

GIANT SUBMANDIBULAR SIALOLITH: A CASE REPORT AND REVIEW OF THE LITERATURE

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Abstract

Background: Sialolithiasis refers to the presence of calcified structures within the ducts of salivary glands and is the most common disorder affecting these glands. It is the most common obstructive pathology of the major salivary glands, with the submandibular gland being most frequently affected. Giant sialoliths (>15 mm) are rare and often present with atypical or prolonged symptoms. It can be diagnosed through clinical examination, conventional radiography, computed tomography, and ultrasonography.

Case Presentation: We report a 39-year-old female who presented to the Maxillofacial Surgery Clinic of Yobe State University teaching hospital in Damaturu with a 5-month history of persistent pain and swelling in the right floor of the mouth. Clinical and radiological evaluation revealed a giant submandibular duct sialolith measuring 3 × 2 cm. Initial conservative management was unsuccessful, necessitating surgical removal under general anaesthesia via a transoral approach. Postoperative recovery was uneventful, with complete resolution of symptoms.

Conclusion: This case underscores the importance of early diagnosis and appropriate imaging in suspected salivary gland obstruction. Surgical excision remains the definitive treatment for giant sialoliths when minimally invasive modalities are not feasible.

Keywords: Sialolithiasis; Submandibular gland; Giant sialolith; Salivary gland obstruction; Transoral excision.

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Introduction

Sialolithiasis refers to the formation of calcified structures (sialoliths) within the salivary glands or their ducts. It may develop either in the parenchyma or the ductal system of a salivary gland [1]. It accounts for approximately 30–50% of all salivary gland diseases and represents the leading cause of obstructive sialadenitis [2]. The submandibular gland is most commonly affected, with 80–90% of stones occurring within Wharton's duct. This is followed by the parotid gland (19%) and the sublingual gland (1%) [3]. This predilection is attributed to anatomical and physiological factors, including the long, upward course of the duct and the viscous, mucin-rich, alkaline nature of submandibular saliva [4,5].

Most sialoliths measure less than 10 mm in diameter. Stones exceeding 15 mm are classified as giant sialoliths and account for less than 1% of reported cases [4]. These giant calculi pose unique diagnostic and therapeutic challenges due to their size, chronicity, and association with ductal damage, secondary infection, and gland dysfunction.

The pathogenesis of sialolithiasis is multifactorial. Calcium salts precipitate around an organic nidus composed of desquamated epithelial cells, bacteria, or mucous plugs [7]. Predisposing factors include reduced salivary flow, dehydration, ductal stenosis, smoking, and systemic conditions such as gout and nephrolithiasis [8,9].

Clinically, sialolithiasis typically presents with salivary colic—pain and swelling during meals. Prolonged obstruction may result in chronic sialadenitis, abscess formation, or glandular atrophy [10]. While small stones may pass spontaneously or respond to conservative measures, giant sialoliths rarely do and usually require surgical intervention [6].

Diagnostic imaging plays a critical role in evaluation. Plain radiographs can identify most radiopaque stones, whereas ultrasonography and computed tomography (CT) offer superior sensitivity for radiolucent or posteriorly located calculi. CT remains the gold standard for assessing stone size, location, and associated glandular pathology [11].

Management strategies have evolved considerably over recent decades. Minimally invasive techniques such as sialendoscopy, extracorporeal shock-wave lithotripsy (ESWL), and combined endoscopic–transoral approaches are now widely employed [12,13]. However, giant stones often require open transoral excision due to their size, impaction, and limited response to fragmentation [12]. Given the rarity of sialoliths exceeding 30 mm, documentation of such cases remains clinically valuable.

Case Presentation

A 39-year-old female presented at the Maxillofacial Surgery Clinic of Yobe State University teaching hospital in Damaturu with a 5-month history of progressive pain and swelling in the right floor of the mouth. The pain was exacerbated during meals and partially relieved by analgesics. There was no associated dysphagia or systemic illness.

