

# Buccal & Palatal Advancement Flap in post extraction

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## **Abstract :**

*The oroantral fistula (OAF) is a communication between the maxillary sinus and oral cavity . the pathological communication created by the dental extraction of maxillary molar and premolar teeth. OAF may leads to sinusitis. Adequate management should be performed include closing the OAF and elimination of sinus infection to provide good healing and prevent recurrences. Antrostomy, FESS or Caldwell-Luc are procedures to eliminate maxillary pathology.*

**KeyWords :** *Buccal advancement ,palatal rotational flap , oroantral fistula , maxillary sinus*

## **Introduction:**

Oroantral communication does not occur in all the extraction of the maxillary molar and premolar region but that occurs in tooth root apex involved in the sinus and sinus involvement and in traumatic extraction. the Maxillary cysts (10-15%), benign or malignant tumors (5-10%) and trauma (2-5%) can be other causes of OAC<sup>1</sup>. The oroantral communication may be confirmed by observing the passage of air or bubbling of blood from the post-extraction socket when the patient tries to exhale gently through their nose while their nostrils are pinched (Valsalva test). If the patient exhales through their nose with great pressure, there is a risk of causing oro-antral communication, even though communication may not have occurred initially, such as when only the lining (mucosa) of the maxillary sinus is present between the tooth socket and the sinus. Some of the traditional methods that are being employed in the repair of oro-antral communications include buccal advancement flaps, palatal rotation and palatal transposition flaps, tongue flaps, and naso-labial flaps.<sup>2</sup> Mostly the buccal advancement flap and palatal rotation flap techniques are used for the repair oroantral fistula. The success of any procedure depends upon local and general factors i.e. elimination of sinus infection, excision of fistulous tract and proper postoperative care. Many studies have shown that the buccal pad advancement flap is more successful in comparison with palatal rotation flap. In case of the chronic OAF repair with palatal rotation flap is more beneficial due to increased vascularity, thickness and maintenance of the buccal sulcus. The good length to width ratio of palatal rotational flap has given good results in oroantral fistula arising in last maxillary molar region.<sup>12</sup> 'The use of some alloplastic material has also been proposed which ranged from auto-geneous bone graft to gold foil. In recent years the use of a pedicle buccal fat pad in the closure of large oroantral fistula has become popular. Distant flaps from the extremities or forehead or tongue are also in use.

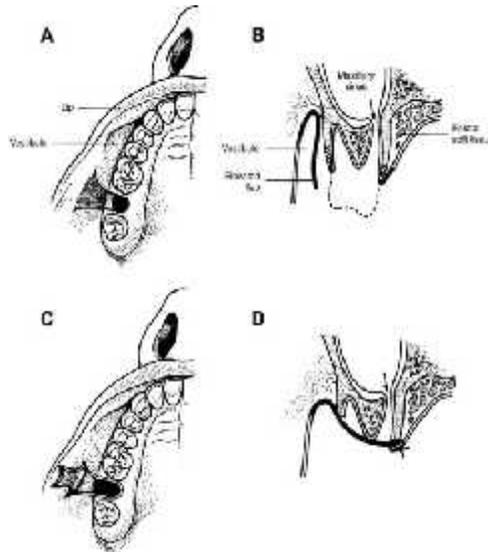
## **Discussion :**

OAF was more common in males (61.7%) than females (38.3%). The male to female ratio was 1.6:1. Delgado<sup>16</sup> reported that out of the 22 cases of OAF 13 (58%) were males and 9 (42%) were females with male to female ratio

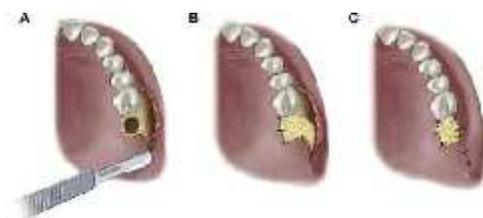
of 1.4:1. The study of Hirata et al<sup>17</sup> showed that the rate of orofacial fistula is significantly higher in males with a male to female ratio of 1.7:1. Generally the age for the patients at the time of presentation was 17 to 68 years with the mean age of 34.03 + 10.56 years. The incidence was higher in 3rd and 4th decade.<sup>3</sup>

**Buccal Advancement Flap :**

Buccal fat flap is another surgical for closing small- to medium-sized OAF. This flap is the pedicled buccal fat pad, which was first described by Egyedi in 1977 (figure 9). Incision is made in maxillary in the distobuccal depth of the maxillary tuberosity, the buccal flap and periosteum are raised. A sharp scissors is used to cut through the periosteum, and with pressure applied to the zygomatic arch region, the buccal fat pad should easily extrude into the operative side. Blunt dissection with a Metzenbaum scissors can mobilize the fat, as much as needed to avoid tension of the flap to closure across the fistula. The tissue is fixed into bone with bur holes or screws and into adjacent palatal and buccal mucosa with resorbable sutures. The exposed buccal fat pad epithelializes in 4 to 6 weeks. A surgical splint can be secured to protect the flap<sup>4</sup>. This method has a low failure rate and low morbidity. Complication of this technique such as necrosis of fat and visible change in facial contour when the buccal fat pad is used for reconstruction of large defects, but it is rare case. Buccal advancement procedure was used, in those cases, which had a small opening and deep buccal sulcus<sup>5</sup>. One case failed because of the postoperative infection, the other case failed because of the flap dehiscence due to the patient carelessness in the postoperative period. Woweren and Zide et al have criticized the buccal advancement flap for the decreased depth of the sulcus. However Eneroth et al showed the reduced depth of the sulcus to be a temporary problem. <sup>6</sup>These authors used models of the patient before and after surgery and showed that the reduced depth became normal after 8 weeks. According to Kruger this procedure is very common, simple and satisfactory which can be performed under local anesthesia.



