ORAL SUBMUCOUS FIBROSIS: RECONSTRUCTION WITH NASOLABIAL FLAP

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ABSTRACT

Objectives: The main objective of the study was to evaluate the efficacy of Nasolabial Flap in the reconstruction of oral submucous fibrosis.

Study Design: Case series

Place and Duration of Study: Oral and Maxillofacial Surgery Department, Armed Forces Institute of Dentistry, Rawalpindi from Jan 2008 to Dec 2009.

Patients and Methods: A total of 5 patients with moderate to severe degree of oral submucous fibrosis were treated surgically and the reconstruction was done using bilateral nasolabial flaps. Four patients were male and one patient was female. The mean age of the patients was 24.6 years. Pre-operative mouth opening was measured before the procedure. Similarly per-operative and post operative mouth openings were also recorded and compared with the pre operative mouth opening.

Results: Pre-operative openings ranged from 8mm to 18mm (mean= 12.3mm). After 6 months of post operative follow up and vigorous physiotherapy exercises, patients were able to maintain mouth openings ranging from 32mm to 39mm (mean =34.5mm). Paired t-test was used to analyze the results and the value was found to be statistically significant. ($p<0.05$)

Conclusion: Bilateral Nasolabial flap is a satisfactory treatment modality for oral submucous fibrosis both functionally and esthetically.

Keywords: Oral Submucous Fibrosis, Nasolabial Flap, Areca nut.

INTRODUCTION

Oral submucous fibrosis (OSF) is a chronic debilitating disease which specifically affects the people of South Asia and Indian sub continent with a reported incidence of 0.2-1.2%, affecting females more often than men with a female to male ratio of approximately 3:1[1]. There is juxtaepithelial fibrosis of oral soft tissues resulting in progressive limitation of mouth opening, difficulty in swallowing and eating. Burning sensation on eating spicy foods and pale mucosa are usually the initial signs and symptoms. Etiology is usually found out to be chillies, spicy foods, areca nut (betel nut quid), tobacco chewing, vitamin B deficiency and malnutrition[2].

Various treatment modalities including removing the etiology, mouth opening exercises, steroid injections and various surgical modalities have been described in literature for treating OSF but none has shown to be 100% effective[3].

PATIENTS AND METHODS

A total of 5 patients, who presented to the oral surgery department of Armed Forces Institute of Dentistry (AFID), Rawalpindi, between Jan 2008 and Dec 2009 (with the last patient presenting in May 2009), diagnosed with OSF clinically and where doubt histopathologically, were included in the study. Out of these 5 patients, 4 were male and 1 female. The age ranged from 18 years to 31 years (mean= 24.6 years). The disease pattern was classified according to classification proposed by Khanna and Andrade et al (1995) [8] and all of our patients had moderate to severe degree of limited mouth opening and burning sensations. A thorough history and clinical evaluation was performed keeping in view the age of the patient and presence of nasolabial furrow. Treatment plan of excising the bands present in the buccal mucosa up to the retromolar area followed by reconstruction with nasolabial flaps bilaterally was formulated. Pre operative mouth opening was measured in millimeters using a vernier caliper from the tip of the lower central incisor to the

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upper central incisor. Peri-operatively, bands were divided surgically. Nasolabial flaps were measured according to the defect and lifted accordingly. They were tunneled inside after de-epithelialization and stitched in place using vicryl. Per-operative mouth opening was recorded. Extra-oral donor sites were closed primarily after minimal undermining. Post operatively flaps were monitored clinically for physical signs such as colour, temperature and capillary refill. Mouth openings were recorded after 7 days, 01 month and 06 months time. All patients were advised vigorous physiotherapy exercises, starting on the 7th post op day when the flap has been taken up reasonably and the exercises could not cause ischemia and dehiscence of the flap. Patients were taught mouth opening exercises using wooden tongue blades which have a thickness of approximately 1.0 mm. They were demonstrated on how to place these tongue blades between their molars in an incremental fashion. Exercises with these blades were advised at least 03 times a day for a period of 06 months. 17-20 tongue blades between molars were considered optimal.

RESULTS

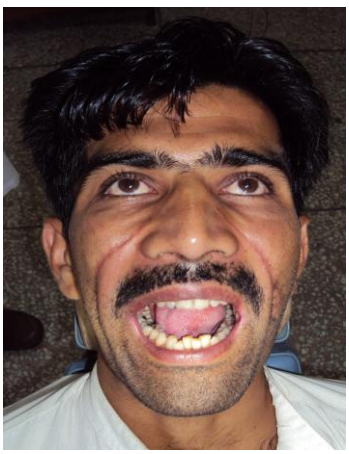
Data was analyzed using SPSS version 17. Descriptive statistics were used to describe the results. Paired sample t-test was used to compare pre and post operative mouth openings. P-value <0.05 was considered significant.

