

## CASE REPORT

# Sialolithiasis in Submandibular Gland; Two Case Presentation

Motiur Rahman Molla\*, Moriom Inna, Md. Nazrul Islam

Department of Oral and Maxillofacial Surgery, Anwer Khan Modern Medical College & Hospital,  
Dhanmondi, Dhaka

### Abstract

Two cases of sialolithiasis are presented here. One patient presented with an acute inflammatory condition of left submandibular gland with secondary infection and facial cellulitis. CT Scan confirmed as cellulitis with secondary infection from ductal stone at mid left floor of the mouth. Another patient presented with repeated low-grade pain and swelling at left submandibular gland area with difficulty in swallowing that was confirmed by Sialogram. In order to allow the gland to operate normally, the duct was kept intact in the first case where ductal calculus was removed from floor of the mouth only. Sialoadenectomy and ductal calculi excision were performed in the second case due to the chronic infection of the non-functioning left submandibular gland.

**Key words:** Sialolithiasis, Submandibular gland, Swallowing difficulty, Facial cellulitis, Sialoadenectomy, Excision of the calculi

### Introduction

Submandibular gland is a major salivary gland which is mixed in type (predominantly mucous gland) with a large superficial section and small deep lobes that connected around the posterior border of the mylohyoid muscle at the angle of the jaw. The submandibular duct arises from the deep part of the gland from the floor of the mouth along the lateral side of the frenulum linguae.<sup>1</sup> Most of the sialoliths are usually of 5mm in maximum diameter and all the stones over 10mm should be reported as a sialolith of unusual size.<sup>2</sup> Sialoliths with an average frequency of occurrence of 12:1000 are approximately twice as common in men as in women.<sup>3</sup> Wharton's duct rests at the lower level of the oral cavity, and this location allows for retrograde infection of the gland by oral flora. The pH of saliva in the submandibular gland is alkaline, which may lead to the formation of calcium salts.<sup>4</sup> Its precise etiology and pathogenesis are unknown. The principal symptoms are pain and inflammation of the gland in response to salivary stimuli.<sup>5</sup> Clinically, the calculi appear as generally

yellowish, round or oval masses and can be rough or smooth. Sialoliths are clinically usually characterized by pain and swelling. There are also symptoms such as reduced saliva flow in the mouth of the salivary gland ducts, restriction of the mouth opening and pus flow.<sup>6</sup> Two cases of sialolithiasis is presented here with its clinical significance and brief discussion of two different surgical procedure for sialolithiasis also presented. Generally, in chronic sialolithiasis, sialoadenectomy along with stone removal is frequently done. However, in one of the two cases presented here, the stone was removed from the duct carefully while maintaining the gland's patency for normal salivary flow. This was quite effective surgical technique and should be keep in mind to save the functional gland when suitable.

### Case 1:

Case presentation: A 25 years female came to our clinic with pain and swelling in the left submandibular region. The pain persisted for almost 30 days and also revealed intermitting swelling and pain during meals which usually resolved after the meal. She also complained unpleasant sensation while eating sour and acidic food.

On clinical examination, there was an inflammatory diffuse swelling at left submandibular area extending up to the left floor of the mouth (Figure 1.a) and initially was diagnosed as left facial cellulitis. On extraoral

\*Correspondence: Motiur Rahman Molla, Department of Oral and Maxillofacial Surgery, Anwer Khan Modern Medical College & Hospital, House 17, Road 8, Dhanmondi, Dhaka, Bangladesh  
e-mail address: moti.molla@gmail.com  
ORCID ID: 0000-0002-7812-2425

