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A Rare Case of Recurrent, Giant and Multiple Obstructive Wharton's Duct Sialolithiasis Treated with Cannula Placement for Ductal Patency Maintenance

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ABSTRACT

Introduction: Sialolithiasis is the most common benign pathology of the major salivary glands, predominantly affecting the submandibular gland and Wharton's duct. Giant Wharton's duct sialoliths (>15 mm) are rare, and their association with multiple calculi is exceedingly uncommon.
Case Report: We report a rare case of recurrent, giant and multiple obstructive sialoliths of Wharton's duct managed successfully by transoral sialolithotomy followed by cannula placement for maintaining ductal patency. This minimally invasive approach resulted in complete stone removal, restoration of salivary flow, and preservation of the submandibular gland, thereby avoiding gland excision.
Conclusion: This case highlights the importance of ductal patency maintenance techniques in the management of complex obstructive sialadenitis with sialolithiasis and also reviews contemporary treatment strategies for recurrent, large and multiple salivary duct stones.

Keywords: Sialolithiasis; Wharton's duct; giant sialolith; submandibular gland; ductal cannulation; transoral sialolithotomy

INTRODUCTION

Sialolithiasis accounts for approximately 85–90% of salivary gland disorders, with the submandibular gland being the most commonly affected.[1]This predilection is attributed to the more viscous and alkaline nature of submandibular gland secretions (when compared to other major salivary glands), its relatively high calcium content, and the long, upward course of Wharton's duct.[1,2] Most sialoliths measure less than 10 mm; stones larger than 15 mm are described as giant sialoliths and are rarely encountered.[3] Multiple giant calculi within Wharton's duct causing complete obstruction are extremely uncommon.

Recent advances in minimally invasive salivary gland surgery have shifted management paradigms towards gland-preserving techniques, including

sialendoscopy, combined approaches, and ductal stenting or cannulation. This case report describes a rare presentation of recurrent, giant and multiple Wharton's duct sialoliths treated successfully with surgical removal and cannula placement to restore and maintain ductal patency.

CASE REPORT

A 47-year-old male presented to the otorhinolaryngology outpatient department with complaints of recurrent pain and swelling in the left submandibular region for 17 years. The symptoms were aggravated during meals and had progressively worsened over time. The patient also reported intermittent purulent discharge from the floor of the mouth but denied fever or systemic symptoms. He gave a history of similar complaint 10 & 5 years back when he was treated for Wharton duct calculus removal.

Clinical examination

Extraoral examination revealed a single, firm, tender swelling in the left submandibular region, mobile on bimanual palpation. Intraoral examination showed a palpable hard mass along the course of left Wharton's duct with reduced salivary flow from the duct orifice.

Investigations

Ultrasonography revealed left submandibular gland to be heterogenous, echogenic with dilated Wharton's duct measuring 3.2mm in calibre. A calculus measuring 15mm in distal part of Wharton's duct.

Management

The patient underwent transoral sialolithotomy under local anaesthesia. Multiple sialoliths, one giant calculus (first) was removed through a 1cm incision along the Wharton's duct, followed by removal of other remaining subcentrimetric sized calculi from the distal most end of the duct. The duct was then examined thoroughly for any residual calculi by careful digital palpation & milking the duct along its entire length in a proximal to distal fashion. Thereafter, a sterile 20-G intravenous cannula (trimmed accordingly) was inserted into the duct and secured with a 4-0 vicryl suture to maintain ductal patency was kept for 6 days, while keeping the patient on antibiotics & anti-inflammatory drugs.

Figure 1: Delivery of megalith from left Wharton's duct

Figure 2: Multiple residual calculi delivered from left Wharton's duct

Figure 3: Megalith (right), crumbled pieces of megalith (left)

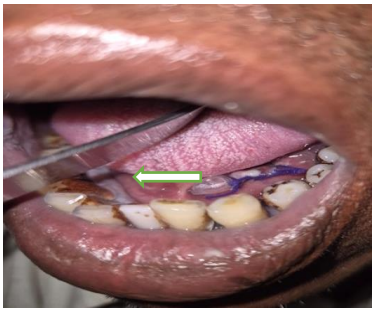

Figure 4: in-situ iv cannula on Day 3

Postoperative course

Postoperatively, the patient was managed with antibiotics, anti-inflammatory drugs, betadine gargles while maintaining adequate hydration. The postoperative period was uneventful. The cannula was retained for 6 days and subsequently removed on 7th day. On follow-up after 3 weeks, the patient remained completely asymptomatic, with complete resolution of submandibular gland swelling (assessed clinically & on sonography), with restoration of normal salivary flow and no evidence of calculi recurrence or ductal stenosis. The patient remained asymptomatic on follow up done every month till 6 months and then at 1 year.

Figure 5: left Wharton's duct on day 10

DISCUSSION

Sialolith formation is believed to result from the deposition of calcium salts around an organic nidus composed of desquamated epithelial cells, bacteria, or mucus.[1] The submandibular gland is particularly susceptible due to its long, upward-coursing duct and alkaline, calcium-rich saliva, which predispose to salivary stasis and stone formation. [1,2]

Giant sialoliths are rare and typically develop over prolonged periods, often presenting with mild or intermittent symptoms that tend to delay diagnosis. The presence of multiple calculi further complicates management and increases the risk of ductal damage, recurrent sialolithiasis and chronic submandibular gland sialadenitis, with surgical gland removal remaining the only treatment option left. Lustmann et al., in a survey of 245 patients with sialolithiasis, reported that 78.8% of stones were smaller than 10 mm, 13.6% measured between 10 and 15 mm, and only 7.6% exceeded 15 mm in size.[4] Saluja et al. reported oral fistula formation due to delayed management of a giant sialolith, highlighting the importance of early prompt intervention for successful obstruction removal and prevention of any sialo-oral fistula.[5]

Sialolithiasis treatment depends on the localization of the salivary calculus. For those closer to the orifice, duct catheterization and dilatation facilitate and allow retrieval of the sialolith. For those located in the anterior half of the duct, surgical intervention is the best choice. Finally, the ones located in the posterior region of the duct or within the gland may require total gland removal.

Historically, large or multiple stones were frequently managed by submandibular gland excision. However, contemporary otolaryngological practice emphasizes gland-preserving techniques whenever feasible. Transoral sialolithotomy remains an effective approach for anterior and palpable ductal stones. Adjunctive ductal cannulation or stenting, as employed in this case, plays a crucial role in maintaining ductal patency, facilitating healing, and reducing the risk of postoperative strictures or fibrosis.

This case highlights the importance of tailored and individualized management strategies based on stone size, number, and location, as well as the expanding role of duct-preserving interventions in salivary gland surgery.

CONCLUSION

Recurrent, giant and multiple obstructive Wharton's duct sialolithiasis is a rare clinical entity. Early diagnosis and minimally invasive surgical management for Wharton duct along with ductal patency maintenance are quintessential for gland preservation and avoidance of its surgical removal.

Declaration by Authors

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