e-ISSN 3050-9432
Journal of Dental Health and Oral Research

ATHENAEUM SCIENTIFIC PUBLISHERS

Case Report

Reconstruction of Oro Antral Fistula with Pedicelled Buccal Fat Pad: Problems Faced and Challenges

Himanshu Thukral[1*], Vishal Gupta[2], Shubhankar Chaudhuri[3], Manish[3], Gauri Arora[4], Rashi Thukral[5]

[1]Oral and Maxillofacial Surgery, MDC Secunderabad, India
[2]Oral and Maxillofacial Surgery, Army Dental Centre (R&R), Delhi, India
[3]Resident (OMFS), Army Dental Centre (R&R), Delhi, India
[4]Conservative and Endodontics, INHS Kalyani, Vizag, india
[5]Prosthodontics, ECHS, Sainikpuri, Secunderabad, India

***Correspondence author:** Himanshu Thukral, MDS (OMFS), Oral and Maxillofacial Surgery, MDC Secunderabad, India; E-mail: him1308@gmail.com

Citation: Thukral H, et al. Reconstruction of Oro Antral Fistula with Pedicelled Buccal Fat Pad: Problems Faced and Challenges. J Dental Health Oral Res. 2026;7(2):1-5.

https://doi.org/10.46889/JDHOR.2026.7202

Received Date: 09-04-2026

Accepted Date: 29-04-2026

Published Date: 06-05-2026

Abstract

Oroantral Fistula (OAF) is an abnormal connection between the oral cavity and the maxillary sinus, commonly occurring after the extraction of maxillary premolars and molars. If left untreated, it can lead to complications such as sinusitis. This article presents an experience of 18 cases of OAF closure using a pedicled Buccal Fat Pad (BFP) flap, highlighting the challenges and key considerations involved in the procedure. While small defects (<2 mm) may heal spontaneously, larger defects require surgical intervention. Persistent fistulas often necessitate closure using various techniques, with the BFP flap being the preferred approach due to its simplicity and high success rate. The use of a pedicled BFP flap in our 18 cases demonstrated effective closure of the OAF, ensuring proper healing and preventing further complications. The BFP flap remains a reliable and effective technique for OAF closure, offering favourable outcomes with minimal complications. The experience underscores the importance of timely surgical intervention in managing oroantral fistulas.

Keywords: Oro Antral Communication; Oro Antral Fistula Closure; Buccal Fat Pad; Buccal Flap

Introduction

Oroantral Communications (OAC) are common complications of dental procedures, particularly those involving the maxillary posterior teeth. Oroantral Fistula (OAF) is a pathological condition characterized by permanent communication between the oral and antral cavities lined with epithelial tissue. Common etiologies include the extraction of maxillary teeth, removal of cysts or tumors, and trauma [1].

Defects smaller than 2 mm often close spontaneously, but larger defects (>3 mm) or those associated with maxillary or periodontal inflammation typically require surgical intervention due to the risk of persistent sinus infection [1,2]. Several techniques have been utilized for OAC closure, such as mucoperiosteal flap techniques (vestibular, palatine, lingual, or combined), bone grafts, or Buccal Fat Pad (BFP) grafts [3-5].

First described by Egyedi in 1977 as a pedicled graft, the BFP has since gained popularity for its high vascularity, ease of mobilization, and ability to epithelialize rapidly [6,7]. Tideman, et al., have shown that BFP need not be covered by a skin graft when brought into the mouth because it epithelializes readily within 2-3 weeks [8]. These reports confirmed that using the BFP as an unlined pedicled graft to close maxillary defects is possible. This paper presents an experience of 18 cases done under local anesthesia highlighting the challenges encountered during the closure of an OAF using a pedicled BFP flap.

Case Presentation

A 31-year-old male presented with complaints of fluid discharge from the nose while drinking, gargling, rinsing, and persistent non-healing of an orifice in the left maxillary region for three months. The patient denied pain, sinus heaviness, smoking history, or systemic illness. Dental history revealed extraction of the left maxillary first molar six months prior.

