

Treatment of Oro-antral Communication : 2 Case Reports

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Abstract

Oro-antral communication (OAC) is a pathological communication between oral cavity and maxillary sinus, which is occasionally produced during routine surgical procedures or dental infections. Swift diagnosis and proper treatment are essential to successful management of OACs. This article deals with two different cases: Case 1 was a chronic OAC, fully communicated with oral mucosal defect which needed a surgical approach (buccal fat pad flap), and Case 2 was not fully communicated, nor in chronic condition, which was treated with conservative method. The purpose of this report is to provide suitable treatment options such as surgical or non-surgical method according to each different clinical evaluation. Buccal fat pad was effectively used as surgical method in Case 1, otherwise antimicrobial medication was considered enough in Case 2.

Key Words : Buccal fat pad, Communication, Oro-antral

Introduction

Oro-antral communications (OACs) usually occur as a complication of oral and maxillofacial surgeries such as maxillary tooth extraction, implant surgery, tumor enucleation and infections [1-3] and mostly after extraction of maxillary first and second molars [4,5].

In the absence of sinus infection, most acute OACs 1 to 2 mm in diameter will heal spontaneously [3].

However, larger OAC and OAC without spontaneous healing lead to chronic infections of the maxillary sinus and fistulas at the site of the defect as a consequence [6,7].

It is difficult to predict whether an OAC will heal uneventfully without intervention, because the size of OAC is difficult to determine clinically [7]. To prevent chronic sinusitis and the development of fistulas, it has generally been accepted that such defects should be surgically closed within 24 to 48

hours [3,4,6,7]. Surgical closure still seems to be the treatment of choice to close OACs, although numerous alternative techniques have been proposed [3,4,8].

Mucosal closure using a buccal mucoperiosteal flap or a palatal rotational flap seems preferable, and the buccal fat pad has also proved to be suitable for closure of OACs especially for failure of the buccal or palatal flaps [1,4].

Surgical closure has several disadvantages. The patient suffers from more postoperative pain and swelling, and mobilization of soft tissue flaps from donor site to the defect requires surgical expertise. In the long term, the vestibular sulcus depth may remain decreased if buccal flap is used [6,9].

Because of the disadvantages of surgical closure, several alternative treatment modalities have been reported including third molar transplantation, hydroxylapatite blocks and many other biodegradable materials [2,6,10]. However, these methods all have their own specific disadvantages [8], and still, they are not frequently used in clinical practice.

The aim of this article is to share the clinical experience in the management of delayed OAC using buccal fat pad and non-surgical intervention, and help to determine the treatment options of each clinical OAC case.

Case Report

Case 1

A 48-year-old man was referred for evaluation of oro-antral fistula and odontogenic sinusitis from ear-neck-throat clinic. He complained of a foul odor at his left nose and a water leak to left nostril when he drunk. His tooth had been extracted over a year ago, and the symptom has been existed after that

time.

Clinical examination revealed a small defect measuring 4mm in diameter (Fig. 1) and discontinuity of maxillary sinus floor distal to first molar in dental panoramic view (Fig. 2).

CT scan showed mucosal swelling of left maxillary sinus with a bony defect measuring 1 to 1.5 cm at sinus floor (Fig. 3). A hissing sound was heard and bubbles were seen at the site by the *Valsalva maneuver*, a nose blowing test. He was diagnosed as oro-antral fistula with chronic maxillary sinusitis.

Surgical closure with buccal fat pad and buccal advance flap under local anesthesia was decided considering the duration and characteristics of defect. Mucoperiosteal flap with two vertical



Fig. 1. Small defect posterior to maxillary first molar.