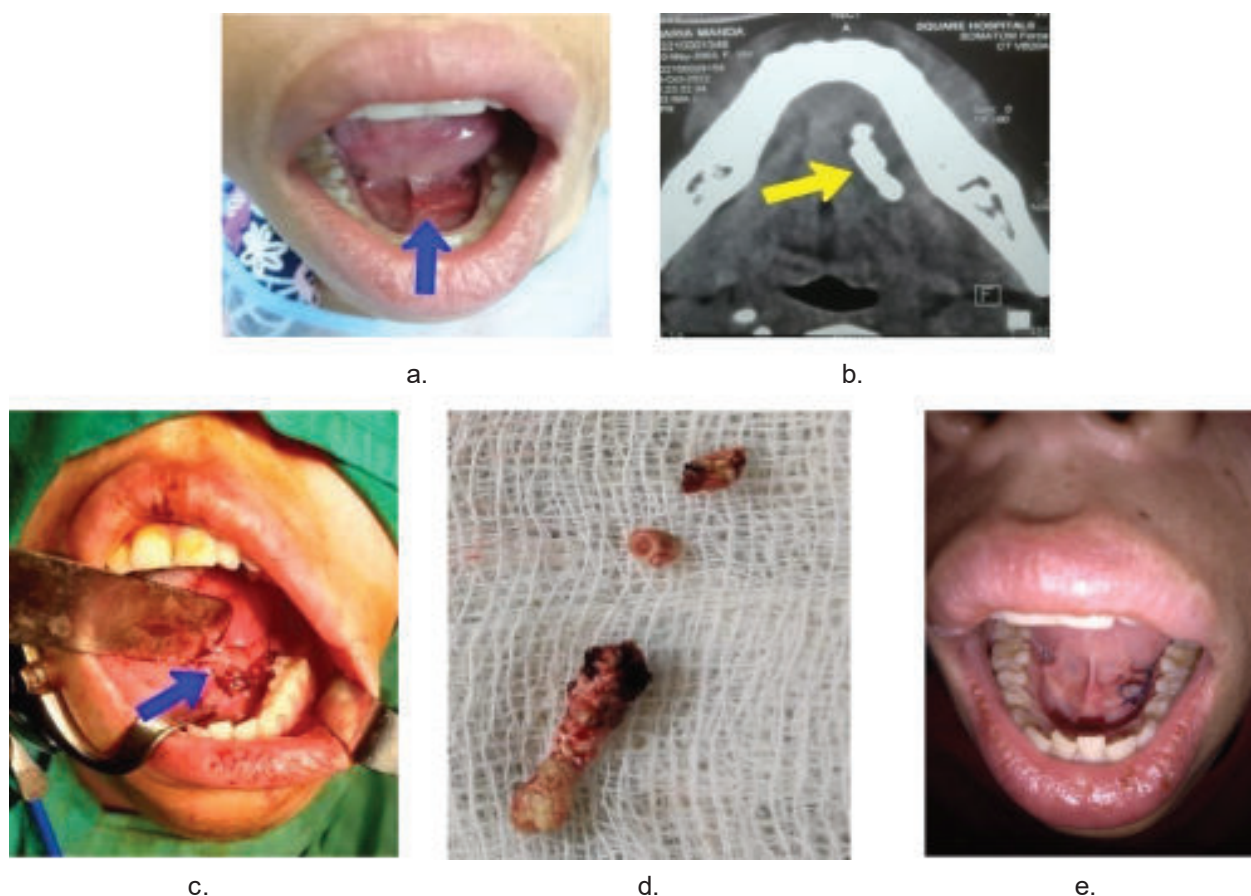
palpation, there was soft inflammatory skin indicating pus formation, but intraorally a firm stone like swelling palpable at mid left floor of the mouth. Computed Tomography (CT) scan revealed the case of sialolithiasis of left submandibular gland (Figure 1.b) with secondary infection resulting facial cellulitis. Parenteral antibiotic such as Ceftriaxone for 7 days and Metronidazole for 5 days was given to control acute infection causing mild left facial cellulitis. The left salivary gland's decreased flow was then observed upon examination following the resolution of the cellulitis.

