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RESEARCH ARTICLE

APPLICATION OF BUCCAL FAT PAD IN MANAGEMENT OF ORAL SUBMUCOUS FIBROSIS: A REVIEW

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ABSTRACT

Diabetes mellitus is a complicated metabolic disorder that has gravely troubled the human health and quality of life. There are currently 371 million people living with diabetes and another 280 million are at high risk of developing the disease. The objective is to examine the impact of whole wheat diet on glycemic control of type 2 diabetics. A total number of 30 diabetics were selected by using purposive sampling method from Coimbatore medical college hospital. The experimental group (15) was directed to follow whole wheat diet and control group (15) was advised to follow their regular diabetic diet, for a period of three months. The fasting blood sample was drawn for estimation of blood glucose before and after the experimental study. The results shows that the decrease in the blood glucose levels of the experimental group at fasting, postprandial and HbA1c state were significant at five per cent level (p<0.05).

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INTRODUCTION

Pindborg (1966) defined OSMF as, "an insidious, chronic disease affecting any part of the oral cavity and sometimes the pharynx. Although occasionally preceded by or associated with vesicle formation, it is always associated with juxta-epithelial inflammatory reaction followed by fibroelastic change of the lamina propria, with epithelial atrophy leading to stiffness of the oral mucosa and causing trismus and inability to eat". In 1952, Schwartz coined the term atrophicaidiopathica mucosa oris to describe an oral fibrosing disease he discovered in 5 Indian women from Kenya. Joshi subsequently termed the condition oral submucous fibrosis (OSF) in 1953 (Renuka *et al*., 2000; Vanaja *et al*., 2011). The condition is well recognized for its malignant potential and is particularly associated with areca nut chewing, the main component of betel quid (Canniff, 1981). This may be treated surgically or non-surgically. Conservative treatment includes tropical application of steroids, placental extracts and hyaluronidase.

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In severe cases surgical excision of the fibrotic bands and reconstruction with a graft is the popular and accepted treatment of choice. The pedicledbuccal fat pad graft has been widely used for the repair of oral defects. A new application of this flap in the patients suffering from trismus caused by oral submucous fibrosis is reported. The patients underwent incision of the fibrotic bands and coverage of the buccal defect with a pedicled fat pad flap (Yeh, 1996).

BUCCAL FAT PAD

The buccal fat pad is a lobulated convex mass of fatty tissue in theoromaxillofacial region that lines the masticator space. The buccal fat pad has often been used to reconstruct small to medium sized defects of ipsilateral soft palate, posterior alveolar ridge of the maxilla, anterior faucial regions, retromolar region and cheek defects. The buccal fat pad is now often being used to improve mouth opening in mild to moderately severe O.M.F.S (Hao, 2000). Its use as a pedicled graft was first reported by Egyedi (1977) and its embryology, vascularization, volume and function was studied by Tideman (Tideman, 1986). In 1983, Neder described the use of buccal fat pad as a free graft for intraoral defects (Neder, 1983).

Rapidis *et al*., Dean *et al*., and Hao used pedicle BFP for the reconstruction of medium-sized postsurgical oral defects of malignant lesions (Rapidis *et al*., 2000; Dean, 2001; Hao, 2000). The proximity of the donor site to the recipient site area permits rapid grafting without having the fatty tissue outside the body for too long and this is considered as an important factor in graft success (Egyedi, 1977).

Anatomy

The buccal fat pad is a mass of specialized fatty tissue which is distinct from subcutaneous fat because it is encapsulated, has its own blood supply and is located bilaterally separating the buccinator and masseter muscles (Malik *et al*., 1977). It is a supple and lobulated mass, easily accessible and mobilized. In recent years, it has become a well-accepted graft for covering intraoral defects (Yeh, 1996). The buccal fat pad is intimately associated with the muscles of mastication (Stuzin *et al*., 1990). The buccal fat pad is located between the buccinator muscle and the mandibular ramus, separating the masticatory muscles from each other, from the zygomatic arch and from the ramus of the mandible it is surrounded by fascialenvelope (Samman *et al*., 1993). Itsimportance in masticatory function is best illustrated in the infant, where it acts as an aid in suckling. The fat pad lends fullness to the cheeks of young children. With age and growth of the surrounding facial structures, it diminishes relatively in size.[13]In the adult, the buccal fat pad enhances intermuscular motion and resembles orbital fat in appearance and function (Samman *et al*., 1993).

