

Cloud of cotton inside the maxillary sinus: A unique case report worth sharing

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ABSTRACT

The maxillary sinus is one of the most important structures present in the vicinity of the oral cavity. Unknowingly, it often gets involved when the environment of dentoalveolar structures of the maxillary unit jeopardize. There are lots of reasons such as trauma, forceful extraction which may change the internal environment of the maxillary sinus, and the balance of its microbial flora. Among them, oroantral communication and oroantral fistula cause chronic sinusitis inevitably. However, this case is unique by virtue due to the formation of chronic sinusitis by the intrusion of a foreign body by the patient himself and followed by the formation of an oroantral fistula after the extraction of an offending tooth.

Key words: Chronic sinusitis, Foreign body, Maxillary antrum, Oroantral fistula

Among all the pathologies of the maxillary sinus, chronic sinusitis is one of the most commonly seen problems that arise. In case of long-standing oroantral fistula (OAF), it is evident that chronic sinusitis also presents concomitantly. If a patient has both OAF and chronic sinusitis, the classical features of sinusitis may get masked as the main concern of the patient got shifted toward the complications of OAF. The occurrence of OAF depends on the amount of corticocancellous bone between the socket alveoli and the floor of the maxillary sinus. According to Harrison's dictum, the bone present in the maxillary posterior teeth region and the maxillary sinus is occasionally 0.5 mm in thickness. In that case, the first premolars are responsible for 5.3% of oroantral communication (OACs), the second molars were the most commonly seen with an incidence of 45%, followed by third molars were responsible for 30% and the first molars accounted for 27.2% [1]. The usual causes of OAC/OAF include tuberosity fracture, dentoalveolar/periapical infections of molars, implant dislodgement into the maxillary sinus, trauma (7.5%), presence of maxillary cysts or tumors (18.5%), osteoradionecrosis, flap necrosis, and dehiscence following implant failure. However, in our case, we got a cotton ball inside the maxillary sinus [2].

To date, there is no case reported that resembles with the clinical condition of our study. The rationale of this case report is to give an idea regarding the treatment lineup of foreign body-induced chronic maxillary sinusitis where OAC is persistent at the same time.

CASE REPORT

A male patient aged 65 years, with a medical history of bronchial asthma for more than 35 years, had a complaint of headache, pain on the right side cheek, foul-smelling in the mouth, and nasal regurgitation of water for 1 week. Before 1 week, the person underwent extraction of 17 under local anesthesia by his dentist. After that, he developed an OAF and was referred to an oral and maxillofacial surgeon by his dentist (Fig. 1).


When cone-beam computed tomography (CBCT) had been advised, a radiopaque round structure was present inside the right side maxillary sinus, along with thickening of the maxillary sinus lining and lamellar bone destruction surrounding the 17,18 region (Fig. 2). The peculiarity of this case lies in the fact that the radiopaque structure showed many pneumatic structures which are unlikely any nasal polyp or any other pathological feature.

Then, along with other clinical examinations for OAF diagnosis, we underwent for thorough case history, where the patient declared that he used to neglect tooth pain on 17 for a long time around 4–5 months. He used to put cotton pellets soaked with clove oil forcefully on the papilla between 17 and 18 when he felt pain on stat. After that, he seldom observed that the cotton pellet usually disappeared in that area. The right side second molar had three-degree mobility. On CBCT, it had been measured that the bone defect on the alveolar ridge was 12.43 mm on the buccal side and 11.03 on the palatal side.

The patient had advised to do all the tests that were important for general anesthesia fitness. The patient was also advised for COVID-19 RT-PCR, which also reported negative. Orotracheal

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intubation had been done and the tube was secured on the left side. The nasogastric tube was introduced from the left nostril. Then, the Caldwell Luc procedure was done on the right side maxilla, along with antral lavage with normal saline (Fig. 3a). Intranasal antrostomy (Fig. 3b) and buccal fat pad repair of the defect had also been done (Fig. 3c). Nineteen pieces of cotton were recovered from the right side antrum (Fig. 3d).

On post-operative period, Amoxyclav 625 mg (1 Tab thrice daily after meals), a combination of Montelukast 10 mg and Levocetirizine hydrochloride 5 mg (1 Tab twice daily after meals), Paracetamol 1 gm (1 Tab thrice daily after meals), Prednisolone 10 mg (1 Tab twice daily after meals), Oxymetazoline nasal drop (2–3 drops four times daily), and Pantoprazole 40 mg (1 Tab once daily before meal) were advised for 7 days. The patient was discharged the day after orotracheal with the nasogastric tube for feed. The nasogastric tube was removed after 10 days. Complete epithelialization started after 7 days. The buccal fat pad was adapted very well over the defect (Fig. 4). The oral feed started after 10 days. The patient was advised to take a soft and semisolid diet for the first 14 days as oral feed. The patient was also advised to do lukewarm saline mouthwash for 2 weeks.

DISCUSSION

There are many options for the repair of OAF such as Von Rehrmann flap, Moczair flap, and buccal fat pad graft. We have considered all the pros and cons of all the procedures. The most common disadvantage of the Rehrmann flap was the reduction of the buccal sulcus depth and tissue tension, which often jeopardized the repair work. A prospective follow-up study by Belmehti *et. al* demonstrated that the reduction of

sulcus depth after the Rehrmann method is permanent in half of the cases [3].

