Obstructive Sialadenitis of Submandibular Gland Due to a Nail-Like Fish Bone Foreign Body: A Rare Case Report

Running title: Obstructive sialadenitis of the submandibular gland

Abstract

Introduction:

Foreign body-associated sialadenitis of submandibular gland is not often and scarce within the literature. In this study, a report of a piece of Nail-like fish bone foreign body entering the Wharton's duct causing an acute sialadenitis is presented.

Foreign bodies must be explored and all suspected areas must be examined carefully for avoiding secondary problems and surgeries in the future.

Foreign bodies in the oral and maxillofacial region are often experienced after trauma and dental treatment.

Case report:

We describe a case of obstructive sialadenitis in the submandibular gland caused by penetration of a fish bone in a 68-year-old man. He had swelling and spontaneous pain in the left submandibular region. The radiographic examination didn't show foreign body in the submandibular gland. Initially, we diagnosed obstructive sialadenitis in the left submandibular gland and the study suspect that salivary stone might be the cause of this swelling so compressing and milking of Wharton duct. The foreign body measured 1.3cm *3 mm*2mm and was a nail-like object. On pathological examination, the foreign body was found to be a fish bone (cartilage-like organic material).

Conclusion

This case demonstrated that precise and proper inspection and examination, milking and then paying attention to the secretion of salivary gland lead to proper diagnosis and after that suitable treatment, so this could reduce costly assessment and treatment, also lessen bewilderment of the patient.

Keywords: Obstructive sialadenitis, foreign body, foreign body-associated sialadenitis, submandibular gland, nail-like fishbone

1. Introduction

Obstructive sialadenitis of the submandibular gland is usually due to sialoliths, but foreign body-associated sialadenitis is not often and rare in the literature [1–14]. The mechanism of foreign-body entry is generally traumatic [4-6, 15], thus reports of a foreign body entering the salivary

gland intraorally through Wharton's or Stensen's duct are not common and usual. [4, 5, 7, 16]. Foreign body-induced sialoliths are even rarer [6, 8, 9, 17, 18]. As we know, sialoendoscopy is one of minimally invasive procedure that has recently been applied for direct diagnosis of pathologic features in the ductal system and removal of sialoliths and foreign bodies in the duct of the salivary gland but it is used for distal of the salivary's duct [4-6,12,19].

Here we report a patient has cured with milking and compressing Wharton's duct and suddenly the foreign body like fish bone-induced sialoliths came out of the duct and after that prescribing antibiotic.

2. Case Report

A 68-year-old male patient was referred to Department of Oral and maxillofacial Medicine and surgery with a chief complaint of a swelling in left side of the neck since 14 days ago and he was suffering pain since 2 weeks ago, by the way, pain was increased in intensity while swallowing and eating meals. (Figure 1A, 1B). The patient gave a history of fever and malaise, difficulty in eating and also speaking. He expressed that the swelling was small in size and immediately increase to the present size of 5-6 cm.

The patient also suffered from diabetes, hypertension and he had a history of cardiac arrhythmia. He consulted with his dentist and get antibiotic (Cap Amoxicillin 500 mg) every 8 hour and also panoramic view radiography was taken but the dentist couldn't find the cause (figure 2A). For a short duration, partial recovery was done but after that, the swelling recurred.

Clinical examination of intraoral revealed that ovoid shape swelling in the floor of the mouth and it measured 5-6 cm in diameter. Extraoral findings reveal that enlargement of lateral neck extended from lower border of mandible (5 cm anterior to angle of mandible) to lateral upper border of thyroid cartilage. (Figure 1A) The border of enlargement was the well-defined and regular border, the surface was smooth and skin over the swelling was intact like adjacent tissues. It was tender on palpation but the temperature was not raised. Consistency of swelling was soft and rubbery and fluctuation was present but it was not fixed to overlying skin (Figure 1a, 1b).

Intra oral examination showed swelling of Wharton's duct in left floor of the mouth (Figure 2b). It was tender and painful on palpation, and consistency of swelling was soft and fluctuant.

