

Case Report**Closure of persistent oroantral fistula: Utilizing buccal fat pad, sticky bone, and buccal advancement flap in a three-layered approach – Case report****Juturu Uday^{1*}, Denis Jacob Kurien¹, Deepthi Shetty¹, Venkatesh Anehosur¹**¹Shri Dharmasthala Manjunatheshwara University, Dharwad, Karnataka, India**ARTICLE INFO***Article history:*

Received 14-09-2024

Accepted 28-10-2024

Available online 16-11-2024

Keywords:

Oroantral communication

Buccal Fat Pad

Platelet Rich Fibrin

ABSTRACT

Oroantral communication (OAC) is a pathological connection between the oral cavity and the maxillary sinus, commonly caused by various factors such as tooth extractions and pathology. Various techniques have been employed to address oroantral fistulae (OAF), predominantly focusing on soft tissue closure and neglecting the bony defect, which is crucial for prosthetic rehabilitation. This case report highlights a novel three-layered closure technique utilizing buccal fat pad (BFP), Guided Tissue Regeneration (GTR) membrane, and a sticky bone graft composed of autogenous and xenograft with i-Platelet Rich Fibrin (PRF), combined with buccal advancement flap and collagen membrane for OAF reconstruction. This innovative approach offers promising outcomes for OAF closure, enhancing patient outcomes and minimizing postoperative complications.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial 4.0 International](https://creativecommons.org/licenses/by-nc/4.0/), which allows others to remix, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com**1. Background**

An oroantral perforation is an unusual communication between the oral cavity and maxillary sinus. Extraction of maxillary premolars and molars, cysts, tumours, osteomyelitis are the common aetiologies of Oroantral communication (OAC).¹

own consequences for prosthetic rehabilitation.

In this present case, we showcase the successful application of three layered closure by using a) BFP b) Guided Tissue Regeneration (GTR) membrane and C) sticky bone graft made of (Autogenous and Xeno graft with i-Platelet Rich Fibrin (PRF)) coupled with closure utilizing buccal advancement flap and collagen membrane for OAF reconstruction.

1.1. Procedure

54 year old male patient, presented with pain and nasal passage of fluids during mastication, following the extraction of his upper right back tooth six months prior. Clinical examination revealed a fistulous opening in the right maxillary first molar region measuring approx. 1-1.5cm with an evident bony defect along the maxillary molar region (Figure 1).

The Procedure was performed under local anaesthesia (2% lignocaine with 1:80,000 adrenaline) involving

Oroantral fistula size	Treatment plan
Measuring < 3mm	Close spontaneously
Measuring > 5mm	Surgical intervention

Several techniques have been reported to close the OAF which include buccal advancement flaps, palatal rotation, tongue flaps and buccal fat pad (BFP).^{2,3} Of all these techniques only soft tissue closure is achieved while completely neglecting the bony defect. However, it's important to note that the underlying bony defect carries its

* Corresponding author.

E-mail address: bablu.uday528@gmail.com (J. Uday).



Figure 1: Oroantral fistula in the right maxillary molar region

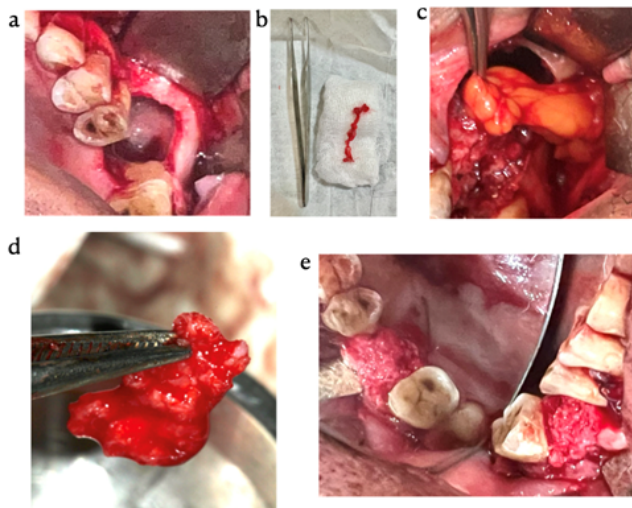


Figure 2: a. Excision of fistula b. Fistula track c. Harvesting buccal fat pad in continuity d. Sticky bone preparation e. Adaptation of sticky bone over the defect

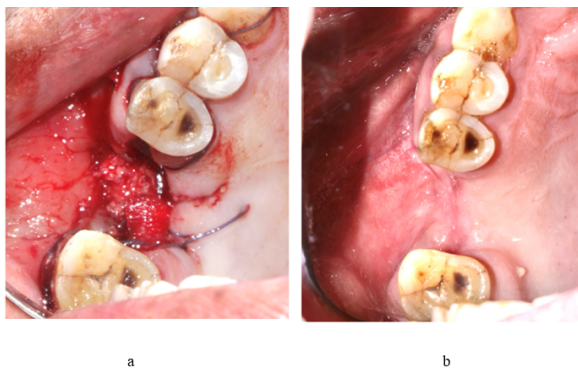


Figure 3: a. Closure using buccal advancement flap and collagen plug. b. 6 Months follow-up

excision of fistulous tract in a circumscribed manner (Figure 2 a). Blunt dissection was carried out to harvest buccal fat pad which was sutured over the defect (Figure 2 c). Followed by, GTR membrane was placed and sutured to serve as a barrier on the BFP.

