

Use of Buccal Pad Fat in the Reconstruction of Oral Submucous Fibrosis: A Study

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ABSTRACT

Background: Oral submucous fibrosis is a chronic progressive premalignant condition, characterized by gradual trismus of mouth. This study was done to assess the use of buccal fat pad as an interpositioning material in surgical management of oral sub mucous fibrosis.

Materials and methods: A series of 12 numbers of patients with the presence of proven oral submucous fibrosis and having mouth opening of less than 15 mm were taken for the study. These patients were treated surgically using pedicled buccal fat pad as an interpositioning material. A detailed history of the patient was recorded before surgery. The preoperative internicisal distance was measured in each patient with maximum mouth opening. All the patients were called for the follow-up at 1 month, 3 month and 6 months. The status of moth opening and signs and symptoms were noted at the follow-up examination.

Results: The preoperative mouth opening was in the range of 4 to 17 mm (mean 13.25 mm). After the successful surgical treatment, the mouth opening at discharge was 24 to 39 mm (mean 31.08 mm). The postoperative mouth opening was also measured at 1 month (mean 30.33 mm), at 3 month (mean 30.75 mm) and at 6 month (mean 30.27 mm) and shown statistically significant results. (student's t test, $p < 0.001$)

Conclusion: Use of buccal fat pad had found to be having many advantages and had shown good postoperative results.

Keywords: Oral submucous fibrosis, Surgical management, Buccal fat pad.

INTRODUCTION

Since the time of Sushruta where oral submucous fibrosis was known as vidari', it is a well-known entity. In 1953 Joshi was the first person to describe this condition in India. Oral submucous fibrosis is chiefly found in the Indian subcontinent. The maximum occurrence is found in the state of Kerala with an overall prevalence rate of 2.5% in different states of the country.¹

The patients predominantly complain of an irritable oral mucosa at the early stage, particularly when spicy food is consumed. Clinically, in the initial stages there are erosions and ulcerations; and subsequently, the oral mucosa becomes blanched

and loses its elasticity. Vertical bands start appearing in the buccal mucosa, the retromolar area, the soft palate, and the pterygomandibular raphe, and a fibrotic ring forms around the entire oral cavity. Some patients can have difficulty in whistling and difficulty with tongue movement.^{2,3}

Soft tissue weaknesses in the oral cavity created after resection of fibrous bands in submucous fibrosis often present a distressing problem both to the patient and the surgeon. Though abundant blood supply within the oral cavity enables any reconstructive procedure, the oral cavity is a store of a variety of microorganisms which can compromise the viability of flaps.¹

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The buccal fat pad is a easily accessible, supple and lobulated mass and mobilized.² Various medical and surgical management protocols have been advocated, but the present study is conducted with the aim of achieving results in terms of mouth opening after transecting the fibrous bands followed by grafting using buccal fat pad.

MATERIALS AND METHODS

A series of 12 numbers of patients with the presence of proven oral submucous fibrosis and having mouth opening of less than 15 mm were taken for the study. These patients were treated surgically using pedicled buccal fat pad as an interpositioning material to cover the raw areas in the buccal mucosa after the incision and making of release of fibrous bands. A detailed history of the patient was recorded before surgery. The preoperative internicisal distance was measured in each patient with maximum mouth opening.

The surgery was done under general anesthesia. The incision was placed along the occlusal plane with the surgical knife on the buccal mucosa away from the stenson's duct. The fibrous bands were detected by digital palpation. Then fibrous bands were released and the wounds created were further freed by manipulation till no restrictions were felt. The mouth was then forced to open using mouth gag to an acceptable range. The buccal fat pad was approached on the posterior superior margin of the created buccal defect at the posterior of the zygomatic buttress region. The fat pad was mobilized until a significant amount was obtained to cover the defect without tension. This was used to cover the defect. The buccal fat pad then sutured at the defect area. (Fig. 4) All the patients were given liquid diet postoperatively for the 1 week. All the patients were called for the follow-up at 1 month, 3 month and 6 months. The status of moth opening and signs and symptoms were noted at the follow-up examination. The results were compared using student's t test.

RESULTS

The results were shown in the table no. 1 and found to be satisfactory in all the patients. The preoperative mouth opening was in the range of 4 to 17 mm (mean 13.25 mm). after the successful surgical treatment, the mouth opening at discharge



Fig 1: Preoperative and postoperative comparison of the mouth opening.