Clinical examination revealed a firm, hard mass palpable in the right floor of the mouth along the course of Wharton's duct. Oral hygiene was fair, and mouth opening was unrestricted. Plain radiography demonstrated a well-defined radiopaque mass consistent with a large submandibular duct sialolith (Fig. 2)

An initial attempt at stone milking under local anaesthesia was unsuccessful. The patient was therefore scheduled for transoral sialolith removal under general anaesthesia after adequate counselling and taking informed consent. With the patient in the supine position and orotracheally intubated, a stay suture was placed on the anterior two-

thirds of the tongue to facilitate retraction. After infiltration with 2% lignocaine containing adrenaline, the surrounding tissues were gently dilated using a curved haemostat. The calculus was delivered intact (Figure 3). The cavity was irrigated with saline, followed by debridement of epithelialised and chronic granulation tissue. Haemostasis was achieved, and the defect was closed with 4-0 Vicryl sutures (Figure 4). Estimated blood loss was approximately 3 mL

A yellowish, kidney-shaped, rough-surfaced calculus measuring 3×2 cm was removed and sent for histopathological evaluation. The postoperative course was uneventful, with complete symptom resolution after 3 months of periodic review and follow-up.

Discussion

This report documents a giant submandibular sialolith measuring approximately 30–35 mm, far exceeding the size of typical salivary calculi encountered in routine practice. Liu et al. reported similar giant stones but emphasised their extreme rarity, while Bodner noted that such calculi constitute less than 0.5% of all sialolithiasis cases [5,16].

The clinical presentation of pain and swelling during meals in this patient is consistent with classical descriptions of sialolithiasis [10]. However, the prolonged duration of symptoms before presentation exceeds that seen in most routine cases. Leung and Katz observed that delayed diagnosis increases the risk of recurrent infection, ductal stenosis, and gland fibrosis [8]. In the present case, timely surgical intervention prevented irreversible gland damage.

Although minimally invasive techniques such as sialendoscopy, extracorporeal shock-wave lithotripsy (ESWL), and combined endoscopic-transoral approaches were documented in the literature [12, 13], transoral excision remains a cornerstone in the management of giant submandibular stones. While Marchal and Dulguerov

documented a historical reliance on gland excision, modern practice increasingly favours gland-preserving approaches [12]. Although sialendoscopy and ESWL are effective for smaller or mobile stones, Capaccio et al. and Koch et al. demonstrated that large, impacted calculi often necessitate open transoral removal [13,14], as was appropriate in this case.

Radiographic evaluation using plain imaging was sufficient due to the stone's radiopaque nature and anterior location. Although CT provides superior anatomical detail, Madani and Beale noted that basic imaging remains adequate for clearly calcified anterior stones [11].

In a case report by Nupur Agarwal et al in northern India of submandibular sialolith in a 50-year-old man, it was reported to measure about 1.5×0.8 cm in dimensions and another 0.4 cm in diameter using CBCT. [15] Importantly, reports from Nigeria and other African settings confirm that giant submandibular sialoliths occur regionally and may reach dimensions comparable to those described here [17,18]. A case from Port Harcourt documented a 40×25 mm submandibular calculus, while another Nigerian report described a “megalith” measuring 37×16 mm. These regional reports, together with global literature, demonstrate that although rare, very large calculi are encountered in African practice and can be managed successfully with appropriate surgical intervention. The present case adds to this limited but growing body of regional evidence.

Conclusion

This case highlights successful transoral removal of a rare giant submandibular sialolith measuring approximately 3 cm, without the need for gland excision. Early diagnosis, appropriate imaging, and an individualised surgical approach are essential for optimal outcomes. Continued reporting of

similar cases will improve understanding of the epidemiology and management of giant salivary calculi. outcomes for giant salivary stones.



Figure 1. Clinical Photograph of the patient with the stone insitu



Figure 2. Periapical Radiograph of the patients showing the stone around the right submandibular region.

