Reconstruction of Intraoral defects with the Pedicled Buccal Fat Pad: A Case Report and Literature Review

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ABSTRACT

Buccal fat pad (BFP) to cover intraoral defects was first described by Egyedi in 1977. The buccal fat pad is specialized fat tissue located anterior to the masseter muscle and deep to the buccinator muscle. Anatomically, the buccal fat pad consists of a central body and four processes: buccal, pterygomandibular, superficial, and temporal extensions, which provides separation allowing gliding motion between muscles, protects the neurovascular bundles from injuries, and maintains facial convexity. The buccal and deep temporal branches of the maxillary artery, the transverse facial branches of the superficial temporal artery, compose the primary blood supply. Because of its many advantageous functions, the use of the BFP during oral and maxillofacial procedures is promoted for the reconstruction of defects secondary to tumor resection, and those defects resulting from oroantral fistula caused by dentoalveolar surgery or trauma. We used the pedicled buccal fat pad in the reconstruction of intraoral defects, such as oroantral fistula, defect due to maxillectomy, buccal mucosal defects and for the closure of incised wound after surgical treatment of oral and maxillofacial surgery. Epithelialization of the fat tissue began 1 week after the surgery, healed without complication within 3 to 5 weeks in all patients. The surface of the fat converted to normal mucosa and demonstrated stable healing without complications over a long-term period. Through this article we want to share our clinical experience and highly recommend the BPF for the reconstruction of intraoral defect.

Keywords: Buccal fat pad, Oral reconstruction, Oroantral fistula.

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INTRODUCTION

Intraoral post surgical defect reconstruction is always a challenging one due to anatomical constraints and the specialized nature of intraoral tissues. Various surgical techniques have been suggested for the closure of oral defects, such as primary closure, buccal mucosal graft, split thickness skin graft, allogenic graft, regional rotational flap, and distant flap. The use of the buccal fat pad (BFP) as a grafting source in the closure of intraoral defects has gained popularity, because of the ease of access and rich blood supply.

Its use as a pedicle graft for oral reconstruction was first reported by Egyedi in 1977. The use of the BFP as a free graft for intraoral defects was reported. In 1983, by Neder, Tideman et al reported that the restoration of defects is possible with BFP without skin graft. In 1995, the pedicled fat pad graft was used in four cases of palatal reconstruction of cleft patients by Hudson et al.

Anatomically, the BFP is composed of the central body and four processes—buccal, pterygomandibular, superficial, and temporal process. It is in the masticatory space between the masseter muscle and buccinator muscle, so it can be easily accessed by exposing in the mouth when cutting the buccinator muscle and is good for engraftment with sufficient blood supply, because it receives blood from superficial temporal artery, internal maxillary artery, facial artery, and maxillary artery. In the case of the oral recipient site, epithelialization begins 7 days after the surgery; histologically, epithelialization with surrounding tissues is completed after 4 to 6 weeks.

Buccal fat pad as a pedicle flap used for the closure of oroantral fistula, reconstruction of cleft palate, as an interpositional arthroplasty material, buccal defect after excision of oral submucous fibrosis and for surgical defect in situ. Through this case report the authors representing the closure of oroantral fistula done in department of oral and maxillofacial surgery with the help of BFP.

CASE REPORT

Oroantral Fistula

Last 6 months 5 cases reported to us with clinical signs and symptoms of oroantral fistula (OAF). All patients gave history of extraction. Diagnosis was confirmed after clinical examination and text, radiological findings (Figs 1A and B). Surgical closure of OAF performed under local anesthesia. Adjacent to fistula, a full thickness...
mucoperiosteal flap raised (Fig. 1C), followed by excision of epithelial lining covering the tract, if necessary removed infected sinus lining, then the pedicle BFP was exposed at the posterior area of the maxillary first molar and moved it forward (Fig. 1D), OAF closed with BFP and advanced buccal flap (Fig. 1E). Patient kept on antibiotic coverage and nasal decongestant. Patients follow-up done on 1st and 4th week (Fig. 1F). Oroantral fistula closed completely without any symptoms and did not leak in the Valsalva maneuver.

**DISCUSSION**

Sufficient blood supply of the BFP is deemed to increase the success rate of surgery and reduce the side-effects by increasing the success rate of engraftment with the surrounding tissues after reconstruction, improving structural resistance to infection or other stimuli, and promoting fast epithelialization.\(^{13,14}\) The epithelialization of the BFP used in the reconstruction started within 1 week of the reconstruction and ended within 6 weeks. The histological examination revealed no fat cell, and the BFP can reportedly maintain the role of membrane.\(^{3,9-11}\) A side-effect of closure using BFP is the recurrence of fistula due to partial necrosis and loss of flap. In most cases, it is generated when the defect area is large.\(^{6,15-18}\) Since, Egyedi reported that it can be used for defects smaller than 4 cm, other studies have been conducted continuously. Most authors recommend the reconstruction of defects measuring under 5 × 4 cm without tension when using pedicled BFP,\(^ {13,19}\) since, they believe it minimizes complications including recurrence of fistula and necrosis in reconstruction of the severe defects. Our cases also showed successful treatments with complete epithelialization without dehiscence for up to 5 × 3 cm.

Other complications include the infection of the restored area, loss of tissue due to necrosis or physical impact, hematoma, and bleeding. To prevent them, there is a need to perform proper disinfection and administer antibiotics as well as reduce tension using tensionless suture with the surrounding tissues to improve blood supply.\(^{3,10,18}\) Furthermore, Amin et al recommended using a cover or an oral closing device using acrylic resin (Obturator) to prevent stimulation and distortion of the operated area.\(^ {8}\) In our cases, operations were performed in aseptic state and under local anesthesia, and tissues were sutured with minimizing tension. To achieve the aforesaid purposes, we exposed the pedicled BFP at the closest location and used enough amount of BFP. In addition, we kept patient on antibiotics for 4 to 7 days after the operation and performed intraoral dressing until the removal of stitches. There was no bleeding after the removal of sutures; though partial necrosis was detected, the patients were cured successfully without using any additional device.

We obtained successful results in reconstruction of the intraoral defects using pedicled BFP, which has many advantages as mentioned above. We report these cases
to recommend the use of pedicled BFP, because it can be utilized more widely with considering the post-surgery problems and complications.

REFERENCES