

Extended nasolabial flaps in the management of oral submucous fibrosis

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Abstract

We evaluated the use of extended nasolabial flaps and coronoidectomy in the management of 47 randomly selected patients with histologically confirmed oral submucous fibrosis. They all had interincisal opening of less than 25 mm and were treated by bilateral release of fibrous bands, coronoidectomy or coronoidotomy, and extended grafting with a nasolabial flap. All patients had postoperative physiotherapy, and were followed up for 2 years. Their interincisal opening improved significantly from a mean of 14 mm (range 3–23) to a mean of 41 mm (range 23–55). The procedure was effective in the management of patients with oral submucous fibrosis, the main disadvantage being the extraoral scars.

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Introduction

Oral submucous fibrosis is an insidious, chronic, disabling disease of obscure aetiology that affects the entire oral cavity, sometimes the pharynx, and rarely the larynx. It is characterised by blanching and stiffness of the oral mucosa, which causes progressive limitation of mouth opening and intolerance to hot and spicy food.¹

It is an established precancerous condition with increased prevalence in the Indian subcontinent. Its precancerous nature was first described by Paymaster,² who recorded the onset of slowly growing squamous cell carcinomas in one third of patients with it. Minti et al reported a malignant transformation rate of 7.6%.³

As the aetiology is uncertain, its treatment has largely been symptomatic. Various treatments have been described with inconsistent results.⁴

We propose a new protocol for the management of oral submucous fibrosis, which highlights the importance of coronoidectomy and the use of extended nasolabial flaps to provide a long-term, relapse-free, and economical option.

Patients and methods

Forty-seven consecutive patients (46 men and 1 woman aged between 18 and 44 years of age), were randomly selected. All patients had interincisal opening of less than 25 mm.

The patients were operated on under general anaesthesia given through a nasoendotracheal tube using a fiberoptic bronchoscope. Incisions were placed bilaterally on the buccal mucosa using an electrosurgical knife; they extended from the corner of mouth to the soft palate at the level of the linea alba, and avoided injury to Stenson's duct. After fibrous bands had been released the interincisal opening was recorded. The coronoid processes were approached through the same incisions and a bilateral coronoidectomy or coronoidotomy was carried out. The maxillary and mandibular third molars were

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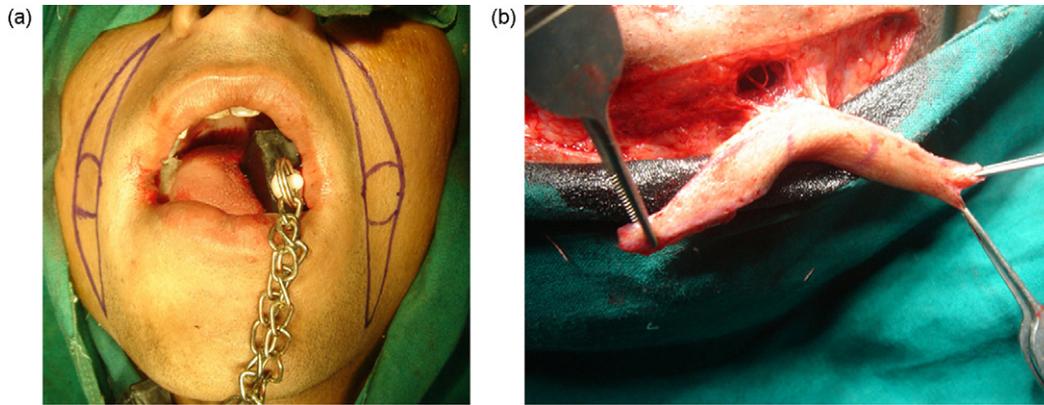


Fig. 1. (a) Illustrating design of nasolabial flap. (b) Raising of nasolabial flap and creating of transbuccal tunnel.

