

Implant placement after closing oroantral fistula with buccal fat pad

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An oroantral fistula (OAF) is an abnormal connection between the maxillary sinuses and oral cavity. As Egyedi described in 1977, BFP had been used the most commonly for the closure of OAF. The purpose of this study is to evaluate the effectiveness of pedicled BFP grafting with double-layered suture in the treatment of OAF. (THE JOURNAL OF KOREAN ACADEMY OF OSSEOINTEGRATION 2022;14(1):8-11)

Key words: Buccal fat pad, Oroantral fistula, Buccal flap

INTRODUCTION

An oroantral fistula (OAF) is an abnormal connection between the maxillary sinuses and oral cavity. It may be induced by tooth extraction, implant surgery, removal of pathological tissues in the palatine part. Clinical symptoms of an Oroantral fistula include such as pronunciation disturbance, liquid leak into the nasal cavity, maxillary sinusitis and excruciating pain in and around the region. OAF caused by tooth extraction or curettage are naturally closed. However, natural closure cannot occur when sinusitis is present, and if it has been more than four weeks or is greater than 4~5 mm, surgical treatment is required.

Various techniques have been introduced for the treatment of OAF, including buccal advancement flap, palatal rotation flaps, tongue and temporalis flaps. These methods, however, have disadvantages such as lowering the oral vestibule after surgery and causing discomfort to the patient until the palatal defect heals, and not always showing satisfactory results.

As Egyedi described in 1977¹, BFP grafting has been used commonly for the closure of OAF. The purpose of this study is to evaluate the effectiveness of pedicled BFP grafting in the treatment of OAF.

CASE REPORT

A 62-year-old female patient was referred from local dental clinic to department of oral and maxillofacial surgery, Cheongju Hankook General Hospital for removal of a displaced dental implant inside the left maxillary

sinus. Clinical and radiographic studies revealed an implant inside the left maxillary sinus with oroantral fistula and maxillary sinusitis (Figure 1).

1. Operative procedure

Under local anesthesia, mid-crestal incision with single vertical release was made at the premolar-molar region. The full-thickness mucoperiosteal flap was elevated to expose the oroantral fistula and underlying bone defect which was about 10 mm at its largest diameter.

The dental aspirator was introduced into the antrum of maxillary sinus through the bone defect, the displaced implant was successfully brought out through the defect. The oroantral fistula was planned to close using buccal fat pad flap (Figure 2A~C). The incision was made in the reflected periosteum posterior to the zygomatic buttress and the buccal fat pad was exposed by blunt dissection under the periosteum of the buccal flap. The exposed BFP was gently pulled out without tension toward the defect and covered the bone defect. The defect was closed with double-layered suture of BFP and oral mucosa. Two-weeks after the surgery, gingival healing was favorable and stitch out was done. 3-months after the surgery, the adequate closure of the defect in the left second molar site was achieved (Figure 2D). After the fistula closure, the adjacent implant placed in the left first molar site was also removed and bone graft was done with sinus elevation by lateral window approach. Ti-Oss® and Frabone® were used as bone graft material and Lysogide® membrane was used to cover where maxillary sinus perforation existed. 7-months after

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Figure 1. Cone beam CT scan showing the destruction of the left maxillary alveolar bone and sinusitis, dental implant fixture and abutment in the left maxillary sinus.

the bone graft, two dental implants were placed on left maxillary posterior area. The implants placed were SNUCONE® AF 4.8x8 with healing abutments (Figure 3B). 6-months after the implant placement, final prosthesis was restored. The two dental implants were splinted and restored with full zirconia prosthesis (Figure 3C, 4). After 7-months follow up, there were no major complications (Figure 3D).