In 1957, Fickling *et. al* had described the use of a buccal flap with a thin layer of buccinators muscle for the closure of an oroantral defect [4]. After that, Berger advised a buccal sliding flap technique for closure of small to medium-sized (<1 cm) fistulas which are located either laterally or at the center of the alveolar process of Maxilla [5]. Lin *et al* also also described immediate closure of an OAC and fistula by rotating gingiva-vestibular flap. This technique is a unique modification of the vestibular flap which prevents the lowering of the vestibular sulcus, which occurs normally while using vestibular flaps [6]. According to Hao, the buccal pad fat flap is a satisfactory and well-planned method to close the oroantral defects. Seeding of epithelial cells and rapid epithelialization of the uncovered fat is a peculiar feature of the buccal pad fat flap stalk [7]. Ziembra had described other two flap

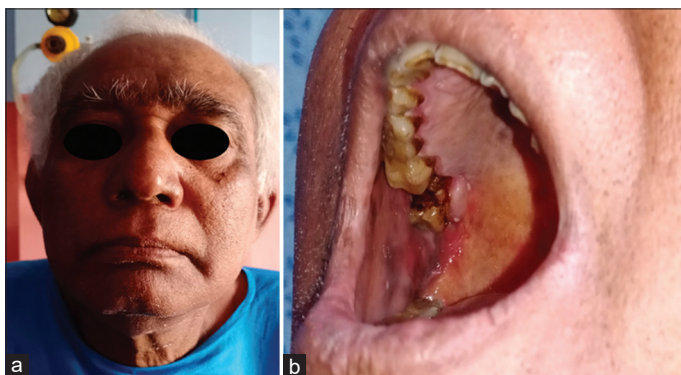


Figure 1: (a) Extraoral picture and (b) intraoral picture showing oroantral communication through the socket of 17

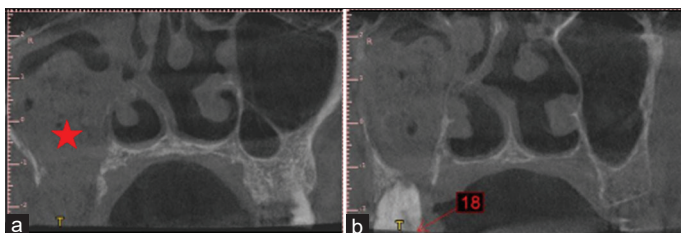


Figure 2: CBCT showing evidence of the presence of foreign body inside the sinus and Oroantral sinus with bone loss on the alveolar socket of 17

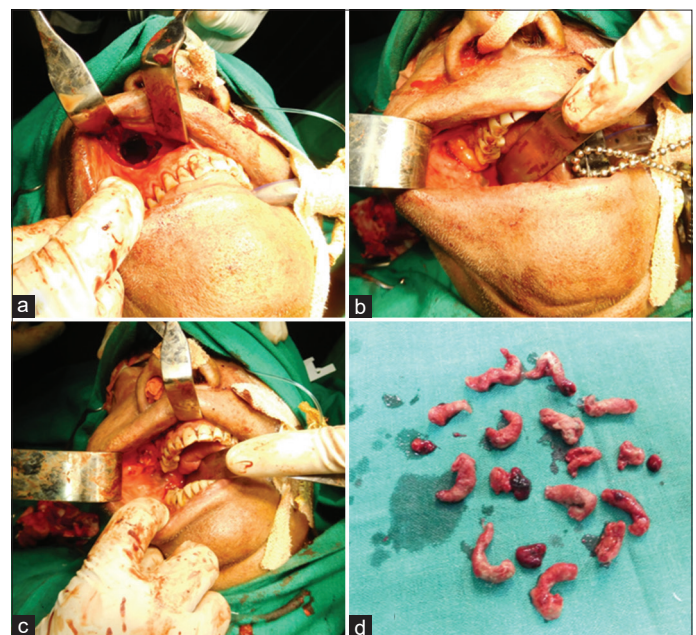


Figure 3: (a and b) Caldwell luc procedure and intranasal antrostomy procedure on the right side maxilla; (c) showing repair of oac with buccal fat pad; (d) shows the recovered cotton pieces from the right side maxillary sinus



Figure 4: Post-operative 2nd week showing evidence of complete epithelialization and repair of OAC

techniques for the closure of OAF. The advantage of using this flap over one flap is that it provides stable bilateral epithelial covering to both the superior and inferior surfaces of the repaired defect [8].

The most common reasons leading to the failure after the closure of oroantral defects include inadequate pre-operative irrigation and antibiotic therapy for any pre-existing sinus infection or disease, excessive tension on the flap impairing blood supply for healing, inadequate excision of epithelialized margins, and inadequate trimming of bony margins before closure or post-operative instructions not given properly or negligence on part of the patient to follow the instructions [9].

CONCLUSION

Repairing oroantral defects such as OAC/OAF is one of the most challenging and difficult problems in the field of oral and maxillofacial surgery. In our case, we got an excellent result with a simple approach with the buccal fat pad. From our side, we will suggest a “less is more” result can be achieved if we can start with an easier approach, that is, buccal fat pad. However, during the selection of the surgical approach to close an OAF, different criteria must be taken into consideration, such as the location of the defect, size of the defect, the height of the alveolar ridge, vestibular depth, the persistence of the defect, sinus inflammation, or infection, and the general health of the patient. OAC/OAF should be managed promptly by creating a barrier between the oral cavity and maxillary sinus to prevent maxillary sinusitis.

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