

Original Research

Comparative evaluation of Buccal fat pad and sandwich graft for treatment of oroantral defects

¹Sudhir Kumar, ²Rohit Goyal, ³Sanjana Arora, ⁴Kumari Kusum

¹Government Dentist, DMFT, Jharkhand, India;

²Prof & HOD, Oral and Maxillofacial Surgery, MGSDC, Sri Ganganagar, Rajasthan, India

³Senior Lecturer, National Dental College and Hospital, Dera Bassi, Punjab, India;

⁴BDS Student, MGSDC, Sri Ganganagar, Rajasthan, India

ABSTRACT:

Background: One of the clinical complications encountered by oral and maxillofacial surgeons is oroantral communication (OAC) with progressive formation of oroantral fistula (OAF). Vascularized grafts may be considered as first choice of treatment in oral reconstruction, but have limitations. Patients with compromised wounds usually have poorly vascularized tissue, and patients with severe diabetes mellitus have difficulties with capillary regeneration. Hence; the present study was undertaken for comparatively evaluating Buccal fat pad and sandwich graft for treatment of oroantral defects. **Materials & methods:** 30 patients with presence of OAF were enrolled. Complete demographic and clinical details of all the patients were obtained. All the patients belonged to the age range of 20 years to 50 years. All the patients were broadly and randomly divided into two study groups as follows with 15 patients in each group: Group A: Patients underwent surgical closure of OAF with sandwich graft (hydroxyapatite crystals within collagen sheaths); Group B: Patients underwent surgical closure of OAF with Buccal fat pad (BFP). All the surgical procedures were carried under the hands of skilled and experienced oral surgeons. Postoperative follow-up was done and all the results were recorded in Microsoft excel sheet. All the results were analysed using SPSS software. **Results:** Mean pain score at 3 weeks postoperative period among patients of group A and group B was 1.45 and 1.24 respectively. At 3 weeks postoperatively, in 86.67 percent of the patients of group A and in 6.67 percent of the patients of group B, radiographic evidence of bone formation was seen. On comparing, the results were found to be statistically significant. **Conclusion:** Sandwich graft technique yielded a more promising closure of OAC by provision of a more biologically apt base in terms of regeneration of lost bone structure at the floor of the maxillary sinus.

Key words: Buccal fat pad, Sandwich graft, Oroantral defects

Received: 20 November, 2021

Accepted: 22 December, 2021

Corresponding author: Sudhir Kumar, Government Dentist, DMFT, Jharkhand, India

This article may be cited as: Kumar S, Goyal R, Arora S, Kusum K. Comparative evaluation of Buccal fat pad and sandwich graft for treatment of oroantral defects. J Adv Med Dent Sci Res 2022;10(1):119-121.

INTRODUCTION

It might seem intriguing how a pea-sized air space at the time of birth within the body of maxilla transforms into a full blown cavity encompassing maximum portion of the body of maxilla. This is made possible by the process of pneumatization which happens to be an evolutionary process as a functional and adaptive phenomenon. One of the clinical complications encountered by oral and maxillofacial surgeons is oroantral communication (OAC) with progressive formation of oroantral fistula (OAF). The incidence of this complication may vary from 0.31 to 3.8% after extraction of maxillary teeth.¹⁻³

Vascularized grafts may be considered as first choice of treatment in oral reconstruction, but have

limitations. Patients with compromised wounds usually have poorly vascularized tissue, and patients with severe diabetes mellitus have difficulties with capillary regeneration. These patients have demonstrated higher rates of postoperative infection and graft failure. Patients receiving radiation therapy or chemotherapy also experience problems in wound healing. Moreover, patients receiving high doses of bisphosphonate often show avascular jaw bone necrosis following oral surgery. Although revision surgery is attempted for these patients, vascularized grafts are the only conventional method that have not failed. However, vascularized grafts should be performed under general anesthesia and require a long operation time. Donor site morbidity and an additional

scar are the disadvantages of using vascularized grafts.⁴⁻⁷

Hence; the present study was undertaken for comparatively evaluating Buccal fat pad and sandwich graft for treatment of oroantral defects.

