

Management of a Giant Parotid Sialolith

Rehman Basharat* and Ghassan Samara

Department of Otolaryngology, Stony Brook University, New York, USA

Abstract

Sialolithiasis, the formation of calculi within the salivary glands, predominantly affects the submandibular glands but can occasionally involve the parotid glands with significant clinical consequences. We present a case of a 64-year-old male with who developed severe left lower jaw pain and swelling due to a large sialolith in the parotid gland. The patient underwent a successful sialoendoscopy and surgical removal under general anesthesia, which involved meticulous dissection and excision of a dense, calcific mass along with affected gland tissue. Postoperative analysis confirmed the presence of a sialolith with extensive glandular calcification. This case underscores the challenges in managing large parotid sialoliths, emphasizing the importance of surgical approaches for optimal outcomes.

Keywords: Sialolith • Salivary stone • Parotid mass • Calcinosis • Giant mass

Introduction

Sialolithiasis, also called salivary gland stones, is a non-threatening condition marked by the creation of calculi in the ducts of the major salivary glands: parotid, submandibular and sublingual. This is the main reason for salivary gland swelling, with males being twice more likely to be affected than females, with an incidence between 1 in 10,000 to 1 in 30,000 individuals [1]. While it is uncommon, there have been reported instances of submandibular calculi in children between 3 weeks and 15 years old [2]. Sialolithiasis is responsible for more than half of the diseases affecting the large salivary glands, serving as the primary reason for both acute and chronic infections in these glands. The majority of cases (over 80%) are found in the submandibular gland or its duct, while 6% occur in the parotid gland and 2% in the sublingual or minor salivary glands [1]. Most stones are found in the submandibular gland because of its anatomical characteristics that make it more likely to have blockages and stone formation. Some of these characteristics consist of the submandibular duct moving upward towards the mouth and the creation of thicker, mucinous and alkaline saliva [2]. In a clinical setting, salivary stones typically affect only one side and do not lead to dryness in the mouth. They may have a yellowish color and come in round or ovoid shapes, with either a rough or smooth texture. The main components are calcium phosphate with some carbonates in the form of hydroxyapatite, in addition to smaller amounts of magnesium, potassium and ammonia [2]. Submandibular stones consist of 82% inorganic material and 18% organic material, while parotid stones are made up of 49% inorganic material and 51% organic material [1]. Various carbohydrates and amino acids are present in the organic material, with no bacterial elements at the center of the stones. Larger stones in the end of the submandibular duct can frequently be identified during a physical exam, whereas smaller stones might need more sophisticated diagnostic methods like point-of-care ultrasound, CT, MRI and direct viewing with sialoendoscopy [1]. The sialolith can range in size from under 1 mm to a few centimeters in its largest diameter. Nevertheless, most (88%) measure less than 10 mm [2]. In

this report, we document the existence of an unusually large sialolith blocking the Stensen's duct in the parotid gland.

Case Presentation

A 64-year-old male presented to the emergency room with left lower jaw swelling, pain and erythema, along with two syncopal episodes during meals the day before. The episodes occurred without prior chest pain but were preceded by a sensation of lightheadedness and dizziness. The patient's medical history was significant for hypertension but no previous episodes of syncope. Physical examination revealed a supple neck, a firm and tender mass at the tail of the left parotid gland and no expression of pus on palpation. The patient underwent a comprehensive evaluation including troponin testing, Electrocardiography (EKG), a Computed Tomography (CT) angiography of head & neck. The troponin test and EKG was unremarkable. However, the CT angiography revealed some thickening of the left platysma muscle, stranding of adjacent fat and a $3.3 \times 2.9 \times 4.0$ cm mass in the left parotid gland (Figure 1). Due to the patient's symptoms, he was scheduled for surgery. The patient was taken to the operating room and placed under general endotracheal anesthesia by the anesthesiology team. The planned procedure was a combination of sialoendoscopy and direct surgical removal of a sialolith. A modified Blair incision on the left side was made, extending