Clinical Findings

Clinical examination revealed a small, round, 5 mm diameter opening in the maxillary left first molar region, communicating with the maxillary sinus. There was no sign of pus or systemic inflammation (Fig. 1). Diagnostic tests, including the cotton wool test, mouth mirror fog test, and Valsalva maneuver, confirmed the presence of OAF (video attached). Radiographic examination (PNS view) indicated a hazy left maxillary sinus without any root remnants.

Operative Procedure

The patient was planned to be treated with excision of the sinus tract with reconstruction with BFP and buccal advancement flap under local anesthesia. The sinus tract was identified (Fig. 1) and excised (Fig. 1). A trapezoidal full-thickness buccal mucoperiosteal flap was raised, and a 1 cm horizontal incision was made posterior to the zygomatic buttress to expose and mobilise the BFP. The incision within the periosteum and the buccinator muscle to provide access to the BFP increased the mobility of the flap. An artery forceps was introduced through the periosteal incision, aiming cranially in the region of the first molar tooth. The clip was opened and withdrawn to create a submucosal tunnel until the BFP appeared (Fig. 1).

The BFP was carefully teased into the oral cavity until sufficient was obtained to obturate the defect (Fig. 2). Care was taken to clasp the buccal fat pad only at the distal aspect to preserve the blood supply of the fat pad. The BFP was secured over the defect with 4/0 Vicryl sutures with buccal advancement flap and the knot on the palatal aspect (Fig. 2). The incision was also closed over the bridge segment of the flap with sutures. Postoperative instructions included avoiding negative pressure activities like nose blowing, using a straw, etc., for two weeks, complete rest at the surgical site, avoiding all irritating smells, and adhering to a soft diet for one week. The patient also received a five-day course of antibiotics (amoxicillin-clavulanic acid), nasal decongestants, and analgesics [3]. The patient was monitored for one month at regular intervals to evaluate for any postoperative complications. Complete epithelialization was observed without complications such as wound dehiscence or infection.

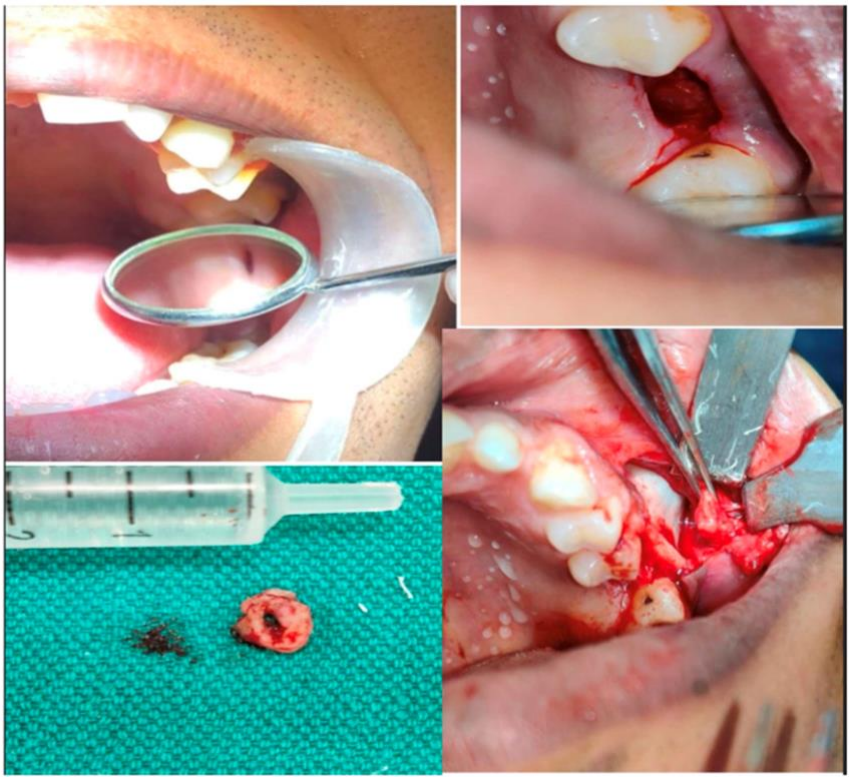

Figure 1: Pre-op clinical examination with operative site with identification of OAF and existing OAF tract.