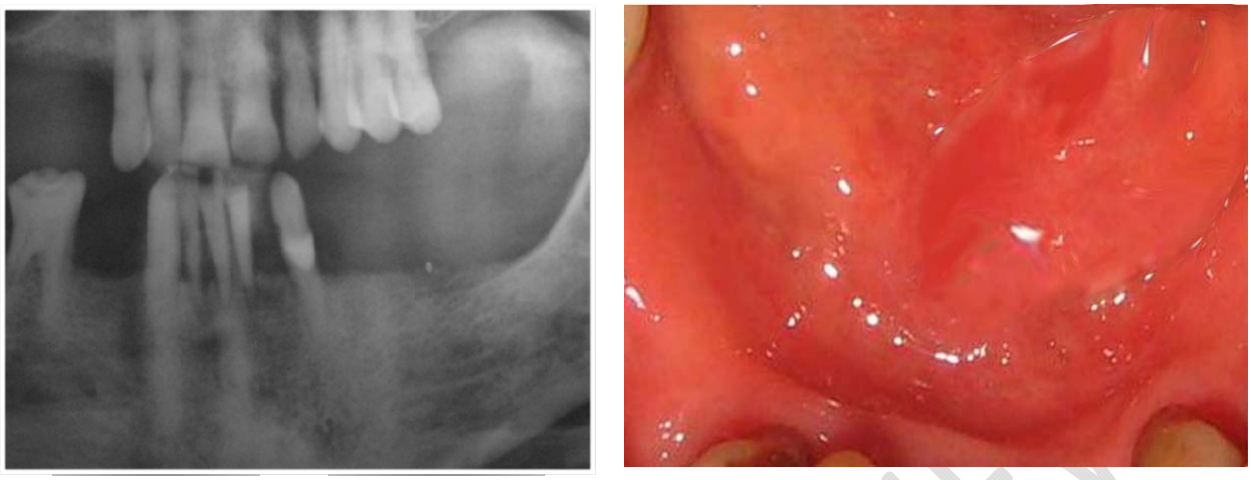
It is important to formulate the differential diagnosis when swelling and mass is seen at the side of the neck since this would help further evaluation of the condition and management of the patient. After considering all clinical findings following entities were considered in differential diagnosis—acute submandibular sialadenitis and benign swelling of the neck.

a b

Figure 1: Swelling of submandibular region that extended to lateral neck, and the patient had tenderness on palpation (a). Asymmetry and swelling of the left submandibular region, frontal view of patient (b).

Compressing and Milking of Wharton duct was performed and suddenly the nail-like fish bone foreign body came out of the duct and after that the pus was pushed out and we waited for about 15 minutes to get out of whole pus then we rinsed the orifice and duct (Figure 3a,3b, Figure 4a) High dose of oral antibiotic (cap Amoxicillin 2 g) every 6 hours was prescribed for one day and then it was tapered until one week after culture test . We emphasized the use of antibiotics 2 hours before eating meals for better gastrointestinal absorption. Also use of adequate hydration and sialagogues, pure honey as a mouth rinse for 3-4 time a day, was advised to him.

The recalled sessions for follow-up was 3 days and 1 week later. Significant improvement was achieved. Foreign body sent for histopathological examination. The report of the biopsy was interpreted as a fishbone (Figure 4b, Figure 5a, 5b). Final diagnosis of obstructive submandibular sialadenitis was given. There is no residual or recurrent swelling apparently in the area of intervention after a follow-up period of 6 months.



a b

Figure 2: (close view) Panoramic view of the patient without illustrating opacity of the foreign body in the left submandibular duct (a). Photography of swelling of orifice of Wharton's duct in the left floor of the mouth (compare with right floor of the mouth) (b).

a b

Figure 3: photography (a) illustrating tip of the foreign body in orifice of Wharton's duct that appeared after milking of this orifice. Close view of the nail-like foreign body (bone fish) that different derbies (???) surrounded it around (b)

Figure 4) Photography from the floor of the mouth illustrating pushing out of pus from orifice of Wharton's duct that appeared after removing the foreign body (a). Improvement of swelling of the floor of the mouth after removal of the foreign body and treatment with an antibiotic for a period of 2 weeks (b).

Figure 5: The report of biopsy was interpreted as foreign body (fish bone) (a). Microscopic view of the foreign body (fish bone) (b)

3. Discussion

A search of Medline using the keywords foreign body, fish bone and submandibular gland revealed that the first case was published in 1990[10].

Many different kind of things as foreign bodies have been found and reported in salivary glands such as paper clips, feathers, toothbrush bristles, spikes of wheat, blades of grass, hairs, pencil

lead, plastic pen tops, plant material, splinters of wood, pieces of metal, slivers of fingernail, and fish bones [4,6,7,10,11,13,16].

Two reasons and hypotheses considered for entering foreign bodies into the salivary gland: one of them is penetrating trauma [4, 6, and 20] and the other reason is retrograde migration [7, 13, and 21]

Perhaps in our case because of partially edentulous and inability to complete mastication and also lessening of salivary gland's secretion due to the presumption of drugs, the contingency of entering foreign body and retrograde migration will be increased.