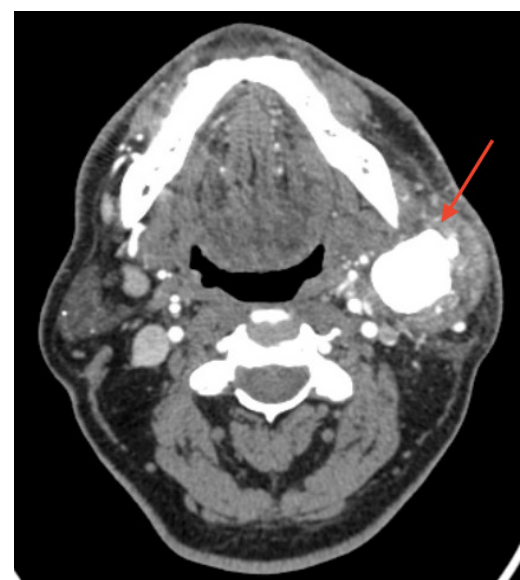


Figure 1. A $3.3 \times 2.9 \times 4.0$ cm mass in the left parotid gland.

*Address for Correspondence: Rehman Basharat, Department of Otolaryngology, Stony Brook University, New York, USA, E-mail: rehmanbasharat20@gmail.com

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down to the Superficial Muscular Aponeurotic System (SMAS). The SMAS was carefully incised and the surgery proceeded from the posterior angle to access the portion of the parotid gland, all the while carefully monitoring the facial nerve. During the procedure, a dense capsule was encountered. The surgical team dissected around half of its surface before incising into the capsule itself. Inside, a soft, mushy white substance resembling hydroxyapatite cement was discovered. This material varied in consistency-some areas were rock hard, while others were completely soft. The team used sterile saline and water irrigation along with curettes to thoroughly evacuate the capsule and excised as much of the capsule wall as feasible. The parotid capsule contained salivary gland parenchyma with intraparenchymal calcific contents, indicating the extensive nature of the calcification within the gland. Once the capsule content was removed, hemostasis was achieved using bipolar cautery. The operation concluded with the closure of the SMAS layer followed by the skin, which was meticulously sutured using a subcuticular Quill stitch. Post-operatively, the patient reported significant relief from previous symptoms and no swelling.

Results and Discussion

Treatment of sialolithiasis should start with conservative approaches, such as massaging the salivary gland, using nonsteroidal anti-inflammatory drugs and sialogogues [1]. Symptoms of infection, such as swollen lymph nodes in the neck, pus coming from the salivary glands, or redness around the salivary glands, show that antibiotic treatment is necessary. If conservative treatment doesn't work, next steps depend on sialolith's size, number and location. Stones smaller than 5 mm found in the distal duct should be first treated with endoscopy [3]. Stones located at the end of the duct and stones that are bigger than 5 mm should receive transoral duct slitting treatment. Initial endoscopic treatment should be given to stones ranging from 5 to 7 mm in the proximal duct or hilar region [3]. If this fails or the stone gets stuck, the next solution is surgery. External Shockwave Lithotripsy (ESWL) can be utilized for stones that cannot be felt or seen during endoscopy [1]. If endoscopic treatment fails or the stones are stuck, shockwave lithotripsy is the next best option before removing the broken stones with endoscopy. If salivary stones do not improve with external shockwave lithotripsy, they can be treated using a combination of transcutaneous and endoscopic methods, as long as the stone is visible during endoscopy. Due to the high prevalence of submandibular sialolithiasis, there is extensive literature on its treatment and management, whereas literature on the management of parotid gland sialolithiasis is comparatively scant. As such, we highlight in this case the treatment of a giant parotid sialolith, a rare event.

Conclusion

Sialolithiasis, the primary reason for swelling in salivary glands, can

pose significant clinical difficulties because it can lead to repeated infections, blockages and inflammation in the salivary ducts. The submandibular gland is mainly impacted by the condition, while the parotid and sublingual glands are less commonly affected. Management approaches vary from less aggressive treatments like gland massage and anti-inflammatory drugs to more invasive procedures such as endoscopy, external shockwave lithotripsy and surgical removal. Treatment decisions depend mostly on the size, quantity and placement of the stones. Surgical intervention may be required for bigger or impacted stones, especially those that lead to recurring symptoms or complications. This procedure requires a high level of precision to prevent nerve damage, especially when removing the submandibular gland. In spite of these obstacles, developments in diagnostic and therapeutic methods have greatly enhanced results for patients with sialolithiasis. A thorough grasp and prompt action are essential for effectively managing this condition and reducing the chances of complications.

Acknowledgement

None.

Conflict of Interest

None.

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