatively, and the salivary function of the gland remained normal.

Keywords: Sialolithiasis; Submandibular swelling; Sialoliths; Salivary gland obstruction; Minimally invasive surgery

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INTRODUCTION

Sialolithiasis is one of the most frequent salivary gland disorders, with the submandibular gland being the most affected gland (80–87%).^{1–4}

Salivary gland stones, or sialoliths, are calcified structures in the salivary glands or their ducts, resulting in the obstruction of salivary secretion and retention of saliva.^{5,6} This is usually accompanied by symptoms of swelling and pain, especially during mealtime.⁷

The etiology of salivary stones is not completely understood, and various hypotheses related to local and systemic predisposing factors have been discussed in the literature.^{5,6}

In addition to clinical examination, several imaging techniques can be applied for the diagnosis of sialoliths, such as intra- and extra-oral radiographs, computed tomography (CT), cone beam computer tomography (CB-CT), ultrasonography, and sialography.^{6,8}

Calculi commonly measure less than 10 mm in size, and calculi surpassing 15 mm are termed giant salivary gland calculi (Sialoliths).^{3,9}The giant sialoliths (>15 mm) in the submandibular gland have rarely been reported.¹⁰

The management of salivary stones depends on the size and location of the stone. The primary objective in the treatment of sialolithiasis should be focused on removing the salivary stones and preserving gland function in combination with a low level of complication and discomfort for the patient.⁶

Various procedures have been proposed for the management of sialolithiasis, which range from conservative minimally-invasive procedures, to more invasive procedures.^{6,11}

This case report presented a 28 mm sialolith which was removed intraorally under local anesthesia (transoral approach; sialolithotomy).

CASE REPORT

A 39-year-old male patient was referred by a private clinic to our Oral Surgery Department.

The patient presented with complaints of pain and swelling in the right submandibular region for 6 months, with episodes of discomfort, especially during mealtime.

A clinical examination revealed a mild to moderate tender and firm right submandibular swelling. Bimanual palpation of the right posterior floor of the mouth revealed a palpable and tender mass measuring approximately 3 cm. In comparison to the contralateral gland region, decreased salivary flow was observed at the opening of the Wharton's duct.

The Orthopantomogram (OPG) confirmed the presence of a radiopaque lesion of around 3 cm in the right submandibular area (Figure 1). A diagnosis of sialolithiasis was given on the basis of the clinical and radiographic examination.

Under local anesthesia, transoral removal of the sialolith was performed. A mucosal incision of 3–4 cm was made directly over the stone in the floor of the mouth in the region of the right first premolar to the second molar. The depth of the incision was superficial in order to prevent damage of the lingual nerve. This was followed by a deep dissection of the gland and duct without widening the duct.

The sialolith was in the hilum of the submandibular salivary gland, while part was in the proximal duct (Hilar submandibular stone). The sialolith was exposed, fragmented and then retrieved using Kocher forceps (Figure 2); this was followed by irrigation with normal saline and suturing. The size of the stone was 28 mm, while there were also four small pieces/fragments (Figure 3).

The postoperative OPG was clear (Figure 4), indicating no remaining sialoliths. After one week (Figure 5), one month (Figure 6), and then again at two months follow up, the patient was asymptomatic, and the salivary gland recovered normal function.

DISCUSSION

Sialolithiasis is the most common pathology of the salivary glands.^{3,5,6} This case report discussed a sialolith which presented in the submandibular gland.

The diagnosis of salivary calculi is mainly based on clinical symptoms and imaging. In addition to the physical examination, several imaging techniques can be applied. Intra- and extra-oral radiographs are effective in most cases. Extra-oral OPGs would detect fewer salivary stones as some calculi could be superimposed on bony structures or teeth.⁶ Hence, it has been suggested that intra-oral occlusal radiographs represent a more useful method for the detection of a submandibular sialolith.⁵ In this case, the diagnosis was clearly obtained by an OPG examination alone, and the need for further investigation was not indicated.

In more challenging cases, more advanced techniques can be used for imaging and examining the salivary stones.¹² These diagnostic tools include ultrasonography, computed tomograms (CT), cone beam computer tomography (CB-CT), sialography and sonography.^{4,12}

The management of salivary stones is focused on removing the salivary stones and preserving salivary gland function based on the size and location of the stone.^{6,13}

The minimally invasive treatment options are numerous and significantly improve the prognosis of sialolithiasis.¹³The conservative therapeutic options include hydration of the patient, prescription of sialogogues, and gland massage.^{3,4,8}

While patients with small sialoliths can undergo conservative treatment, those with standard size or larger sialoliths require sialendoscopy, or a transoral approach (sialolithotomy).¹⁴The use of these minimally-invasive and conservative techniques makes it possible to preserve the function of the affected submandibular gland in most cases.⁷

