

Buccal Pad Of Fat - The Nature's Gift For Oral Reconstruction

Case Report

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Abstract

The buccal pad of fat was initially believed to be an anatomic structure without any function, and was even considered to be a surgical nuisance. However with time, the buccal pad of fat has been used for various intraoral reconstructions. The buccal fat pad flap (BFP) is a simple and reliable flap because of its rich blood supply and location. It needs minimal dissection and can be mobilised easily. Good rate of epithelization and low failure rate makes it more favourable for oral reconstruction. The surgical procedure is simple and has shown very good results. Buccal pad of fat can be used for various surgeries like OAF closure, OSMF, Cleft Palate, Palatal Fistula, TMJ Surgery, Closure of small defects, Biological membrane for covering bone grafts. In this study we focused the clinical application of Buccal Pad of Fat in Oral and Maxillofacial Surgery.

Keywords: Buccal Pad of Fat; Buccal Pad Fat; Oral Reconstruction.

Introduction

The buccal pad of fat is the fat tissue that is located in profound facial spaces. It lies behind zygomatic arch and it has four processes. They are buccal process, pterygoid process, the superficial process and the deep temporal process [1]. Pterygopalatine process which stays in pterygopalatine fossa was found by Chinese scientists. The volume may change throughout life.

The average weight of each buccal fat pad was found to be 9.3 g, and its average volume was 9.6 ml [2, 3]. They stated that it serves to line the masticatory space, separating the masticatory muscles from each other and from the mandibular ramus and the zygoma. This volume could be used to repair a defect measuring 4 x 4 x 3 cm in Maxilla & 7 x 5 x 2 cm. in mandible. Buccal pad of fat chiefly owes its blood supply primarily to the small venules and arterioles situated in the base, therefore both excessive manipulation at the base and the rupture of surrounding vascular capsule results in free fat transfer rather than vascular grafting.

Buccal Pad Of Fat is used in various Maxillofacial Surgeries [4]. It has physiological functions which include filling deep tissue space, and acts like a cushion for some structures from outer forces. It also serves as a versatile flap in some reconstructive procedures.

The application of buccal pad of fat has increased rapidly in recent years. It has been used in different kinds of surgeries. Now the scientists have been working on regenerative properties of buccal pad of fat [5].

With a rich case bank established over 3 decades we have been able to publish extensively in our domain [6-16]. Based on this inspiration we aim to present the following case series to highlight the excellent properties of buccal pad of fat as a scaffold and autogenous dressing in healing of intraoral defects like Oroantral Fistula, after excision of a lesion in oral cavity, in the treatment of OSMF and in Cleft Palate surgery.

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Anatomy

Buccal pad of fat protrudes at the anterior border of the masseter muscle and extends to the parotid duct, where it rests on the buccopharyngeal fascia, which covers the buccinator muscle [1]. The main body is positioned along the posterior maxilla and it is covered with a thin capsule. The parotid duct pierces the buccinator at the anterior border of the buccal fat pad. The buccal fat pad has abundant blood supplies from the maxillary artery and the superficial and deep temporal artery. There are rich capillary networks within the capsules that cover the fat pad. Arterioles enter the capsule from several directions and break up into capillary plexuses. Most of the blood from the fat pad drains into the facial vein [17].

Case 1

Closure Of Oroantral Fistula

A 35 year old male patient came to the Department of Oral and Maxillofacial Surgery with a chief complaint of Right hemifacial pain and discharge from non healed orifice after extraction of right upper third molar 6 months before. On examination, there was a 5-6mm fistula which communicates the left maxillary sinus. No pus or inflammation seen. Diagnosis was made as oroantral Fistula. The treatment plan was to close the fistula using a buccal pad of fat. Vestibular incision was given in relation to the right upper first molar till third molar region. Full thickness muco periosteal flap elevated and Fistula region was noted. Buccal pad of fat was harvested (Figure 1) and it was used to close the fistula. Simple interrupted sutures were placed to secure the fat pad.

Figure 1.

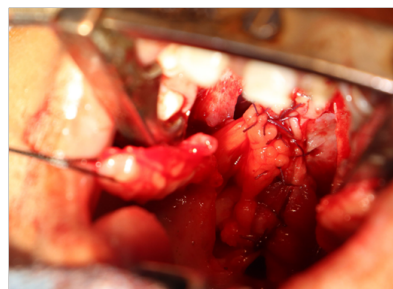


Case 2

Cleft Palate Surgery

A 10 months old baby presented with Cleft Palate to the Department of Oral and Maxillofacial Surgery for the primary repair. Using Bardach's technique, primary palatoplasty was done. Buccal pad of fat can be used as a packing material to cover the raw bone (Figure 2). Using blunt dissection, a buccal pad of fat was harvested and then placed toward the area of the defect and sutured with light pressure to the edge of the flap and left open for the epithelialization. Satisfactory healing was noted postoperatively.

Figure 2.