When the traumatic injury is a cause and history of obstructive sialadenitis so diagnosis is relatively easy [6]. However, in cases without traumatic injury, it is obscure whether the cause is retrograde migration for these 4 reasons: (1) there is almost steady salivary flow; (2) the orifice of duct is mobile and can twist in all directions; (3) the diameter of the duct at the orifice is miniature; and (4) in most submandibular glands, there is a sphincter-like system in the first 3 cm of Wharton's duct that prevents the retrograde migration of substances [17,21,22,23]. Findings support the possibility that some sialoliths might result from retrograde migration of a fishbone through the orifice of Wharton's duct. Fish bones are one of the most common foreign bodies found in the pharynx and esophagus, but they are very rarely found in the salivary gland or the duct [4-10, 13, 14, 24, and 25]. In previous studies, the incidence of a fishbone encompassed by a sialolith ranged from 2.8% (12/423) to 4.4% (5/114) of patients with sialoliths of the submandibular gland [6, 8, and 26].

There are interesting statics about fish bone as a foreign body, for example, in one of review of English-language literature, migration of a fish bone into the salivary gland was more common in men than in women [4-10, 13, 26]. Fish bones were more often present in the submandibular gland than the parotid gland [4-10,13,14,26] and were more often located in the left side of the submandibular gland than in the right side [4-10,13,14,26]. Stone formation induced by a fish bone tended to be obviously related to the occupation (fisherman), dietary habit (seafood), and history of injury (recollection of a fish-bone injury and subsequent symptoms) [6]. Fish bone-induced sialoliths were previously reported to be 3–18 mm in size [5-8, 10, 26].

Our case was matched to this literature, in our male patient, the nail-like fish bone foreign body was a total of 1.2 cm in length and 0.3 cm in diameter in the left submandibular duct.

In evaluating the patient with sialadenitis, these steps should be taken in the following order:

1. History, 2. Physical examination, 3.Culture, 4. Laboratory investigation, 5. Radiography, and if indicated, 6.Fine-needle aspiration biopsy.

There are a wide range of approaches for management and treatment of sialadenitis, these include conservative medical management to more invasive surgical intervention.

One management scheme is as follows:

• Acute sialadenitis –

Medical management (hydration, antibiotics [oral versus parenteral], warm compresses and massage, sialagogues);

Surgical management (consideration of incision and drainage versus excision of the gland in cases refractory to antibiotics, incision and drainage with abscess formation, gland excision in cases of recurrent acute sialadenitis)

Conservative therapies for acute management of obstructive sialadenitis, include hydration, analgesia (NSAIDs), sialagogues to stimulate salivary secretion, and regular, gentle gland massage.

As we know the first- line therapy for stones in distal ducts of salivary glands is interventional sialadenoscopy, also we can use this approach for removal of foreign bodies.

By the way, if the infection is present, empiric antibiotic therapy should be given after proper cultures have been obtained.

In our case, because of the improvement of sign and symptoms, we continued the same antibiotic that we prescribed before for our patient. By the way, with removal of fish bone foreign body, most of the pus was pushed out. As we know the foreign body was the main cause.

4. Conclusion

This case demonstrated that precise and proper inspection and examination lead to proper diagnosis and after that suitable treatment, so this could reduce costly and expensive assessment and treatment, also lessen bewilderment of the patient.

Another important matter is that patients with any form of sialadenitis should be educated as to the worthiness of hydration and excellent oral hygiene.

At the end, milking and pay attention to transparency (glassiness) and canescent of secretion of salivary gland are helpful for achievement of proper diagnosis.

References

1. Taneja M, Taneja MK. Foreign body Wharton's duct. Indian J Otolaryngol Head Neck Surg 2011; 63:300–301.

2. Ozturk, Kayhan MD; Erdur, Omer MD; Aksoy, Ceren MD. Foreign Body of Submandibular Gland. Journal of Craniofacial Surgery: October 2016 - Volume 27 - Issue 7 - p e600–e601.

3. Shameeka Thopte, Shams Ul Nisa, Abhijeet Jadhav, Rohan Chaudhari. Sialolithiasis Of Submandibular Gland With Acute Suppurative Sialadenitis: A Case Report. World Journal Of Pharmacy And Pharmaceutical Sciences 5(4) · March 2016

4. Gill AS, Kieliszak C, Joshi AS. Sialendoscopy as a management tool in patients with foreign body impaction of the salivary gland. Am J Otolaryngol 2016; 37:369–71.

5. Yamano Y, Uzawa K, Ito H, Tanzawa H. Endoscopically assisted removal of a fish bone penetrating the parotid duct: an unusual case. J Oral Maxillofac Surg 2014; 72:1343–9.

6. Xie L, Zheng L, Yu C, Yang C, Chen Z, Yun B, et al. Foreign body induced sialolithiasis treated by sialoendoscopic intervention. J Craniofac Surg 2014; 25:1372–5.