Fig 2: Preoperative and postoperative comparison of the mouth opening.



Fig 3: Preoperative and postoperative comparison of the mouth opening.



Fig 4: Intraoperative photographs of the patient showing release of the fibrous bands and positioning of the buccal fat pad.

Table 1: Comparison of the preoperative and postoperative mouth opening. (Student's t test)

Examination	Number of patients	Mouth opening (Mean $\pm$ SD)	SE	t value	p value
Preoperatively	12	13.25 $\pm$ 1.36	0.39	21.4586	<0.001*
At discharge	12	31.08 $\pm$ 2.54	0.73		
Preoperatively	12	13.25 $\pm$ 1.36	0.39	26.0160	<0.001*
At 1 month	12	30.33 $\pm$ 1.45	0.53		
Preoperatively	12	13.25 $\pm$ 1.36	0.39	26.2874	<0.001*
At 3 month	12	30.75 $\pm$ 1.86	0.54		
Preoperatively	12	13.25 $\pm$ 1.36	0.39	29.3900	<0.001*
At 6 month	12	30.27 $\pm$ 1.42	0.43		

was 24 to 39 mm (mean 31.08 mm). The pedicled buccal fat pad was seen epithelialized at the place after 3 to 4 weeks. The postoperative mouth opening was also measured at 1 month (mean 30.33 mm), at 3 month (mean 30.75 mm) and at 6 month (mean 30.27 mm). (Fig. 1, 2 and 3) On comparison of the preoperative mouth opening with discharge and postoperative mouth opening using student's t test had shown statistically significant results. (student's t test, $p < 0.001$)

DISCUSSION

The management of oral submucous fibrosis can be done with two broad categories: medical and surgical management. The medical management includes multiphase injections of hyaluronidase, placental extract, hydrocortisone, iron supplements, and triamcinolone plus vitamin. Intralesional steroid injections are satisfactory only in cases with minimal impairment of mouth opening. The surgical management is the choice method in patients with noticeable limitation of mouth opening. The surgical modalities can be used are: release of fibrous bands and covering of the raw areas with bilateral nasolabial flaps, split thickness skin grafting, palatal island flaps, temporalis myotomy, tongue flaps, and coronoidectomy.⁴

The bulk of the buccal fat pad reside in the buccal space and rests on the periosteum covering the posterior buccal aspect of the maxilla. It has a rich blood supply with the internal maxillary artery, small branches of the facial artery, and the superficial temporal artery and vein by an abundant network of vascular anastomosis. On average, the volume of buccal fat pad is 9.6 mL (range, 8.3-11.9 mL). Defects measuring up to 35 cm can be covered with BFP without compromising the blood supply. The buccal extension and the main body of the fat pad are in near vicinity to the buccal defect and can be approached through the same incision.^{2,5,6}

In 1983, Nader put forward the use of buccal fat pad as a free graft for the repair of intraoral defects. Tideman et al⁷ and Stuzin et al⁸ shown clinical use of the buccal fat pad is grounded on its anatomy and clinical significance.

The buccal fat pad is largely used in protection of the defects in the hard palate, the posterior maxilla, the buccal region, the soft palate, and the pterygomandibular regions and the retromolar. Also after tumor resections and oroantral communications after tooth extractions.⁴

Yen et al⁹, who first designated the application of buccal fat pad for oral submucosal fibrosis, establish that a pedicled graft of buccal fat permits closure of oral defects up to 3 x 5 cm and 6 mm in thickness with no obliteration of the oral vestibule and very

slight morbidity at the donor site as related to other local flaps. Mehrotra et al¹⁰ also used buccal fat pad in various maxillofacial surgeries like oroantral fistulae, submucosal fibrosis, and scar tissue adhesions in the cheek with noble results.

In the present study, the buccal fat pad volume was found to be satisfactory in all cases, and it sustained its position as an interpositioning material in postoperative follow up period, similar to the findings of Yeh et al¹¹ and Sharma et al².

Mehrotra et al¹² compared the surgical management in 100 patients using tongue flap, buccal fat pad, nasolabial flap, and split thickness graft and determined that buccal fat pad graft was more superior to other surgical measures and it can be done under local anaesthesia as a day care procedure.

