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Case Report

When Maxillary Sinus Speaks: Clinical Insights Into Oro Antral Fistula Management – A Case Report

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Abstract

OAF (Oroantral fistula) is an abnormal epithelial lined communication between oral cavity & maxillary sinus. It most commonly arises following extraction of maxillary posterior teeth due to close anatomical relationship between the sinus floor & rots of molars. Teeth displacement in the maxillary sinus is one of the commonly described extraction complications in oral surgery. Roots or whole teeth accidentally displaced during an avulsion process are the most common cause of foreign bodies in the maxillary sinus. It exposes the patient to more or less serious complications that can go as far as development of pneumonia or septic thrombosis of the cavernous sinus in rare cases. Several therapeutic solutions can be proposed to manage this complication, ranging from therapeutic abstention to the removal of the dental component using various techniques. Corpus: The objectives of this article are to explain the main characteristics of this complication as well as its treatment. Through a systematic review of the literature, the risk factors, prevention, diagnosis, complications, and management of teeth displacement will be discussed. A treatment decision tree will be proposed to guide practitioners in the management of a tooth or dental root displaced into the sinus. Furthermore, the surgical management in almost all cases must be carried out early to prevent later infectious complications.

Keywords: *OroAntral Fistual, Local Flaps, Retained Roots.*

Abbreviations

OAF (OroAntral Fistula),

OAC (OroAntral Communication).

Introduction

Oro-antral Communication (OAC) is an abnormal communication between the oral cavity and maxillary sinus and when it fails to close spontaneously, it remains patent and is epithelialized so that Oro-Antral fistula (OAF) develops. Teeth displacement in the maxillary sinus is one of the most frequently described peri-extraction complications in oral surgery. An apex, root, or tooth accidentally displaced during an avulsion process is the most common cause of foreign bodies in the maxillary sinus.[1]. The intrasinus displacement of drills. [2]

Endodontic material 3 or implants 4 has also been reported in the literature. Such a displacement exposes the patient to potentially serious complications, including the development of pneumonia or septic thrombosis of the cavernous sinus in rare cases[5]. The major reason is the anatomic proximity or projection of the roots within the maxillary sinus. Other causes of OAC/OAF include tuberosity fracture, dentoalveolar/periapical infections of molars, implant dislodgement into maxillary sinus, trauma (7.5%), presence of maxillary cysts or tumors (18.5%), osteoradionecrosis, flap necrosis, dehiscence following implant failure and sometimes as a complication of the Caldwell-Luc procedure [6] Several therapeutic solutions can be proposed ranging from therapeutic abstention to the removal of the intrasinus foreign body using different techniques. The alveolar crestal approach and the CaldwellLuc procedure are well documented surgical techniques in the literature [7,8,9]. In addition, endoscopic nasal surgery has seen a rise in recent years. Signs and symptoms of oro-antral fistula varies from free escape of fluids, pain, pus leakage, voice alteration, to pan-sinusitis. Several surgical options exist for its management, like Buccal advancement flap, Palatal Rotational Flap, Buccal Fat Pad, Combination Flaps, Bone Grafts/Guided Tissue Regeneration, FESS in combination of intraoral closure, particular the buccal fat pad technique, which has proved to be an effective and a reliable technique.

There are many techniques for the closure of oroantral communication including buccal or palatal alveolar flaps and their modifications, various alloplastic materials like gold foil, gold plate, soft polymethylmethacrylate and lyophilized collagen, autogenous bone grafts were also used. The choice of technique depends on the size, the localization, and seniority of the lesion, but also on the surgeon's experience [10].

Among other available methods, the combination flap, buccal & palatal (Burger’s flap & Ashley’s flap) is a simple and reliable flap for the treatment of these defects.

Here we present a case report treated successfully with the combination flap technique.

A 57-year-old patient referred for air and fluid leakage in the oral cavity. The patient had a well-balanced diabetes under treatment. On questioning, the patient reported a history of dental extraction eight months before.

