



## **SURGICAL MANAGEMENT OF ORO-ANTRAL FISTULA- A CASE REPORT**

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### **ABSTRACT:**

An Oro-antral fistula (OAF) refers to an aberrant pathological communication between the oral cavity and the maxillary sinus. This anomalous conduit with the maxillary sinus often manifests during select surgical interventions in the posterior maxillary region. The most common cause of this condition is known to be an extraction of posterior maxillary teeth and dental implant surgery. If left untreated, it progresses to maxillary sinusitis and impairs the quality of life of the patient. OAF can be managed by creating a barrier between the oral cavity and maxillary sinus. This article includes the patient history, clinical examination, diagnostic criteria, management strategies, and prognosis of Oro-antral fistula.

**KEYWORDS:** Oro-antral fistula, maxillary sinus, management, flap, graft

### **INTRODUCTION:**

An Oro-antral fistula (OAF) is an unnatural pathological communication that develops between the oral cavity and the maxillary sinus, typically as a result of extractions or implant surgeries in the posterior maxillary region (1). This complication predominantly arises in the first and second molars as well as the second premolar teeth (2). This communication may get contaminated by food and saliva, which leads to bacterial infections, chronic sinusitis, and impaired healing. The main clinical findings following the formation of OAF are air and fluids passing into the nose and mouth (3). Clinicians might observe blood bubbles in the defect, or patients may sense the escape of air while blowing their nose with closed

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nostrils. Smaller defects, less than 2mm, can often heal spontaneously through blood clot formation and secondary healing in the absence of infection (4). Untreated larger defects lead to the development of sinusitis within 2 weeks. A confirmatory diagnosis is vital for the successful closure of an OAF (3).

**CASE REPORT:**

A 48-year-old female patient came to a private hospital with the chief complaint of pain in her right upper back tooth region for the past month. The patient revealed a history of extraction of the upper right back tooth a month ago and was under medication. The patient also reported continuous localized pain in that area. On clinical examination, the patient presented with a non-healing extracted socket with an opening resembling an oroantral communication (Fig. 1). Tenderness was noted upon palpation in that area. The patient underwent a nose-blowing test where she was instructed to close her nostrils and blow gently down the nose with her mouth open, which resulted in an escape of air down into the fistula via the oral cavity.

Computed tomography (CT) of the paranasal sinuses provided an accurate estimation of the bony defect of the fistula. The CT scan revealed the right maxillary first molar post-extraction site with a thin rim of radiolucency around the root, communicating with the floor of the right maxillary sinus through a defect measuring 2x5 mm. Mild mucosal thickening in the floor of the right maxillary sinus was observed (Fig. 2). This confirmed the diagnosis of an oroantral fistula.

The planned treatment was the surgical closure of the oroantral fistula. The operating area was irrigated with povidone-iodine diluted with normal saline and anesthetized using 2% lignocaine. After reflecting the buccal and palatal flaps, the defect was visualized (Fig. 3). Soft tissue around the defect was excised, and the sinus floor was curetted to ensure direct bone contact. Once the defect was located, Bio-Oss (a bone substitute material of bovine origin) was placed over the defect through the socket, followed by CO Mupimet collagen particles (Fig. 4) mixed with saline. This mixture, primarily composed of Mupirocin (an antibacterial) and metronidazole (an antimicrobial), was placed over the graft (Fig. 5). These particles prevent the growth of infection-causing microorganisms, promoting faster healing.

A tension-free buccal flap was advanced to provide complete coverage of the area. Once the flap was approximated to create a tight seal, horizontal mattress sutures were placed using high tensile strength Vicryl (Fig. 5). The sutures were left intact for 2 weeks. The patient was prescribed antibiotics, analgesics, and nasal decongestant drops for 7 days and advised to avoid consuming hard foods,

engaging in physical activities, nose-blowing, sneezing with a closed mouth, and using a straw. The patient was reviewed after a week, and satisfactory healing was achieved.

#### **DISCUSSION:**

The term oroantral fistula (OAF) indicates an epithelial-lined canal filled with granulation tissue or polyposis of the maxillary sinus membrane, most commonly as an iatrogenic communication (5). OAF most commonly occurs due to the extraction of upper molars and premolars, periapical infection of molars, tuberosity fractures, implant dislodgment into the maxillary sinus, flap necrosis, trauma, presence of a maxillary cyst or tumors, osteo radionecrosis, and dehiscence following implant failure (6). Maxillary sinus mucous thickness usually ranges from 1 to 7 mm under physiological circumstances, but in cases of periapical infections or cysts, the risk of OAF increases due to antrum resorption (7).