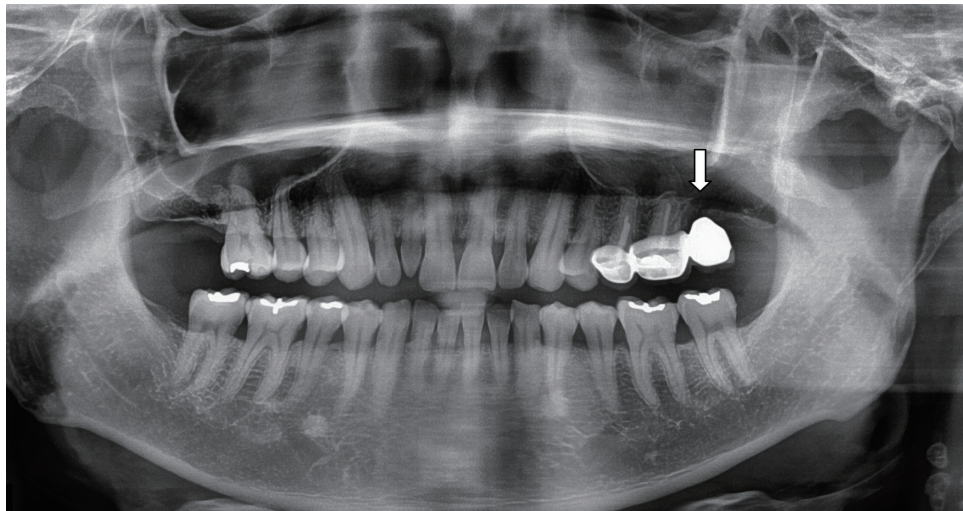


Fig. 2. Dental panoramic view.

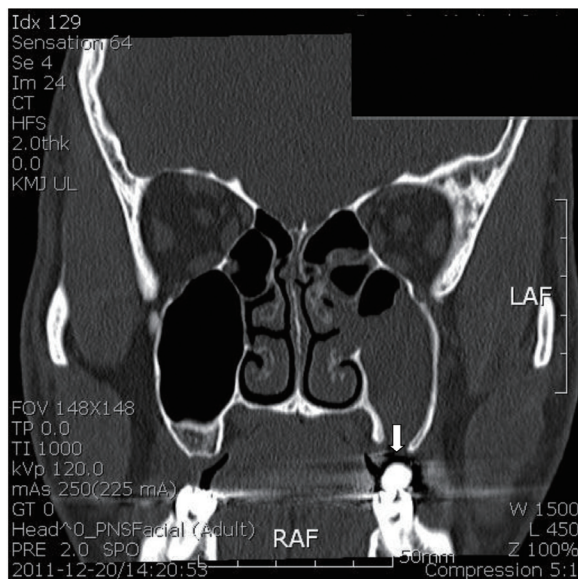


Fig. 3. CT scan showed a bony defect of left maxillary sinus floor.

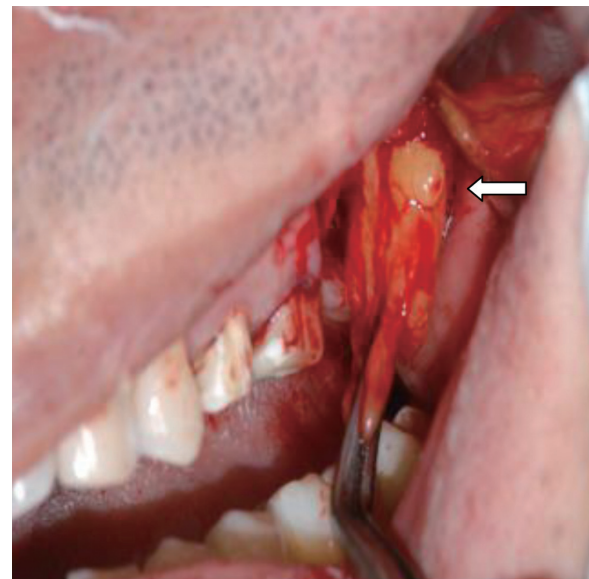


Fig. 4. Exposed buccal fat pad during surgery.

incision in the mesial area of the maxillary first molar and maxillary tuberosity area respectively. The buccal fat pad was exposed and moved toward the defect (Fig. 4). After careful debridement of the defect, the fat pad and the palatal mucosa was

sutured first, and the mucoperiosteal flap with releasing incision was closed over the defect to accelerate healing and sealing (Fig. 5). Antimicrobials and nasal decongestants were prescribed during two weeks before and after



Fig. 5. Postoperative view.



Fig. 6. Two months after surgery.

surgery.

Stitch out was performed 1 week after the operation and the defect was healed with epithelization in spite of the small mucosal dehiscence of buccal flap during the first two weeks after surgery.

After two months, the patient was out of symptom with fully healed defect (Fig. 6), and CT scan showed improved condition of maxillary sinus (Fig. 7). Five months after surgery, clear mid meatus was observed though nasal endoscopy and he was



Fig. 7. Postoperative CT scan.

still out of symptom.

Case 2

A 51-year-old man was referred from ear-nose-throat clinic due to sinusitis after tooth extraction.

He informed that he had been suffering from toothache and pain around cheek and eye for 20 days. He said his upper tooth was extracted about 10 days ago due to toothache, and the purulent discharge in his mouth had been detected after that time.