The extraoral examination had no particularity. At the intraoral examination, we noted inflamed gingiva in maxillary right quadrant with the absence of teeth no. 4. The mucosa around the site of 4 was inflamed, tooth no. 4 looks platally placed with the presence of fistula. Fig. 1

On the panoramic radiograph, a bony defect was noted making the right sinus communicate with the oral cavity with radioopaque structure in the right side maxillary sinus. The CBCT Scan confirmed the defect and presence of tooth root in right side maxillary sinus , maxillary sinus lining showed a slight thickening of the sinus mucosa. Fig. 1.2

Fig. 1 OROANTRAL FISTULA PRESENT ON PALATAL REGION

Fig. 1.1

Fig. 1.2

Considering all these data, the patient was put on antibiotics (amoxicillin/clavulanic acid for 3 days) and a nasal decongestant. A surgery with combination of flap was decided to close the oro-antral fistula.

Under local anaesthesia, local infiltration given with 1:80000, lignocaine with adrenalin on buccal side of teeth no. 3,4,5 , greater palatine nerve block given along with local infiltration in region of teeth no. 5,6. With no. 15 blade, incision given around inflamed mucosa around fistula located on palatal side between teeth no. 3,5, along with crevicular incision around teeth no. 3,5,6 . flap reflected and the exposure of the fistula and bone defect done. Copious amount of saline irrigation done. All the fistulous tract (epithelial lining) was curetted out, again copious amount of saline irrigation done to cleanse the sinus. After cleansing the sinus, displaced root was identified after exploring into right side maxillary sinus, retained root of tooth no. 4 was removed using curved artery forceps. Again, copious amount of saline irrigation done.Fig.2.1

Palatal flap (Ashley's flap) (Fig. 2.2) raised on right side based on greater palatine artery after giving elliptical incision, 1cm away from gingival margin, extending till tooth no. 5 region. Buccal flap (Reherman's flap) raised after giving crevicular incision in teeth no. 3,5 region along with two releasing incision which is having broad base, full thickness mucoperiosteal flap raised. After copious irrigation, both flap joined together to close the Oro Antral fistula with 4-0 vicryl, Tight closure has been achieved. Post surgical instructions given. Patient was asked to continue medications for another 5 days.

The patient was seen again on next day & after 10 days, then after 60 days respectively Fig. 3, Fig. 4.1, 4.2 there was no complaint of fluid & air leakage. Healing was uneventful with closure of the OAF.