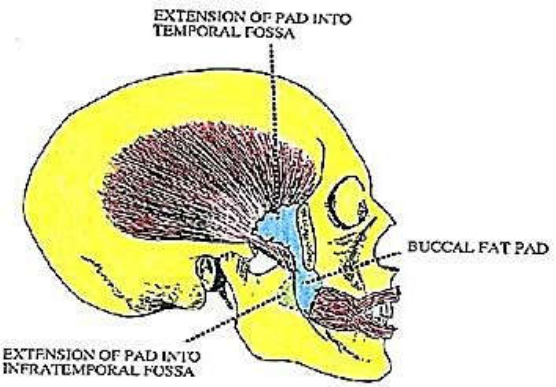

Fig 1. Buccal pad fat

Clinical Significance

The buccal fat pad has received attention for its clinical applications. It is occasionally involved in traumatic herniation into the oral cavity or maxillary sinus (Messenger, 1977; Wolford, 1981). This is seen commonly in children because of the buccal fat pad in this age group. It forms a ready donor site for free fat grafting and has been used as a pedicled flap to provide oral or nasal lining in closing oronasal fistulas. Perhaps its greatest current interest pertains to its application in aesthetic surgery to modify the contour of patients with full cheeks and to highlight the malar eminences (Stuzin, 1990). The BFP is mainly used to cover defects in the posterior maxilla, the buccal region, the hard palate, the soft palate,and retromolar and pterygomandibular regions after tumor resection, and oroantral communication after tooth extraction.[4] Surgical exposure of the buccal fat pad through an external approach is not without hazard because of the facial nerve branches those travel along its lateral surface.

APPLICATION OF THE BUCCAL FAT PAD TO THE SURGICAL TREATMENT OF O.S.M.F.

There is no definite treatment for this condition. Many medical and surgical modalities have been tried. Various flaps have been used to reconstruct surgical defects following excision of fibrous bands. Soft tissue defects in the oral cavity created after resection of fibrous bands in submucous fibrosis present a distressing problem both to the patient and the surgeon. Though abundant blood supply within the oral cavityfacilitates any reconstructive procedure, the oral cavity is a storehouse of a variety of microorganisms which can compromise the viability of flaps. A large number of flaps are available for reconstruction of oral defects, like tongue flap, palatal flap and skin grafts.

A large number of flaps are available for reconstruction of oral defects, like tongue flap, palatal flap and skin grafts.Buccal fat pad for intra oral reconstruction was used by us with excellent results. Egyedi first published the use of buccal fat pad as a pedicled graft for closure of oral defects; he lined it with a split thickness skin graft. Neder described the use of buccal fat pad as a free graft for intra oral defects. Yen first described application of buccal fat pad for oral submucosal fibrosis. He found that a pedicled graft of buccal fat enables closure of oral defects up to 60mm x 60mm and 6 mm in thickness. He found no obliteration of the oral vestibule and very little morbidity at the donor site as compared to other local flaps. Mehrotra *et al* also used buccal fat pad in various maxillofacial surgeries like submucosal fibrosis, oroantral fistulae and scar tissue adhesions in the cheek with good results (Dubin, 1989; Stuzin, 1989; Mehta *et al*., 2003).