Planning and procedure: As the function and the salivary secretion of left submandibular gland secretion was normal. Surgery was planned to remove only the stone from the duct sparing the removal of the gland under General Anesthesia (GA). GA fitness obtained before surgery. On October 16, 2022 with all aseptic precautions, a wide incision was given at left floor of the mouth, then blunt dissection of the soft tissue

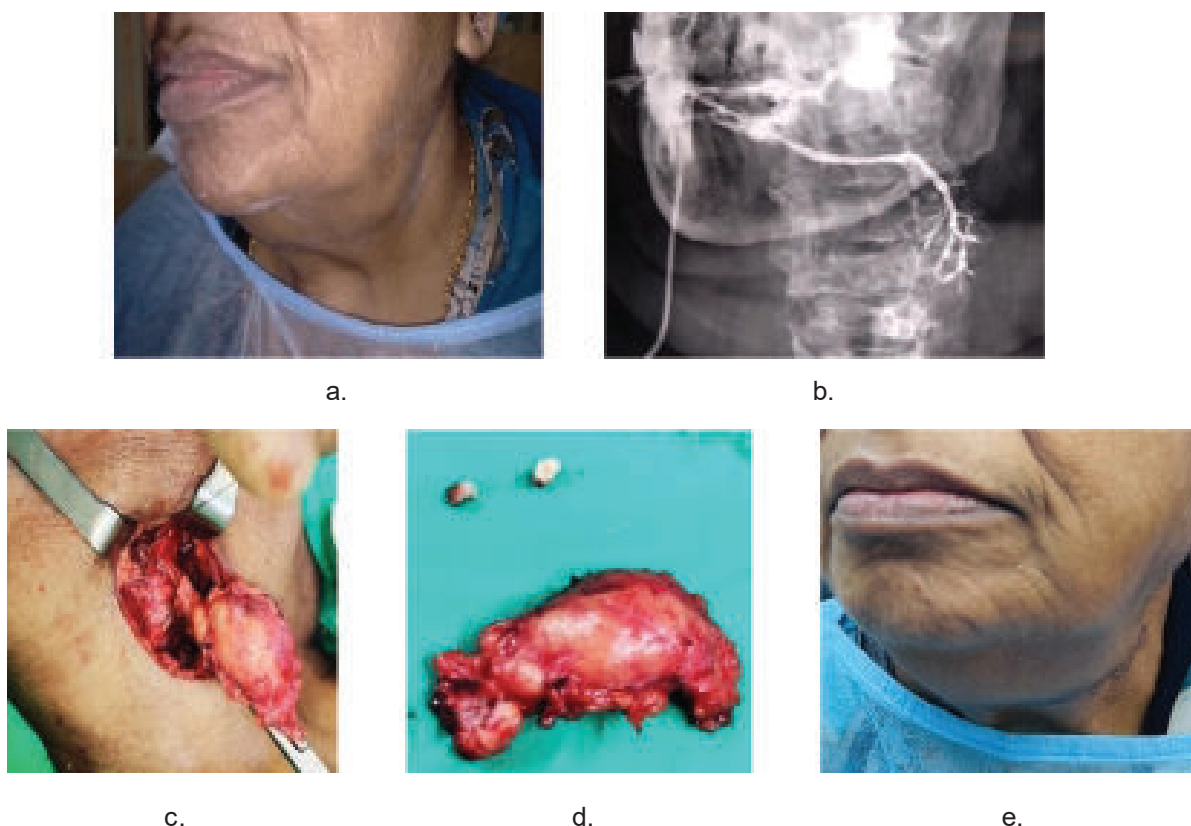
was done, identifying the salivary duct and stone was palpated. Then an incision was given over the duct to carefully remove the stone (Figure 1.d). Finally, duct was kept patent by introducing a tube into the duct and fixed with suture and that tube was left in the floor of the mouth for two weeks for the new canalization and to maintain the ductal patency (Figure 1.c). Patient experienced no post-operative complications or any discomfort on follow up examination and visit (Figure 1.e).