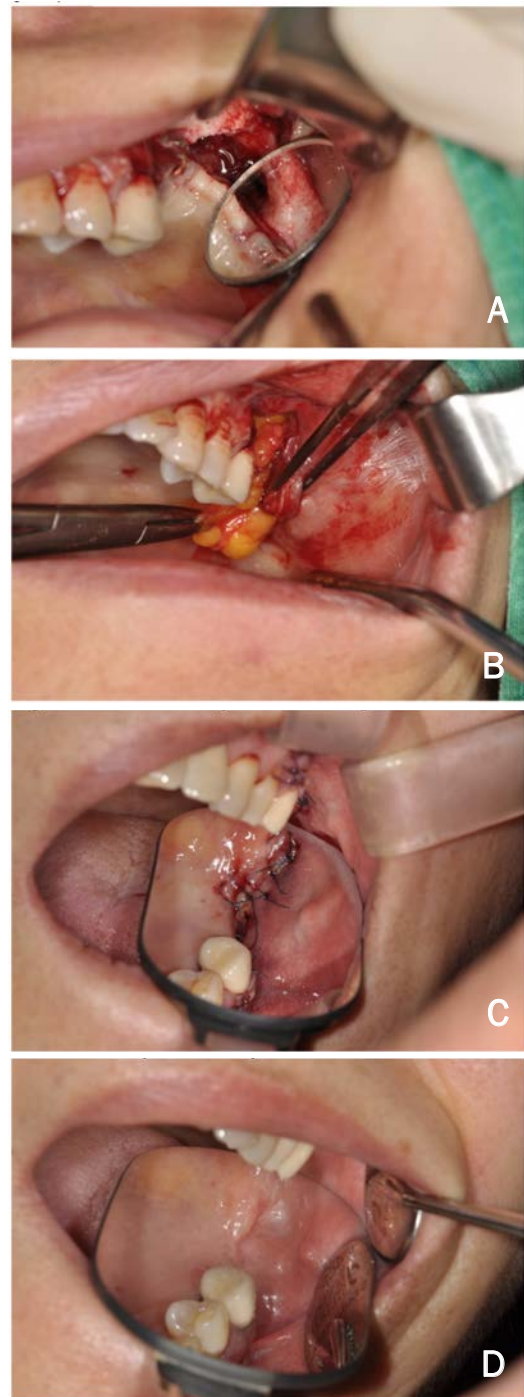


Figure 2. (A) Destruction of left maxillary alveolar bone. (B) Harvesting of buccal fat pad. (C) Closure of the defect with the BFP and oral mucosa by double-layered suture. (D) 3-months after the OAF closure.

DISCUSSION

There are many factors that can cause an OAF, including pathological reasons such as cysts and tumors in the maxilla, iatrogenic factors such as tooth fractures during tooth extraction or

