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# Immediate Closure of OAC with Buccal Advancement Flap: A Case Report

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## 1. Introduction

One of the most commonly seen complications by oral and maxillofacial surgeons is Oro-antral communication or Oro-antral fistula. It is an unnatural connection formed between the oral cavity and the maxillary sinus [1]. Minor oroantral communications of smaller diameter i.e., 1 to 2 mm will eventually heal on its own after the formation of a blood clot and secondary healing but even after that formation of an oroantral fistula (OAF) becomes unavoidable as some of the major communications remain undiagnosed [2]. Due to the anatomic proximity or projection of the roots of upper pre-molars and molars within the maxillary sinus, extraction of these teeth usually results in formation of OAC (seen in 48% of cases). Patient diagnosed with OAC will give history of various unpleasant symptoms like a reduced sense of smell and taste, pain in maxillary teeth, postnasal exudate, and halitosis [1].

Autograft, allograft, alloplastic materials and closure with membranes or titanium mesh are some of the common treatment modalities that are used for the treatment of OAFs [3].

Immediate closure of acute oroantral defects has an upper hand over secondary closure with the success rate of former being approximately 95% while the latter is having success rate to be as low as 67%.

Various types of flap designs have been reported to cover such defects these include local soft tissue flap techniques such as buccal and palatal flaps and their modifications and distant soft tissue flaps such as tongue and temporalis flaps [2].

In 1936, Rehrmann designed a buccal advancement flap that has an upper hand on other modalities as it along with providing an adequate access also gives a good blood supply and gives ease of tissue release for primary closure [3].

## 2. Case Report

A Male patient aged 65 years old reported to department of oral and maxillofacial surgery with the chief complaint of pain and mobile tooth in upper back left tooth region since last 20 days. On clinical examination the tooth was tender on percussion along with grade one mobility.

Radiographic evaluation showed a presence of an oval shaped radiolucency having a dimension of 2*2 mm in relation to tooth number 28 (FIG. 1). It was also quite prevalent in the radiograph that the root apex of the tooth was having close proximity with the maxillary sinus.

FIG. 1. **Radiograph of the offending tooth.**

The treatment aimed at firstly extracting the tooth as traumatically as possible followed by closure of the communication with buccal advancement flap.

The patient was first scrubbed and draped. The treatment was initiated by infiltrating Posterior Superior Alveolar Nerve Block and Greater Palatine Nerve block with 2% lignocaine having 1:100000 adrenaline succeeded by extraction of 28 using upper third molar forceps in figure of eight motion (FIG. 2).

FIG. 2. **Extracted tooth.**

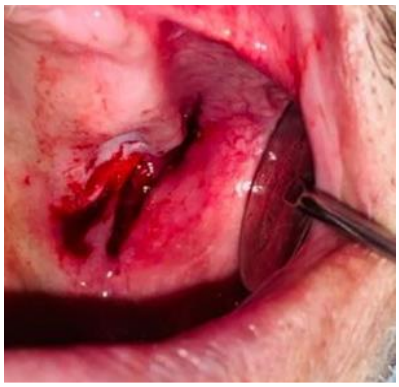

FIG. 3. **Photograph after raising buccal advancement flap.**

A buccal advancement flap that was trapezoidal was raised by making two buccal divergent vertical incisions extending into the buccal vestibule (FIG. 3). The flap was then horizontally scored and then advanced to cover the defect (FIG. 4). This flap was then sutured with the help of 3-0 silk suture in horizontal mattress pattern (FIG. 5).

FIG 4. **Advancement of flap to cover defect.**

FIG. 5. **After suturing of flap.**

The patient was then prescribed antibiotics BD along with analgesic (SOS) for 5 days along with routine post-extraction instructions and was advised to take steam inhalation after 24 hours for 5 days. The sutures were removed at 7th post-operative day. The patient was then followed after 48 hours and 7 days in which he didn't report of any pain, discomfort, fluids releasing from nose on eating or any associated symptom of oro-antral communication.

## 3. Discussion

Extraction of tooth is the main etiological factor for the formation of Oro-antral communication. It was concluded by Killey and Kay, Von Wovern, Ehrl, and Punwutukorn et al that extraction of the upper first molars are mostly responsible for oroantral communications [4-8]. In our case the roots of maxillary 3rd molar were in close proximation with the sinus. Mostly the age group of 30 to 60 years are susceptible to the formation of OAC [2]. Our patient was 65 years old male who reported with the chief complaint of pain in upper back left tooth region for which thorough clinical examination followed by radiological evaluation was done.

Due to the undesirable consequences of sinus infection, impossibility to perform implant rehabilitation or pre-implant surgical procedures, the closure of the OAC becomes a significant problem. Although the surgical technique of buccal advancement flap technique is easy to perform but its perfusion is poor. When the buccal advancement flap is used, narrowing of the gingivobuccal sulcus is an undesirable sequala. This situation becomes even more significant when the patient is edentulous because mild to severe reduction in vestibular depth can occur postoperatively. Axhausen was first to describe the use of a buccal flap with a thin layer of buccinator muscle for closure of an oro-antral defect in the year 1930. Later, Berger advocated a buccal sliding flap technique for closure of small to medium sized (<1 cm) fistulas which are located either laterally or at center of the alveolar process. Krompotie and Bagatin described immediate closure of an oroantral communication and fistula by rotating gingiva-vestibular flap [9].

Buccal flap techniques are superior due to the nearness of the harvesting area to the defected area. Despite the possibility of a decrease in sulcus depth, its ease of use and proximity to the recipient site make it a preferred procedure among clinicians when they encounter patients with small OAFs [9,10]. Therefore, when the defect size is small (<5 mm) and no alveolar resorption has occurred or the patient is not edentulous, the buccal advancement flap technique can be used successfully [2].

Despite of the pros and cons of each flap design, all techniques yield successful results when used in areas where they are properly indicated. Hence, clinicians should be competent and well aware of the various treatment options available for closure of OACs· certain factors must be taken into account when establishing the treatment plan; specific needs and the medical history of the patient such as the use of dentures and a history of radiation therapy in the head and neck region must be taken into account. Therefore, the quantity and quality of remaining tissue should be thoroughly evaluated along with the possibility of further implant placement in the affected site [9].

## 4. Conclusion

If OAC is left untreated it results in tract formation that further leads to chronic sinusitis. Immediate closure i.e., closure done within 48 hours gave a high success rate of 90%-95 % whereas late closure has been associated with a success rate of 67% [3].

Sufficient blood supply and, consequently, a high survival rate have been reported in the literature in relation to this technique. However, this flap technique also presents the major disadvantage of that the buccal sulcus depth might decrease after the surgery, possibly resulting in reduced retention and increased discomfort among patients using dentures [9].

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