



A CASE REPORT OF TRANSORAL REMOVAL OF SUBMANDIBULAR GLAND SIALOLITH

Submandibular Tükürük Bezi Taşının Ağız İçinden Uzaklaştırılması: Bir Olgu Sunumu

Kumuda RAO, Subhas G BABU, Renita Lorina CASTELINO

Makale Kodu/Article Code : 189565
Makale Gönderilme Tarihi : 17.05.2016
Kabul Tarihi : 20.01.2017

ABSTRACT

Salivary calculus or sialolithiasis is a disease that affects the salivary glands characterized by the formation of mineralized structures within the glandular substance or excretory ducts of the salivary gland. The formation of these salivary stones is due to the crystallization of minerals in saliva. It causes blockage of salivary ducts and results in painful inflammation or sialadenitis of the salivary gland. Among the salivary glands submandibular gland has highest incidence of sialolithiasis due its anatomic features. The patient commonly experiences pain and/or edema when the ducts are obstructed. The case report presented here is of sialolithiasis of submandibular gland which had caused pain and swelling in the floor of the mouth.

Keywords: Salivary calculus, sialolithiasis, salivary stones, submandibular gland, Wharton's duct

ÖZ

Tükürük bezi taşı veya siyalolitiyaz, tükürük bezini etkileyen, glandüler madde veya tükürük bezinin boşaltma kanallarındaki mineralize yapıların oluşumu ile karakterize olan bir hastalıktır. Bu tükürük taşlarının oluşumu tükürükteki minerallerin kristalleşmesinden kaynaklanmaktadır. Tükürük kanallarının tıkanmasına neden olur ve tükürük bezi ağrılı inflamasyonu veya sialadenit ile sonuçlanır. Tükürük bezleri arasında, submandibular bezin anatomik özellikleri nedeniyle siyalolitiyaz insidansının en yüksek olduğu görülmektedir. Kanallar tıkanmış zaman hasta genellikle ağrı ve / veya ödem görür. Bu olguda, ağız tabanında ağrı ve şişme yaratan submandibular bezin siyalolitiyazisi sunulmaktadır.

Anahtar Kelimeler: Tükürük taşı, siyalolitiyazis, tükürük taşları, submandibular bez, Wharton kanalı

INTRODUCTION

Sialolithiasis is the disease of the salivary glands, predominantly occurring in the submandibular gland, followed by the parotid, the sublingual and infrequently the minor salivary glands.¹ The disease corresponds to about 30% of the salivary gland pathologies and is more commonly seen in adults (0.1–1.0% of population) than among children.² It is twice more common among middle aged men than among women.^{3, 4} Sialoliths are calcified structures that develop within the ductal system of a major and/or minor salivary gland. The stones are mainly composed of organic calcium and sodium phosphate salts. They are believed to occur due to deposition of these salts around a nidus of debris within the duct lumen. The debris may be composed of inspissated mucus, bacteria, ductal, epithelial cells or foreign bodies.⁵ Patients with sialoliths most commonly present with a history of acute, painful and intermediate swelling of the affected major salivary gland. The degree of symptoms is dependent on the extent of salivary duct obstructions and the presence or absence of secondary infection. Eating typically will initiate the swelling salivary gland duct as the stones totally or partially block the flow of saliva causing salivary pooling within the ductal system of the gland. Since the gland is encapsulated and only little space is available for expansion, there is resultant pain and discomfort. When salivary stimulation ceases and/or the output decreases, the swelling subsides.^{6, 7} Obstructive sialoliths cause enlargement and tenderness of the salivary glands frequently. Stasis of the saliva may lead to infection, fistulae, sinus tract, ulceration over the stone in chronic cases, fibrosis and gland atrophy.⁵ The factors which play a role in the etiopathogenesis of sialolithiasis are stasis of the salivary flow, increased mucous secretion, epithelial inflammation, calcium deterioration, and electrolyte metabolism.⁸ We present a case of a patient with submandibular sialolithiasis with

pain, edema and swelling in the floor of the mouth.

CASE REPORT

A 37 year old male patient reported to the department of Oral Medicine and Radiology with a chief complaint of pain, swelling under the tongue since 5 days. The patient gave history of increase and decrease in size of the swelling before as well as after meals with occasional pus discharge from the floor of the mouth. (Figure 1)



Figure 1. Clinical image of the patient showing inflamed, ulcerated left submandibular duct orifice and raised floor of the mouth.

