

Closure of Oroantral Communication with Buccal Fat Pad Flap in Zygomatic Implant Surgery: A Case Report

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The scientific literature has demonstrated the use of the buccal fat pad (BFP) flap to cover bone grafts in the correction of maxillary osseous defects and in the closure of oroantral communications. The use of the pedicled BFP flap to provide an immediate blood supply to a recipient site is recommended to provide closure of oroantral communications. The author presents a case report of zygomatic implant surgery in which the BFP flap technique was used in the closure of an oroantral communication caused by maxillofacial surgery. INT J ORAL MAXILLOFAC IMPLANTS 2008;23:143–146

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The use of pedicled buccal fat pad (BFP) flap to cover bone grafts in the correction of maxillary osseous defects as well as the closure of oroantral communication has been described in the scientific literature. The use of the BFP allows for immediate blood supply to the flap, which is recommended for the closure of oroantral communications. The treatment for this type of complication is considered to have a high degree of difficulty. The palatal flap, buccal flap, and fat pad flap are all surgical techniques used for the closure of this type of opening. However, if the diameter of the fistula is greater than 5 mm, the BFP is the most recommended technique.¹ This technique has also been applied successfully for the covering of maxillary bone grafts.^{2–5}

The BFP (“Bichat’s Ball”) is located medial to the buccinator muscle and the anterior margin of the masseter muscle and lateral to the mandibular ramus and the zygomatic arch. It consists of encapsulated, rounded, biconvex fatty structure with a good blood supply.⁶ Egyedi⁷ initially described the BFP flap as a successful technique for the closure of buccal sinus fistulas. Neder⁸ used this technique with a free graft for intraoral defects in the posterior max-

illary region. Various authors have shown that use of the BFP flap is an option for the closure of oroantral communications.^{1,4,6,9–12}

The following is a case report of a zygomatic implant surgery where a BFP flap was successfully used for closure of an oroantral communication caused by maxillofacial surgery.

CASE REPORT

A 44-year-old man with complete maxillary edentulism presented for treatment complaining of an oroantral fistula. The patient reported that he had undergone orthognathic surgery 2 years earlier and received an iliac crest onlay bone graft to allow for dental implant procedures. The patient requested an evaluation for the purpose of rehabilitation with an implant-supported prosthesis.

During clinical examination evidence of a Le Fort I osteotomy was observed, including scar fibrosis in the maxillary gingival labial mucous region and an oroantral fistula on the right side (Fig 1a). A clinical evaluation was performed in conjunction with imaging (panoramic radiography and computerized tomography [CT]; Fig 1b). The treatment plan included 3-dimensional stereolithographic models generated from the CT images (Figs 1c and 1d).

Treatment Plan and Implant Placement

Zygomatic implants have been used for the rehabilitation of the atrophied maxilla as an alternative to onlay bone grafts.¹³ In this case, the placement of

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Fig 1a (Left) Presurgical panoramic radiograph.

Fig 1b (Above) An oroantral fistula can be seen over a scar area on the right side.



Fig 1c (Left) Frontal view of the stereolithographic model.

Fig 1d (Right) Occlusal view of stereolithographic model.

conventional implants in the anterior maxillary region and of bilateral zygomatic implants (1 on each side) in the posterior maxillary region was proposed. Under general anesthesia, a supracrestal incision was performed from 1 side of the maxillary tuberosity to the opposite side, with 2 bilateral posterior buccal releasing incisions and 1 vertical medial-line buccal releasing incision. The releasing incisions were approximately 1 cm in length.¹⁴

An extensive maxillary and zygomatic bone dissection was performed with a periosteal elevator. Buccal exposure of the nasal cavity floor, infraorbital rim, and zygomatic bone buttress area was performed. The palatal mucosa was reflected only to expose the remaining alveolar crest. Four implants 3.5 mm in diameter and 11.5 mm in length (Master Conic; Conexão Sistema de Prótese, São Paulo, Brazil) were placed in the anterior maxillary region using a palatal approach. To assist in the visualization of the angle and eventual positioning of the zygomatic implants, a window was created in the lateral sinus wall of the maxillary on the left side. On the right side it was not necessary to perform an osteotomy on the lateral sinus wall due to the existing communication. A zygomatic implant 4.0 mm in diameter and 45 mm in length was placed on each side (Master Zygomatico; Conexão Sistema de Prótese) (Figs 2a and 2b).

Pediced BFP Flap Technique

Because of the way the patient exhibited an oroantral communication, a pediced BFP flap rotation technique was proposed. An incision approximately 1 cm in length was performed through the buccinator muscle behind the zygomatic buttress. A blunt dissection was performed with Metzenbaum scissors to penetrate the BFP capsule. This stretching was done in a gentle and gradual manner to avoid ruptures and maintain integrity. A pedicle of the fatty tissue was stretched and sutured with resorbable material (Vicryl 4-0; Johnson & Johnson/Ethicon, Somerville, NJ) over the osseous opening that had generated the oroantral communication. The alveolar mucosa was then sutured with nylon monofilament 5-0 (Figs 3a to 3d).

During the postoperative period, antibiotic therapy was prescribed (1 g cephalosporin 4 times a day for 7 days) along with anti-inflammatory medication (20 mg tenoxicam once a day for 3 days) and chemical control of bacterial plaque (0.12% chlorhexidine; 1-minute mouth rinses 3 times a day). Sutures were removed after 1 week, and in 4 weeks the mucosa of the pediced BFP flap showed good healing, as can be seen in Fig 3d.

Fig 2a (Left) Flap after placement of implants.



Fig 2b (Right) Definitive radiograph (Waters projection).



Figs 3a and 3b BFP sutured with resorbable material (Vicryl 4-0).



Fig 3c (Left) Examination after 2 weeks.



Fig 3d (Right) Examination after 4 weeks.



DISCUSSION

Egyedi⁷ first published the use of the BFP as a pedicled graft to close oral defects protected by a fine layer of skin graft. Neder⁸ described the use of BFP as a free graft for the correction of oral defects. Lijie et al¹¹ explained the advantages of BFP grafts, including the fact that there is easy access to the anatomic region for excision. The surgery may be performed with a single incision without changes in the patient's appearance or function. Tideman et al⁵

showed that a BFP exposed to the buccal medium without any protection and could undergo epithelization in a period of 1 to 4 weeks, so that a skin graft was deemed unnecessary. Liversedge and Wong⁶ proposed that the fat pad may provide sufficient protection and blood supply for bone grafts in the maxilla and maxillary sinus. The use of BFP showed advantages in this case and was a good treatment option for use in association with the zygomatic implant surgery.

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