

Case Report

Case Report-A 42-Year-Old Lady with Unilateral Leaky Nostril Post Extraction

Tsyeng Ng K*, Ding A, Tay HW and Kovipillai FJ
Department of Oral and Maxillofacial Surgery, Taiping Hospital, Perak, Ministry of Health, Malaysia

***Corresponding author:** Ng Kar Tsyeng, Department of Oral and Maxillofacial Surgery, Taiping Hospital, Ministry of Health, Malaysia

Received: May 26, 2020; **Accepted:** June 16, 2020;
Published: June 23, 2020

Abstract

Background: OroAntral Communication (OAC) is a pathological communication between the oral cavity and maxillary sinus that can occur after the extraction of maxillary posterior teeth. Left undiagnosed, it will epithelize to form an Oroantral Fistula (OAF).

Case Presentation: This is a case report of a 42-year-old Chinese lady who underwent a routine upper posterior tooth extraction and developed oroantral fistula but was misdiagnosed by multiple general practitioners as sinusitis.

Conclusion: This report highlights the importance of cross specialty knowledge in the diagnosis of a common but often overlooked condition.

Keywords: Oroantral communication; Oroantral fistula; Tooth extraction; Sinusitis; Nasal regurgitation

Introduction

The maxillary sinuses are bilateral hollow air-filled cavities occupying the upper 2/3rd of the maxillary bone. Anatomically, each maxillary sinus consists of a roof, lateral walls and floor. It is separated from the oral cavity by the alveolar bone. As a person ages, the sinus will undergo pneumatization, resulting in the roots of the maxillary teeth projecting into the floor of the maxillary sinus (Figure 1).

Early diagnosis and management of OAC is of utmost importance. Left undiagnosed, epithelialization of the communication occurs after 48-72 hours and this can result in infection of the maxillary sinus and complicates the surgical closure. Hence, it is important that clinicians can diagnose OAC and referral to the dental surgeon.

Case Presentation

A 42-year-old fit and healthy female patient was referred to our Oral Maxillofacial Department for the management of right nasal discharge during mealtimes. She was previously seen by multiple general physicians and was treated for conditions ranging from allergic rhinitis to bacterial sinusitis. Her condition persists despite multiple courses of antibiotics, antihistamines and nasal decongestants. Patient also noted worsening of her sinusitis with occasional blood-stained secretion from the right nostril.

In our clinic, the patient reported pain on the right cheek region. The temperature was 37.1°C, the pulse 74 beats per minute, the blood pressure 118/79 mm Hg, the respiratory rate 17 breaths per minute, and the oxygen saturation 100% while she was breathing ambient air. No visible facial asymmetry or palpable lymph nodes were noted. Full blood count showed a raised in total leukocyte count (11500/cu mm of blood) along with neutrophilia (75%). All the other parameters were within the normal range.

A thorough history was taken from the patient and it was revealed that she had undergone a routine upper right molar extraction about a month prior. Nasal symptoms and sinusitis occurred about 5 days

after the extraction and hence patient did not suspect that it could be due to the extraction as she has had multiple extractions done previously without any complications. In addition, she also noticed the occasional salty taste in the mouth.

We had a high index of suspicion that these symptoms were due to the recent history of extraction and hence a diagnostic imaging was performed.

A dental Cone Beam Computed Tomography (CBCT scan) of which had been taken, reported the presence of a bony defect on the floor of the right posterior maxillary sinus measuring about 9.5 x 7 mm with thickening of the sinus lining (Figure 2). The maxillary sinus was otherwise clear of any collections. No other pathologies were seen in the scan.

A diagnosis of Oroantral Fistula (OAF) secondary to the extraction of the upper right molar was made in this case from both clinical and radiological findings. The defect was subsequently closed surgically under local anesthesia (2% Mepivacaine 1:100 000 adrenaline) *via* the buccal flap.

She was started on a course of Amoxicillin/Clavulanic acid (Augmentin 625 mg) twice daily and pseudoephedrine 30mg thrice daily as well as warm saline mouth wash for 5 days. Post-operative instructions such as no blowing of the nose, no sneezing with the mouth closed and no drinking with a straw were given. These are to avoid the formation of intraoral negative pressure that might cause the flap to fail.

Subsequent follow up reviews noted complete healing and resolved symptoms but with the significant loss of the buccal sulcus depth (Figure 3).

Discussion

The maxillary sinuses are bilateral hollow air-filled cavities occupying the upper 2/3rd of the maxillary bone. Anatomically, each maxillary sinus consists of a roof, lateral walls and floor. It is separated



Figure 1: Red arrows showing the roots of the teeth projecting into the maxillary sinus.



Figure 2: 9.5mm bony defect (green line) on the floor of the right maxillary sinus with thickening of the sinus lining (Red arrows).



Figure 3: 1-month review- Complete healing but with significant reduction in the buccal sulcus depth (Green arrow).

from the oral cavity by the alveolar bone which also supports the roots of the teeth. As a person ages, the maxillary sinus will undergo pneumatization and expansion, resulting in it enveloping the roots of the maxillary teeth. Sharan [1] has shown that early extraction of teeth will increase pneumatization of the maxillary sinus and bring it closer to the crest of the alveolar bone and roots of the teeth (Figure 2). In this case, the extracted tooth was the last remaining tooth in the maxilla, and this could possibly lead to the development of OAC post extraction.