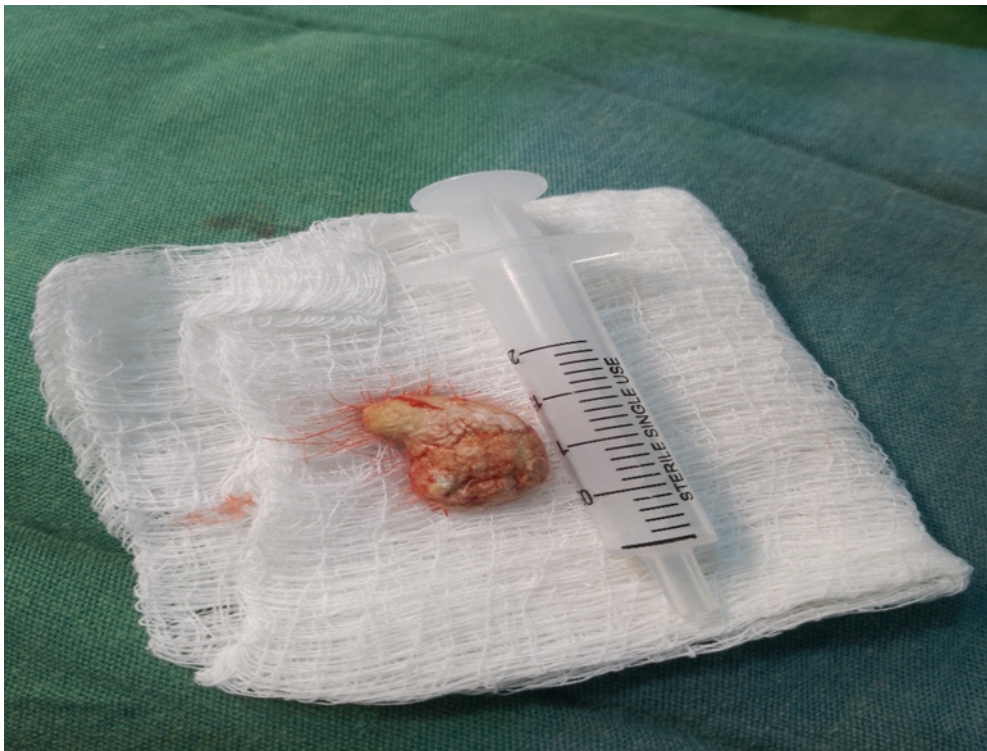


Figure 3. Clinical Photograph of the stone removed

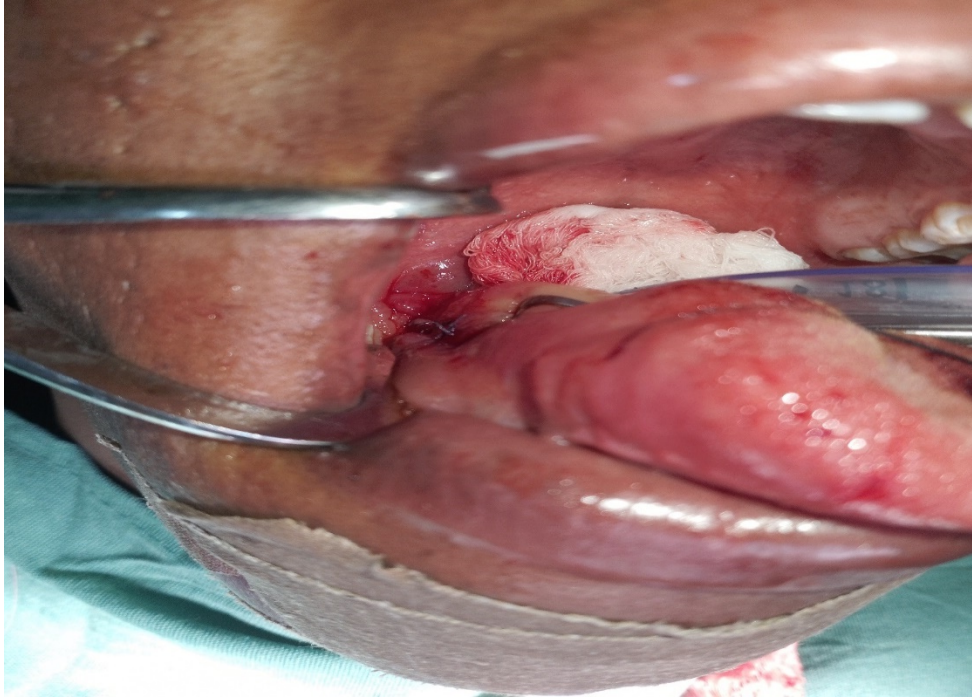


Figure 4. Clinical Photograph of the patient with the surgical site sutured

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