Case 3

Surgical Management Of Oral Submucous Fibrosis Using Buccal Pad Of Fat

Different surgical procedures described in the literature claim different success rates. The use of a Buccal pad of fat as a grafting material is relatively good. The fibrous bands were detected by digital palpation. Horizontal incision given along the occlusal plane in buccal mucosa. Incision extends anteriorly from the corner of the mouth till pterygomandibular raphe posteriorly. Using fingers, bands were released. The mouth was then forced to open with the mouth gag to an acceptable range of approximately 40mm. A small amount of the lesions were excised and sent for biopsy. The buccal pad of fat was harvested from the defect, that is posterior to zygomatic buttress. After blunt dissection, buccal pad of fat was gently mobilised until the required amount was obtained to cover the defect. It should be covered without tension (Figure 3). This can be done by gently pulling it using small artery forceps. This pedicled fat pad was used to cover the areas. And secured by placing horizontal mattress sutures using 3-0 Vicryl.

Figure 3.



Case 4

Closure Of Defect Using Buccal Pad Of Fat After Excision Of Lesion

A 29 year old female patient reported to the Department of Oral and Maxillofacial Surgery with a history of painless gradually progressive swelling in the right side of the face for the past 3 years. It was slow growing, no pain associated with it. On examination it was diffuse, non-tender, bony hard swelling of approximately 5x6 cm extending from upper right canine till right upper molar. Under general anesthesia, excision of the lesion done and sent for histopathological examination. Buccal pad of fat was harvested and used to cover the defect (Figure 4,5).

Figure 4.

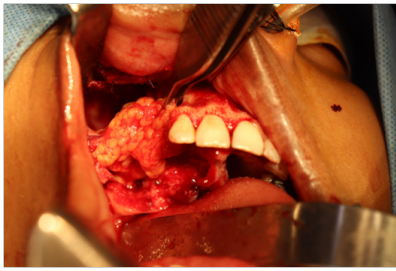
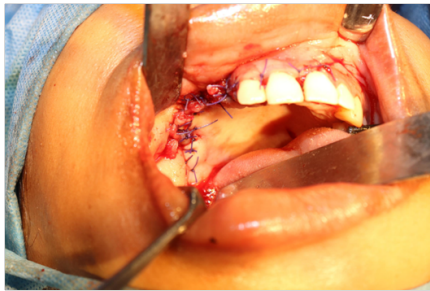


Figure 5.



Discussion

The anatomy of the buccal pad of fat is complex. A detailed review of anatomy was described by [18]. It has a main body and four processes. The main body lies above the parotid duct on the anterior border of the masseter muscle and extends deeply to lie on the posterior maxilla and forward along the buccal vestibule. The buccal extension is superficial and enters the cheek below the parotid duct. It descends to the mandibular retromolar region and overlies the buccinator muscle.

The pterygoid extension of the fat pad passes down and back to lie on the lateral surfaces of the pterygoid plates. Its temporal extension passes upwards below the zygomatic arch, and comprises a deep and a superficial portion. The deep part lies directly on the temporalis muscle and its tendon, separating the temporalis muscle from the zygomatic arch. The blood supply of the BFP is from three sources: the maxillary artery (buccal and deep temporal branches), the superficial temporal artery (transverse facial branch), and the facial artery (small branches). Once the fascial envelope of the BFP is opened, spontaneous fat pad herniation into the mouth occurs [2, 18].

[19] was the first surgeon to report the use of the buccal fat pad as a pedicled graft for the closure of oro-antral and oronasal communications: a split-thickness skin graft was used to line the oral side of the fat pad [19, 20]. reported the use of the buccal fat pad as a free graft for reconstruction of defects within the oral cavity [18]. have shown that the buccal fat pad need not be covered by a skin graft when brought into the mouth because of its quick epithelization within 3 weeks. They have reported that the superficial layer of fat tissue is replaced by granulation tissue and is finally covered by stratified squamous epithelium.

[21] reported successful results with the use of the BFP in reconstruction of both palatal and cheek defects. It can also be used in medicine related osteoradionecrosis of the jaws (MRONJ) re-

ported by [21, 22]. [23] successfully reported the use of buccal pad of fat in oroantral communication [24]. reported that the buccal pad of fat was not affected by postoperative radiation therapy in cancer patients.

[25] reported that this flap has significant potential to function as an added vascularized tissue layer in cleft palate repair. Advantages of using buccal pad of fat include it provides vascular coverage to the denuded bone, it lacks scarring effect, serves as a bed for secondary granulation, it obliterates dead space at the alveolar defect.

[26-28] and various other authors reported the use of buccal pad of fat in the treatment of OSMF [29-31]. reported that buccal pad of fat provided better results compared to naso labial flap in the treatment of OSMF.

Conclusion

From this study, We conclude that the buccal pad of fat is rapidly healing, less invasive, easy to harvest & manipulate and also acts as a reconstructive material which is free from significant postoperative complications.

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