**Case 2:**

Case presentation: A 50 years old female came to our clinic and reported with pain and swelling in left submandibular region (Figure 2.a). On clinical examination, pain was low-grade and a swelling was present at left submandibular gland area with difficulty in swallowing. Diagnosis was sialolithiasis of left submandibular gland which was confirmed by Sialogram (Figure 2.b).



**Figure 1:** a: Patient's Profile, b: CT scan showing Sialolith in left submandibular duct, c: Sialolithotomy and Suturing of the defeat, d: Sialolith, e: Post- operative stich in situ



**Figure 2:** a: Patient's Profile, b: Sialogram, e: Post- operative follow up, d: Excised salivary gland and clamping, c: Sialolithotomy operative stone

Planning and procedure: Because of repeated infection, the left submandibular gland was almost non-functioning and the stone was present at the base of the deep level of the duct of left submandibular gland. So, surgery was planned for the removal of the left submandibular gland with extraoral approach along with removal of the calculi under GA. GA fitness obtained before surgery. On November 18, 2022 with all aseptic precautions, a submandibular incision was given two fingers below the left body of the mandible to save the marginal mandibular nerve. After the skin incision, Platysma muscle was incised and the superficial layer of the deep cervical fascia was incised to expose the left submandibular gland. Then, lower lobe of the gland was lifted to see the tendon of digastric muscle inferior to the gland (Figure 2.c). Below the submandibular gland facial artery located and above mandibular nerve. Glandular branch was found during gland removal where vessels were present. Gland removed (Figure 2.d) and nerve was preserved. As submandibular gland is sitting over the mylohyoid muscle, it should be dissected also. Gland

has to be separated from ganglionic fiber to preserve Lingual nerve. Then gland was hanged in duct, palpation of the duct was done to check whether stone is here or not. Then excision of the gland was done and ligated the duct with suture. Then suction drain was placed and wound was closed in layers. Negative pressure to suction drain was given. Patient was admitted in hospital and discharged after 7 days. Stich was removed and patient was uneventful in follow up visit (Figure 2.e).

### Discussion

In the two cases presented here, one patient came with sialolithiasis along with secondary infection and cellulitis in the left submandibular gland area and sialolithiasis diagnosis was confirmed by CT scan. Study shows anterior stones are easy to recognize with occlusal radiographs and usually can be easily excised because they perforate into the mouth.<sup>7</sup> Another study shows, excision of the calculus can be achieved with an incision of the mouth floor's mucosa following the longitudinal axis of the

submandibular duct. Care should be taken not to exceed the first mandibular molar in order to avoid any damage to the lingual nerve. The stone can then be released from the canal using Metzenbaum chisel or a curette. A traction wire can also be placed behind the calculus in order to avoid its posterior migration during surgery.<sup>8</sup> As the stone was superficially present in the ductal end at left floor of the mouth and the left submandibular gland was soft and likely with normal function, so only the ductal stone was surgically removed with maintaining the ductal patency and preserving the left submandibular gland. Successfully the patient recovered. Anterior stones are easy to recognize with occlusal radiographs and usually can be easily excised because they perforate into the mouth. Another patient came with repeated low-grade pain and swelling at left submandibular gland area with difficulty in swallowing and diagnosis was confirmed by Sialogram. The left submandibular gland was almost non-functioning and moreover the stone was present at the of the deep level of the duct and near to the left submandibular gland. So, it is difficult to remove only the stone from the duct and because of the repeated infection the gland was also non-functioning. Study shows, usually this kind of case managed by surgical removal of the gland along with the stone preserving vital structures.<sup>9</sup> Another study shows the transcervical approach to sialoadenectomy is the most common, as it provides direct exposure to the gland and can be performed relatively quickly. However, complications such as scarring, nerve injury, and hematoma may occur.<sup>[10 11]</sup> So, removal of the left submandibular gland with extraoral approach along with removal of the ductal stone was done, preserving all the vital structures like marginal mandibular nerve, lingual nerve and associated blood vessels. Both the patients recovered well uneventfully and there were no complications in at least one year of follow up.