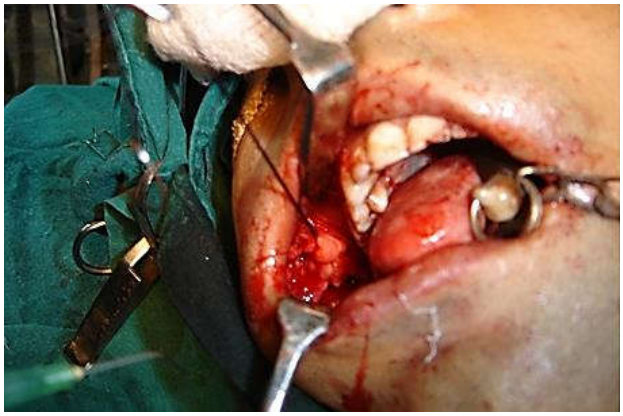

Fig 2. Teasing of buccal fat pad

Surgical procedure

The surgery is performed under general anesthesia with nasal incubation.The incision is made with surgical knife or with an electrosurgical knife along each sideof buccal mucosa at the level of occlusal plane away from the stenson's orifice. The incisions are carried posteriorly along the pterygomandibular raphe or anterior pillar of the fauces and anteriorly as far as the corner of the mouth. Depending upon the location of the fibrotic bands, which restricted mouth opening these fibrotic bands are always detectable by palpation. The wounds created are further freed by manipulation until no restrictions are felt. The mouth is then forced open with a mouth gag to an acceptable range of approximately 35 mm. the coronoid process are approached form the wounds created and resected if a 35 mm mouth opening could not be achieved.

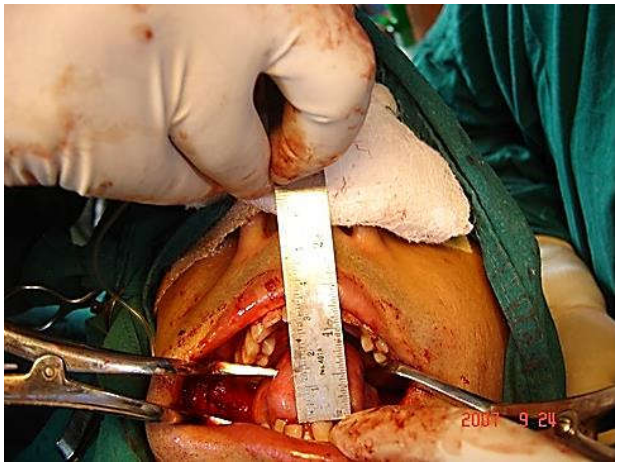

Fig 3. Buccal fat pad secured with transbuccal or horizontal mattress suture. Also showing post operative mouth opening

A mouth opening of 35 mm as measured from the incisor edge is considered to be the minimum acceptable opening in an adult. Bilateral buccal defects of from 3.5 x 2.0 to 5.5 x 3.0 cm can be covered by BFP grafts after hemostasis. The BFP can be approached via the posterior-superior margin of the created buccal defect, and then dissected with an index finger. The BFP is teased out gently until a sufficient amount is obtained to cover the defect without tension. The BFP is then secured in place with horizontal mattress sutures. The buccal fat pad graft covers the buccal defects posteriorly to the soft palate and anteriorly to the cuspid region. The remaining defect is left for secondary epithelization or is covered with local flaps (Surej Kumar *et al*., 2010).

ADVANTAGES

- Mobilization of fat is a relatively simple procedure and can be carried out under local anesthesia.
- The proximity of donor site to recipient site.
- There is minimal disfigurement and discomfort to patient.
- It is an expendable tissue. If it fails, the potential of the use of other local flaps is not jeopardized.
- The buccal fat pad has agood blood supply, efficient uptake at recipient site andspontaneous epithelialization in oral cavity.
- It has a majoradvantage of not producing any morbidity at the donorsite

Conclusion

Technically this surgical procedure is easy and the donor site is in close proximity to the posterior third of the buccal defect. This is a very quick and efficient form of therapy for O.S.M.F. patients with severe trismus to ensure long term improvement in mouth opening.

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