

Oroantral Fistula -A General Dental Practitioner's Dilemma

A A. SHAH

Department of Oral & Maxillofacial Surgery de'Montmorency College Of Dentistry, Lahore
Correspondence to Dr. Adnan Ali Shah, Associate Professor

Closure of oroantral fistula possess difficulty to both general dental practitioner and oral & maxillofacial surgeon. Different options have been proposed, each having its own merits and demerits. Choice of a procedure depends upon the expertise, facilities available, local and general factors of the patient. Successful closure equally depends on complete elimination of sinus infection ,excision of fistulous tract and proper post operative care.

Key words: Oroantral fistula, practitioner's dilemma, buccal fat pad, buccal advancement flap

Oroantral fistula is defined as an epithelized abnormal connection between oral and antral cavities. The creation of an oroantral communication results as a complication of trauma, surgery, irradiation, cyst or neoplasms and most commonly follows an extraction of a maxillary premolar or molar tooth closely related to the antral floor. Oroantral communication ,if not anticipated before the extraction and not managed afterwards invariably leads to the creation of oroantral fistula .This paper would discuss various aspects in the prevention of oroantral fistula and its management.

Materials and methods

All of the patients were treated at the Department of Oral & Maxillofacial Surgery ,de'Montmorency College Of Dentistry ,Shaukat Khanum Cancer Hospital and Smile Center Lahore. The data regarding age, gender, site ,aetiology and procedure are as follows :

Total number of cases	57
Age range 17-70 years	
Male	32
Female	25
<i>Site of fistula</i>	
a) Around 1 st Maxillary molar	35
b) Around 2 nd Maxillary molar	6
c) Around 3 rd Maxillary molar	8
d) Involving lateral & mid palatal region	8

Aetiology of fistula

a) Extraction of teeth	50
b) Trauma	3
c) Infection	3
d) Neoplasms	1

Means of closure

a) Buccal fat pad	29
b) Buccal advancement flap	5
c) Palatal rotation flap	5
d) Palatal island flap	3
e) Bridge flap/Transverse Muscle flap	3
f) Temporalis muscle Transantral flap	1
g) Double layered flap Closure using buccal fat pad & buccal advancement flap	1

Results

Out of 57 oroantral fistula cases performed,2 cases completely failed, one each of buccal advancement flap and palatal rotation flap.In addition, 2 cases of oroantral fistula closed by buccal fat pad had transient residual fistula which spontaneously healed over period of weeks.Overall success achieved was 96.5 % .There was noticeable reduction in sulcus depth where buccal advancement flap was used which recovered over a period of 6 months.Some depression was also noticed over temporal region where temporalis muscle was transposed.

Discussion

The closure of oroantral fistula is one of the challenging problems for the general dental practitioner and oral and maxillofacial surgeons. There are various techniques from simple to more complex procedures to close the defect. The option is influenced by the size, location of the defect and amount and condition of the soft tissues available for repair. However, for successful closure of the fistula complete elimination of sinus pathology and the fistulous tract is essential¹. The incidence of oroantral communication after tooth extraction is probably high but as the number of residual fistula is small, the ability of alveolar tissues to heal spontaneously is marked. However ,the following steps would assist the healing of oroantral penetrations and these may be kept in mind while attempting an extraction of maxillary pre molars and molars liable to cause a communication .This will prevent an oroantral fistula being established².

- ❖ Socket edge reduction and simple packing.
- ❖ Use of supportive pack or protective dental plate.
- ❖ Restriction on nose blowing and mouth washing.

Options available for closure of oroantral fistula are quite a few. Buccal advancement mucoperiosteal flap was first described by Wetty⁴ and Rehrmann². This is probably the most common and oldest procedure performed. Having a broad base, it ensures adequate blood supply to the flap. Its mobility is improved by making parallel incisions in the periosteum at the base of flap .This technique is simple and well tolerated by the patients .Buccal sulcus obliteration is a problem and it has been suggested that permanent reduction in 45% of cases⁵,

while others claim that the sulcus regains its shape within 4-8 weeks⁶. We in our study have also noticed that the vestibule regains its form in the due course. Overall success has been reported to be 60% by some⁷, and 97.2% by others⁸. Our success has been 93.3%.

Palatal mucoperiosteum flap: It is used when the fistula is more towards the palatal side or the other commonly used flaps are failed. This flap is based on greater palatine artery and was proposed by Dunning⁹ and Ashley¹⁰. Palatal flap is thick and inelastic so that it must be made longer than would appear necessary. Rotation posterior to premolars is not recommended as it cannot be safely performed without twisting the palatine vessels and thus compromising the viability of the flap. It is useful in closing an oro nasal or oro antral communication on the contralateral side of palate. In the authors' experience this flap resulted in some speech problems due to its thickness and one flap had to be debulked in one school teacher.

