



Multiple Submandibular Duct (Wharton's Duct) Stones

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Obstruction is a common problem of major salivary glands, and the most common cause is salivary calculi. The most frequent locations of sialolithiasis are submandibular gland and its duct; the vast majority of them are found in Wharton's duct. Wharton's duct stones are frequently single, and multiplicity is uncommon. Only about 5% of cases have more than two calculi. Based on the location and size of stone(s), there are different options for the treatment of sialolithiasis. Therefore, radiologic imaging has an important role in the diagnosis and management of sialolithiasis. In this study, we presented an uncommon case of sialolithiasis with six stones within submandibular duct that CT scan detected them accurately.

Keywords: sialolithiasis, submaxillary gland, diagnostic imaging.

Introduction

Obstruction is a common problem of major salivary glands, and the most common cause is salivary calculi [1, 2]. The most frequent locations of sialolithiasis are submandibular gland and its duct; the vast majority of them are found in Wharton's duct [3]. Wharton's duct stones are frequently single [4], and multiplicity is uncommon. Only about 5% of cases have more than two calculi [4]. Based on the location and size of stone(s), there are different options for the treatment of sialolithiasis [3]. Therefore, radiologic imaging has an important role in the diagnosis and management of sialolithiasis. In this study, we presented an uncommon case of sialolithiasis with six stones within submandibular duct that CT scan detected them accurately.

Case report

A 40-year-old man who developed pain and swelling in right submandibular region, for about 15 days, was referred to radiology department. Clinically, abscess formation was one of the differential diagnosis for this complaint. CT scan showed six stones in right Wharton's duct (Figure1) with the

largest one being about 9 mm in size. Moreover, the enlargement of right submandibular gland was demonstrated with more enhancement in comparison with left side in favor of inflammation and with evidence of some sialectasis (Figure2). There wasn't any abscess formation.

Discussion

More frequent submandibular gland stone is attributed to several factors. In addition to distinctive composition of submandibular saliva, other predisposing factors are angulation of Warton's duct against the gravity associated with its wider and longer course compared to parotid duct [5, 6]. However, multiple calculi in Warton's duct is uncommon, and only about 5% of cases with Warton's duct stone have more than two calculi [4]. Huang TC et al. reported a patient with four large calculi within submandibular gland duct [7] and Shafi M et al. described thirteen small stones of 1-3 mm within submandibular gland duct [8].

Another area for consideration is the subject of salivary stone diagnosis. Ultrasonography has limitation in detection of sialoliths smaller than 3 mm [3] and those

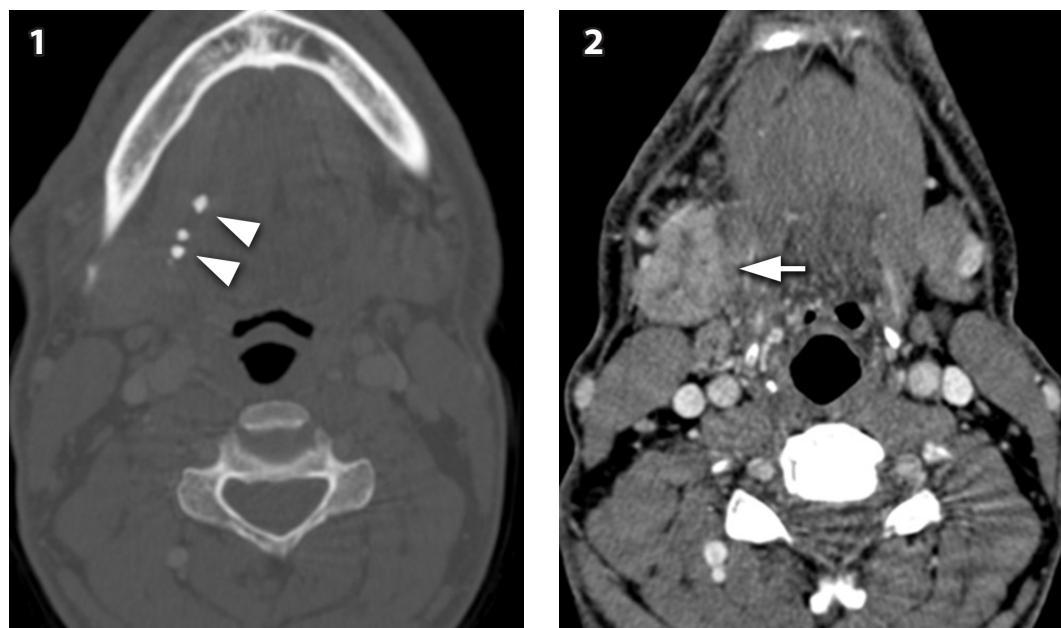


Figure 1.
Axial CT image (bone window): Multiple stones (arrowheads) in right Warton's duct.

Figure 2.
Axial CT image: Enlarged right submandibular gland (arrow) with sialectasis

located within the distal duct [1]. CT scan without contrast is excellent imaging method in detection of salivary stones [9, 10]. According to Burke CJ et al, CT scan with contrast is preferred modality in the patients with suspicious for abscess formation [1].

Conclusion

Although multiple calculi in Warton's ducts is uncommon, this diagnosis should be considered in patients with submandibular pain and swelling. Moreover, selection of proper imaging modality is necessary to make a correct diagnosis and to define the number, size, and location of salivary stones.

References

1. Burke CJ, Thomas RH, Howlett D. Imaging the major salivary glands. *Br J Oral Maxillofac Surg* 2011; 49:261-9.
2. Brown JE. Interventional Sialography and Minimally Invasive Techniques in Benign Salivary Gland Obstruction. *Semin Ultrasound CT MR* 2006; 27:465-75.
3. Sunder VS, Chakravarthy C, Mikkilineni R, Mahoorkar S. Multiple bilateral submandibular gland sialolithiasis. *Niger J Clin Pract* 2014; 17:115-18.
4. Krishnappa BD. Multiple submandibular duct (Wharton's duct) calculi of unusual size and shape. *Indian J Otolaryngol Head Neck Surg* 2010; 62:88-9.
5. Ledesma-Montes C, Garcés-Ortiz M, Salcido-García JE, Hernández-Flores F, Hernández-Guerrero JC. Giant Sialolith: Case Report and Review of the Literature. *J Oral Maxillofac Surg* 2007; 65:128-30.
6. Bateman ND. Diseases of the salivary glands. *Surgery (Oxford)* 2009; 27:535-9.
7. Huang TC, Dalton JB, Monsour FN, Savage NW. Multiple, large sialoliths of the submandibular gland duct: a case report. *Aust Dent J* 2009; 54:61-5.
8. Shafi M, Jaffer S. Submandibular duct sialolithiasis : an unusual presentation. *J Coll Physicians Surg Pak* 2006; 16:671-2.
9. Madani G, Beale T. Inflammatory Conditions of the Salivary Glands. *Semin Ultrasound CT MR* 2006; 27:440-51.
10. Rzymaska-Grala I, Stopa Z, Grala B, Golebiowski M, Wanyura H, Zuchowska A, et al. Salivary gland calculi - contemporary methods of imaging. *Pol J Radiol* 2010; 75:25-37.

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