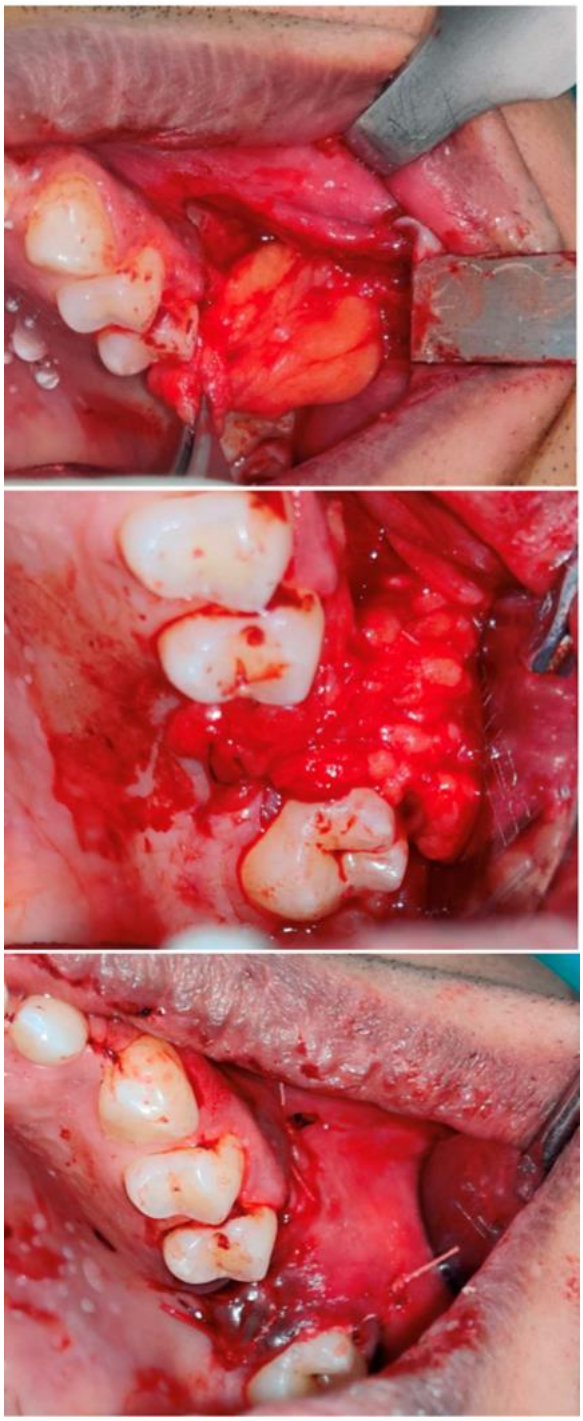

Figure 2: Teasing out of submucosal BFP and buccal flap over BFP (sandwich technique).

Discussion

Closure of oroantral defects requires a technique that ensures reliable sealing of the communication while preserving vestibular anatomy and promoting rapid healing. A double-layered ("sandwich") approach utilizing the buccal fat pad as an inner vascularized layer covered by a buccal advancement flap provides enhanced stability and improved success rates [2]. The rich vascularity of the buccal fat pad facilitates rapid epithelialization and reduces the risk of postoperative dehiscence or infection, while the overlying mucoperiosteal flap offers additional mechanical protection and tension-free closure. This technique is particularly advantageous in medium to large defects where single-layer closure may be insufficient. In contrast, conventional buccal advancement flaps alone may lead to a reduction in vestibular depth, compromising future prosthetic rehabilitation, and are associated with higher recurrence in larger defects due to limited tissue thickness and vascular support [4]. Palatal rotational flaps, although well vascularized, may result in donor site morbidity, including pain, delayed healing, and palatal denudation.

