Prosthodontic Management of Oroantral Fistula: A Case Report

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ABSTRACT

An oroantral communication is an un-natural communication between the oral cavity and maxillary sinus. Most common cause of oroantral communication is extraction of upper molars and premolar teeth. Oroantral fistula develops when oroantral communication fails to heal spontaneously and remains patent and gets epithelized. The ideal treatment is immediate surgical repair using various surgical techniques. This article presents prosthodontic management of oroantral fistula using obturator after failure of surgical repair.

Key words: Obturator; Oroantral fistula; Prosthodontic management

INTRODUCTION

An Oroantral fistula is an epithelialized, pathological, abnormal communication between the oral cavity and the maxillary sinus.[1]The process of epithelization begins after 48–72 hours of Oroantral Communication (OAC). OAC may develop due to various causes such as extraction of upper posterior teeth, due to infection, as a sequelae of radiation therapy, extensive trauma to face, tuberosity fracture and removal of maxillary cysts, or tumors, sinus lift and improper implant placement.[1-3] The most common cause of an OAC is the extraction of maxillary posterior teeth usually first or second molar, due to close proximity of root apices to the floor of sinus.[1] A fistula must be quickly closed since its persistence increases the possible inflammation of the sinus through contamination of the oral cavity and improper sinus drainage.[4] In chronic cases, the general state of the patient is slightly affected but a multitude of signs and symptoms arise, such as pain, alteration in voice resonance, inability to blow out the cheeks, air shooting from the fistula into the mouth when blowing the nose, and escape of liquids from the mouth through the nose and nasal fluid regurgitation.[5] The treatment of OACs varies depending on the size of the opening access. Most of the minor communications, having a diameter of 1-2mm, heal spontaneously by blood clot development and secondary healing, in the absence of infection. When chronic oroantral fistula defects are wider than 5 mm and persist for more than 3 weeks, a secondary surgical intervention is required to avoid further complications.[1,6,7] The surgical procedures most commonly used for closure of OAC are Buccal advancement flap, Palatal pedicled flap, Combination of buccal and palatal flaps, nasolabial flaps and closure using buccal pad of fat.[8] When the primary closure using surgery fails, or surgery is to be deferred, prosthodontic closure of the communication with obturator is an option. An obturator

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prosthesis is used to restore masticatory function and improve speech, deglutition and cosmetics for patients with maxillary defects. It is important to avoid contamination by food and saliva that may cause bacterial infection, impaired healing and chronic sinusitis and also to provide symptomatic relief for patient.[4,9] This case report presents a case of 68 years male with failure of primary closure who was managed prosthodontically using obturator followed by definitive complete dentures.

CASE REPORT

A 68 years old male was referred from Department of Oral Surgery for prosthetic rehabilitation of the oral defect. He complained of regurgitation of fluid from nose, feeding difficulty and nasal tone of voice for 2 weeks. On intraoral examination, oroantral fistula was present on upper left vestibule of completely edentulous maxilla extending from 1st molar region to 3rd molar region, measuring about 25 mm mesiodistally and 5mm buccolingually (Figure 1).

His dental history revealed extraction of maxillary left second molar 1 month back followed by oro-antral communication. Patient had undergone primary closure of communication immediately with buccal advancement flap. On follow up after 1 week, patient presented with sutures broken and larger defect. The patient was chronic smoker, non-complaint to follow the instructions given post-surgically and also was unable to quit the habit in post-surgical phase leading to failure of primary closure. On the day of visit, patient was explained about the condition and surgical repair of fistula was explained but patient denied for surgery and left without any treatment.

After 2 weeks, he again presented to Department of Oral Surgery with complains like difficulty in feeding and nasal tone in the speech and was showing indifferent behaviour constantly demanding of any other solution than surgery. Then the patient was eventually sent to Department of Prosthodontics for the prosthetic closure of the defect. The patient was re-evaluated clinically. Knowing the reluctance of patient for surgical closure, the initial treatment plan proposed was temporary closure of the defect using Obturator followed by surgical closure of fistula using local flap as a definitive treatment.

Primary impression was made after packing the defect using gauze piece with irreversible hydrocolloid (Alginate) (Figure2) and cast was poured using dental stone (Figure 3). Wax blockout was done in the undercut areas of the defect. An obturator was made using self cure acrylic resin (Figure 4). Insertion of obturator was done (Figure 5) and post insertion instructions were given. Patient was recalled in 24 hours and after a week.

On follow up, patient was having no nasal regurgitation and improved nasal tone following the insertion of obturator. The patient was again counseled for surgical closure of the fistula owing to its chances for infection in long run. But the patient refused for the surgical procedure. Since the patient was completely edentulous he was also functionally and esthetically concerned, hence we planned for conventional complete dentures and same were fabricated on upper and lower arch within a month (Figure 6).

Denture insertion was done (Figure 7) and post insertion instructions were given. Patient was kept on regular follow-up appointments.