At present, management through surgical treatment is the mainstay treatment modality. The surgical removal via a direct incision in the stone (sialolithotomy) is relatively simple to perform; it is also well-tolerated, can be carried out under local anesthesia, and does not often result in complications.⁶

This traditional management of submandibular stones based on sialolithotomy is usually for stones located in the distal and mid-third of the Wharton's duct, while sialadenectomy (removal of the gland) is used for deeper stones.⁷

The surgical intraoral removal of submandibular sialoliths is a technique for the treatment of sialolithiasis and is reported to have excellent outcomes.¹⁵ Carelessness during this treatment, however, can cause rupturing of the duct.³

After sialolith therapy that does not include surgical removal of the gland, most patients experience no complaints or discomfort, and are left with a normal functioning gland. Minor complications include a postoperative infection, postoperative ranulas, and lingual nerve dysfunction.^{8,15} In the presented case, there were no complications and the gland recovered normal function quickly following removal of the stone at up to two months follow up.

Recurrence of sialoliths is rather uncommon, and is estimated to occur in 1–10% of patients during the first 6 months postoperatively.¹⁴ Long-term follow up was planned for this case.

CONCLUSION

Sialolithiasis is common and should be considered in patients experiencing submandibular swelling and pain, especially at mealtime.

This case report draws attention to the feasibility of a harmless therapeutic approach to such a huge sialolith. No submandibular function impairment resulted after the therapy.

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References

1. Bilahari N, Kumari B, James B, Kuruvila V. Submandibular sialolithiasis: Report of six cases. *J Pharm Bioallied Sci.* 2013 Jul;5(3):240.
2. Batori M, Mariotta H, Chatelou H, Casella G, Casella MC. Diagnostic and surgical management of submandibular gland sialolithiasis: Report of a stone of unusual size. *Eur Rev Med Pharmacol Sci.* 2005;9(1):67–8.
3. Cho S-H, Han J-D, Kim J-H, Lee S-H, Jo J-B, Kim C-H, et al. Removal of submandibular calculi by surgical method and hydraulic power with curved needle: a case report. *J Korean Assoc Oral Maxillofac Surg.* 2017 Jun;43(3):182.
4. Kopeć T, Wierzbicka M, Szyfter W, Leszczyńska M. Algorithm changes in treatment of submandibular gland sialolithiasis. *Eur Arch Oto-Rhino-Laryngology.* 2013 Jul 9;270(7):2089–93.
5. Delli K, Spijkervet FKL, Vissink A. Salivary Gland Diseases: Infections, Sialolithiasis and Mucoceles. In: *Monographs in oral science.* 2014. p. 135–48.

6. Kraaij S, Karagozoglou KH, Forouzanfar T, Veerman ECI, Brand HS. Salivary stones: symptoms, aetiology, biochemical composition and treatment. *Br Dent J.* 2014 Dec 5;217(11):E23.
7. Capaccio P, Marciante G, Gaffuri M, Spadari F. Submandibular swelling: Tooth or salivary stone? *Indian J Dent Res.* 2013;24(3):381.
8. Ardekian L, Klein HH, Araydy S, Marchal F. The Use of Sialendoscopy for the Treatment of Multiple Salivary Gland Stones. *J Oral Maxillofac Surg.* 2014 Jan;72(1):89–95.
9. Lim EH, Nadarajah S, Mohamad I. Giant Submandibular Calculus Eroding Oral Cavity Mucosa. *Oman Med J.* 2017 Sep 27;32(5):432–5.
10. Rodrigues GHC, Carvalho VJG, Alves FA, Domaneschi C. Giant submandibular sialolith conservatively treated. *Autops case reports.* 2017;7(1):9–11.
11. Erkul E, Gillespie MB. Sialendoscopy for non-stone disorders: The current evidence. *Laryngoscope Investig Otolaryngol.* 2016 Oct;1(5):140–5.
12. Pabst G, Strobel K, Zehnder J. The value of the twinkling artefact for the diagnosis of sialolithiasis of the large salivary glands. *J Laryngol Otol.* 2017 Dec 18;18:1–6.
13. Foletti JM, Graillon N, Avignon S, Guyot L, Chossegros C. Salivary Calculi Removal by Minimally Invasive Techniques: A Decision Tree Based on the Diameter of the Calculi and Their Position in the Excretory Duct. *J Oral Maxillofac Surg.* 2018 Jan;76(1):112–8.
14. Ruiz R, Brygo A, Nicot R, Ferri J. Sialolithiasis Removal under general anesthesia: a descriptive retrospective study in the maxillo-facial surgery department in Lille University Hospital. *J Stomatol Oral Maxillofac Surg.* 2017 Nov 10;17:30203.

