BUCCAL FAT PAD FLAP IN MANAGEMENT OF OROANTRAL FISTULA

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ABSTRACT

Many options are exercised to affect surgical management of oroantral fistulae. Postoperative wound dehiscence is not uncommon, and the surgical management of such fistulae often becomes increasingly difficult because of a lingering maxillary sinus infection. This was a retrospective study done on 23 patients in which a double layered technique, consisting of buccal fat pad in conjunction with buccal advancement flap was used for surgical closure of oroantral fistulae. Only 3 of the patients had had a failure of the closure. We recommend this technique because of its many advantages and low risk of complications.

Key Words: Minor oral surgery, dental extraction complications, buccal fat pad flap, oroantral fistula.

INTRODUCTION

Oroantral communication is not an infrequent complication of dental extraction in the upper buccal region. Continued pneumatization of the alveolar portion of the maxilla by the maxillary sinus leads to a close proximity of the dental roots of especially the maxillary first molar, but also the maxillary second and third molars, premolars and sometimes the maxillary canine. Extraction leads to the formation of a small communication, with or without the displacement of the dental root into the maxillary sinus. Host of effects follow, the notable of which include regurgitation of oral fluids into the sinus and nasal cavity, foul smelling discharge from the site of the communication, inability to build oral pressure and possibly sinusitis.

While most cases of small oroantral communications can be managed relatively easily by adhering to sinus precautions and possibly prescribing an antir

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**Surgical technique:** After verification of resolution of inflammation in the area, all cases except two were operated under local anaesthesia containing 2% Lignocaine with 1:100,000 adrenaline. Two patients underwent same treatment under general anaesthesia. One of them required a concomitant Caldwell-Luc procedure for enucleation of sinus pathology, and one patient preferred general anaesthesia over local anaesthesia because of personal preference. A four cornered buccal mucoperiosteal flap is raised with releasing incisions to the depth of the vestibule. Raising of the flap gives a clear view of the whole length of the fistula tract within the tooth socket, which is removed till the floor of the maxillary sinus. No attempt is made to remove any more sinus lining from within the sinus confines, and clearance of only the socket walls was performed. Periosteal incision was then given in the depth of the flap, extending into the area opposite the second molar. After incision of the peristeam, fine, mosquito forceps were gently introduced into the buccal space to expose the BFP. This was then gently teased taking care to preserve the thin, delicate fascial envelope surrounding the fat. Fat was automatically transferred to cover the alveolar defect performing a tension-free closure with 910 Polyglactin sutures. The initially raised buccal advancement flap was then opened up to ensure a tension free closure, and formed a second lining over the defect. The procedure was always performed under a prophylactic antibiotic cover, consisting of Co-Amoxiclav, which was then continued for a period of five days postoperatively. Ibuprofen with pseudoephedrine, and cetrizine was also prescribed to these patients. After the first five days, a four day course of Xylometazoline nasal drops was prescribed, followed up with gentle steam inhalation for another week. The patient was followed up weekly for first two weeks, and then fortnightly till six weeks postoperatively.

**RESULTS**

The average age of these patients was 44 years (Range 21 to 62 years). There were 14 males (60.9%) and 9 females (39.1%). The operation was successful in terms of no postoperative residual fistula in 87% (n=20) of patients. Three patients developed a dehiscence of the closed site. One patient had an acute severe exacerbation of maxillary sinusitis. In all patients, there was a remarkable reduction in the depth of the buccal vestibule.

**DISCUSSION**

After its first description by Heister in 1732, Bichat elucidated on the exact character of the flap. Other names in the literature than can be used to refer to the BFP are boule de Bichat or boule graisseuse in French, Wangenfettppfropf or Wangenfettpolster in German, and the sucking pad, sucking cushion, masticatory fat pad, or the buccal pad of fat in English.

As an entity which is considered distinct from subcutaneous cheek fat, the BFP prevents indrawing of the cheeks during sucking in infants, whereas facilitate and enhance intermuscular motion in the adult. BFP has been used in a wide range of clinical scenarios including closure of OAF, reconstruction of post excision defects, mucosal defects, treatment of oral submucous fibrosis, repair of primary cleft palate, temporomandibular reconstruction, sinus floor augmentation and as a graft for vocal cord augmentation.

The management of an established case of oroantral fistula can be challenging, especially in the presence of active sinusitis. Control of acute inflammation is thus mandatory. This was done through the use of prophylactic broad spectrum antibiotics, and medications to ensure patenty of sinus drainage tract. Without adequate reduction in sinus inflammation and establishment of an effective sinus drainage, even the best of fistula repairs would fail.

