Closure of Oro-Antral Fistula with Pedicled Buccal Fat Pad; a Case Report and Review of Literature

F Yabroudi, A Dannan

Citation

Abstract
Background and Aim: Chronic oro-antral fistula following dental extraction is a common complication. This paper demonstrates the use of pedicled buccal fat pad in the repair of chronic oro-antral fistula. Materials and Methods: A case of a chronic oro-antral fistula of 5-year duration in a 56-year-old male was successfully repaired with pedicled buccal fat pad after several unsuccessful attempts of treatment with other local flaps. A review of relevant literature is also presented. Results: Complete epithelization of the pedicled buccal fat pad was observed 4 weeks post-operatively with no postoperative complications. Conclusion: Pedicled buccal fat pad is a reliable flap for the repair of oro-antral fistula. The easy mobilization of the buccal fat pad, its excellent blood supply, and minimal donor site morbidity make it an ideal flap in such cases. It should also be considered as a reliable back-up procedure in the event of failure of other techniques.

INTRODUCTION
Oro-antral communications may develop as a complication of dental extractions, but may also result from accidental or iatrogenic trauma, neoplasm or infection (1, 2). 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 (1, 3).

Buccal fat pad (BFP) is being increasingly employed in the repair of oro-antral fistula (OAF) and other oral defects worldwide (4-9). This paper reports a case of chronic oro-antral fistula which was treated successfully with the use of a pedicled BFP after several unsuccessful attempts with other local flaps. A brief literature review is presented, and the advantages and possible complications of pedicled BFP are also highlighted.

CASE REPORT
DIAGNOSIS
A 56-year-old male patient was referred to St. Lukas Clinic in Solingen, Germany, for the management of a chronic oro-antral fistula. The patient reported a past history of extracting an upper right second premolar about 5 years ago, with a subsequent oro-antral fistula formation. The patient also reported that an attempt had been made to repair the fistula few months later with a local flap, but without any successful results.

The clinical examination revealed a fistula (0.7 cm × 0.8 cm) at the depth of buccal sulcus in relation to the edentulous space of the missing tooth with air-bubble around the orifice. There was no discharge from the fistula or any signs of acute infection. Patient’s medical history was not conspicuous. A clinical diagnosis of chronic oro-antral fistula was made. Periapical and occipitomental x-ray views of the sinus were taken to exclude any other antral complications.

The radiographs revealed a generalized thickening of right antral mucosa and a defect in the bony floor. A decision was then made to employ the use of pedicled BFP for the repair under local anesthesia. A right pedicled BFP was considered to repair the fistula.

PROCEDURE
The patient was firstly placed on Amoxicillin (500 mg/8hrly) and Metronidazole (200mg/8hrly) three days before the surgery. Excision of the fistulous tract from the sinus to the oral cavity and freshening of the wound edges done after local anesthesia with 2% Lignocaine (with Adrenaline 1:80,000) was achieved.

A right upper vestibular horizontal incision, posterior to the second premolar was made and was then extended to the
anterior margin of the fistula to expose the required BFP (Figure 1).

**Figure 1**
Fig. 1: Oro-antral defect and the line of incision

Careful manipulation and blunt dissection was done to fully mobilize and advance the flap to the recipient site (Figure 2).

**Figure 2**
Fig. 2: Pedicled buccal fat pad (BFP) being advanced to the surgical site after adequate mobilization

The flap was sutured in place with simple interrupted 3/0 black silk sutures (Figures 3a and 3b).

**Figure 3**
Figs. (3a, 3b): Buccal fat pad sutured

The incision was also closed over the bridge segment of the flap with 3/0 black silk non-resorbable sutures.

Patient was instructed against blowing the nose for 2 weeks. Pre-operative antibiotic was continued for the next 7 days. Patient was reviewed at regular one week intervals and sutures were removed 2 weeks after the procedure. At the end of the 4th week, full epithelization of the flap was noticed (Figure 4). No postoperative complications were observed.