### Conclusion

Two cases of submandibular sialolithiasis are presented here. The importance of thorough examination all cases of sialolithiasis should carefully be judged the surgical technique in order to preserve the gland and remove ductal calculi only where practical. It is essential to have at least one year of

follow up, as some studies indicated some complication up to the rate of 20%.

### Acknowledgement

We extend our gratitude to the Department of Oral and Maxillofacial Surgery, Anwer Khan Modern Medical College Hospital, Dhaka, Bangladesh. We're also grateful to the patients' families for sharing information and allowing us to take photos with their consent.

*Conflict of interest:* No competing interests were disclosed.

*Funding Source:* Anwer Khan Modern Medical College Hospital, Dhaka, Bangladesh.

*Ethical approval:* Anwer Khan Modern Medical College Hospital, Dhaka, Bangladesh.

*Submitted:* 11 September, 2023

*Final Revision Received:* 16 March, 2024

*Accepted:* 09 January, 2024

*Published:* 01 April, 2024

### References:

1. Ellis H. Anatomy of the salivary glands. *Surgery (Oxford)*. 2012 1;30:569-72. DOI: 10.1016/j.mpsur.2012.09.008
2. Isberg A, Haverling M, Lundquist PG. Salivary calculi and chronic sialoadenitis of the submandibular gland: a radiographic and histologic study. *Oral surgery, oral medicine, oral pathology*. 1984 1;58:622-27. DOI: 10.1016/0030-4220(84)90090-2
3. Ayranci F, Omezli MM, Torul D, Sunar C, Leyla KO. Sialolith of the Submandibular Gland: A Case Report. *Middle Black Sea Journal of Health Science*. 2020;6:407-11. DOI: 10.19127/mbsjohs.817042
4. Arifa SP, Christopher PJ, Kumar S, Kengasubbiah S, Shenoy V. Sialolithiasis of the submandibular gland: report of cases. *Cureus*. 2019;6;11-01-06. DOI: 10.7759/cureus.4180
5. Rivera CJ, Castillo PG. Submandibular sialolith. A case report. *Rev ADM*. 2015;72:55-258. Available from: [www.medigraphic.com/cgi-bin/new/resumenI.cgi?IDARTICULO=61600](http://www.medigraphic.com/cgi-bin/new/resumenI.cgi?IDARTICULO=61600)
6. Omezli, M.M., Ayranci, F., Sadik, E. and Polat, M.E., 2016. Case report of giant sialolith (megalith) of the Wharton's duct. *Nigerian journal of clinical practice*, 19,414-17. DOI: 10.4103/1119-3077.179273
7. Bayındır T, Çetinkaya Z, Toplu Y, Akarçay M. Aóýz içine spontan açýlan büyük submandibular sialolitiazis: Olgu

- sunumu. *Journal of Turgut Ozal Medical Center*. 2012 5;19:188-91.  
DOI: 10.7247/jiumf.19.3.12
8. Chossegros C, Guyot L, Alessi G. Lithiases salivaires. *EMC. Stomatologie*. 2006:22057-A15.  
DOI: 10.1016/S1283-0852(06)41607-4
9. Arifa SP, Christopher PJ, Kumar S, Kengasubbiah S, Shenoy V. Sialolithiasis of the submandibular gland: report of cases. *Cureus*. 2019 6;11-01-06.  
DOI: 10.7759/cureus.4180
10. Koch M, Zenk J, Iro H. Algorithms for treatment of salivary gland obstructions. *Otolaryngologic Clinics of North America*. 2009;1;42:1173-92.  
DOI: 10.1016/j.otc.2009.08.002
11. Pitak-Arnop P, Pausch NC, Dhanuthai K, Sappayatosok K, Ngamwannagul P, Bauer U, Sader R, Rapis AD, Hervé C, Hemprich A. Endoscope-assisted submandibular sialadenectomy: a review of outcomes, complications, and ethical concerns. *Eplasty*. 2010;10.  
PMCID: PMC2875098