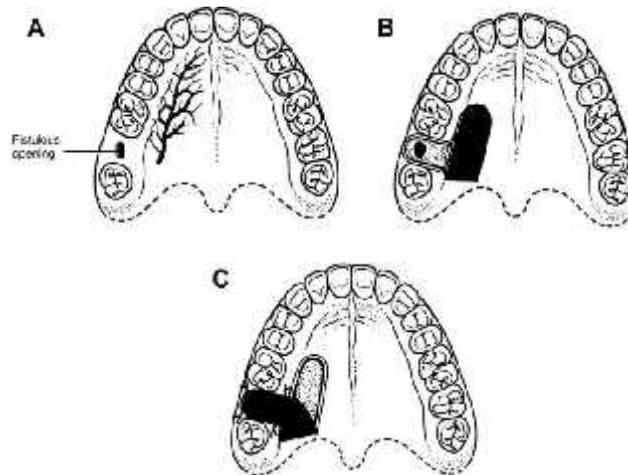
(A) Full-thickness mucoperiosteal flap elevated to allow access to the buccal fat pad. (B) Buccal fat pad mobilized and secured to the palatal soft tissue. Horizontal scoring of periosteum, and removal of the bone to allow tension-free closure of buccal vestibule. (C & D) Advancement of flap into position of defect.



(A) Buccal Flap Closure for OAF  
(B) Undermining of the mucoperiosteal flap ,  
(C) Mucoperiosteal flap closure with preservation

### **Palatal Rotational Flap :**

Palatal flap are preferred to the buccal flap because it does not make any reduction in the depth of the maxillary buccal vestibule, and it is less vulnerable to breaking down than a buccal flap because of the thickness of the palatal mucosa and because inclusion of the artery prevents vascular compromise<sup>7</sup>. Palatal flaps are preferred in larger and recurrent fistula. It is also particularly indicated in cases of unsuccessful of buccal flap procedure<sup>8</sup>. Palatal bone at donor site of palatal flap that exposed will heal by secondary epithelialization and completely healed 2 months post-operatively and it is not necessary to use grafts. The advantages of this flap include good vascularization, excellent thickness and tissue bulk and easy accessibility. It also allows for the maintenance of the vestibular-sulcus depth. It is particularly indicated in cases of unsuccessful buccal flap closure. <sup>8</sup>Donor site necrosis is a very rare complication. The disadvantage of this flap include surgical procedure is more difficult, exposure of the bony palatal surface, pain and later surface irregularities of the surgical area due to secondary epithelialization two or three months later and the most important disadvantage is the necrosis of the palatal flap that can occur following excessive rotation of the flap. Palatal flap is also more technically challenging and may expose more of the palatal bone if the fistula is larger, requiring a longer procedure and a second operation. Palatal rotation flap may be problematic in the presence of a third molar fistula, as flap rotation may affect negatively the vascular pedicle. <sup>9</sup>This flap may result in arterial injury and hemorrhage. Borgonovo suggest this method is only indicate for closing fistula in the premolar area cause an excessive rotation required when operating in the molar region could cause ischemia of the flap due to the palatal artery occlusion and necrosis. Hernando used palatal rotation-advancement flap for 4 patients and all of these patient was success. Qureshi performed rotational palatal flap to 29 patient with OAF and only one case (3.45%) was failed. This failed was due to postoperative sinusitis. According to Anavi11 et al, palatal rotation flap is recommended for the late repair of oroantral fistula owing to its good vascularization, excellent thickness and tissue bulk and easy accessibility. It also allows for the maintenance of the vestibular-sulcus depth. It is particularly indicated in cases of unsuccessful buccal flap closure. Donor site necrosis is a very rare complication of palatal rotational flaps.



(A)Fistula with outlining course of anterior palatine artery. (B) Incision for palatal flap. (C)Flap rotated and sutured into position. Exposed palatal bone will heal by secondary epithelialization.

#### Conclusion :

From the above discussion, we can conclude that a proper diagnosis and proper surgical technique is mandatory to close a large OAF. Buccal advancement flaps are best suited for small fistulas, and should not be attempted in large OAFs. A palatal rotation flap or a combination of the two gives best results for large OAFs.<sup>10</sup> The extension of palatal mucogingival incision on maxillary tuberosity with a slight curve behind the third molar eliminates the use of back-cut, and thus ensuring excellent vascularity of the flap. Both buccal advancement flap and palatal rotation flap are good surgical procedures with the palatal rotation flap showing a considerably less failure rate than the buccal advancement flap

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