extracted. Extended nasolabial flaps from the tip of nasolabial fold to the inferior border of mandible were bilaterally raised in the plane of the superficial musculoaponeurotic system from both terminal points to the region of the central pedicle. The pedicle was 1 cm lateral to the corner of mouth and the diameter of the pedicle was roughly 1 cm. The flap was transposed intraorally through a small transbuccal tunnel near the commissure of the mouth, with no tension (Fig. 1). The transposed flaps were used to cover the intraoral defects. The inferior wing of the flap was sutured to the anterior edge of the defect, while the superior wing was sutured to the posterior edge of the defect. The extraoral defect was closed primarily in layers after liberal undermining of the skin in the subcutaneous plane to prevent any tension across the suture line.

A soft temporomandibular joint trainer was placed postoperatively in the oral cavity for 10 days to prevent dehiscence of the flap as a result of occlusal trauma. After a latent period of 10 days, physiotherapy was started with the help of Heister’s jaw exerciser to prevent contractures and relapse. The patients were instructed and motivated to continue the physiotherapy themselves for up to 6 months and were followed up for 2 years.

Results

The mean (range) increase in interincisal opening after bilateral release of the fibrous bands was 18 (range 23–46) mm and there was further improvement of 17 mm (range 41–52) after bilateral release or excision of the coronoid processes (Table 1).

Table 1
Interincisal mouth opening (mm) (n = 47).

Period	Mean (range)
Preoperatively	14 (–)
After release of fibrous bands	32 (–)
After bilateral coronoidectomy or coronoidotomy	49 (–)
Two years postoperatively	41 (–)

The transposed nasolabial flaps were widened from a 10 mm to the mean of 27 (range 20–29) mm after physiotherapy (Fig. 3).

The interincisal opening improved significantly from a mean (range) of 14 (3–23) mm to 41 (23–55) mm at the end of 6 months and persisted without relapse for 2 years of follow up.

Four patients had unsatisfactory mouth opening because of poor compliance.

The transposed flaps were covered with mucosa by the end of 2 years, and the growth of hair was also significantly reduced.



Fig. 2. Showing widening of oral commissure in the immediate Postoperative period.

Table 2
Widening of the oral commissure (mm) ($n = 47$).

Period	Mean (range)
Preoperatively	46 (–)
Postoperatively	61 (–)
Two years postoperatively	49 (–)

Subjectively 41 of the 47 patients reported a reduction in the burning sensation.

There were some minor complications such as partial flap necrosis particularly at the tips, temporary widening of the oral commissure (Table 2, Fig. 2), unsightly extraoral scars, subluxation of the mandible, and intraoral growth of hair (Table 3).

Discussion

Treatments for oral submucous fibrosis are mainly symptomatic, because the aetiology of the disease is not fully understood and it is progressive. Conservative treatment includes vitamins, iron supplements; intralesional injections of hyaluronidase, placental extracts, and steroids. Submucosal injections of various drugs may produce temporary symptomatic relief but can lead to aggravated fibrosis, pronounced trismus, and increased morbidity from the mechanical injury secondary to insertion of the needle and chemical irritation from the drug.⁴

Operations have been proposed by different authors, with variable success rates. Excision of the fibrous bands and propping the mouth open to allow secondary epithelialisation causes rebound fibrosis during healing. Release of fibrous bands and split thickness skin grafting has a high recurrence from contracture. The survival of full thickness skin grafts is questionable.⁵ The use of island palatal flaps based on the greater palatine artery as recommended by Khanna et al.⁵ has limitations including involvement of the donor site by fibrosis, limited donor tissue with limited reach of the flap, and the need for extraction of maxillary second molars to cover the defect with the flap under no tension.⁶

The bilateral tongue flaps cause severe dysphasia, disarticulation, and carry the risk of postoperative aspiration. They also provide a limited amount of donor tissue as their reach is inadequate. The stability of a tongue flap and dehiscence

Table 3
Immediate and delayed complications ($n = 47$).