MATERIALS & METHODS

The present study was undertaken for comparatively evaluating buccal fat pad and sandwich graft for treatment of oroantral defects. 30 patients with presence of OAF were enrolled. Complete demographic and clinical details of all the patients were obtained. All the patients belonged to the age range of 20 years to 50 years. Patients with history of any systemic illness, any co-morbidity or any known drug allergy were excluded. All the patients were broadly and randomly divided into two study groups as follows with 15 patients in each group:

Group A: Patients underwent surgical closure of OAF with sandwich graft (hydroxyapatite crystals within collagen sheaths).

Group B: Patients underwent surgical closure of OAF with Buccal fat pad (BFP)

Patients of both the groups were operated under local anaesthesia. Metronidazole, decongestant nasal drops and steam inhalation were given for 7 days preoperatively. All the surgical procedures were carried under the hands of skilled and experienced oral surgeons. Postoperative follow-up was done and all the results were recorded in Microsoft excel sheet. All the results were analysed using SPSS software.

RESULTS

Mean age of the patients of group A and group B was 28.1 years and 29.4 years respectively. There were 9 males and 6 females in group A while there were 10 males and 5 females in group B. Mean size of oro-antral fistula among patients of group A and group B was 7.12 mm² and 6.41 mm² respectively. Mean pain score at 3 weeks postoperative period among patients of group A and group B was 1.45 and 1.24 respectively. At 3 weeks postoperatively, in 86.67 percent of the patients of group A and in 6.67 percent of the patients of group B, radiographic evidence of bone formation was seen. On comparing, the results were found to be statistically significant.

Table 1: Demographic and clinical data

Variable	Group A	Group B
Mean age (years)	28.1	29.4
Males (n)	9	10
Females (n)	6	5
Mean size of oro-antral fistula (mm ²)	7.12	6.41

Table 2: Comparison of pain on a scale of 0 to 10 according to VAS

Time interval	Group A	Group B	p- value
Immediate postoperative	7.12	7.39	0.12
3 weeks postoperative	1.45	1.24	0.23

Table 3: Comparison of bone formation (radiographic evidence)

Time interval	Group A	Group B	p- value
3 weeks postoperative (n,%)	13, 86.67%	1, 6.67%	0.000 (Significant)

DISCUSSION

Oroantral communicating defects, characterized by a connection between the maxillary sinus and the oral cavity, are often induced by tooth extraction, removal of cysts and benign tumors, and resection of malignant tumors. The surgical defect may develop into an oroantral fistula, with resultant patient discomfort and chronic maxillary sinusitis. Small defects may close spontaneously; however, large oroantral defects generally require reconstruction.¹⁻³ Large oroantral defects may develop into oroantral fistulas or may not be covered adequately by intraoral soft tissue. Autogenous or allogeneous graft materials can be used for reconstruction; however, most surgical techniques are complex and technically difficult. Among the available methods, the pedicled buccal fat pad is a simple and reliable flap for the treatment of these defects. This pedicled flap has a rich blood supply, is easily accessible, and is in close proximity to the maxillary intraoral defect.⁴⁻⁸

An OAF of less than 2 mm diameter has the possibility of spontaneous healing; but in the one with a diameter of more than 3 mm spontaneous healing is hampered because of inflammation of the sinus or periodontal region. There is also less possibility of spontaneous healing when the OAF has been present for 3-4 weeks, or when its diameter is greater than 5 mm. If oroantral opening remains untreated, the patients experience sinusitis.⁷⁻⁹ Hence; the present study was undertaken for comparatively evaluating Buccal fat pad and sandwich graft for treatment of oroantral defects.

