

ORIGINAL ARTICLE

The Usefulness of an Absorbable Bilayer Collagen With Buccal Fatpad in Surgical Management of Oral Submucous Fibrosis: A Prospective Study

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ABSTRACT:

Oral submucous fibrosis is a chronic progressive premalignant condition. It is one of the commonest oral pathological conditions in Northern India. It occurs due to use of smokeless tobacco like betel quid, areca nut, tobacco and slaked lime. Various surgical modalities have been tried in surgical management of oral submucous fibrosis, but each has its own limitations. Here we used collagen graft with buccal fat pad.

Keywords: Oral submucous fibrosis, Fibrous bands, Buccal fat pad, Collagen graft.

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INTRODUCTION

The use of smokeless tobacco in various forms is very popular in the Indian subcontinent. This habit which usually involves chewing of betel quid combined with areca nut, betel leaf, tobacco and slaked lime, often leads to unique generalized fibrosis of oral soft tissue called oral submucous fibrosis resulting in gradual reduction in mouth opening which impedes the function.^{1,2}

In advance cases, surgical treatment is only choice of treatment to improve mouth opening. The various surgical procedures include excision of fibrous bands with and without grafts. The excision of fibrous bands without graft resulting in a raw wound surface. According to Ashley's principles of plastic surgery, covering the raw wound is necessary to prevent infection, tissue contracture and scarring.^{3,4,5} To cover this wound various flaps has been tried, but each has its own limitations. Now a day's Collagen is commonly use, it is a biological product and easily available. The Buccal fat pad and Collagen membrane have all been used with satisfactory postoperative results.^{6,7}

This study aims to assess the efficacy and usefulness of a commercially available absorbable bilayer collagen graft with buccal fat pad in surgical management of Oral submucous fibrosis.

MATERIALS AND METHODS

SOURCE OF DATA

Department of Dentistry, Dr. S.N. Medical college

INCLUSION CRITERIA

- Male and female subjects within the age group of

15-55 years

- ASA Grade I and II patients
- Patients with Grade III and Grade IV Oral Submucous Fibrosis (Khanna and Andrade grading) requiring surgical management and reconstruction.

EXCLUSION CRITERIA

- ASA Grade III and IV patients.
- Women who are pregnant.
- Patients with known history of hypersensitivity reactions.

STUDY DESIGN

- This is a prospective clinical based study.
- Sample size: 20

METHODS OF COLLECTION OF DATA

Procedure included resection of fibrous bands, intra operative forced mouth opening, followed by covering the raw mucosal defect with a commercially available absorbable bilayerd collagen graft with buccal fat pad which was stabilized by the use of sutures. They were instructed to quit the habit completely. Patients were required to continue with postoperative physiotherapy along with nutritional supplements.

EVALUATION CRITERIA

- Changes in the interincisal distances were analysed preoperatively and postoperatively.
- Post-operative mouth opening was assessed for every patient at 1 week using Inter- incisal distances.

METHOD OF STUDY

Relevant history was taken from the patients and careful clinical examinations were done. In the present study collagen membrane with buccal fat pad. was applied as a dressing to 20 cases of OSMF. The procedure involved bilateral release of fibrous bands, bilateral coronoidectomy, release the buccal fat pad graft, covering the buccal defects with buccal fat pad and collagen membrane. The procedure was carried out under GA. Regular follow up was done and results were assessed by comparing the pre operative and post operative maximum mouth opening.

Collagen membrane removed from pouch was thoroughly washed in sterile saline solution (in order to remove the preserving medium), was cut by scissors in slight excess of the wound size and sutured to the edges of the wound by the use of Black silk sutures. A few quilting sutures were also given in addition to making a few criss-cross incisions on the collagen membrane to facilitate drainage. The collagen sheet showed certain degree of sloughing and disintegration generally after 7 days. At the 2nd week, most of the collagen sloughed off the surface. The remnants of collagen were removed by irrigation with normal saline. The study was designed to evaluate the clinical efficacy of collagen with buccal fat pad as a graft Detailed results are represented in tables 1 to 7

material in promoting haemostasis, relieving pain, inducing granulation, preventing infection, assisting in rapid epitheliasation at wound site and in improving postoperative mouth opening.