The patient also complained of difficulty in eating and speaking. On extra-oral examination the patients' left submandibular lymph node was palpable which was tender and mobile. On intra-oral examination, there was swelling on left side of floor of the mouth with an overlying ulceration at the site of Wharton's duct opening. The overlying mucosa was erythematous and inflamed. The floor of the mouth appeared to be raised on left side when compared to the right. The floor of the mouth was tender on palpation. Bimanual palpation revealed a hard component within the floor of the mouth. Based on history and clinical features a provisional diagnosis of salivary calculi within the duct of submandibular gland

located in the floor of the mouth was made. A topographic mandibular occlusal projection was advised which revealed an elongated homogenous radio-opacity at the left side of the floor of the mouth extending from the area lingual to the mandibular incisors to 1 cm medial to the line corresponding to mesial aspect of the first molar. (Figure 2)



Figure 2. Topographic mandibular occlusal projection showing the radiopaque sialolith in the anterior part of the mandible on the left side.

Based on the radiographic finding a radiographic diagnosis of sialolith of the left submandibular gland duct was made. Following the radiographic diagnosis of sialolith, an attempt for conservative management of the same was done. Milking of the submandibular duct was performed bimanually and the sialolith was expelled. The stone measured approximately 2.2 X 0.5 X 0.4 cm. (Figure 3) Clinically reduction in the swelling of the floor of the mouth was noticed following the expulsion. (Figure 4a) A post-operative topographic mandibular occlusal projection was made to confirm complete expulsion of the stone and the radiograph revealed total absence of any radio-opacity. (Figure 4b) The patient was then prescribed capsule Amoxicillin 500mg thrice daily along with anti-inflammatory tablet Diclofenac sodium 50 mg twice daily for 5 days. The patient was also recommended to follow soft diet regimen for a few days. The follow up of the patient revealed uneventful healing.



Figure 3. Sialolith which was expressed from the submandibular gland duct through transoral approach.



Figure 4a. Clinical image of the floor of the mouth after the sialolith is milked out of the gland

Figure 4b. Topographic mandibular occlusal projection following removal of the sialolith from the submandibular gland duct

DISCUSSION

The cause of the submandibular sialolithiasis is due to the fact that the Wharton's duct is longer, tortuous, its flow is horizontal as well as against gravity, the mouth of the duct is narrow, and the submandibular saliva is more alkaline and contains more mucous secretions. 80% of the submandibular sialolithiasis occurs in the Wharton's duct and other 20% of it occurs in the gland.⁹ Of utmost importance in the diagnosis of sialolithiasis is the detailed analysis of the symptoms and physical examination. The history of pain and swelling in the gland during meals or in response to the stimulus are relevant.¹⁰ This patient presented with all the above features of pain, swelling of the floor of the mouth during meals. The classification of submandibular stones is made according to their transverse direction relationship with the mandibular first molar tooth as anterior and posterior. The anterior stones can be detected with bimanual palpation and are easy to recognize with occlusal radiographs as seen in the case reported here.

These stones could be excised intraorally because the opening of the duct would get distended and they could perforate into the mouth.^{8, 11} The anterior stones can also be expressed and manipulated through the orifice of the duct with the aid of dilating lacrimal probes if required to open the duct.¹³ Whereas the posterior stones reside in the hilum of the gland or sometimes within the gland, such stones are usually removed surgically through an extraoral excision.^{8, 11, 13} Based on the above classification of stones we inferred that this patient had an anterior stone in the duct of the gland which was confirmed by a mandibular occlusal radiograph. In case of complete obstruction of the salivary gland or the duct the patient will present with pain and swelling. Drainage of pus can be observed through the duct along with signs of systemic infection which was similar in this case as the patient had reported fever and fatigue. Bimanual palpation of the floor of mouth, from posterior to anterior, reveals palpable sialoliths in most anterior submandibular duct stones.¹⁰ Our patient had swelling and pain while eating due to complete obstruction of the duct. However, in case of an intraglandular sialolith and those associated with recurring glandular infection, submandibular sialoadenectomy may be required.¹⁴ In case of our patient the sialolith was expressed by milking the Wharton's duct posteriorly to anteriorly. Sialography may be useful where sialadenitis is associated with radiolucent sialolith which is present within deep submandibular gland, but keeping in mind the necessary precautions taken in those patients having acute infections of the gland or those who are allergic to contrast medium.^{15, 16.}