Mean age of the patients of group A and group B was 28.1 years and 29.4 years respectively. There were 9 males and 6 females in group A while there were 10 males and 5 females in group B. Mean size of oro-antral fistula among patients of group A and group B was 7.12 mm² and 6.41 mm² respectively. Mean pain score at 3 weeks postoperative period among patients of group A and group B was 1.45 and 1.24

respectively. Yang S et al described three cases of reconstruction of large oroantral defects, all of which were covered by a pedicled buccal fat pad. Follow-up photography and radiologic imaging showed successful closure of the oroantral defects. Furthermore, there were no operative site complications, and no patient reported postsurgical discomfort. The use of the pedicled buccal fat pad is a reliable, safe, and successful method for the reconstruction of large oroantral defects.¹¹

At 3 weeks postoperatively, in 86.67 percent of the patients of group A and in 6.67 percent of the patients of group B, radiographic evidence of bone formation was seen. On comparing, the results were found to be statistically significant. Chakrabarti J et al described the indications, advantages, and complications of the BFP flap and report our clinical experience with the flap for intraoral reconstruction after tumor removal. They analyzed 29 patients in the age range of 32 to 82 years old who underwent a pedicled BFP flap reconstruction for oral defects after intraoral tumor removal. Postoperative wound healing and complications including any recurrence was followed-up prospectively. Most of the patients had an uneventful immediate postoperative period with signs of buccal fat pad epithelialization by the end of the first week and complete epithelialization at the end of the first month. On continued follow-up, a linear band of fibrous tissue under the epithelialized mucosa replaced the once reconstructed buccal fat pad. Three patients had varying degrees of hemorrhage: one of them had hematoma that healed with severe fibrosis and of the remaining two, one had a partial flap loss and one had a complete flap loss.¹²

CONCLUSION

Sandwich graft technique yielded a more promising closure of OAC by provision of a more biologically apt base in terms of regeneration of lost bone structure at the floor of the maxillary sinus.

REFERENCES

1. Solker K, Vuksan V, Lauc T. Treatment of oroantral fistula. *Acta Stomatol Croat* 2002;36:135-40.
2. Kitagawa Y, Sano K, Nakamura M, Ogasawara T. Use of third molar transplantation for closure of the oroantral communication after tooth extraction: A report of 2 cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2003;95:409-15.
3. Goldman EH, Stratigos GT, Arthur AL. Treatment of oroantral fistula by gold foil closure: Report of case. *J Oral Surg* 1969;27:875-7.
4. Pappachan B, Vasant R. Application of bilateral pedicled buccal fat pad in wide primary cleft palate. *Br J Oral Maxillofac Surg*. 2008;46:310-2.
5. Samman N, Cheung LK, Tideman H. The buccal fat pad in oral reconstruction. *Int J Oral Maxillofac Surg*. 1993;22:2-6.
6. Baumann A, Ewers R. Application of the buccal fat pad in oral reconstruction. *J Oral Maxillofac Surg*. 2000;58:389-93. [PubMed] [Google Scholar]
7. Mai R, Reinsdorf A, Pilling E, Lauer G, Gelinsky M, Eckelt U. Custom moldable hydroxyapatite collagen composite for repair of osseous defects. *Mund Kiefer Gesichtschir*. 2005;9:12-7.
8. Martín-Granizo R, Naval L, Costas A, Goizueta C, Rodriguez F, Monje F, et al. Use of buccal fat pad to repair intraoral defects: review of 30 cases. *Br J Oral Maxillofac Surg*. 1997;35:81-4.
9. Kim MK, Han W, Kim SG. The use of the buccal fat pad flap for oral reconstruction. *Maxillofacial plastic and reconstructive. Surgery*. 2017;39:5.
10. Von Wower N. Correlation between the development of an oroantral fistula and the size of the corresponding bony defect. *J Oral Surg*. 1973;31:98.
11. Yang S, Jee YJ, Ryu DM. Reconstruction of large oroantral defects using a pedicled buccal fat pad. *Maxillofac Plast Reconstr Surg*. 2018;40(1):7. Published 2018 Apr 5.
12. Chakrabarti J, Tekriwal R, Ganguli A, Ghosh S, Mishra PK. Pedicled buccal fat pad flap for intraoral malignant defects: A series of 29 cases. *Indian J Plast Surg*. 2009;42(1):36-42.