7. Su YX, Lao XM, Zheng GS, Liang LZ, Huang XH, Liao GQ. Sialoendoscopic management of submandibular gland obstruction caused by intraglandular foreign body. Oral Surg Oral Med Oral Pathol Oral Radiol 2012; 114:e17–21.

8. Yu C, Yang C, Zheng L. Sialendoscopic findings in patients with obstructive sialadenitis: long-term experience. Br J Oral Maxillofac Surg 2013; 51:337–41.

9. Sato K, Umeno H. Clinical photographs. Fish bone-induced sialolith. Otolaryngol Head Neck Surg 2009; 141:539–40.

10. Abe K, Higuchi T, Kubo S, Oka M. Submandibular sialoadenitis due to a foreign body. Br J Oral Maxillofac Surg 1990; 28:50–2.

11. Ozturk K, Erdur O, Aksoy C. Foreign body of submandibular gland. J Craniofac Surg 2016; 27:e600–601.

12. Ardekian L, Klain H, Peled M. Obstructive sialadenitis of submandib-ular gland due to foreign body successfully treated by sialoendoscopic intervention. J Oral Maxillofac Surg 2009; 67:1337–9.

13. Derin S, Sahan M, Kule M, Koseoglu S, Celik OI. Fish bone induced sialolith in Warthon duct. J Craniofac Surg 2015; 26:e663–664.

14. Matsuo T. Acute suppurative parotitis caused by a fish bone: a case report. Int J Oral Maxillofac Surg 1997; 26:54.

15. Amarbir S.GillBS[a]Christopher R.KieliszakDO[b]Arjun S. Sialendoscopy as a management tool in patients with foreign body impaction of the salivary gland. American Journal of Otolaryngology. Volume 37, Issue 4, July–August 2016, Pages 369-371.

16. Sivapatha Sundaram Sreetharan , Rajan Philip.Unusual Foreign Body of Parotid Gland Presenting as Sialolithiasis: Case Report and Literature Review. Case Reports in Otolaryngology. Volume 2012 (2012), Article ID 367349, 3 pages.

17. Marchal F, Kurt AM, Dulguerov P, Lehmann W. Retrograde theory in sialolithiasis formation. Arch Otolaryngol Head Neck Surg 2001; 127:66–8.

18.Yasufumi KOSUGI,Toshinori Iwai, Shinsuke OHTA,Iwai TOHNAI.A case of an endoscopically removed parotid duct sialolith. Nippon Koku Geka Gakkai zasshi· March 2017; 63(3):153-157.

19.Maria E.PapadakiDMD, MD,Joseph P.McCainDMD,KingKimDMD,Ronald L.KatzDMD§Leonard B.KabanDMD, MD‖Maria J.TroulisDMD, MSc .Interventional Sialoendoscopy: Early Clinical Results.Journal of Oral and Maxillofacial Surgery. Volume 66, Issue 5, May 2008, Pages 954-962.

20. P Capaccio, Torretta S, Ottaviani F,et al.Modern management of obstructive salivary diseases. Acta Otorhinolaryngol Ital. 2007 Aug; 27(4): 161–172.

21. Yu-xiongSuMD, DDS[a]Xiao-meiLaoBDS, DDS[b]Guang-senZheng ,Li-zhongLiangDDS[b]Xing-huaHuangBDS[b]Gui-QingLiaoMD, DDS[c]Sialoendoscopic management of submandibular gland obstruction caused by intraglandular foreign body. Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology Volume 114, Issue 5, November 2012, Pages e17-e21.

22. F. Marchal, A.M. Kurt, P. Dulguerov, W. Lehmann. Retrograde theory in sialolithiasis formation .Arch Otolaryngol Head Neck Surg, 127 (2001), pp. 66-68.

23. Mahabaleshwara C.H, Jayadeep Nidyalmale, Abhishek P.T, Ashoka G. 'FISH BONE': THE REASON BEHIND SUBMANDIBULAR SIALADENTITS - A UNIQUE CASE REPORT. International Journal of Clinical And Diagnostic Research ISSN 2395-3403 Volume 5, Issue 3, May-June 2017. *Intl. J. Clin. Diag. Res. 2017; 5(3): I.*

24. Ikenberry SO, Jue TL, Anderson MA, et al; Management of ingested foreign bodies and food impactions. Gastrointest Endosc. 2011 Jun73 (6):1085-91. doi: 10.1016/j.gie.2010.11.010.

25. Marc H Hohman, Wayne J Harsha, K Linnea Peterson. Migration of Ingested Foreign Bodies into the Thyroid Gland: Literature Review and Case Report.The Annals of otology, rhinology, and laryngology February 2010.119(2):93-8 ·

26. Yu C, Yang C, Zheng L, Wu D. Endoscopic observation and strategic management of obstructive submandibular sialadenitis. J Oral Max-illofac Surg 2010; 68:1770–5.