Figure 1: *Oro-antral fistula on left edentulous maxilla*

Figure 2: *Primary impression with alginate*

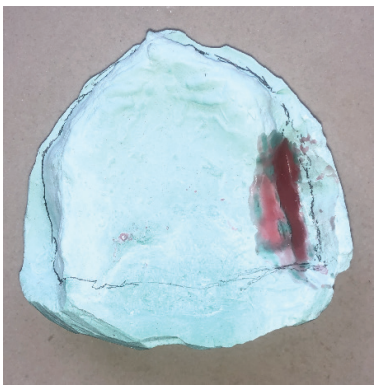

Figure 3: *Cast poured with dental stone*

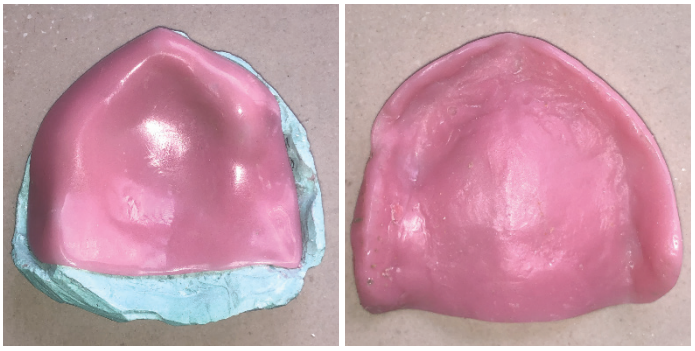

Figure 4: *Obturator made with self cure acrylic resin*

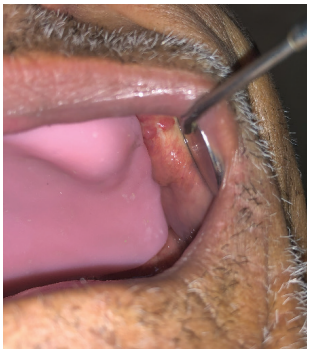

Figure 5: *Defect closed with obturator*

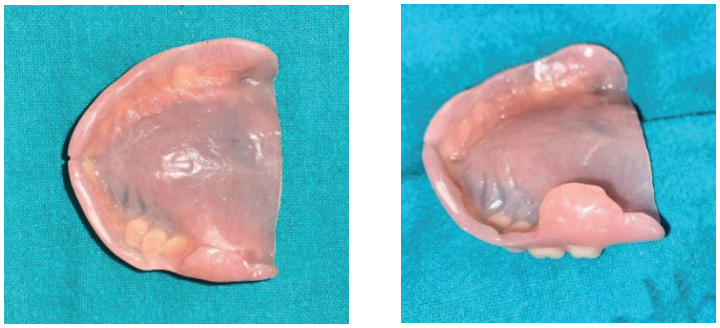

Figure 6: *Maxillary Complete Denture*

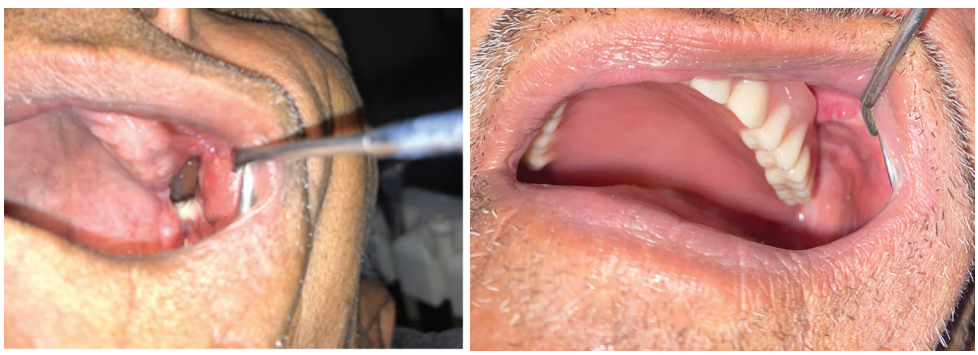

Figure 7: *Pre-insertion and Post-insertion of Complete denture*

DISCUSSION

Oro-antral Communication (OAC) is an abnormal pathway between the oral cavity and maxillary sinus and when it fails to close spontaneously, it remains patent and gets epithelialized within 48-72 hours leading to development of oro-antral fistula (OAF).[10] According to the literature any communication between the maxillary sinus and the oral cavity lasting for more than three weeks should be surgically closed in order to avoid further medical problems. The primary closure of an oroantral fistula in 48 hours has a success rate of 90-95% and such rate fails to 67% when closing is secondary.[4,11] Treatment modalities to repair the oroantral fistula include local or free soft tissue laps, with or without autogenous grafts or alloplastic implants, or by prosthodontics management.[4,9] Some commonly used soft tissue grafts include palatal rotational flaps, palatal transposition flaps, buccal advancement flaps, combination of buccal and palatal flaps and buccal pad of fat[7,8] Successful closure of the oro-antral fistula should be preceded by the complete elimination of any sinus pathology, the fistulous tract, sinus infection, degenerated mucosa and diseased bone.[1]Patients must have attention in the postoperative care since the complete healing depends on patient's care. Parvini et al. reported the need for oral hygiene, soft diet and, mainly, avoid sneezing or nose blowing with closed mouth and smoking.[5]The most common reasons causes of failure after surgical closure of OAF include: inadequate preoperative irrigation and antibiotic therapy for any existing sinus infection or disease, excessive tension on the flap impairing blood supply for healing, inadequate excision of epithelialized margins and inadequate trimming of bony margins prior to closure or post-operative instructions not given properly or negligence on part of patient to follow the instructions.[13]

