

Case Report

The Role of Buccal Fat Pad in the Surgical Management of Oral Submucous Fibrosis

Dr. M. Alagappan*, Dr. S. Vijay parthiban**, Dr. R. Sathish Muthukumar***

*Associate Professor, ** Senior Lecturer, ***Professor, Dept. of Oral & Maxillofacial Pathology, Chettinad Dental College & Research Institute (CDCRI), Kelambakkam, Tamil Nadu, India.



Dr. M. Alagappan graduated from Ragas Dental College, Chennai. He did his Masters in Oral & Maxillofacial Surgery from Nair Hospital Dental College, Mumbai, one of the best dental schools in Asia, under the prestigious Mumbai University. He is a DNB in Oral & Maxillofacial Surgery. He is also a Member of Faculty of Dentistry of Royal College of Physicians & Surgeons of Glasgow (MFDSRCPS). He attended a clinical training in Orthognathic Surgery at Sunninghill hospital, Johannesburg, South Africa in 2008. His areas of interest include Maxillofacial Trauma, Orthognathic Surgeries and TMJ surgeries. He is currently working as Associate Professor in the Department of Oral & Maxillofacial Surgery, Chettinad Dental College & Research Institute.

Corresponding author - Dr. Alagappan (alagumds@gmail.com)

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Abstract

The buccal fat pad is commonly used in oral surgical procedures as it can be harvested easily, is reliable and has minimal complication. The volume of buccal fat pad is important when used for grafting in oral submucous fibrosis to achieve adequate coverage of surgical defect. The fat pad undergoes atrophy as age advances and in severe cases of oral submucous fibrosis, and the availability of normal to good volume of buccal fat is rare in these group of patients. Adequate volume of buccal fat pad is necessary to cover the surgical defect in oral submucous fibrosis. In majority of patients the fat pad undergoes atrophy as the disease progresses. After grafting, the buccal fat is replaced by stratified squamous epithelium over a period of time. We present a peculiar case of oral submucous fibrosis treated surgically with buccal fat pad grafting with special emphasis on the volume of fat obtained.

Key Words: Buccal fat pad volume, submucous fibrosis, epithelialisation

Introduction

Different treatment modalities including medical, surgical or a combination of both have been tried by various workers in the treatment of submucous fibrosis with variable success rates with no universally accepted protocol mainly due to the fact that the disease is not fully understood and it is progressive in nature. The younger the age, the more rapid the progression of the disease, and more likely the recurrence of symptoms.¹

The surgical procedure includes excision of fibrous bands with grafting of raw area with various graft materials like split skin graft,² palatal island flaps,³ nasolabial flaps,⁴ tongue flaps,⁵ buccal pad of fat⁶, placental grafts,⁷ and radial forearm free flaps.⁸ The grafting procedure may be combined with bilateral temporalis myotomy and coronoidectomy with extraction of all wisdom teeth⁹.

Case Report

A 45 year old female patient reported with the chief complaint of burning sensation and decrease in mouth opening for 3 years. The patient gave a history of pan and areca nut chewing habit for 7-8 years. Examination revealed palpable fibrotic bands in the buccal mucosa, rima oris and retromolar area bilaterally. Mucosal blanching was seen on the hard and soft palate with involvement of uvula and floor of mouth.

The mouth opening of the patient was 1.5 cm (fig.2). The patient was operated for the release of fibrotic bands under general anaesthesia. The incisions were made along the buccal mucosa at the level of the occlusal plane away from the orifice of parotid duct. They were carried posteriorly to 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 the mouth opening. Bilateral coronoidectomy (fig.3) temporalis myotomy and extraction of all wisdom teeth was done. An acceptable mouth opening of 3.5 cm was achieved. Buccal fat pad was teased out by dissecting a tunnel along the ascending ramus of the mandible and from lateral surface of buccinator muscle by gentle dissection and lateral pressure on the cheeks. The buccal fat pad of volume about 15 ml and thickness of about 8 mm was obtained, which is a rare occurrence among female patients with severe oral submucous fibrosis. The fat was interposed in the raw area and was sutured to the mucosa using reabsorbable suture material. The same procedure was performed bilaterally (fig.4, 5). The patient was kept under antibiotic cover and nasogastric feed for 5 days. The mouth opening exercises were started from second postoperative day onwards. At the end of one year follow up the patient had a mouth opening of 3.2 cm and had good epithelialisation of buccal pad of fat grafted over the raw area (fig.6, 7).