STATISTICAL ANALYSIS

All statistical analyses were performed using the SPSS 15 statistical software version, IBM, USA, by applying Paired and Independent T test and ANOVA test

OBSERVATION

Good haemostasis was noted in 16 cases out of 20. Pain relief was rated as good in 12 cases and in all cases collagen graft well adhere to the underlying wound bed.

In all cases granulation and epithelialisation were good and there was little or no contracture. In these cases the collagen membrane was in contact with the buccal fat pad and with wound bed during the initial healing phase. In this study on average the adhered collagen underwent lysis on the 8 postoperative day.

In the present study when using collagen with buccal fat pad for dressing wounds. All the patients were comfortable with the grafting and mouth opening were good postoperatively.

Table 1: Age distribution of patients studied

Age	NO	%
15-25	1	5.00
26-35	8	40.00
36-45	8	40.00
46-55	3	15.00
Total	20	100.00

Table 2: Gender distribution of patients studied

Gender	No	%
Male	6	30.00
Female	14	70.00
Total	20	100.00

Table 3: Difference between Pre-op and post-op mouth opening using Paired T test.

Groups	Mean	Standard Deviation	Mean Difference	95% Confidence Interval for mean difference		t	p
				Lower	Upper		
Pre-op	16.0500	3.60519	-18.90000	-20.16951	-17.63049	-31.160	.000 (HS)
Post-op	34.9500	3.69174					

HS = highly significant (p< 0.001)

Interpretation = There was highly significant difference in mouth opening between pre-op and post-operative surgery.

Table 4: Difference in Pre-op and post-op mouth opening between males and females using Independent T test.

Groups	Gender	Mean	Standard Deviation	Mean Difference	95% Confidence Interval for mean difference		t	p
					Lower	Upper		
Pre-op	Males	17.8333	4.49073	2.54762	-1.03380	6.12903	1.272	.152 (NS)
	Females	15.2857	3.02372					
Post-op	Males	35.3333	3.77712	.54762	-3.33119	4.42643	.297	.770 (NS)
	Females	34.7857	3.78618					

NS = Not significant

Interpretation = There was no significant difference in mouth opening between males and females during both pre-op and post-operative surgery.

Table 5: Difference in Pre-op and post-op mouth opening between different age groups using One way ANOVA test.

Groups	Age groups	Mean	Standard Deviation	95% Confidence Interval for mean		F	p
				Lower	Upper		
Pre-op	15-25	22.0000	.	.	.	2.251	.122 (NS)
	26-35	17.2500	2.37547	15.2641	19.2359		
	36-45	14.2500	3.80789	11.0665	17.4335		
	46-55	15.6667	4.04145	5.6271	25.7062		
Post-op	15-25	38.0000845	.489 (NS)
	26-35	36.1250	3.09089	33.5410	38.7090		
	36-45	34.0000	3.58569	31.0023	36.9977		
	46-55	33.3333	5.77350	18.9912	47.6755		

Interpretation = There was no significant difference in mouth opening between all the age groups during both pre-op and post-operative surgery.

Table 6: Comparison between difference in mouth opening between males and females using Independent T test.

Gender	Mean	Standard Deviation	Mean Difference	95% Confidence Interval for mean difference		t	p
				Lower	Upper		
Males	17.5000	2.07364	-1.28571	-3.99645	1.42503	-.996	.332 (NS)
Females	18.7857	2.83328					

Interpretation = There was no significant difference in mouth opening between males and females.

Table 7: Difference in Pre-op and post-op mouth opening between different age groups using One way ANOVA test.

Age groups	Mean	Standard Deviation	95% Confidence Interval for mean		F	p
			Lower	Upper		
15-25	16.0000	.	.	.	1.346	.295 (NS)
26-35	17.6250	3.15945	14.9836	20.2664		
36-45	19.7500	1.83225	18.2182	21.2818		
46-55	17.6667	2.51661	11.4151	23.9183		

Interpretation = There was no significant difference in mouth opening between all the age groups .