Abnormal granulation tissue with erythematous mucosa and purulent, bloody discharge were seen at the extraction site of right maxillary first molar (Fig. 8). The soft tissue lesion was about 1cm in diameter, but neither hissing sound nor air bubble was detected by nose blowing test. CT scan revealed severe mucosal thickening of right maxillary sinus, bony defect of maxillary sinus floor but soft tissue covering of the defect (Fig. 9). Dental panoramic view showed a recent extraction socket of maxillary first molar (Fig. 10).

Because there was no clinical sign of full communication between oral and antral cavity, and the lesion was no longer than 3 weeks which is

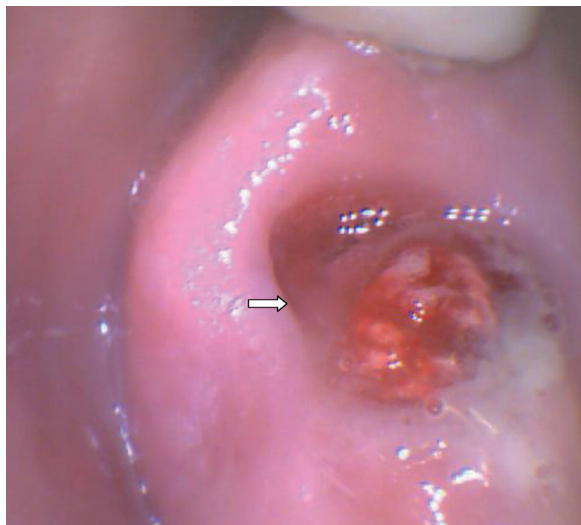


Fig. 8. Purulent discharge from tooth extraction site.

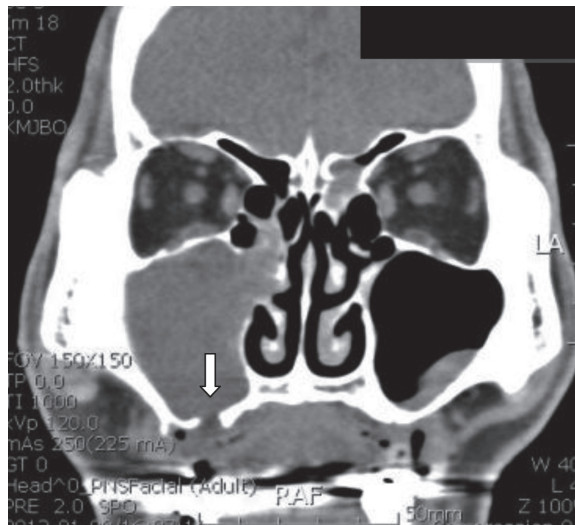


Fig. 9. CT scan.

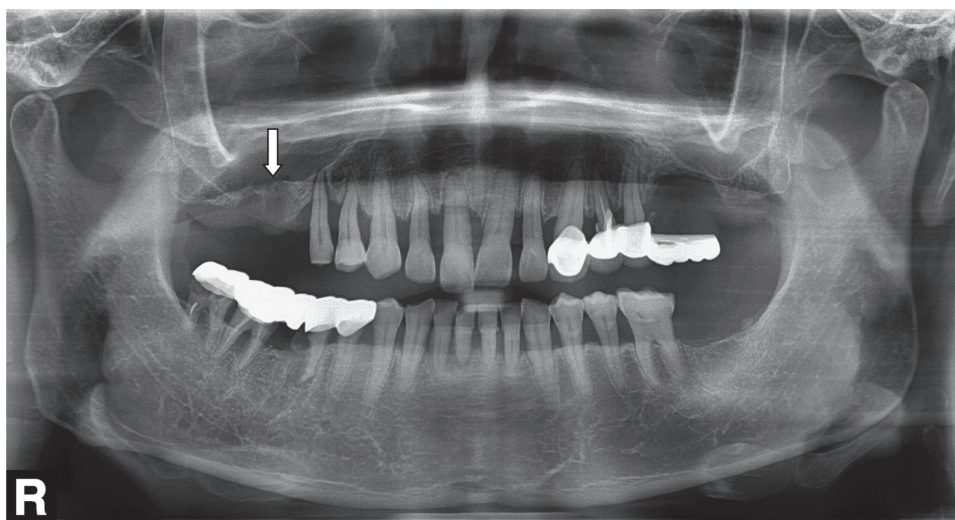


Fig. 10. Dental panoramic view.

considered chronic, a more conservative approach was considered. The patient agreed to take a conservative treatment with medication first, then the surgical intervention if it fails.

Antibiotics of 3rd generation cephalosporin and nasal decongestant of pseudoephedrine were administered orally for 20 days with mouth gaggle. After one month, he was fully out of symptom and the lesion was fully covered with epithelized tissue

(Fig. 11).