An oroantral fistula itself causes little or no discomfort but usually leads to sinusitis. Patients with an oroantral fistula manifest symptoms such as facial pain, halitosis, unilateral nasal obstruction, foul or salty taste, alteration in voice resonance, air shooting from the fistula into the mouth when blowing the nose, inability to blow out the cheeks, and the escape of liquids from the mouth through the nose. At a later stage, an antral polyp may protrude and can be detected intraorally (8).

The diagnosis of OAF can be made in several ways. During chair-side assessment, OAF can be diagnosed through clinical inspection, patient history, nose blowing test (Valsalva method), and cheek blowing test (9). A panoramic radiograph or computed tomography (CT) is needed for a confirmatory diagnosis. Radiologically, OAF shows sinus floor discontinuity, sinus opacification, or communication between the sinus and the oral cavity. It also helps to locate the fistula and determine the size and extent of the defect (10).

In general, closure of the fistula within 24 hours is highly recommended to avoid complications. Defects smaller than 2 mm without any infection can heal spontaneously. Untreated larger defects lead to sinusitis within 2 weeks. The ideal treatment consists of two phases: surgical repair to achieve primary closure and spontaneous antibiotic prophylaxis to prevent sinus infection. The closure of the oroantral fistula should primarily protect the sinus from oral microbial flora, prevent the escape of fluids and other contents across the communication, and eliminate antral pathology.

The success rate for immediate closure of OAF is high. The Rehrmann flap is the most commonly used, which is raised by a buccal flap. In 1930, Axhausen introduced the thin layer of buccal flap for closure of the oroantral defect. Berger advocated closing OAF with a buccal sliding flap. Egyedi and Hao developed

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a buccal pad of fat for defect closure. Once the epithelialized margins are excised, two vertical incisions can be made to advance the flap for closure. The flap should comprise both epithelium and connective tissue. It should be placed over the defect and sutured.

Bone autografts can also be placed to close OAFs. Grafts can be harvested from distant sites in the oral cavity or the iliac crest. Articular cartilage also plays a role in grafts, which is highly resistant to infection. A lyophilized fibrin seal above the floor of the antrum achieves closure by protecting the clot from airflow. Post-operative instructions and follow-up are highly recommended for the success of the procedure.

**CONCLUSION:**

Oro-antral fistula (OAF) is an unnatural epithelialized pathological communication between the oral cavity and the maxillary sinus. In our case of OAF, we utilized CO Mupimet collagen particles to establish a barrier function, preventing the growth of infection-causing microorganisms and promoting faster healing. The use of a buccal flap for defect reconstruction offers convenience to the patient. While OAF can result from various causes, the primary etiology is typically iatrogenic. Therefore, a meticulous approach to diagnosis and treatment is imperative. The choice of treatment modality should consider factors such as the size and location of the defect, the time elapsed since the fistula developed, the feasibility of using a flap, any prior surgical interventions, and the presence of pre-existing infection.

**CONFLICT OF INTEREST:**

There is no conflict of interests.

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**DECLARATION OF PATIENT CONSENT:**

The authors certify that an appropriate consent form has been obtained from the patient. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published, and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Fig 1: Intraoral picture of OAF

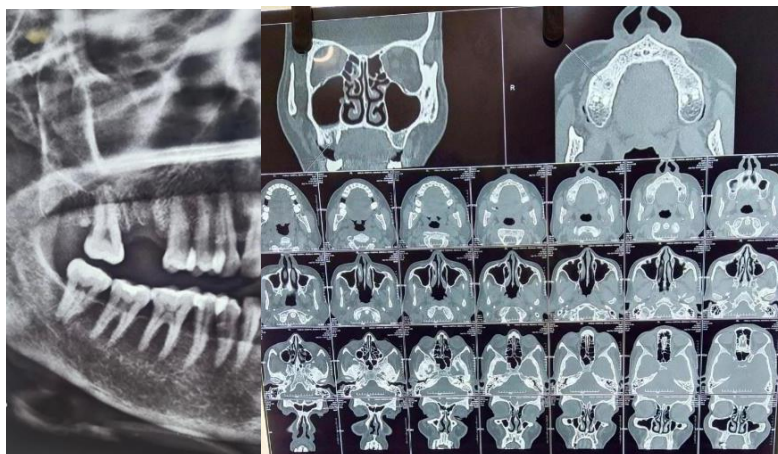


Fig 2: OPG and CT picture of OAF



Fig 3: Flap reflected to visualize defect



Fig 4: Bio Oss & Co Mupimet



Fig 5: Condensed collagen to seal the defect



Fig 6: Buccal flap advanced and suture placed