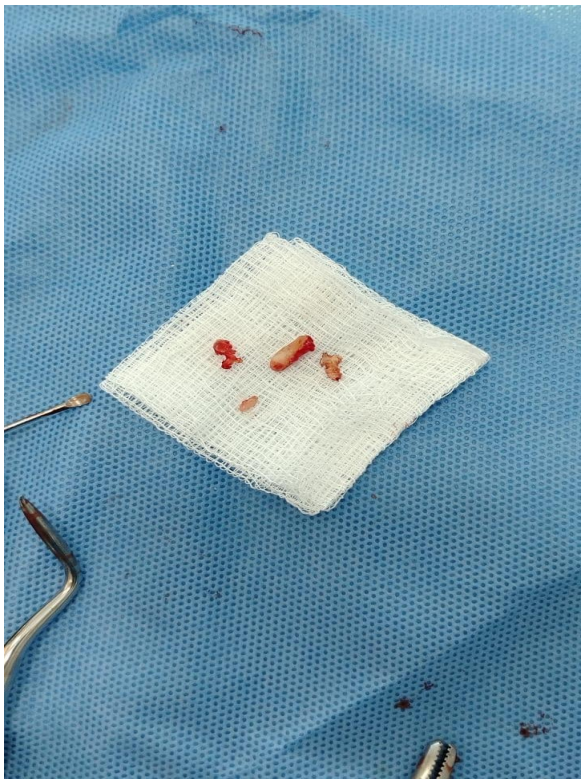

Fig. 2.1

Fig. 2.2

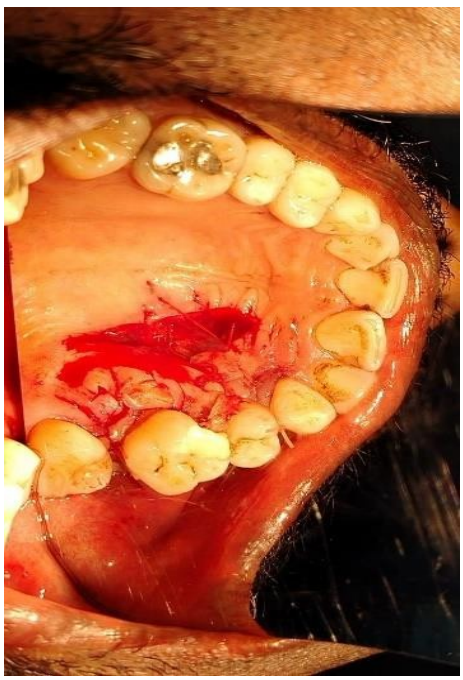

Fig. 3 CLOSURE WITH COMBINATION OF FLAP (PALATAL & BUCCAL FLAP)

Fig. 4.1

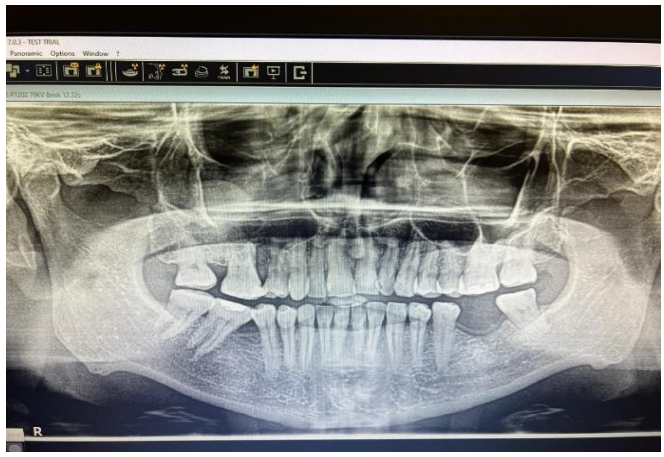

Fig. 4.2 POST OPERATIVE HEALING AFTER 2 MONTHS

Discussion

Previous literature have described certain conditions associated with predisposition to the occurrence of oroantral communication after tooth extractions, such as pneumatized maxillary sinus with little alveolar bone remaining and presence of divergent dental roots.[11,12,13] The extraction of molars and premolars is often associated with oroantral fistula. In the present case, the opacification and discontinuity of the sinus floor were noted. As mentioned by Borgonovo et al. these aspects are suggestive of the presence of communication associated with sinus infection.[14]

The passage of air and fluids between the nose and the mouth are clinical findings of the presence of oroantral fistula. According to Kwon et al. [15] The patient can report symptoms such as bad taste and smell, pain in the affected region and reflux of food from the nose to the oral cavity. Sinusitis caused by sinus infection was also exposed by Khandelwal and Hajira[1]. Other authors mentioned unilateral nasal obstruction and nocturnal cough due to drainage of exudate into the pharynx. [16] The combination flap with good blood supply to both buccal fat pad and buccal advancement flap, proximity to recipient site permitting short surgical time, easy manipulation and minimal donor site morbidity, one flap providing protection against perforation or necrosis of the other is an appropriate surgical treatment choice. Combination flap offers greater stability and reliability. Postoperative sequelae to be expected with this surgical procedure are pain, swelling, restriction of mouth opening, and loss of vestibular depth. Complications that have been reported to occur are partial necrosis, haemorrhage, hematoma, excessive scarring, and facial nerve injury.[11,12] In our case, the patient reported a mild loss of buccal vestibular. No other complications were encountered.

The different aetiologies that may cause oroantral fistula with chronic sinusitis are inflammatory (infectious or noninfectious), neoplastic (primary or metastatic), odontogenic, spontaneous, iatrogenic, or persistence of infection. In this case, while attempting to remove the premolar, root has been pushed into maxillary sinus. In specific instances as discussed above, surgical plan for combination flap with buccal advancement flap & palatal flap should be considered. A systematic treatment approach of controlling local adverse factors of infection and sinusitis, optimizing general health, and choice of surgical technique tailored to individual patient remain the cornerstones of successful oroantral fistula closure.

Conclusion

Oral-antral fistula are frequent complications in dentistry. Their diagnoses require careful clinical and radiological examination. An early closure of post-surgical Oro antral communication is the best way to prevent oroantral fistula and sinus complications. Combination of flaps (buccal & palatal) represents a reliable treatment option that is easy and predictable for the closure of Oro-Antral fistula.

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