CASE REPORT

Right-Sided Submandibular Sialadenitis with Sialolithiasis Managed by Transoral Sialolithotomy: A Case Report

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Abstract
Sialolithiasis is the most common cause of obstructive salivary gland disease and predominantly affects the submandibular gland due to the anatomical and biochemical characteristics of Wharton's duct. This report describes a case of chronic right-sided submandibular sialadenitis caused by a ductal calculus in a 39-year-old female presenting with recurrent swelling and meal-related pain in the submandibular region and floor of mouth. Ultrasonography demonstrated dilation of the right submandibular duct with a 4.5-mm calculus near the oral cavity. The patient underwent successful transoral sialolithotomy with ductal incision and removal of the stone, followed by irrigation and restoration of salivary flow. Postoperative recovery was uneventful with complete symptom resolution. This case highlights the importance of early diagnosis and minimally invasive surgical management of submandibular duct calculi.

Keywords: Sialolithiasis, Submandibular gland, Sialadenitis, Wharton duct calculus, Sialolithotomy

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Introduction

Obstructive salivary gland diseases are common conditions encountered in oral and maxillofacial surgery and otolaryngology practice. Among these disorders, **sialolithiasis**, the formation of calcified structures within the salivary gland ducts or parenchyma, accounts for nearly **50% of major salivary gland pathologies** [1]. The condition most frequently involves the **submandibular gland**, representing approximately **80–90% of cases**, followed by the parotid gland and rarely the sublingual glands [2].

The high incidence in the submandibular gland is attributed to several anatomical and biochemical factors. Wharton's duct is long and tortuous with an upward course, promoting salivary stasis. Additionally, submandibular saliva is relatively alkaline, viscous, and rich in calcium and phosphate, which facilitates crystallization and calculus formation [3]. These stones obstruct salivary flow and predispose patients to recurrent inflammation known as **chronic obstructive sialadenitis**.

Clinically, patients commonly present with **painful swelling of the gland that increases during meals**, a phenomenon known as "meal-time syndrome," caused by stimulated salivary secretion against an obstructed duct [4]. Other symptoms may include tenderness, palpable ductal stones, and occasionally infection leading to suppurative sialadenitis.

Diagnostic evaluation typically includes **clinical examination and imaging modalities such as ultrasonography, computed tomography, or sialendoscopy**. Ultrasonography is widely used as the first-line investigation due to its noninvasive nature and ability to detect stones larger than 2 mm [5].

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Management depends on the **size and location of the calculus**. Small stones may pass spontaneously or be removed via sialendoscopy, whereas larger or distal duct stones are commonly treated with **transoral sialolithotomy**, which preserves gland function [6]. More invasive procedures such as gland excision are reserved for recurrent disease or intraglandular stones.

This report describes a case of **right-sided submandibular sialadenitis with a distal Wharton duct calculus**, successfully managed through intraoral sialolithotomy.

Case Presentation

Patient Information

A **39-year-old female** presented with swelling over the **upper part of the right side of the neck** for two months and swelling in the **right floor of mouth** for one month. The swelling gradually increased in size and was associated with **dull aching pain during meals** for the preceding two weeks. The patient reported that the swelling typically increased during food intake and subsided afterward.

There was **no history of fever, dysphagia, dyspnea, trauma, weight loss, or similar swelling elsewhere**. The patient was a known case of **hypothyroidism on regular medication**. No other systemic illnesses were reported.

Clinical Examination

On general examination the patient was **conscious, oriented, afebrile, and hemodynamically stable** with normal vital signs.

Extraoral examination revealed a **globular swelling measuring approximately 4 × 3 cm in the right submandibular triangle** with smooth surface and regular margins. The overlying skin appeared normal without erythema or sinus formation (Figure 1).

Intraoral examination demonstrated **a small swelling approximately 0.5 × 0.5 cm over the right floor of mouth near the ventral surface of the tongue** (Figure 2). The mucosa was intact without ulceration or discharge.

On palpation:

- The submandibular swelling was **firm, tender, and not freely mobile**.
- Bidigital palpation of the floor of mouth revealed an **enlarged submandibular gland with a palpable stone in Wharton's duct**.
- No local rise in temperature was noted.

