Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Surgery

Giant Calculi of the Submandibular Gland

Mohamed SAHLI[1]*, Amina El HAJJI[1], Bouchaib HEMMAOUI[1], Saloua OURAINI[1], Fouad BENARIBA[1], Noureddine ERRAMI[1]

[1]ENT and Cervicofacial Surgery Department, Military Hospital, Rabat, Morocco

DOI: https://doi.org/10.36347/sjmcr.2026.v14i11.038 | **Received:** 09.09.2026 | **Accepted:** 04.11.2026 | **Published:** 10.11.2026

***Corresponding author:** Mohamed SAHLI
ENT and Cervicofacial Surgery Department, Military Hospital, Rabat, Morocco

Abstract | **Clinical Case**

Salivary gland lithiasis is a common condition, most frequently affecting the submandibular gland. A "giant" calculus in this location defined as one exceeding 1.5 cm in size is rare. The clinical diagnosis is evident, typically presenting as a submandibular swelling that intensifies during meals, accompanied by induration of the floor of the mouth upon bimanual palpation. Imaging, primarily ultrasound and more importantly computed tomography (CT), allows a precise assessment of the lesion and measurement of the calculus size, which is essential for surgical planning. While conservative management or sialoendoscopy may be appropriate for smaller lithiasis, open surgery remains the treatment of choice for large calculi, despite the associated neurovascular risks specifically involving the lingual and hypoglossal nerves, as well as the facial artery.

Keywords: Giant calculi, submandibular gland, surgery.

Copyright © 2026 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Sialolithiasis is the second most common salivary gland disorder, following mumps parotitis. It most frequently affects the submandibular gland (approximately 80% of cases), followed by the parotid gland (19%) and the sublingual gland (1%) [1]. While the size of a stone generally does not exceed 1 cm, a stone with a diameter greater than 1.5 cm is classified as a "giant" sialolith [2]. The preservation of salivary flow explains the latency and good clinical tolerance as well as the progressive increase in size which takes place over several years. Despite the development of endoscopic techniques, the gold standard for treating giant or posteriorly located lithaisis remains open surgery specifically, submandibular gland excision (submandibulectomy) with extraction of the stone.

CLINICAL CASE

A 50-year-old patient followed for Hodgkin lymphoma in remission since 2022, he had also undergone a left submaxillectomy in 2014 for lithiasis of the left submandibular gland with uncomplicated post-operative care. He consulted for a swelling in the right submandibular region that had been developing for more than 8 years, including a progressive increase in volume and more marked sensitivity during meals, as well as a sensation of an intraoral foreign body on the right floor of the mouth. On clinical examination, the swelling was firm, painless, and mobile in relation to the two planes; bi-digital palpation showed a well-defined, mobile, slightly painful stony mass in the posterior and right part of the floor of the mouth (Figure 1).



Figure 1: Preoperative appearance showing a swelling in the right submandibular region

The cervical CT scan reveals an enlarged (38×25 mm) and heterogeneous right submandibular gland, with intraglandular ductal dilation proximal to a large, oval-shaped calculus (40×24×21 mm) of very high density (1343 UH) that runs along the horizontal ramus of the mandible **(Figure 2)**.



Figure 2: Computed tomography in axial view (A) and 3D reconstruction (B) showing a large oval lithiasis (40 x 24mm) (red arrow) with a very high density (1343UH)

Given the size and posterior location of the stone, the patient underwent surgery under general anesthesia, consisting of a right submandibulectomy and the removal of the large, proximally situated calculus, which was in close proximity to the floor of the mouth **(Figure 3).** Wharton's duct was ligated to prevent recurrence. The postoperative course was uneventful, with no evidence of paralysis of the mental nerve or the lingual nerve, the latter having followed a path very close to the calculus . Follow-up assessment at a mean interval of 6 months shows a satisfactory outcome.

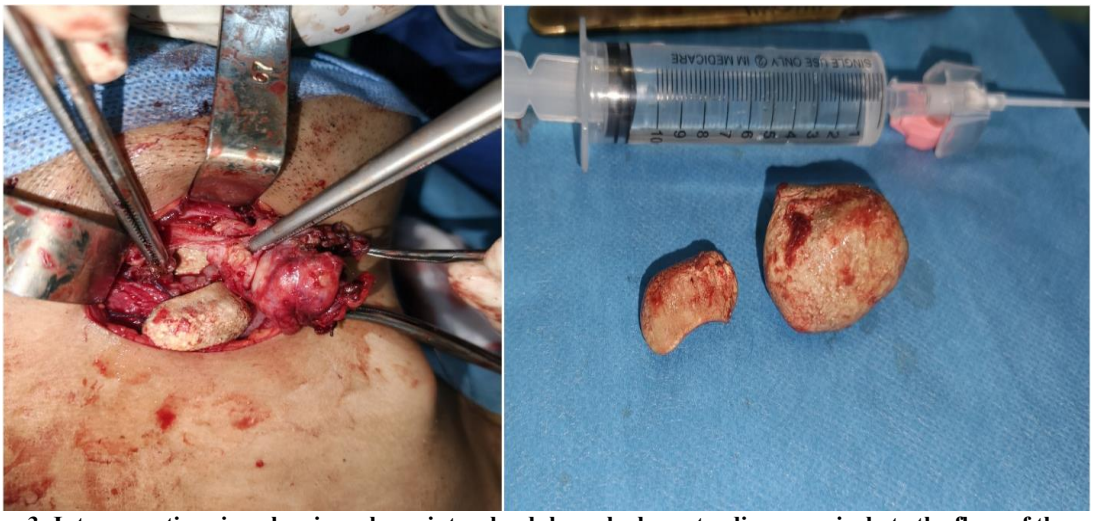


Figure 3: Intraoperative view showing a large intraglandular calculus extending superiorly to the floor of the mouth