It is cumbersome to excise fistula with limited visibility in a tunnel, and we find it surgically helpful to first elevate the buccal mucosa flap sometimes in conjunction with a limited palatal sulcular flap to correctly identify the edges of the sinus lining on the socket wall, which can then be cleared easily. The exposure of BFP through periosteal incision brings into view the syssarcosis in a thin fascial envelope. Though we always try to preserve the fascial envelope, it does not always remain possible and in our experience was not seen to adversely affect the vascularity of the flap. However, this makes the handling of fat more tedious, and any more surgical trauma is best avoided by strictly not using the suction, and using only surgical gauze (peanuts) to gently clear bleeding. After the fat is sutured to the palatal mucosa, it is also sutured to the edges of the buccal alveolar mucosa. The fat tends to adapt very well to the edges of the incised epithelium because of its volumetric expansion, and can be approximated adequately by using only simple, interrupted sutures. The buccal advancement flap, however requires mattress sutures, preferably in a vertical pattern to avoid postoperative dehiscence.

The advantages of BFP in affecting closure of oroantral fistula have been cited to be a thoroughly vascularized flap, availability in the immediate proximity, minimal donor site morbidity, rapid mucosalization and the return of the buccal flap to its original anatomical position to avoid obliteration of the buccal vestibule. It has been shown in studies that the BFP does not need to be covered by a skin graft when exposed to heal in the mouth, because of its inherent ability to epithelialize readily within 2 to 3 weeks. It is considered the primary choice for repair of oroantral fistula by some surgeons, whereas others like Samman et al justify its use only in cases where the buccal advancement flap is damaged and can be used as a primary option.

The use of buccal advancement flap only is associated with a high risk of postoperative dehiscence, and our technique of using both flaps together tends to minimize postoperative risks of wound dehiscence. However, a critique of such technique would be the buccal vestibular depth would still be obliterated. There has already been documented success for closure
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Fig 1: Preoperative view of an established case of oroantral fistula in the upper right first molar region

Fig 2: A four cornered buccal mucoperiosteal flap is raised to expose the complete extent of the fistula

Fig 3: Excision of the fistula tract

Fig 4: BFP being transported into the defect site

Fig 5: Closure of OAF with BFP using polyglactin sutures

Fig 6: Double layered closure of the OAF with BFP and buccal advancement flap

Fig 7: 12 days postoperative view of double layered closure of the OAF. Note a slight dehiscence of the buccal advancement flap, and the start of mucosalization in the BFP

Fig 8: Complete healing of the surgical site at 6 weeks
of oroantral communications with BFP only, with a reported rapid mucosalization of the exposed fat in the oral cavity.\(^{19}\)

In our opinion in conditions where the BFP has to advance to a larger distance, it is not possible to advance a buccal mucosal flap to function as an additional lining, but where it is used for closure in the immediate proximity and with the availability of buccal advancement flap, a double layered option can be exercised. We rationalize this double layered technique also because of the fact, that in the setting of an oroantral communication due to a tooth extraction, the defect is small and sinus inflammation is invariably present which cannot be completely overcome, and a more effective closure is warranted. A double layered closure has been reported in cases of residual sinus infection and redo cases.\(^{19}\)

In 3 of our patients, a concomitant Caldwell Luc procedure was performed in conjunction with the surgical closure of the fistula. This is important in cases of sinusitis refractory to conservative measures, including the use of antibiotics, nasal decongestants and anti histamines. Other authors\(^{20}\) have also reported exenteration of sinus lining at the same time at even a small doubt on presence of active sinus disease.

Seven of the 20 patients had had a partial dehiscence of the buccal advancement flap layer, and in all these cases buccal fat pad had started to seal off the fistula by the time the dehiscence was noticed. Exposed BFP in the oral cavity has been clinically and histologically to transform from fat tissue to loose connective tissue by the time the dehiscence was noticed. Exposed BFP provides an adequate barrier to withstand a mild degree of sinus inflammation which is invariably present in the setting of an oroantral fistula.

**CONCLUSION**

Closure of oroantral fistula through a combined use of buccal fat pad and buccal advancement flap is a safe and reliable method, with few complications and provides an adequate barrier to withstand a mild degree of sinus inflammation which is invariably present in the setting of an oroantral fistula.

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