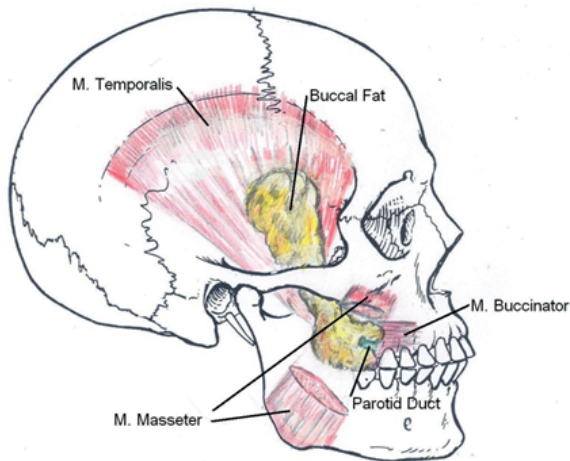


Fig 1: Anatomy of Buccal fat pad



Fig 5: Buccal fat pad covering the raw area in the surgical site (left side)



Fig 2: Preoperative mouth opening(<2cm)



Fig 3: OPG showing bilateral coronoidectomy



Fig 6: Postoperative mouth opening (1 year) measuring 3.2cm



Fig 4: Buccal fat pad covering the raw area in the surgical site, bilaterally (Right side)



Fig 7: Epithelialisation of buccal fat pad at the surgical site bilaterally at the end of 1 year

Discussion

The buccal fat pad is a biconvex disc of vascularized fat lying behind the zygomatic arch (fig1). The buccal fat pad can be divided into three lobes-anterior, intermediate, and posterior-according to the structure of the lobar envelopes, the formation of the ligaments, and the source of the nutritional vessels. The buccal, pterygoid, pterygopalatine, and temporal extensions (superficial and profound) are derived from the posterior lobe. The buccal fat pad is fixed by six ligaments to the maxilla, posterior zygoma, and inner and outer rim of the infraorbital fissure, temporalis tendon, or buccinator membrane. Several nutritional vessels exist in each lobe and in the subcapsular vascular plexus forms. The buccal fat pads function to fill the deep tissue spaces, to act as gliding pads when masticatory and mimetic muscles contract, and to cushion important structures from the extrusion of muscle contraction or outer force impulsion.¹⁰ The buccal pad of fat is supplied by branches of the facial artery, the internal maxillary artery, and the superficial temporal artery.^{11,12,13}

Histological examination of pedicled buccal fat pad graft in oral submucous fibrosis on weekly interval showed inflammatory cell infiltrate, blood vessel congestion, and fibrinous exudates covering the buccal fat pad which were obvious by 2 nd week. At 3 rd week, blood vessel congestion and fat cell number decreased markedly. Evidence of stratified squamous epithelium with parakeratosis was seen in the margin of the buccal fat pad graft. At 4 weeks, the number of fat cells decreased significantly and the original Buccal Fat Pad was almost completely replaced by granulation tissue. The original buccal fat pad was fully covered by stratified squamous epithelium by 5 weeks.¹⁴

The volume of the buccal fat pad may change throughout a person's life. The volume in adult ranges from 8.3-11.9 ml. The mean volume in males is 10.2ml and ranges between 7.8-11.2ml, while in females the mean volume is 8.9ml and ranges between 7.2-10.8ml.¹⁵ Defects of size upto 12 cm² to 15 cm² can be closed using buccal fat pad alone without compromising the blood supply. In severe oral submucous fibrosis the buccal fat pad is atrophic and the anterior reach of fat is inadequate. Though in majority of patients with oral submucous fibrosis the buccal fat pad undergoes atrophy as the disease progresses, we obtained about 15ml of buccal fat pad with thickness of 8mm, which is a rare occurrence among the female population with severe oral submucous fibrosis. The pedicled buccal fat pad harvested was adequate enough to cover the entire surgical defect and was eventually replaced by stratified squamous epithelium.

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