Investigations

Baseline laboratory investigations were within normal limits.

Ultrasonography of the neck demonstrated:

- Enlargement of the right submandibular gland
- Dilatation of the right submandibular duct measuring **4.9 mm**
- Presence of a **4.5-mm ductal calculus near the oral cavity**

The radiological impression was **right submandibular sialadenitis with ductal calculus** (Figure 3).

Diagnosis

Based on clinical and radiological findings, a provisional diagnosis of:**Chronic right-sided submandibular sialadenitis with sialolithiasis** was made.

Treatment

The patient underwent **transoral sialolithotomy under general anesthesia**.

The patient was placed in a supine position and a mouth gag was applied. The tongue was retracted to the contralateral side to expose the floor of mouth. Wharton's duct was identified on the right side.

The calculus was localized using **bimanual palpation**. A **longitudinal incision was made over the duct**, and the duct was carefully opened. The calculus was identified and removed (Figure 4).

Following stone extraction:

- The duct was irrigated with normal saline
- The gland was gently milked to confirm **free salivary flow**
- Hemostasis was achieved

The duct was left open to facilitate drainage.

Outcome and Follow-Up

The postoperative period was uneventful. The patient experienced **complete relief of pain and swelling** following the procedure. Salivary flow from Wharton's duct was restored and no recurrence was noted during follow-up.

Discussion

Sialolithiasis is the most common obstructive disease of the salivary glands and accounts for the majority of inflammatory salivary gland disorders [1]. The **submandibular gland is most frequently affected**, primarily because of the anatomical characteristics of Wharton's duct and the biochemical composition of submandibular saliva [2].

The pathogenesis of sialolithiasis involves the formation of an **organic nidus composed of mucus, bacteria, or desquamated epithelial cells**, followed by deposition of inorganic salts such as calcium phosphate and carbonate [7]. Salivary stasis and altered pH contribute significantly to this process.

The typical clinical presentation includes **intermittent swelling and pain during meals**, which occurs due to stimulation of salivary secretion against an obstructed duct [4]. Our patient demonstrated this classic symptom, often described as **"mealtime syndrome."**

Diagnostic imaging plays an important role in confirming the presence and location of calculi. **Ultrasonography is widely recommended as the first diagnostic modality**, with high sensitivity for stones larger than 2 mm [5]. In this case, ultrasonography clearly demonstrated both ductal dilatation and the obstructing calculus.

Management strategies depend largely on **stone size, location, and gland function**. Minimally invasive techniques such as **sialendoscopy and extracorporeal shock wave lithotripsy (ESWL)** are increasingly used for smaller stones [6]. However, distal ductal stones

near the ductal orifice are most effectively treated through **transoral sialolithotomy**, which allows direct removal of the stone while preserving gland function.

Recent studies emphasize that **gland-preserving procedures should be prioritized whenever possible**, as they provide excellent outcomes with minimal complications [8]. Transoral sialolithotomy has been reported to achieve **success rates exceeding 90% for distal duct stones** [9].

Complications of untreated sialolithiasis include recurrent infections, ductal strictures, and chronic gland dysfunction. Early diagnosis and treatment are therefore essential to prevent gland damage [10].

The present case illustrates the classical presentation, diagnosis, and successful surgical management of a distal submandibular duct calculus. Removal of the calculus restored salivary flow and prevented further episodes of obstructive sialadenitis.

Conclusion

Submandibular sialolithiasis is a common cause of obstructive salivary gland disease presenting with recurrent swelling and pain during meals. Ultrasonography provides a reliable and noninvasive diagnostic modality for detecting ductal calculi. Transoral sialolithotomy remains an effective and gland-preserving treatment for distal Wharton's duct stones. Early surgical intervention ensures symptom resolution and prevents recurrent sialadenitis.

Figures

Figure 1: Extraoral swelling in the right submandibular region.