Therefore, the sandwich technique combining buccal fat pad and buccal advancement flap represents a predictable and biologically favorable option for the management of oroantral communications and fistula [5]. The procedure involved sandwiching a pedicled buccal fat pad graft with a buccal advancement flap at the surgical site. The mobilization of the BFP required careful dissection to avoid compromising its vascular supply. Non-tooth forceps were used to minimize tissue damage and ensure atraumatic handling. In some of our cases we had to reduce the height of the buccal cortical plate to easily mobilize the pedicled BFP. Whenever the defect site was more anteriorly positioned, the posterior release incision of the buccal advancement flap was more obliquely placed for tension free closure of the flap. Postoperatively, the exposed fat tissue was successfully epithelialized, leading to complete regeneration of the treated area.

Conclusion

The pedicled BFP remains the gold standard for closing OAFs near the maxillary sinus. Its rich vascularity and ease of mobilization make it an ideal choice for defect closure. However, surgical precision is imperative to preserve the vascular supply and ensure successful outcomes. Our cases underscore the efficacy of the BFP technique and provides insights into overcoming procedural challenges.

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding Statement

This research did not receive any specific grant from funding agencies in the public, commercial or non-profit sectors.

Acknowledgement

None.

Data Availability Statement

Not applicable.

Ethical Statement

The project did not meet the definition of human subject research under the purview of the IRB according to federal regulations and therefore, was exempt.

Informed Consent Statement

Informed consent was taken for this study.

Authors' Contributions

All authors contributed equally to this paper.

References

1. Krishanappa SKK, Eachempati P, Kumbargere Nagraj S, Shetty NY, Moe S, Aggarwal H, et al. Interventions for treating oro-antral communications and fistulae due to dental procedures. Cochrane Database Syst Rev. 2018;8(8):CD011784.
2. Manuel S, Kumar S, Nair PR. The versatility in the use of buccal fat pad in the closure of oro-antral fistulas. J Maxillofac Oral Surg. 2015;14(2):374-7.
3. Khandelwal P, Hajira N. Management of oro-antral communication and fistula: various surgical options. World J Plast Surg. 2017;6(1):3-8.
4. Killey HC, Kay LW. An analysis of 250 cases of oro-antral fistula treated by the buccal flap operation. Oral Surg Oral Med Oral Pathol. 1967;24(6):726-39.
5. Candamourty R, Jain MK, Sankar K, Babu MR. Double-layered closure of oroantral fistula using buccal fat pad and buccal advancement flap. J Nat Sci Biol Med. 2012;3(2):203-5.
6. Egyedi P. Utilization of the buccal fat pad for closure of oro-antral and/or oro-nasal communications. J Maxillofac Surg. 1977;5:241-4.
7. Abdel-Fatah R, Elkashty A, El-Sharkawy H. The use of free buccal fat pad graft as a viable therapeutic modality in localized

gingival recession: a randomized controlled clinical trial. BMC Oral Health. 2025;25(1):780.
8. Tideman H, Bosanquet A, Scott J. Use of the buccal fat pad as a pedicled graft. J Oral Maxillofac Surg. 1986;44:435440.
9. Jain MK, Ramesh C, Sankar K. Pedicled buccal fat pad in the management of oroantral fistula: A clinical study of 15 cases. Int J Oral Maxillofac Surg. 2012;41:1025.
10. Nezafati S, Vafaii A, Ghojazadeh M. Comparison of pedicled buccal fat pad flap with buccal flap for closure of oro-antral communication. Int J Oral Maxillofac Surg. 2012;41:624-8.