GIANT SALIVARY CALCULI OF THE SUBMANDIBULAR GLAND DUCT : A CASE REPORT

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Summary

Giant sialoliths are classified as those exceeding 15 mm in any one dimension.Sialolithiasis is the most common disease of salivary glands and approximately 80% of all reported cases of sialoliths occur in the sub mandibular salivary gland and its duct. A case of unusually large sialolith arising in the submandibular salivary gland duct presented which was removed surgically through per-oral approach.It was measured to be 38 mm along with its greatest length and 15 mm wide.

Key words

Giant salivary gland; Calculi; Submandibular gland.

Introduction

Sialolithiasis accounts for more than 50% of diseases of the large salivary glands and is thus the most common cause of acute and chronic infections [1]. More than 80% occur in the submandibular gland or its duct, 6% in the parotid gland and 2% in the sublingual gland or minor salivary glands as is simultaneous lithiasis in more than one salivary glands [1]. Forty per cent of parotid and 20% of submandibular stones are not radiopaque and sialography may be required to locate them [2].

88% of salivary calculi are reported to be less than 10mm in size [3]. With review of the literature showing the occurrence of abnormally large (>15mm) salivary calculi to be rare.

Case Report

A 44 years old male reported with recurrent swelling in right submandibular region with mild pain for 4 years. He gave a history of intraoral abscess 2 years back.

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Extra oral examination revealed a palpable right submandibular gland and intraoral examination a large , hard, mild tender swelling in right anterior and mid portion of floor of mouth in the region of submandibular duct. A Floor of the mouth occlusalview radiograph showed a radiopaque shadow extending from first premolar tolower right second molar.

A diagnosis of right submandibular duct calculus was made and at asubsequent appointment the stone was removed under local anaesthesia with sharp dissection. The stone was found abnormally large measuring 38 mm long and 15 mm wide.

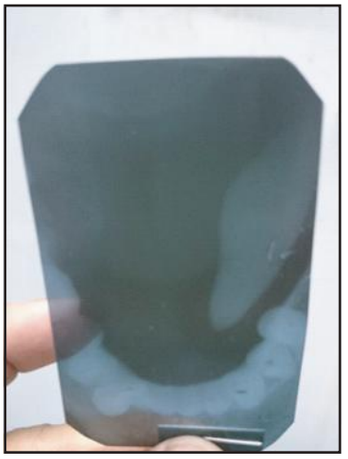

Figure 1: Flooe of the mouth occlusal view radiograph showing submandibular salivary duct stone

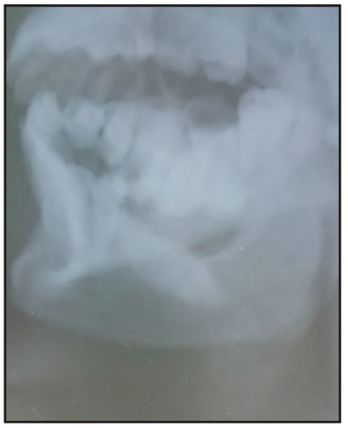

Figure 2 : Plain radiograph showing a large radiopaque shadow in the submandibular salivary gland duct region

Figure 3 : The stone shown to scale (38 mm)

Discussion

Many different aetiological theories have been proposed for salivary gland formation. These include inflammatory, infective, mechanical, neurogenic and chemical. Stone formation is currently thought to be multifactorial, leading to the precipitation of amorphous tricalcic phosphate around an organic matrix of salivary mucin, desquamated epithelial cells and bacteria. Crystallisation occurs and this structure becomes the initial hydroxyapatite focus. This initial focus acts as a catalyst that attracts and supports the deposition of different substances. Giant salivary calculi are thought to form in salivary ducts, which allow expansion and permit salivary flow around the stone. Stones may slowly increase in size, remaining asymptomatic for a more substantial period of time [4]. Subsequently, most giant salivary calculi adopt an oval or elongated shape. Giant calculi are described as being hard in texture, yellow in colour and with a porous aspect [5]. The stone in our case was classical in appearance for a giant salivary calculi developing within the submandibular duct and gland hilum.

Several factors predispose the submandibular gland to stone disease. These include the length and calibre of its duct, as well as the direction of flow and salivary content. Wharton's ducts are longer and of larger calibre than parotid (Stenson's) ducts. These dimensions, along with the need for saliva to flow against gravity, are thought to result in slower salivary flow rates. Saliva produced in the submandibular gland is also more alkaline than that produced in the parotid glands, with a higher calcium and mucin concentration [6]. The predisposition to calculi, and ability to tolerate expansion, lead to a higher incidence of giant calculi associated with this gland [7].

Diagnosis of giant salivary lithiasis is often straightforward from a thorough history and examination. Special investigations can be used to confirm diagnosis and plan treatment.

Plain radiography will detect opaque stones (80 to 95% of sialoliths), with intra-oral occlusal radiographs particularly useful.

Sialography allows the whole duct system to be visualised, demonstrating calculi of all sizes and also glandular damage from chronic obstruction. Ultrasound provides an excellent, non-invasive method of detecting sialoliths. Stones that are greater than 1.5mm and of high mineral content are reported to be identifiable on ultrasound with an accuracy of 99% [8]. In cases of clinically evident giant sialoliths, ultrasound imaging may aid treatment planning by the detection of further small stones. It is also described as the best method of demonstrating salivary flow post-stone removalThe location and size of calculi are important factors when planning intervention for large calculi. The goal of treatment for giant calculi, as for standard size stones, is restoration of normal salivary secretion. Although chronic sialedenitis secondary to persistent obstruction from a giant calculus leads to a fibrotic and poorly functioning gland, symptoms apparently resolve after calculi removal [9]. Submandibular gland excision is recommended in cases of substantial intra-glandular caliculli, which are inaccessible via a trans-oral approach. Also, when multiple small stones are present in the vertical and comma portions of Wharton's duct, sialadenectomy is recommended [10]. Although modern methods of stone investigation and intervention have been reported for the treatement of giant calculi, transoralsialolithotomy with sialodochoplasty or sialodenectomy remain the mainstay of treatment.

Conclusion

Giant salivary gland duct calculi > 15 mm are rare. X-ray floor of the mouth occlusal view is very useful for diagnosing such stone. Other diagnostic methods are Sialography Ultrasound, Computed Tomography etc. The objective of the treatment is to be restoration of normal salivary secretion and it's flow.

Disclosure

All the authors declared no competing interest.

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