DISCUSSION

The oral submucous fibrosis is a pre malignant condition and it was first described by Schwartz and Pindborg et al in 1954. Various authors opine that OSMF is a collagen disorder and its prevalence in Indian subcontinent is very high. Similar observations

were reported by Khanna & Andrade in 1995.^{3,4} A progressive inability to open the mouth fully is an important feature in oral sub mucous fibrous due to the formation of fibrous bands especially in the buccal mucosa, posterior palate and lips.^{1, 2} The basic aim of any treatment modality has been relieving the

symptoms that includes, burning sensation in the mouth, ulceration and stiffness of the oral mucosa and progressive limitations in mouth opening thereby tampering the functions like deglutition and speech.^{5,6,7} Different treatment modalities have been used for management of OSMF including medicinal and surgical therapy separately or in combination. However the success rates as reported in various articles differs greatly and remains controversial. In grade III and IV OSMF cases, surgical therapy is considered as treatment of choice. In our cases after surgical removal of fibrous band the bilayer collagen graft material with buccal fat pad were used to cover the surgical defect with good mouth opening postoperatively.

Relapse is common complication that occurs after surgical release of the oral trismus caused by OSMF. Initially surgeons aimed at surgical elimination of the fibrotic bands which showed further scar formation and reoccurrence of trismus, hence to prevent they started using various inter positional graft material.⁸⁻¹⁰

YEN was the first to succeed in covering the buccal defect with split thickness skin graft and Caniff.et.al, succeeded with split thickness skin graft following bilateral temporalis myotomy or coronoidectomy. But the results with skin grafting have a high reoccurrence rate due to graft shrinkage.^{5,10} Reoccurrence of symptoms was common in the studies conducted by Khanna and Andrade, Lai. D.R. and Glenn Morawetz et.al⁴ Various autogenous (Temporalis muscle, fascia, dermal graft, fascia lata, nasiolabial flap, palatal flap, buccal fat pad, tongue etc) have been used to cover the surgically created defect after excision of fibrous band.

Use of island palatal flap has limitation such as its involvement with fibrosis and second molar tooth extraction is required for flap cover without tension. Bilateral palatal flaps leave a large raw area on palatal bones. Sometimes the defect created may be large and local flaps may not be able to cover the entire defect. A nasolabial flap is too short to cover the defect and causes visible scarring on the face and requires division at 2nd stage. Tongue flaps have been used to cover the buccal defects but were found to be bulky and needed additional surgery for detachment. Bilateral tongue flaps can cause severe dysphagia and disarticulation and carry the risk of postoperative aspiration. Pindborg et.al found an incidence of 38% tongue involvement in OSMF, which precludes its use.³ Bilateral free radial artery forearm free flaps require micro vascular expertise, the flaps are hairy and 40% of patients require secondary de-bulking procedures. Extraction of third molar tooth is required to avoid flap inclination between teeth.¹⁰⁻¹² Buccal fat of pad closure is very easy and safe procedure for intraoral wound closure and is given very good result in oral submucous fibrosis without inducing any further fibrous band post operatively but anterior reach is limited so we use collagen graft with it and found good result.^{8,10-13}

The recent development of a bilayer collagen graft has advantages over other soft tissue graft options. Collagen when used to cover the raw area provides the coverage for sensitive nerve endings thereby diminishing degree of pain. The adherence of collagen, membrane is initially due to fibrin collagen interaction & later due to fibro vascular in growth into the collagen. All collagen membranes, with time, slowly underwent collagenolysis and were eventually sloughed off. However, despite it's weakening by collagenolysis, collagen membranes were robust enough to resist masticatory forces for sufficient time, to allow granulation tissue to form, which appeared uniform and clinically healthy.^{7,8}

Whatever the graft being used, the treatment should be coupled with cessation of betel quid / gutkha chewing and daily mouth opening exercises, and proper nutrition in order to manage properly both early and advanced stages of oral submucous fibrosis.

CONCLUSION

The results of the present study shows Collagen with buccal fat pad is very good option, there is no need of extra surgical site, suturing take less time, no tearing of graft during suturing, so total operative time is less. In all patients collagen with buccal fat pad was use as a graft material and found satisfactory result with mean 35.33 (male) and 34.78 (female) interincisal opening. All patients had less pain and discomfort during post operative period. Healing was very good with no recurrence.

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