Out of our 5 patients, 4 were male and one was female with an age ranging from 18 years to 31 years and having a mean age of 24.6 years. Pre-operative openings ranged from 8mm to 18 mm (mean = 12.3mm). Per-operative mouth openings achieved ranged from 36mm to 40 mm with a mean of 38.4mm. After 06 months of post operative follow up and vigorous physiotherapy exercises with the tongue blades patients were able to maintain mouth openings ranging from 32mm to 39mm (mean =34.5mm). This difference was found to be statistically significant ($p<0.05$) Figure shows pre operative and post operative photographs.

Table showing pre operative, per-operative and post operative mouth openings.

S No.	Pre-Operative	Per-operative		Post-Operative	
			7 days	01 Month	06 Months
	(mm)	(mm)	(mm)	(mm)	(mm)
1	8.0	37	25	29	32
2	10.0	40	27	31	34.5
3	11.5	36	21	26	33
4	18.0	40	23	30	39
5	14.0	39	20	31	34
Mean ± SD	12.3±3.86 mm	38.4±1.81mm	23.2±2.86mm	29.4±2.07mm	34.5±2.69mm

Fig.1 (a) Pre-Operative photograph of a patient



(b) Post operative photograph of the patient

The results are displayed in the table.

DISCUSSION

Oral submucous fibrosis is considered pre-malignant condition with a chance of malignant transformation to be around 7.6-13%[1]. There is progressive fibrosis of buccal mucosa, soft palate and oropharynx owing to the formation of sub mucosal fibrotic bands[4].

Some studies have proved that arecoline in areca nut is the main causative agent and tannin which is a protein, can have synergistic role. These chemicals interfere with the molecular processes of deposition and degradation of extra-cellular molecules such as collagen. There is increased secretion of inflammatory cytokines, growth factors and decreased production of anti-fibrotic cytokines[1,2,4].

Histopathological examination of OSF specimens show hyperkeratosis with marked epithelial atrophy in older lesions. Underlying connective tissue shows dense and hypovascular collagen deposition with chronic inflammatory infiltrate. Epithelial dysplasia and carcinoma in situ is found in 6-15% of the cases submitted for biopsy[5]. Pindborg described 4 stages of oral submucous fibrosis based on histological findings: very early stage, early stage, moderately advanced stage and advanced stage[3].

Treatment can be conservative or surgical. Conservative treatment involves mouth opening exercises[6], vitamin and iron supplements, intralesional injections of hyaluronidase, placental extract, intralesional injections of steroids and lycopene therapy. Submucosal injections may produce temporary symptomatic relief but can also lead to aggravated fibrosis, pronounced trismus and increased morbidity due to mechanical injury secondary to injection trauma and chemical irritation from the drug[7-10].

Surgical treatment is required in all advanced cases. The aim of surgical treatment is to release fibrotic bands and provide adequate mouth opening[11]. After surgical division of the bands, reconstruction can be carried out using split skin graft, palatal island flap, superficial temporal fascia flap, bilateral tongue flaps, buccal fat pad, bilateral nasolabial flaps and bi pedicled radial forearm free flap. A newly developed modality using collagen/silicone bilayer membrane as mucosal substitute has also been described[12-16].

Nasolabial flap is an axial pattern flap based on the angular artery which is a branch of facial artery. It can be based inferiorly or superiorly. It is raised in subcutaneous plane without disturbing the oro-facial musculature and can be easily tunneled to reconstruct various intra-oral defects like oral submucous fibrosis, carcinoma of buccal mucosa or floor of the mouth etc[15,17,18].

In our experience with nasolabial flap the results were satisfactory. We de-epithelialized the flap along the portion that would rest in the myomucosal tunnel. This removed the need for a second surgery. A slight decrease in mouth opening was noted between the opening achieved per operatively and final post operative opening. This is probably because of scarring which occurs as a natural sequalae of healing. One patient complained of excessive tissue inside the mouth which later required de-bulking while one patient required revision of the extra-oral scars. Hair growth inside the mouth was also noted in one patient.

CONCLUSION:

Use of bilateral nasolabial flap for reconstruction of oral submucous fibrosis is a good option as it is easy to perform and gives good results regarding both, esthetics and function. Post operative patient cooperation and physiotherapy is extremely important to get good long term results.

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