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Treatment of Oroantral Fistula using palatal flap- A case report and technical note.

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Abstract

Oro-antral fistula following dental extraction is a common complication. Although many techniques have been advocated for the closure of OAFs, Palatal flap remains the flap of choice for closure of OAFs. A case of an Oro-antral fistula of 15 days duration in a 25-year-old male was successfully repaired using palatal rotation flap. Complete epithelisation of the palatal raw area was observed 4 weeks post-operatively with no postoperative complications. Palatal rotation flap is a reliable flap for the repair of oro-antral fistula. The easy mobilization of the palatal flap, its excellent blood supply, and minimal donor site morbidity make it an ideal flap in such cases.

Keywords-Oro-Antral fistula(OAF), Palatal Flap, Caldwell Luc.

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Introduction:

Oroantral communications (OAC) are not unusual complications in oral and maxillofacial surgery. The extraction of maxillary posterior teeth is the most common cause of OAC (80%), because of the anatomic close relationship between the root apices of the premolar and molar teeth and the sinus floor. Maxillary cysts (10-15%), benign or malignant tumors (5-10%) and trauma (2-5%) can be other causes of OAC [3,6]. The *oro-antral 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* te*s*t). 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[3].

Palatal flaps are being increasingly employed in the repair of oro-antral fistula (OAF) and other oral defects worldwide.

This article reports a case of 15 days old oro-antral fistula which was treated successfully with the use of a palatal rotation flap. A brief literature review is also presented.

Case report:

Diagnosis:

A 25-year-old male patient was referred to KLE's VK Institute of Dental Sciences, Belgaum, for the management of an Oro-antral fistula. The patient reported a past history of upper left first molar extraction 15 days back, with a subsequent oro-antral fistula formation. Previous attempt was made for closure of oro-antral communication using buccal advancement flap.

The clinical examination revealed a fistula (1 cm diameter) at the depth of the 26 extraction socket. There was no discharge from the fistula or any signs of acute infection. Patient did not have any positive medical history. A clinical diagnosis of oro-antral fistula was made.PNS, OPG and IOPA x-rays were taken.

The radiographs did not reveal any tooth, root or sinusitis.

Procedure:

The patient was firstly placed on intravenous Cefotaxime (1gm/bid) and Metronidazole (100 ml/tid) one day before the surgery. Surgery was planned and patient was taken under General Anaesthesia. Since an attempt was already made to close the OAF with the buccal advancement flap, the sutures were removed, the fistulous tract was excised, the buccal flap was raised. The anterior limb of the buccal flap was curved into a vestibular incision extending upto the lateral incisor. Flap was raised, caldwell luc surgery was performed to ensure the absence of root piece. On thorough exploration of the sinus, the absence of root piece was confirmed.

The palatal flap was marked with adequate width so as to cover the defect completely. A full thickness palatal mucoperiosteal flap was raised and rotated over the defect. Both the buccal and the palatal flaps were approximated so as to achieve a water tight closure. Post-operatively standard sinus protocol was followed. The patient was followed for 6 months post operatively.

Fig-1. Pre-operative photograph showing OAF.

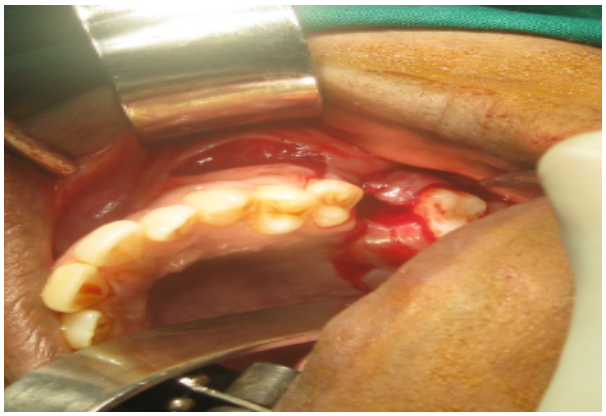

Fig-2. Extension of buccal anterior releasing incision.

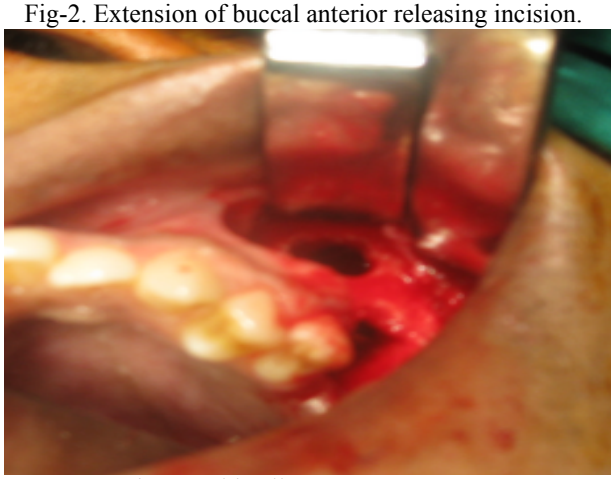

Fig-3. Caldwell Luc Surgery.