Preparation of sticky bone: Autogenous bone graft was harvested from the external oblique ridge region and Xenograft granules were mixed in 1:1 ratio. 20ml of patient venous blood was drawn and then centrifuged for 3 minutes at 700 rpm to obtain iPRF. This was mixed with bone graft and left for 10 minutes for agglutination. The two components were firmly united in a compound with gelatinous consistency to form a sticky bone (Figure 2 d).

This sticky bone, was moulded and adapted over the GTR membrane to cover the bony defect (Figure 2 e.). Subsequently, collagen plug and buccal advancement flap was sutured to prevent the graft exposure in the oral cavity (Figure 3 a). This way, 3-layered closure was performed to reconstruct the bony as well as soft tissue defect.

2. Discussion

Oroantral fistula closure requires consideration of various factors, including defect size, duration since development, infection and presence of foreign bodies. The fundamental concept is to achieve the total closure and establish a seal between the maxillary sinus and the oral cavity for sufficient nasal outflow in order to keep out from infection. Traditional flap closure techniques may result in vestibular depth loss, requirement for a second operation, wound dehiscence.⁴

Our idea of three-layer closure is based on the studies of Er et al. and Weinstock et al.^{5,6} Er et al. observed wound dehiscence in 20% of cases after two-layered closure. BFP has emerged as a reliable option for closure of oral defects due to its reliability, ease of harvesting, excellent blood supply and can cover upto 10cm X cm and 6mm thickness.⁷ Tideman et al. have shown the BFP alone can self-epithelialize within 3-4 weeks from its inset.^{8,9} Weinstock et al. demonstrated additional benefit of the buccal flap covering the BFP over the graft. GTR membrane which was secured on the BFP acts as a physical barrier between BFP and the bone graft which helps in mucosalisation of BFP.

The application of sticky bone over the GTR membrane facilitates new bone formation and enhances wound healing. Its mouldable nature allows for easy shaping, handling, and prevents dispersion. Furthermore, the presence of enriched growth factors in i-Platelet Rich Fibrin (PRF) contributes to a positive effect on both new bone formation and soft tissue healing.¹⁰ Additionally, securing a collagen membrane over the sticky bone prevents graft dislodgment and provides supplementary support.

3. Conclusion

Effective OAF closure is vital to prevent maxillary sinus-related complications, especially concerning future implant rehabilitation. Combining soft tissue and hard tissue techniques, such as BFP and bone grafting, with buccal advancement flap support, offers a comprehensive approach to OAF closure. The three layered approach described in this case report demonstrates excellent clinical outcomes with minimal postoperative discomfort and preserved vestibular architecture. While further research is warranted, this technique presents a valuable addition to the existing repertoire of OAF closure methods.

4. Source of Funding

None.

5. Conflict of Interest

None.

References

1. Khandelwal P, Hajira N. Management of oro-antral communication and fistula: various surgical options. *World J Plast Surg.* 2017;6(1):3–8.
2. Lazow SK. Surgical management of the oroantral fistula: flap procedures. *Opeative Tech Otolaryngol Head Neck Surg.* 1999;10(2):148–52.
3. Dym H, Wolf JC. Oroantral communication. *Oral Maxillofac Surg Clin North Am.* 2012;24(2):239–47.
4. Balakrishnan VE. Prakash: Buccal & palatal advancement flap in post extraction. *Eur J Mol Clin Med.* 2020;7:1585–93.
5. Er N, Tuncer HY, Karaca Ç, Çopuroğlu S. Treatment of oroantral fistulas using bony press-fit technique. *J Oral Maxillofac Surg.* 2013;71(4):659–66.
6. Weinstock RJ, Nikoyan L, Dym H. Composite three- layer closure of oral antral communication with 10 months follow-up-a case study. *J Oral Maxillofac Surg.* 2014;72(2):266–7.
7. Tostevinandh PMJ. Thebuccalpadoffat:areview. *Clin Anat.* 1995;8(6):403–6.
8. Egyedi P. Utilization of the buccal fat pad for closure of oro- antral and/or oro-nasal communications. *J MaxillofacSurg.* 1977;5(4):241–4.
9. Tideman H, Bosanquet A, Scott J. Use of the buccal fat pad as a pedicled graft. *J Oral Maxillofac Surg.* 1986;44(6):435–40.
10. Kökdere NN, Baykul T, Findik Y. The use of platelet-rich fibrin (PRF) and PRF-mixed particulated autogenous bone graft in the treatment of bone defects: An experimental and histomorphometrical study. *Dent Res J.* 2015;12(5):418–42.

Author's biography

Juturu Uday, Assistant Professor  <https://orcid.org/0000-0003-4690-8949>

Denis Jacob Kurien, Assistant Professor

Deepthi Shetty, Associate Professor

Venkatesh Anehosur, Professor

Cite this article: Uday J, Kurien DJ, Shetty D, Anehosur V. Closure of persistent oroantral fistula: Utilizing buccal fat pad, sticky bone, and buccal advancement flap in a three-layered approach – Case report. *J Orofac Health Sci* 2024;11(4):210–212.