Extended Nasolabial Flaps in the Management of Oral Submucous Fibrosis

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Abstract

Purpose We evaluated the use of extended nasolabial flaps in the management of oral submucous fibrosis.

Methods We evaluated the use of extended nasolabial flaps in the management of 27 randomly selected patients with histologically confirmed oral submucous fibrosis. They all had interincisal opening of less than 20 mm and were treated by bilateral release of fibrous bands and extended grafting with a nasolabial flap. All patients had postoperative physiotherapy, and were followed up for one year.

Results Their interincisal opening improved significantly from a mean of 11mm (range 3–19) to a mean of 39 mm (range 23–48).

Conclusions The procedure was effective in the management of patients with oral submucous fibrosis, the main disadvantage being the extraoral scars.

Keywords Oral submucous fibrosis · Extended Nasolabial flap

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 characterized 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 did a prospective study for the management of oral submucous fibrosis, which highlights the use of extended nasolabial flaps to provide a long-term, relapse-free, and economical option. This flap is very economical as it does not require any allograft material.

Patients and Methods

Twenty-seven consecutive patients (26 men and one woman aged between 18 and 44 years of age), were randomly selected. All patients had interincisal opening of less than 20 mm. The patients were operated 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 maxillary and mandibular third molars were extracted. Extended nasolabial flaps from the tip of nasolabial fold to the inferior border of the mandible were bilaterally raised in the plane of the superficial musculo-aponeurotic system from both terminal points to the region of the central pedicle (Figs. 1, 2). The pedicle was 1 cm lateral to the corner of mouth and the diameter of the

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Fig. 1 Marking for flap

Fig. 2 Raised flap

Fig. 3 Inserting flap in oral cavity

Fig. 4 Sutured flap

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. 3). 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 (Fig. 4). 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.

After a latent period of 10 days, physiotherapy was started to prevent contractures and relapse. The patients were instructed and motivated to continue the physiotherapy themselves with wooden spatulas for up to 6 months and were followed up for a year.

Results

After bilateral release of the fibrous bands, the mean of the increase in interincisal opening was 24 (range 18–39) mm (Table 1). The transposed nasolabial flaps were widened after physiotherapy (Fig. 5). The interincisal opening improved significantly from a mean (range) of 11 (3–19) mm to 39 (23–48) mm at the end of 6 months and persisted without relapse for 1 years of follow up (Table 1).

Two patients had unsatisfactory mouth opening because of poor compliance. Subjectively 23 of the 27 patients

Table 1 Interincisal mouth opening (mm) ($n = 27$)

Period	Mean
Preoperatively	11
After release of fibrous bands	35
One years postoperatively	39

Fig. 5 Flattening of flap and hair growth

Table 2 Complications
(*n* = 27)

Complications	No
Perforation of soft palate	1
Partial necrosis of flap	2
Postoperative infection	1

reported a reduction in the burning sensation. There were some minor complications (Table 2), such as partial flap necrosis, particularly at the tips, postoperative infection, perforation of the soft palate. There were some disadvantages in some patients like unsightly extraoral scars, and intraoral growth of hair in men (Fig. 5), but growth of hair decreased with time and no patient required scar revision.

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 epithelialization 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 the 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 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, 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 Harvey [9] 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 nasolabial flap is a versatile flap, which can be successfully used in the reconstruction of defects created after the release of fibrotic bands. Extended nasolabial flaps is raised from the tip of nasolabial fold to the inferior border of mandible in the plane of the superficial musculoaponeurotic system from both terminal points to the region of the central pedicle. The pedicle is 1 cm lateral to the corner of mouth and the diameter of the pedicle is roughly 1 cm. The flap is transposed intraorally through a small transbuccal tunnel near the commissure of the mouth, with no tension and sutured over intraoral defect. The postoperative extraoral scars were hidden in the nasolabial fold (Fig. 6). The scars were more acceptable in older patients who had prominent nasolabial folds and laxity of the skin as compared to the younger patients. The carcinogenic potential of the disease is often underestimated, and because it is both common and follows a chronic course clinician and patients tend to take it casually. 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

Fig. 6 Postoperative mouth opening and minimum scar

is difficult 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. It shows less contracture and more survival than split thickness skin graft. It does not have limitations of palatal flap like 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. It does not have problems of buccal fat pad like atrophy in patients with chronic disease and inadequate anterior reach. It is not as bulky as Bilateral radial forearm free flap and is easier to

harvest. It has only minor disadvantages like unsightly extraoral scars in some patients and intraoral growth of hair in men. Large scar in some of the patients can be treated with scar revision, but none of our patient required scar revision. Intraoral hair should be shaved initially and with time this hair growth will reduce. Cases treated for oral submucous fibrosis using bilateral nasolabial flaps showed adequate mouth opening (Fig. 6) at one year postoperatively.

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