CONCLUSION

Despite the large size of the sialolith of this patient, treatment consisted of the removal of the calcified mass using a conservative intraoral approach. Transoral removal of submandibular sialolithiasis without performing external approaches is a method

that has to be as the first step because it is the simplest and the most inexpensive method. To conclude, conservative treatment option which aims to preserve the submandibular salivary gland with minimal trauma and confers optimum post-surgical function is most sought out treatment plan for favourable prognosis.

REFERENCES

1. Jardim EC, Ponzoni D, de Carvalho PS, et al. Sialolithiasis of the submandibular gland. *J Craniofac Surg* 2011;22:1128-1131.
2. Grases F, Santiago C, Simonet BM, Costa-Bauz A. Sialolithiasis: mechanism of calculi formation and etiologic factors. *Clinica Chimica Acta* 334 (2003) 131–136.
3. Kurtoğlu G, Durmuşoğlu M, Ecevit MC. Submandibular Sialolithiasis Perforating the Floor of Mouth: A Case Report. *Turk Arch Otorhinolaryngol* 2015; 53: 35-7.
4. Ben Lagha N, Alantar A, Samson J, Chapiro D, Maman L. Lithiasis of minor salivary glands: current data. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2005; 100(3):345-8.
5. Ebenezer V, Balakrishnan R and Sivakumar. Sialolith Conservative and Surgical Management. *Biosci. Biotech. Res. Asia*, 2014; 11(1):169-172.
6. Lustmaan J, Ragev M and Melamed Y. Sialolithiasis. A survey on 245 patients and a review of the literature. *Int J Oral Maxillofac Surg.* 1990; 19(3):135-8.
7. Stanley MW1, Bardales RH, Beneke J, Korourian S, Stern SJ. Sialolithiasis. Differential diagnostic problems in fine-needle aspiration cytology. *Am J Clin Pathol.* 1996; 106(2):229-33.
8. Bayındır T, Cetinkaya Z, Toplu Y, Akarcay M. A Giant Submandibular Sialolithiasis that Erupted Spontaneously to the Mouth: A Case Report. *JJUMF* 2012; 19: 188-91.

9. Cho, W., Lim, D. and Park, H. (2014), Transoral sonographic diagnosis of submandibular duct calculi. *J. Clin. Ultrasound*, 42: 125–128.

10. Mandel L, Alfi D. Diagnostic imaging for submandibular duct atresia: literature review and case report. *J. oral. Maxillofac. Surg.* 2012; 70:2819–22.

11. Yaman T, Ünlü G, Atılgan S.: Ağız içine sürmüş submandibular sialolitiazis: (Olgu Sunumu). *Atatürk Üniversitesi Dişhekimliği Fakültesi Dergisi* 2006; 16: 70-3.

12. Gabrielli M, Paleari A, Neto C N. et al., Tratamento de sialolitíase em glândulas submandibulares: relato de dois casos. *Robrac*, 2008; 17(44):110-116.

13. Marwaha M, Nanda KD. Sialolithiasis in a 10 year old child. *Indian J Dent Res* 2012; 23: 546-9.

14. Lee LT, Wong YK. Pathogenesis and diverse histologic findings of sialolithiasis in minor salivary glands. *J Oral Maxillofac Surg* 2010;68:465-470.

15. Landgraf H, Assis AF, Klupell LE. et al., Extenso sialolito no ducto da glândula submandibular: relato de caso. *Rev. Cir. Traumatol Buco- Maxilo-Fac*, 2006; 6(2):29-34.

16. Marzola C. *Fundamentos de Cirurgia Buco Maxilo Facial*. São Paulo: Ed. Big Forms, 2008, 6 vs

Correspondence Author

Kumuda RAO

A. B. Shetty Memorial Institute of Dental Sciences

Department of Oral Medicine and Radiology,
Nitte University, India.

E-mail: drkumudarao@yahoo.in