Palatal Island Flap: This procedure dissects an island of palatal mucosa maintaining its supply from that greater palatine artery. The procedure was first recommended by Brosch¹¹. This flap offers greater mobility for posterior closures and can obtain an extra 1 cm by freeing the vessels. In this series one case with small residual opening persisted. Patient was offered further treatment which was declined.

Bridge or Transverse flap: In an edentulous maxilla a local bridge of tissue in an area adjacent to a fistula may be mobilized and moved over it to cover. Bridge flap was first proposed by Kazanjian¹³ and Schuchardt¹⁴. In this series 3 patients with oroantral fistula were treated successfully with transverse flap, 1 was post extraction and 2 were post trauma cases.

Buccal Fat Pad flap: Egyedi¹⁵ used Buccal fat pad as a pedicled graft lined by split thickness skin graft for the closure of oronasal or oroantral communications. The author has found this flap most useful and convenient to close the fistula. No split skin graft was used as it epithelizes in 2-3 weeks. It is expandible, well vascularized and resistant to infection but is technique sensitive. There was no significant morbidity at the donor or recipient sites. In our study group, we had 100% success with this flap and strongly advocate this technique as the treatment of choice in the closure of oroantral fistula.

Temporalis muscle trans antral flap: Temporalis muscle is a versatile pedicle flap used for multiple uses in the reconstruction of orbits, maxillary malar complex, mandible, floor of mouth and palate^{16,17}. Transmaxillary transfer of temporalis muscle has also been reported for the reconstruction of oral defects¹⁸. In this series, 1 case of oroantral fistula / oronasal fistula following Le'forte- III

fracture was treated with temporalis muscle transantral approach.

Double layered flap closure --- Occasionally double layered flap closure can also be used in cases where there has been an earlier breakdown of treated oroantral fistula or there is some suspicion towards the inadequacy of one flap. We used buccal fat pad along with buccal advancement flap as a double layered closure. This improves the strength of flap, minimizes contraction and risk of infection.

References

1. M.N. Awang. Closure of oro-antral fistula. *Int.J.Oral Maxillofac.surg.* 1988;17:110-115.
2. G.H. Forman. Oroantral fistula and foreign bodies of dental origin in the Antrum. *Surgery of Mouth and Jaws* 1985:528-539.
3. Welty.C.F.. Closure of fistulous tract through alveolar process into antrum of Highmore. *J American Medical Association* 1920;75:867.
4. Rehrmann.A.Von. Eine Methode Zur Schliess ung von kieferhohlen Perforativen. *Deutsche Zahnarztliche Wochenschrift* 1936;39:1137.
5. Wowers.N.V. Treatment of oroantral fistula. *Arch. Otolaryngol* 1972;96:99-104.
6. Juselive H , Katiokallio K. Closure of antroalveolar fistulae. *J.laryngol* 1971;85:387-393.
7. Tanner H,Royer.R.Q, McBean.J.B. Chronic oroantral fistula. *J.S. Calif.Dent.Assoc* 1964;32:200-207.
8. Killley H, Kay L. An analysis of 250 cases of oroantral fistula treated by buccal flap operation. *J. Oral. Surg* 1967;24:726-739.
9. Dunning HS. Maxillary sinusitis of oral origin. *The laryngoscope* 1925;35:766.
10. Ashley.R.E. Method of closing antroalveolar fistula. *Annals of otology, rhinology, laryngology* 1939;48:632.
11. Brosch F. Uber die fundierung und die vorzuge derverwendung des mobilisierten palatine - lappens' zur gaumenplastik. *Deutsche Zahnartzliche Zeitschrift* 1950;5:1114.
12. Gillane .P.J, Arena .S. Palatal island flap for reconstruction of oral defects. *Arch. Otolaryngol* 1977;103:598-599.
13. Kazanjian.V.H. The surgical treatment of facial injuries. *William and Wilkins,Baltimore* 1949.
14. Schuchardt K. Zur methodic des verschlusses von defekten im alveolar fortsatz zaahnlose oberkiefer. *Deutsche Zahn-Mund und kieferhei lkunde* 1953;17:366.
15. Egyedi P. Utilization of buccal fat pad for closure of oroantral/oronasal communication. *J. Maxillofac. Surg* 1977;5:241.
16. Curioni C, Toscano R, Fiorretti C et al .Reconstruction of the orbital floor with the muscle-bone flap. *J. Maxillofac. Surg* 1983;11:263.
17. Bradley P, Brockbank J. Temporalis muscle flap in oral reconstruction. *J. Maxillofac Surg* 1981;9:139.
18. Peter N D, George. C. Sotereannos. Transmaxillary temporalis transfer for reconstruction of a large palatal defect. *J. Maxillofac. Surg* 1989;47:197-203.