**Figure 4**
Fig. 4: Complete epithelization of the BFP after 4 weeks

**DISCUSSION**

The buccal fat pad is an encapsulated, rounded, biconvex specialized fatty tissue which is distinct from subcutaneous fatty tissues. It is located between the buccinator muscle medially, the anterior margin of the masseter muscle and the mandibular ramus and zygomatic arch laterally (6, 9).

Buccal fat pad was considered a surgical nuisance for many years because of its accidental encounter during various operations in the pterygomandibular area such as tumor-, orthognathic-, or trauma-surgeries (8, 9). In 1977, Egyedi in first reported the use of pedicled BFP for closure of post-surgical maxillary defects (10). Since then, BFP has become
a popular option among surgeons worldwide for the
reconstruction of small to medium acquired or congenital
soft tissue and bone defects in the oral cavity (4, 6-9).

Successful closure of OAF with BFP is widely reported in
the literature (2, 4, 11, 12). Stajic (1992) reported the use of
pedicled BFP in the closure of oro-nasal and oro-antral
communications following extractions in 56 patients with
excellent results. Despite postoperative infection in one
patient, and partial necrosis in two patients, pedicled BFP
were reported to be successful (12).

In another report by El-Hakim and El-Fakharany (11), the
use of pedicled BFP was compared with palatal rotation flap
in closure of antral communication and palatal defects
resulting from tumor resection. They found BFP to be
consistently successful, preserving the normal anatomical
architecture of the oral mucosa. No denuded area requiring
secondary granulation was required as in the case of palatal
flaps.

Pedicled BFP is also considered as a reliable back-up
procedure in the event of failure of other techniques (4, 11).
This was also confirmed in our case.

Many researchers also reported good results with the use of
BFP in the closure of oro-antral and oro-nasal
communications (2, 13, 14).

Pedicled BFP has also been employed in the closure of
surgical defects following tumor excision (4), excision of
leukoplakia (15), and submucous fibrosis (16), as well as in
the closure of primary and secondary palatal clefts (5, 17),
and in the coverage of maxillary and mandibular bone grafts
(6, 18). Although no post-operative complications were
observed in our case, reported complications in large series
ranged between 3.1% - 6.9% (4, 9, 18, 19). These included
partial necrosis, infection, excessive scarring, excessive
granulation, and sulcus obliteration.

Pedicled BFP had also been employed in the closure of
defects (7 cm × 4 cm × 3 cm) defects (8). In the current
case, however, the size of the defect was (0.7 cm × 0.8 cm).
Overenthusiastic usage of BFP in covering very large defects
should be avoided.

Complete epithelization of the BFP was observed after 4
weeks of inset in our patient. This seems to be consistent
with previous reported results in the literature (4, 8, 9).

Egyedi (1977) recommended coverage of the exposed BFP
with a skin graft (10). However, our case confirmed other
previous reports in which epithelization of the flap did take
place without additional skin graft covering after 3-4 weeks
postoperatively (2, 8, 9, 14).

Histology of the healed tissue at the site of graft confirms
that epithelization does indeed take place, although the
origin of this epithelium is not clear (4, 9, 20).

CONCLUSION

The advantages of pedicled BFP include ease of harvesting,
simplicity, versatility, low rate of complications, and quick
surgical technique.

The operation, as demonstrated in this report, could have
been also performed with one incision, affecting neither the
appearance nor function of the area. The fact that BFP is
located in the same surgical field as the defects to be covered
and the possibility of its harvesting under local anesthesia
are considered to be additional advantages for such
technique.

Pedicled BFP is a reliable flap for the repair of oro-antral
fistula. The easy mobilization of the BFP and its excellent
blood supply and minimal donor site morbidity make it an
ideal flap. It should also be considered as a reliable back-up
procedure in the event of failure of other techniques.

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Author Information

Feras Yabroudi, D.D.S, Facharzt in Oral Surgery, M.Sc. in Implantology
Department of Oral & Maxillofacial & Plastic Surgery, St. Lukas Clinic

Aous Dannan, D.D.S, M.Sc
Department of Periodontology, Faculty of Dental Medicine, Witten/Herdecke University