Discussion

A potentially serious side effect of posterior maxillary tooth extraction is an oro-antral communication (OAC), which means an opening into the maxillary sinus [4,11]. In a 1982 study

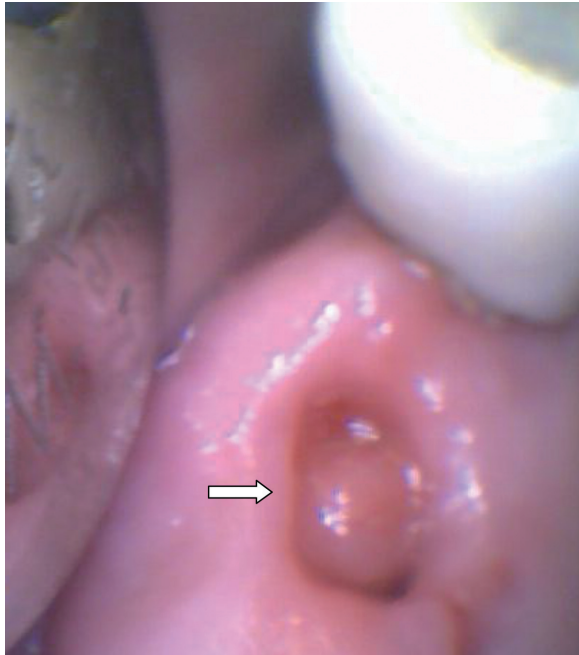


Fig. 11. 1 month after treatment.

involving 90 patients that exhibited OACs, 94% of the communications occurred in the molar region, while 6% in the premolar region [12]. In this literature, 50% of OACs resulted from the extraction of teeth that had no adjacent teeth and a pneumatized sinus also increased the probability of entrance into the maxillary sinus.

A simple yet effective method to test for an OAC is the nose blowing test known as the *Valsalva maneuver* [11]. If an OAC is present and the membrane is not intact, a hissing sound will be heard and bubbles will be seen at the surgical site.

Once an OAC is diagnosed, the size of opening must be determined to make a treatment decision.

Treatment options and further management are guided by the size of the lesion, the health of the Schneiderian membrane, the presence of absence of sinusitis, and the age of any lesion that may be present [4,11].

It has been reported that even a lesion 5mm in

diameter will close spontaneously, provided that the patient has a good blood supply and the sinusitis is absent [13], and the lesion should close spontaneously if the osseous defect is not larger than 4 mm in diameter [7,12].

Correcting maxillary sinusitis is essential for successful therapy. The clinician should educate the patient on home care to help avoid the postoperative maxillary sinusitis as well as prescribing the appropriate medications.

Medicaments should include an antimicrobial for 7-10 days. Aerobic streptococci and staphylococci are the bacteria cultured most frequently from an odontogenic maxillary sinusitis, and cephalosporins are the antimicrobials of choice [14]. A nasal spray decongestant should be used for 3-4 days to shrink the sinus membrane and help keep the ostium patent. Systemic decongestant such as pseudoephedrine also used for 10-14 days postsurgery to decrease sinus congestion.

The age of lesion is another clinical consideration. Long-standing lesions will require surgical intervention and an OAC should be considered chronic if it has been present for 3 weeks or more [15].

In these points of views, if the lesion is small (less than 2-3 mm), less than 36 hours old, and has good healthy tissue, spontaneous closure is predicted. However, when lesions are larger in size, many surgical treatment options are available. Surgical closure has a success rate of approximately up to 95% [3,4,11,15,16].

The most common treatment of choice is the closure using the local mucoperiosteal flap.

The buccal local flap needs additional vestibuloplasty, otherwise the palatal island flap has more postoperative discomfort [3,16]. Recently, because of various advantages, buccal fat pad (BFP) is increasingly being employed in the repair of OACs and other oral defects [17].

The location of the BFP allows it to be harvested with ease and minimal dissection. Other advantages are its simplicity, versatility, excellent blood supply, minimal complications, quick surgical technique and good rate of epithelization. The possibility of harvesting under local anesthesia also can be added [16-19].

There is no such thing as a best treatment option for OACs, because multiple aspects have to be taken into consideration in each case when deciding which method is to be used. The site of an OAC, its size, duration, and clearly demonstrated in this article, the presence of maxillary sinusitis [4]. And I carefully suggest that such lesion like case 2, which is not fully communicated between oral and antral cavity, more conservative approach may be considered before surgical approach.

The author obtained successful results in OAC cases with different characteristics and different treatment options, and the success of each case was also observed as clear maxillary sinus through nasal endoscopy by courtesy of the ear-neck-throat doctor.

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