DISCUSSION

Sialolithiasis is the most common pathology of the salivary glands with a predilection for the submandibular gland (80-95%), it mainly affects adults (30 to 60 years old) with a male predominance [3]. The size of the stone rarely exceeds 10mm, indeed giant stones (more than 15 mm) are very rarely reported in the literature, the largest stone was reported by Rai [4] measuring 72mm and weighing 45.2g. The pathogenesis of these lithiasis is based on salivary stagnation secondary to desquamated epithelial cells and a bacterial infection which would provide the organic matter necessary for the nucleation phenomena the apposition of successive layers of tricalcium phosphate salts [5]. A retrograde theory suggested that any substance or bacteria from the oral cavity that migrated into the salivary ducts could act as a breeding ground for subsequent calcification. Polypharmacy and advanced age promote a decrease in salivary secretion and thus

constitute a favorable environment for the development of calculi [3]. The clinical aspect of these giant calculi can be completely asymptomatic for several years; this is due to the ability of the adjacent affected duct to dilate, thus allowing normal salivary flow. However, as the calculus increases in size, the duct's ability to dilate decreases, and a sialo-oral fistula therefore appears, with the calculus protruding into the floor of the mouth [3][4][5]. In our patient, there was no sialo-oral fistula, but the stone was very close to the floor of the mouth and erosion at this level would have been observed if the patient remained without treatment. Standard occlusal radiographs visualize radio-opaque lithiasis, but ultrasound and computed tomography are the preferred examinations and provide precise information on calculi size and associated canal dilatations and allow for an accurate pre-operative assessment [6].

Sialendoscopy is a recent technique for the diagnosis and treatment of these lithiasis; it has been improved over the years with optimal optical resolution and miniaturized instruments. In addition to non-radiopaque calculi and those not seen in imaging techniques, any possible stenosis of the canal or other types of obstructions can also be detected with this technique. In cases of small sialoliths and favorable anatomical conditions, a definitive sialolithotomy can be performed [1]. In giant lithiasis, this technique reaches its limits and other alternatives or approaches are used: endoscopic, intraoral, combined (endoscopic and oral) [7], or finally open surgery in cases of intraglandular and posterior calculi like the case of our patient, but with greater morbidity, particularly for nerve structures such as the marginal mandibular nerve, the lingual nerve and the hypoglossal nerve. If a calculus causes erosion of the floor of the mouth, the resulting tissue defect must be closed via an intraoral approach to prevent secondary infection or the formation of a communication between the floor of the mouth and the cervical region [8].

Conclusion

Submandibular gland lithiasis is common and should be considered in the differential diagnosis of any swelling and pain in the submandibular region, particularly during meals. Giant lithiasis are rarely found and are sometimes asymptomatic due to the preservation of normal salivary flow. As a result, the diagnosis is sometimes delayed, sometimes even being discovered during an erosion of the floor of the mouth by lithiasis. Despite the availability of modern therapeutic methods, such as extracorporeal or intracorporeal lithotripsy and the development of endoscopic techniques, surgical excision remains the gold-standard treatment for giant salivary gland calculi.

Declarations

Consent for publication: Was provided and signed by the patient.

Funding: no external funding was received.

Conflicts of interest: the authors declare no conflicts of interest.

References

1. Achisia S, Mandal G, Sahu S, Ghosh S. Submandibular sialolithiasis: A series of three case reports with review of literature. Clin Pract. 2019 Mar 20;9(1):1119.
2. Soopanit T, Pongsapich W, Maneeprasopchoke P. Giant accessory submandibular sialolithiasis: A case report. Otolaryngology Case Reports 2020; 16:100204.
3. Bodner L. Giant salivary gland calculi: Diagnostic imaging and surgical management. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2002; 94: 320-23.
4. Rai M, Burman R. Giant submandibular sialolith of remarkable size in the comma area of Wharton's duct: a case report. J Oral Maxillofac Surg. 2009; 67:1329-32.
5. Oteri G1, Procopio RM, Cicciù M. Giant Salivary Gland Calculi (GSGC): Report Of Two Cases. Open Dent J. 2011; 5:90-5.
6. Filipe J, Rodrigo A, Rodrigo LA, Bárbara FG, Márcio BFA. Sialolito gigante no ducto da glândula submandibular. Rev port estomatol med dent cir maxilofac. 2013; 54:33–36.
7. Nofrat S, Inbal H, Sivan G. Combined Approach Sialendoscopy for Management of Submandibular Gland Sialolthiasis. Am J Otolaryngol. 2015.
8. Sahli M, Benariba N. Sialolithiasis in an accessory submandibular gland. PAMJ Clinical Medicine. 2021;6:22.