The sign and symptoms of OAC/OAF includes fluids escaping from the oral cavity into the nostril during drinking, unilateral sinusitis, discharge from the extraction site and a change in the voice [2]. However, in some instances, the blood clot in the extraction socket acts as a protective barrier by sealing up the defect, thus preventing

fluids from entering the maxillary sinus through the extraction site. Over a period of days when the clot starts to break down, a breach will occur between the oral cavity and the maxillary sinus resulting in the manifestation of the symptoms [3].

Due to the close relationship of the roots to the maxillary sinus and the thin sinus floor, extraction of the upper molars and premolars is considered the most common etiology of OAC [4]. Generally, defects that are smaller than 2 mm can heal spontaneously following the blood clot formation and secondary healing. Spontaneous healing is unlikely in larger defects and hence surgical closure is needed to prevent food and saliva accumulation that will eventually lead to infection of the sinus [4].

Two principles are essential for successful closure of OAC/OAF. Firstly, the sinus involved needs to be free from infection. If there is evidence of sinus infections, a referral to the ENT surgeon is necessary to optimize the maxillary sinus before closure can be attempted. Secondly, the flap used must be of broad based with good vasculature and be a tension free flap supported by underlying bone [3].

Buccal flap was selected for closure of this case. This flap design provides for an easier access and manipulation. A broad base trapezoidal flap was used. In cases where the buccal flap is not long enough to close the defect, scoring of the buccal periosteum can be done to provide additional length for coverage [5].

For larger defects, the use of palatal flap is used as it has improved circulation, adequate thickness and better tissue quality compared to the thinner buccal flap. This flap design will not affect the denture stability in comparison with the buccal advancement flap. The palatal flap is more suitable for closure of fistula in the anterior pre-molar region. If used for molar region, excessive rotation of the flap can result in the occlusion of the palatal artery and subsequently necrosis of the flap [5].

The other alternative is the usage of buccal pad of fat. The buccal pad of fat (BFP) is a capsulated lobulated mass located deeply along the posterior maxilla and the superior fibers of buccinator muscle [6]. The anatomically favorable position of the BFP, good epithelialization and a high rate of success make it an attractive option [7].

It is in the authors' opinion that the buccal flap in this case was not the best choice for closure in this patient. A fully edentulous patient with OAC/OAF should instead have a palatal rotational flap or a buccal fat pad closure. It is of no doubt that buccal flap design is the easiest of the 3 options, however in this case, there was a noticeable reduction in the depth of the buccal sulcus after closure. This was also complicated by the high alveolar bone process that the flap needs to cover, ultimately resulting in shallowing of the buccal sulcus. As the patient is a complete denture wearer, the reduction in the sulcus height compromises the denture's retention. Good outcome of the patient should always precede the surgeon's convenience.

Conclusion

The development of OAC post extraction is unavoidable if the roots of the teeth are already encroaching into the maxillary sinus. However, it should be diagnosed and managed promptly to prevent the development of OAF and sinus infection. A proper history needs to be elicited from the patient and if there was previous history of recent

dental extractions, the patient needs to be referred to the dental surgeon for further investigations and management. Clinicians need to have a high degree of suspicion when patient presents with ipsilateral sinusitis, nasal discharge and salty taste in the mouth. Dental surgeons should also inform patients that such an event can occur post extraction, and they need to come back immediately for surgical closure. No man is an island, and this applies to us as well. By working together and improving our knowledge, only then can we provide better quality care for our patients.

Acknowledgement

The authors would like to thank the Director General of Health Malaysia for the permission to publish this paper. We would also like to thank Dr Vivian Ong and Dr Rubinderan Muthusamy for their help in revision of the manuscript.

Ethical Approval

Case report approved by the Medical Research & Ethical Committee Malaysia. NMRR-20-948-55050.

Patient Consent

Written informed consent obtained from patient for usage of details and images.

References

1. Sharan A, Madjar D, Maxillary Sinus Pneumatization Following Extractions in Riyadh, Saudi Arabia: A Cross-sectional Study. *Int J Oral Maxillofac Implants.* 2008; 23: 48-56.
2. Khandelwal P, Hajira N. Management of Oro-antral Communication and Fistula. Various Surgical Options. *World J Plast Surg.* 2017; 6: 3-8.
3. Geon Pauly. Radiodiagnostic lessons from a rare case. *Diagnostic Imaging.* 2017.
4. Killey HC, Kay LW. An analysis of 250 cases of oro-antral fistula treated by the buccal flap operation. *Oral Surg Oral Med Oral Pathol.* 1967; 24: 726-739.
5. Borgonovo AE, Berardinelli FV, Favale M, Maiorana C. Surgical Options in Oroantral Fistula Treatment. *Open Dent J.* 2012; 6: 94-98.
6. Fujimoto N, Nagura H, Enamoto S. Grafting of the buccal fat pad into palatal defects. *J Craniomaxillofac Surg.* 1990; 18: 219-222.
7. Ferrari S, Ferri A, Bianchi B, Copelli C, Magri AS, Sesenna E. A novel technique for cheek mucosa defect reconstruction using a pedicled buccal fat pad and buccinator myomucosal island flap. *Oral Oncol.* 2009; 45: 59-62.