There are various benefits of employing buccal fat pad like^{4,5,6,13}:-

- a. Ease of accessibility through the same incision used for creating surgical defect, thereby obviating the necessity of an alternative donor site and its ensuing morbidity.
- b. It can be teased out and spread to cover the depth and width of the surgical defect, unlike just the superficial thin layer as seen in a split thickness skin graft.
- c. The buccal fat pad as a donor tissue is not involved in the pathological process unlike other donor tissues such as the tongue or palate.
- d. It also improves the physiological functions of cheek by regaining its suppleness and elasticity post surgically.
- e. The rich vascularity of the pedicled graft ensures its vitality and resistance to infections compared to a free graft.
- f. Early return to function with normal eating can be commenced within 5 to 7 days with rapid and predictable wound healing expected confidently.

The buccal fat pad is of course no substitute for early, vigorous and sustained physiotherapy, which

continues to be an important perquisite for success. However, the resilience of the graft encourages immediate commencement of mouth opening exercises. These factors make the buccal fat pad a logical, reliable and convenient technique for the treatment of oral submucous fibrosis.^{4,5,6,13}

CONCLUSION

In conclusion, it was found that the buccal fat pad had many advantages like readily available, easily reconstituted for simple chair-side technique, temporary covering material on the sensitive nerve endings of raw wounds, which reduced the postoperative pain, acted as a mechanical barrier preventing wound contamination, etc. In turn, greater compliance positively affects mouth opening management and therefore, patient satisfaction with the outcome of treatment.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Mehta AAK, Panwar SS, Verma RK, Pal AK. Buccal Fat Pad Reconstruction in Oral Submucosal Fibrosis. *MJAFI* 2003;59(4):340-1.
2. Sharma R, Tbaptiyal GK, Sinha R, Menon PS. Use of Buccal Fat Pad for Treatment of Oral Submucous Fibrosis. *J Oral Maxillofac Surg* 2012;70(1):228-32.
3. Randhawa RK, Randhawa GS, Tiwari S, Gupta KC, Maria A, Satpathy M. Comparison of Efficacy of Buccal Fat Pad and Collagen Membrane in Surgical Management of Oral Submucous Fibrosis. *Int J Prev Clin Dent Res* 2017;4(3):1-8.
4. Saravanan K, Narayanan V. The Use of Buccal Fat Pad in the Treatment of Oral Submucous Fibrosis: A Newer Method. *Hindawi Publishing Corporation International Journal of Dentistry* 2012; Article ID 935135:1-7.
5. Surej Kumar LK, Kurien NM, Sakkir N. Buccal fat pad reconstruction for oral submucous fibrosis. *National Journal of Maxillofacial Surgery* 2010;1(2):164-7.

6. Sethi T, Kumar V, Gour S, Gupta D. Application of buccal fat pad in management of oral submucous fibrosis: a review. *International Journal of Current Research* 2017;9(5):51451-3.
7. Tideman H. Buccal fat pad as a pedicled graft. *J Oral Maxillofac Surg* 1986;44:435-8.
8. Stuzin JM, Wagstrom L, Kawamoto HK, Baker TJ, Wolfe SA. The anatomy and clinical applications of buccal fat pad. *Plast Reconstr Surg* 1990;85:29-37.
9. Yen DJ. Surgical treatment of submucous fibrosis. *J Oral Surg* 1986;54:230-69.
10. Mehrotra D, Bhargava A, Pradhan R, Mohammad S, Singh RK. Buccal fat pad for reconstruction in maxillofacial surgery. *Indian J Maxillofac Surg* 2001;16:7-11.
11. Yeh CJ, "Application of the buccal fat pad to the surgical treatment of oral submucous fibrosis," *International Journal of Oral and Maxillofacial Surgery* 1996;25(2)130-3.
12. Mehrotra D, Pradhan R, Gupta S. Retrospective comparison of surgical treatment modalities in 100 patients with oral submucous fibrosis," *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology* 2009;107(3)e1-e10.
13. Shreyas Gupte, Rakesh Sorathia, Angad Shetye. "Autogenous Buccal Fat Pad in the Treatment of Oral Submucous Fibrosis: A Case Report & Review of Literature". *International Journal of Scientific Study*. 2014;1(6):48-51.