Fig-4. Palatal flap raised.

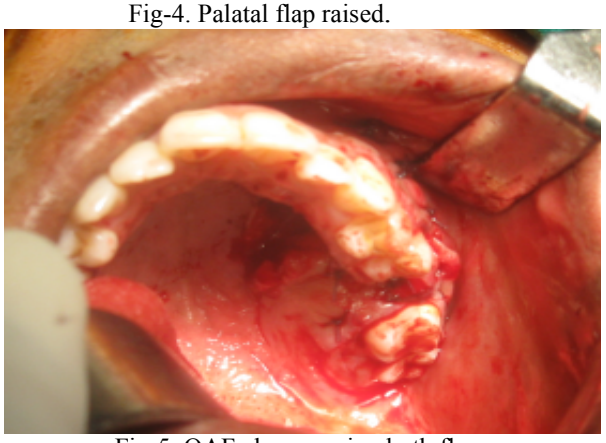

Fig-5. OAF closure using both flaps.

Fig-6. 1 week post post operative.

Fig-7. 1 month post post operative.

Technical Note-

1. In this case a root stump was suspected to be dislodged in the sinus for which a Caldwell luc was planned. The incision was planned so as to enable Caldwell luc along with a buccal advancement flap for the closure. The anterior releasing incision of the buccal flap was extended as a vestibular incision, upto the lateral incisor to aid Caldwell luc procedure. However, no root piece was found inside on thorough exploration.

2. A palatal flap of adequate width was marked and raised, with the incision on mucogingival junction extending posteriorly on to the maxillary tuberosity with a gentle curve. This extension eliminates the need for back-cut on the palatal flap which is given to eliminate the kink at the point of rotation which jeopardizes the palatal blood supply.

3. Both the palatal and buccal flaps were advanced and a tension free closure was achieved the raw surface on palate was packed with gel foam and a few stay sutures were placed. The closure of the fistula is best achieved by the combination of buccal advancement flap with palatal rotation flap as per our experience.

Discussion:

Numerous surgical methods have been described for treatment of oroantral fistulas, although only a few have been accepted in daily practice.In 1936 Rehrmann first published a method for closing an oroantral fistula by a simple and efficient method, the method of a buccal advancement flap.[8] The advantage of the buccal flap method is that it can be used in cases when the alveolar ridge is very low and when it is impossible to apply the method of interseptal alveotomy. In 1972 Killey and Kay reported success with this method in 93% of cases[6]. A disadvantage of the method is that it does not protect the bone base. In 1981 Obradov et al. concluded that with the buccal flap significant lowering of the vestibulum and cheek oedema occurs, while in 1982 Von Wovern recommended the use of buccal flap for edentulous jaws only[10]. However this remains the most common and feasible flap to close small OACs. In 1939 Ashley was first to describe a method of using a palatal flap of full thickness in order to close an oroantral fistula[2]. All palatal flaps are based on the greater palatine artery, and its integrity has been considered an important success factor. A palatal flap contains blood vessel, which enables a satisfactory blood supply, and with its thickness and width, it covers the site of the fistula better and safer. In 1980 Ehrl concluded that this method could also be applied for oroantral fistulas larger than 1 cm diameter. An advantage of this method compared to the method in which a buccal flap is used, is that no lowering of the vestibulum occurs and the flap is firmer and more resistant to trauma and infection than the buccal flap. A disadvantage of this method is the denudation of the palatal surface, pain, and the later appearance of roughness and deepening of this area as a result of secondary epithialization over two to three months. Another disadvantage with the palatal flap is the kink that occurs along the arch of rotation, for which a back-cut is given to eliminate the kink. This back-cut jeopardises the

vascularity resulting in necrosis of the flap. In 1974 Takahashi and Henderson, and in 1980 James, modified the operational method of the palatal flap by the application of a mucosal palatal island flap so that in the anterior of the flap only the mucous membrane was separated from the palate, which was shaped according to the size and shape of the oroantral fistula, and the submucosal layer and periosteum remain on the site of the defect in the palatal surface. In this way the area of the palatal surface is protected, compared with the use of a much thicker palatal flap.

In 1985 Yamazaki et al. described a method of submucosal palatal island flap. All methods preserve the bone surface in such a way so that they do not touch the periosteum. The advantage of these methods is that healing of the defect is enabled without necrosis of the palatal mucosal layer, and the fact that they can apparently also be used in cases where there is a wide oroantral fistula caused by a large cyst or tumour.

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. 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.

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