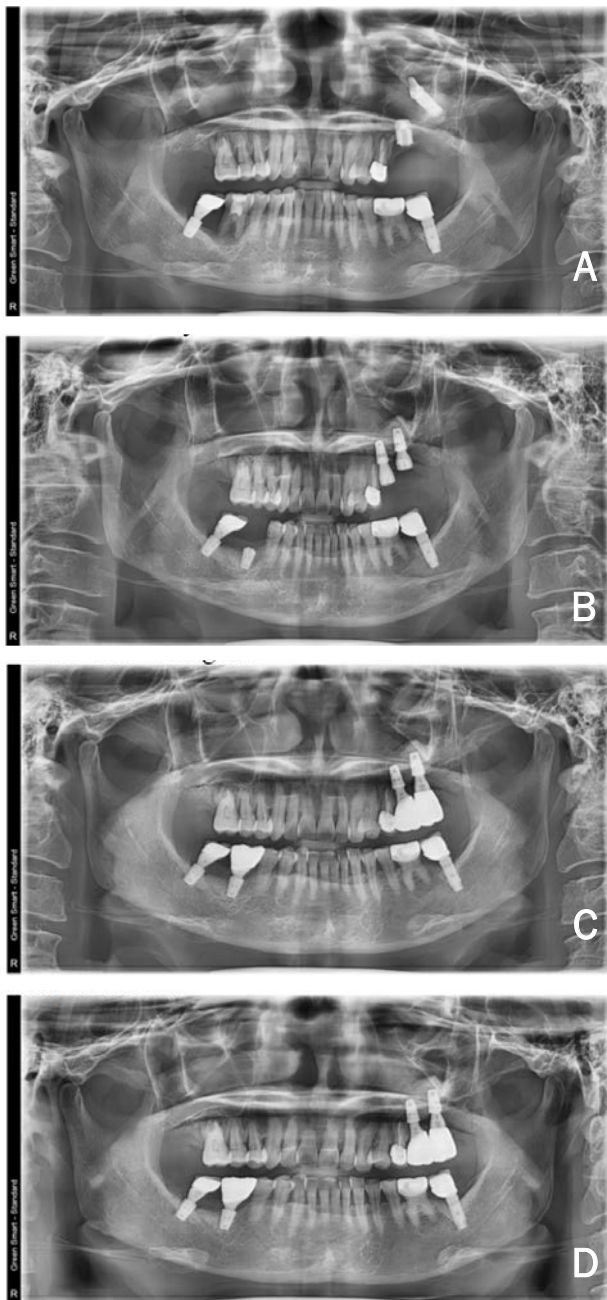


Figure 3. (A) Dental implant fixture and abutment in the left maxillary sinus. (B) Two dental implants placed after OAF closure and bone graft. (C) Restoration of implants with splinted full zirconia crowns. (D) 7-months after the final restoration.

severe curettage, and traumatic events such as maxillary or alveolar fractures. Several factors must be considered when closing chronic OAF, including the fistula size, the time of diagnosis, and sinus infection². In many cases, OAF caused by tooth extraction or curettage closes naturally. Sinusitis, however, prevents natural closure, and if the sinusitis lasts over four weeks or is greater than



Figure 4. Final restoration of the implants with splinted full zirconia crowns.

4~5 mm, surgery treatment is needed.

Various techniques have been introduced for the treatment of OAF, including buccal advancement flap, palatal rotation flap, tongue and temporalis flap. However, some disadvantages of these procedures may include donor site discomfort, an extended healing period, or the lowering of the buccal vestibule. As Egyedi described in 1977¹, BFP has been used the most commonly for the closure of OAF.

The BFP has the advantages of high utilization, flourishing blood supply, low rate of complications, minimal donor-site morbidity³. Even if the BFP is not completely covered with the oral mucosa, it appears to undergo complete epithelialization within 4 to 6 weeks². In addition, it has no significant effect on buccal sulcus depth⁴. Since this patient already had shallow buccal sulcus due to alveolar bone defect and previous surgical treatment, we chose to use BFP flap, which would be less likely to affect the sulcus depth.

Despite these advantages, the BFP graft could show the necrosis of the graft, and new fistulae formation⁵. If the blood supply is compromised, there is a chance of tissue necrosis. As the blood vessels within the adipose tissue are very weak, it is crucial to

perform blunt dissection so as not to injure the capsule overlying the fat pad while herniating it and the harvested BFP need to be sutured with minimal tension⁶.

It has been suggested that combining BFP with oral mucosa can minimize complications following surgery. Generally, postoperative complications are associated with graft failure due to infection or necrosis⁷. The latter is probably caused by insufficient BFP covering the surgical defect². Yet Egyedi recommended covering the flap with a skin graft, it has been documented that epithelization of the flap occurs after 3 to 4 weeks without a split skin graft on the exposed BFP⁸. Although we agree that covering BFP with other flaps provides no additional advantages, there is still the risk of overstretching and perforating BFP during collection. We used double-layered suture technique to minimize such postoperative complications, resulting in favorable soft tissue healing after the surgery.

CONCLUSIONS

There have been many applications of BFP since its introduction for OAF. Compared to other types of flaps, BFP has many advantages. Through this case, buccal fat pad flap with double-layered suture could be considered as a reliable method to close oroantral fistula and further follow up is needed to study long

term prognosis of the implant placed on this site.

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