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BUCCAL FAT PAD: A REVIEW

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INTRODUCTION

Heister first described the buccal fat pad anatomy in 1732[1], and Bichat[2] verified its fatty histology in 1801, and there have been many authors [3-5]who have studied its features. Egyedi[6] first reported its use as a pedicle graft and its embryology, vascularization, volume and function being studied by Tideman[7], Marx[8] and other authors.

The buccal fat pad had a limited clinical importance for many years and was usually considered a surgical nuisance because of its accidental encounter either during various operations in the pterygomaxillary space or after injuries of the maxillofacial region.[9-10]

Buccal fat pad has many possible functions: filling and allowing slippage of fascial spaces between mimetic muscles; enhancement of intermuscular motion, separating muscles of mastication from one another; to counteract negative pressure during suction in the newborn; protection and cushion of neurovascular bundles from injuries; it also contains a rich venous network involved in exoendocranial blood flow through the pterygoid plexus. [4-11]

Nowadays, its use has become very popular, above all for the closure of oro-antral communications,[6-8] as a single layer[12], with free skin grafts[6] or even covered by lyophilized porcine dermis. There are a few series dealing with the reconstruction of defects secondary to maxillary cysts and intraoral tumor resections.[7]

Materials and Methods

A computerized literature search was performed using science direct and the Google search engine for articles published. Key words used were buccal pad of fat and its application, buccal fat pad, Bichat's.

The following clinical uses of the buccal fat pad in the literature were observed: closure of oroantral communication/orantral fistula, closure of postexcision defects, closure of mucosal defects, closure of primary clefts, midline secondary clefts, in TMJ reconstruction, in oral submucous fibrosis.

Anatomy and characteristics

The buccal fat pad is a simple lobulated mass consisting of a central body and 4 extensions: buccal, pterygoid, pterygopalatine, and temporal. The body is situated along the posterior maxilla and superior fibers of the buccinator. The buccal extension lies superficially and is responsible for contour of the cheek.

The buccal extension and body constitute 55%-70% of total weight. The pterygopalatine extension extends to the pterygopalatine fossa and inferior orbital fissure. The pterygoid extension stays in the pterygomandibular space and packs the lingual nerve and mandibular neurovascular bundle.

The temporal extension is divided further into two parts: superficial and deep. The superficial part of the temporal process of the buccal fat pad lies between the deep temporal fascia, temporalis muscle, and tendon. The anterior part turns around the anterior rim of the temporalis muscle, and continues with the deep part. The deep part of the temporal process lies behind the lateral orbital wall and frontal process of the zygoma.[4, 11, 13]

The Buccal and deep temporal branches of the maxillary artery, transverse facial branches of the superficial temporal artery and branches of the facial artery supplies the buccal fat pad. As it has a rich blood supply, it is considered as a pedicled graft with an axial

pattern .It may also be one reason for the quick epithelialization of the fat.[3, 4, 14]

Physiologically, it is a specialized type of fat termed as syssacosis, a fat that enhances intermuscular motion. The average volume of fat is 9.6 mL (range 8.33- 11.9 mL).[4, 14] The size of the buccal fat pad is fairly constant regardless of overall body weight and fat distribution. Ranke, in 1884, recognized that its rate of lypolysis also is different compared with subcutaneous fat.[7] It persisted during times of severe emaciation, even after subcutaneous fat was lost.

Technique to harvest the buccal fat pad

Under either local or general anesthesia an maxillary vestibular incision posterior to zygomatic buttress is placed followed by a simple incision through the periosteum and fascial envelope of the buccal fat pad. Gentle blunt dissection with a fine curved artery forceps anterior and medial to the coronoid process exposes the yellowish-colored buccal fat. Further blunt dissection with 2 vascular clamps is necessary, one to gently pull out the emergent part and the other to dissect the tissues surrounding the buccal fat pad. Mechanical suction must be avoided once the buccal fat pad is exposed.[15]

Healing of the buccal fat pad

The surface of the exposed fat becomes yellowish-white in 3 days and then gradually changes to red within 7 days due to the formation of young granulation tissue.It later changes into firmer granulation tissue during the 2nd week, and becomes completely epithelialized 3 weeks after the operation.[15, 16]

Various uses

It has been put to many uses, mainly closure of oroantral communications/fistulas , The other major use of the buccal fat pad has been in closure of postexcision defects. The defects were caused by excision of pathologies, malignancies. The buccal fat pad can be used in various regions from the angle of mouth to retromolar trigone and palate. Other uses include coverage of mucosal defects after ablative surgery or after fibrotic band incision in oral submucous fibrosis, as adjunct in closure of primary clefts or post-osteotomy clefts, as membrane in sinus lift procedures, and in TMJ surgeries.

The most critical factor for the success of the buccal fat pad is the size; although the literature reports that defects of size 7 x 5 x 2 cm have healed successfully, most authors recommend 5 x 4 cm (medium sized) defects for reconstruction with the buccal fat pad. However, if the defects are big and near the midline, bilateral flaps have been used, so that it can be distributed over a large area. [5-16]

Complications

Among the few complications associated with the buccal fat pad were recurrence of OAF and partial loss of flap, which was mostly seen in large-sized defects. Cheek deformity, Limitation in mouth opening was most commonly seen when the buccal fat pad flap was used in the retromolar region. Occasional hematoma and hemorrhage were reported due to one of the pedicles of the flap and which responded to conservative treatment. Mild obliteration of the vestibule, which corrects in due course of time. [3,6,7,9,11]

CONCLUSION

The success of the buccal fat pad is attributed to its rich vascular supply, less donor site morbidity, almost constant weight for all individuals, reliability, and ease of harvest and lower complication rate. To conclude, in recent years, the buccal fat pad has been used for a variety of purposes, owing to its physical and biologic properties, and the results have been encouraging clinicians to make use of its potential benefits.

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