Patients with oroantral defects often complain about swallowing difficulties, fluids regurgitation through the nasal cavity, hypernasality of voice and speech difficulties, impacting the patient's quality of life [14] which were also seen in the above case. The choice of technique depends on the size, the localization, and seniority of the lesion, but also on the surgeon's experience.[8] Surgical closure is the preferred choice of treatment in cases of OAF, but it may not be possible in some cases due to various factors including systemic conditions of the patient, patient compliance, in patients whom GA is contraindicated.[15] An obturator prosthesis is used to restore masticatory function and improve speech, deglutition and cosmetics for patients in such cases.[12] In our case, the patient had poor compliance and did not follow the post operative instructions which resulted in failure of primary closure. Patient was chronic smoker and was unwilling to stop the habit. Also, patient was unwilling for second surgery. So, we opted for prosthodontic rehabilitation of the OAF using obturator.

CONCLUSION

Oral-antral fistulas are frequent complications in dentistry. Primary closure is the first choice of treatment for management of OAF. But in selected cases, we might have to do prosthodontic management due to various reasons, one of them being the patient's preference. In such cases, obturator helps in improving the quality of life of patient by relieving the symptoms of the patient and also prevents the complications that might arise due to infection of the sinus.

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. Yilmaz T, Suslu AE, Gursel B. Treatment of oroantral fistula: experience with 27 cases. Am J. Otolaryngol. 2003;24(4):221-3.

3. Cheng GL, Tatakis DN. Collagen strip technique: a novel approach for ridge preservation and concomitant oroantral communication management after implant explantation. Clin Adv Periodontics. 2020;10(3):135-9.
4. Borgonovo AE, Berardinelli FV, Favale M, Maiorana C. Surgical options in oroantral fistula treatment. Open Dent J 2012;6:948.
5. Parvini P, Obreja K, Begic A, Schwarz F, Becker J, Sader R, Salti L. Decision-making in closure of oroantral communication and fistula. Int J. Implant Dent. 2019;5(13):1-11.
6. Liversedge RL, Wong K. Use of the buccal fat pad in maxillary and sinus grafting of the severely atrophic maxilla preparatory to implant reconstruction of the partially or completely edentulous patient: technical note. Int J Oral Maxillofac Implants 2002; 17: 424-8.
7. Shahrour R, Shah P, Withana T, Jung J, Syed AZ. Oroantral communication, its causes, complications, treatments and radiographic features: A pictorial review. Imaging Sci Dent. 2021;51(3):307-311.
8. Krishanappa SK, Prashanti E, Sumanth KN, Naresh S, Moe S, Aggarwal H, Mathew RJ. Interventions for treating oro-antral communications and fistulae due to dental procedures. Cochrane Database of Sys Rev. 2016(5).1-24.
9. Sanas S, Adaki R, Shigli K, Raikar S, Jain P. Prosthodontic management of oroantral fistula: a case report. Int J Sci Stud. 2017 May 1;5(2):256-8.
10. Chekaraou SM, Benjelloun L, Harti KE. Management of oro-antral fistula: Two case reports and review. Ann Med Surg (Lond). 2021;69:102817.
11. Phull S, Phull G, Chugh D, Sheokand P. Treatment of recurrent oro-antralfistula in left maxillary posterior region: A secondary repair procedure with buccal fat pad advancement technique. Asian Pac J Health Sci 2014;1:47-9.
12. Krishna CV, Babu JK, Fathima T, Reddy GV. Fabrication of a hollow bulb prosthesis for the rehabilitation of an acquired total maxillectomy defect. BMJ Case Reports. 2014; 26:1-4.
13. Haanaes HR, Pedersen KN. Treatment of oroantral communication. Int J Oral Surg. 1974;3(3):124-132
14. Brandão, T.B.; Vechiato Filho, A.J.; de Souza Batista, V.E.; de Oliveira, M.C.Q.; Santos-Silva, A.R. Obturator prostheses versus free tissue transfers: A systematic review of the optimal approach to improving the quality of life for patients with maxillary defects. *J. Prosthet. Dent.* 2016, *115*, 247–53.
15. Chen J, Yang R, Shi B, Xu Y, Huang H. Obturator Manufacturing for Oronasal Fistula after Cleft Palate Repair: A Review from Handicraft to the Application of Digital Techniques. J Funct Biomater. 2022;13(4):251.