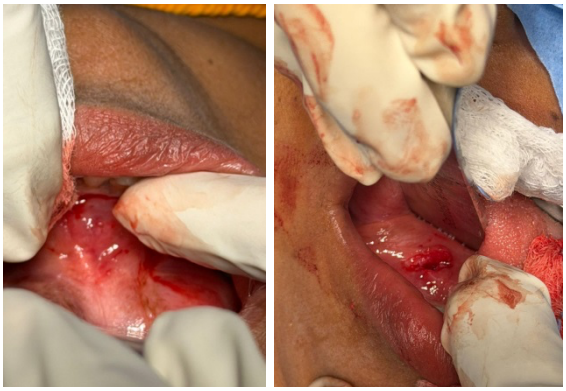

Figure 2: Intraoral swelling in the right floor of mouth.

Figure 3: Intraoperative removal of Wharton duct calculus.

References

1. Ngu RK, Brown JE, Whaites EJ, Drage NA, Ng SY, Makdissi J. Salivary duct strictures and stones: diagnosis and management. **Br J Radiol. 2007;80(951):373-382.** https://doi.org/10.1259/bjr/58909411
2. Koch M, Zenk J, Iro H. Algorithms for treatment of salivary gland obstructions. **Otolaryngol Clin North Am. 2009;42(6):1173-1192.** https://doi.org/10.1016/j.otc.2009.08.015
3. Williams MF. Sialolithiasis. **Otolaryngol Clin North Am. 1999;32(5):819-834.** https://doi.org/10.1016/S0030-6665(05)70172-0
4. Iro H, Zenk J. Salivary gland diseases in children and adolescents. **Head Neck. 2014;36(6):874-884.** https://doi.org/10.1002/hed.23431

5. Zenk J, Koch M, Klintworth N, König B, Konz K, Gillespie MB, Iro H. Sialendoscopy in the diagnosis and treatment of sialolithiasis: a study on more than 1000 patients. **Otolaryngol Head Neck Surg. 2012;147(5):858-863.** https://doi.org/10.1177/0194599812452837
6. Koch M, Iro H, Zenk J. Role of sialoscopy in the treatment of Stensen duct strictures. **Ann Otol Rhinol Laryngol. 2008;117(4):271-278.** https://doi.org/10.1177/000348940811700406
7. Marchal F, Dulguerov P. Sialolithiasis management: the state of the art. **Arch Otolaryngol Head Neck Surg. 2003;129(9):951-956.** https://doi.org/10.1001/archotol.129.9.951
8. Koch M, Iro H, Zenk J. Sialendoscopy-based diagnosis and therapy of salivary gland diseases. **Laryngoscope. 2009;119(2):251-255.** https://doi.org/10.1002/lary.20079
9. Capaccio P, Torretta S, Pignataro L. The role of transoral duct surgery in submandibular sialolithiasis. **Acta Otorhinolaryngol Ital. 2017;37(2):97-102.** https://doi.org/10.14639/0392-100X-1018
10. Nahlieli O, Shacham R, Zagury A, Eliav E. Combined approach to impacted parotid stones. **J Oral Maxillofac Surg. 2010;68(1):153-157.** https://doi.org/10.1016/j.joms.2009.07.012

Authors' Contributions

- **Dr Preetham Goud** – Conceptualization of the case report, clinical data collection, preparation of clinical documentation, literature review, drafting of the manuscript, and preparation of figures.
- **Dr Srinivasan** – Supervision of the case management as Head of the Department, guidance in surgical decision-making, critical revision of the manuscript for important intellectual content, and final approval of the manuscript.
- **Dr Jayakanthan** – Assistance in perioperative management of the patient, interpretation of clinical findings and imaging investigations, literature review, and manuscript editing.
- **Dr Govardhan** – Assistance during surgical management, intraoperative documentation, contribution to data interpretation, and revision of the manuscript.
- **Dr Rahul Sairam** – Participation in postoperative patient care, assistance in data collection and literature review, and manuscript proofreading.
- **Dr Vineetha** – Support in clinical documentation, preparation of figures and images, literature search, and formatting of the manuscript.

All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work.

Conflict of Interest

The authors declare that there is **no conflict of interest** regarding the publication of this article.

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