Complications	No
Immediate	
Subluxation	4
Distortion of commissure	1
Perforation of soft palate	1
Partial necrosis of flap	4
Postoperative infection	1
Delayed	
Fish mouth	4



Fig. 3. Intraoral photo showing adequate mouth opening and adaptation of nasolabial flap.



Fig. 4. Preoperative clinical photograph.

are the common postoperative complications of uncontrolled tongue movements.⁵ Apart from this the reported involvement of the tongue is 38%, which precludes its use for reconstruction.⁵ Buccal fat pads may also be used to cover the defects after excision of the fibrous bands. The harvesting of the buccal fat pad is simple because access is easy. However,



Fig. 5. Postoperative clinical photo showing extraoral scars.

we have found severe atrophy of buccal fat pads in patients with chronic disease. In addition, the anterior reach of the buccal fat pad is often inadequate, and the region anterior to the cuspid is required to be left raw. This raw area heals by secondary intention and subsequently fibroses, leading to gradual relapse.⁷

Bilateral radial forearm free flaps are hairy, 40% of patients require secondary debulking procedures, and the facilities for free tissue transfer are not universally available.⁸ Canniff and Harvey⁹ recommended temporal myotomy or coronoidectomy to release severe trismus caused by the atrophic changes in the tendon of temporalis muscle secondary to the disease.

The postoperative extraoral scars were hidden in the nasolabial fold. The scars were more acceptable in older patients who had prominent nasolabial folds and laxity of the skin as compared to the younger patients (Figs. 4 and 5).

The carcinogenic potential of the disease is often underestimated and because it is both common and follows a chronic course clinicians and patients tend to take it casually. The coexisting association with oral squamous cell carcinoma (SCC) was 26% in a study done at our centre (unpublished observations). The most common site of oral SCC in patients is the posterior part of the buccal mucosa and the tongue. This is probably the result of the chronic irritation of the posterior buccal mucosa by the malpositioned maxillary third molars. Because of severe trismus, the early

detection of oral SCC is not possible and the patients often report late to the hospital for treatment. Surgical management not only relieves the trismus but also facilitates oral examination for early detection and management of malignant transformation.

References

1. Gupta D, Sharma SC. Oral submucous fibrosis – a new treatment regimen. *J Oral Maxillofac Surg* 1988;**46**:830–3.
2. Paymaster JC. Cancer of the buccal mucosa: clinical study of 650 cases in Indian patients. *Cancer* 1956;**9**:431–5.
3. Murti PR, Bhonsale RB, Pindborg JJ, Daftary DK, Gupta PC, Mehta FS. Malignant transformation rate in oral submucous fibrosis over a 17 year period. *Community Dent Oral Epidemiol* 1985;**13**:340–1.
4. Borle RM, Borle SR. Management of oral submucous fibrosis. *J Oral Maxillofac Surg* 1991;**49**:788–91.
5. Khanna JN, Andrade NN. Oral submucous fibrosis: a new concept in surgical management. Report of 100 cases. *Int J Oral Maxillofac Surg* 1995;**24**:433–9.
6. Kavarana NM, Bhathena HM. Surgery for severe trismus in submucous fibrosis. *Br J Plast Surg* 1987;**40**:407–9.
7. Yeh CJ. Application of the buccal fat pad to the surgical treatment of oral submucous fibrosis. *Int J Oral Maxillofac Surg* 1996;**25**:130–3.
8. Wei FC, Chang YM, Kildal M, Tsang WS, Chen HC. Bilateral small radial forearm flaps for the reconstruction of buccal mucosa after surgical release of submucosal fibrosis: a new reliable approach. *Plast Reconstr Surg* 2001;**107**:1679–83.
9. Canniff JP, Harvey W, Harris M. Oral submucous fibrosis- its pathogenesis and management. *Br Dent J* 1986;**160**:429–33.