15. Dong SH, Kim SH, Doo JG, Jung AR, Lee YC, Eun YG. Risk Factors for Complications of Intraoral Removal of Submandibular Sialoliths. *J Oral Maxillofac Surg.* 2017 Sep 21;17:31235.

Figure Legends:

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Figure 1. Preoperative OPG showing the radiopaque structure.



Figure 2. Intraoperative photograph showing removal of sialolith.

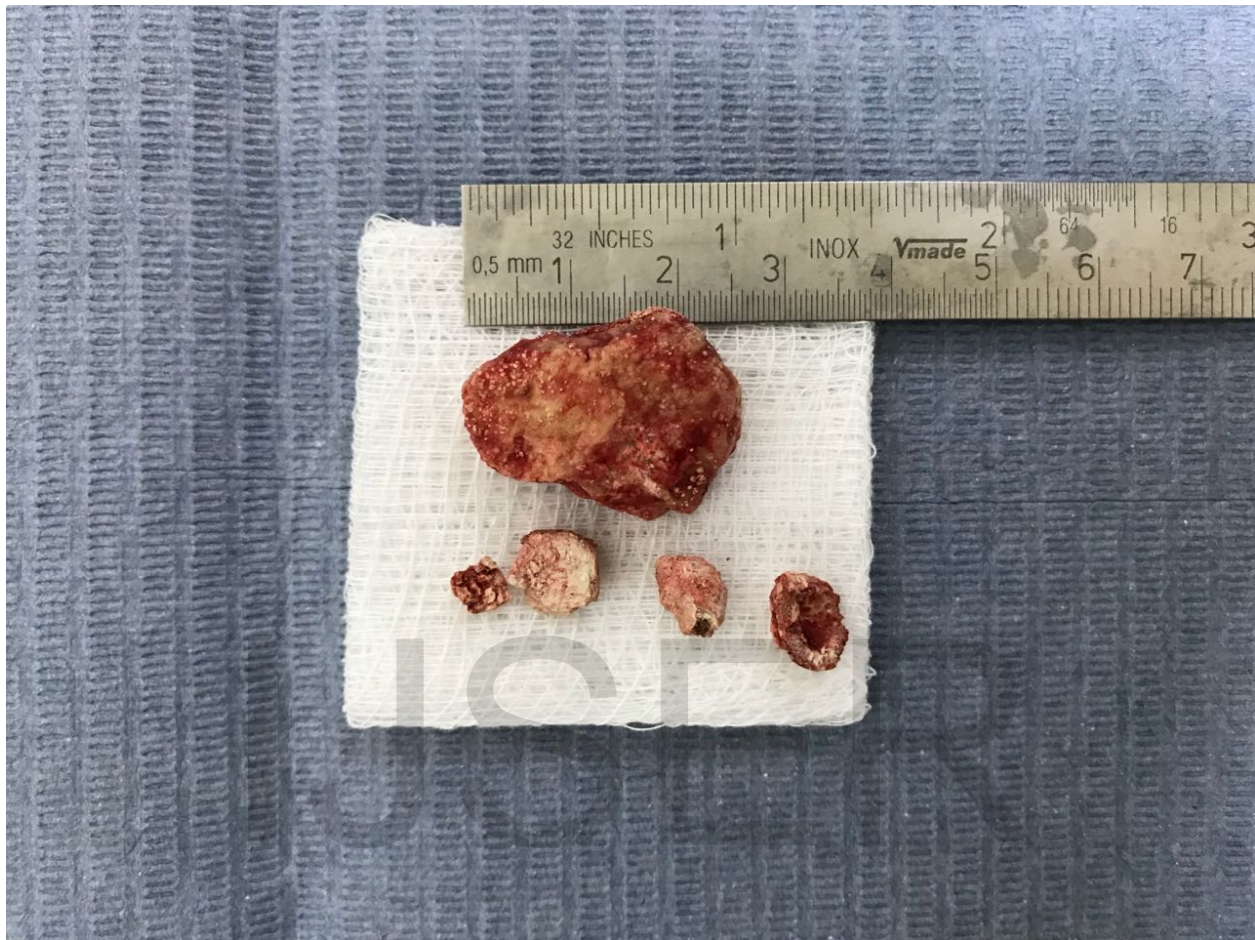


Figure 3. Fragmented sialolith, removed from the submandibular gland.



Figure 4. Postoperative OPG.

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Figure 5. Intraoral view, one week follow up.



Figure 6. Intraoral view, one month follow up.