

## Treatment Modality for Advanced Oral Submucous Fibrosis

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**Abstract:** Oral submucous fibrosis (OSMF), which presents with a severe degree of trismus, is a great surgical challenge. The surgical procedures include excision of fibrous bands with or without coverage of the surgically created defect. The use of vascularised flaps such as the palatal pedicled flap, tongue flaps, use of buccal fat pad and nasolabial flaps are becoming increasingly popular. We present a case of advanced oral submucous fibrosis treated with bilateral inferiorly based nasolabial flaps.

**Key Words:** Oral Submucous Fibrosis, Fibrous bands, Vascularised flaps

### I. Case Report

A 35 years old male reported with a chief complaint of burning sensation and limitation of mouth opening since 3 years. He had been a 'gutkha' chewer for the past 11 years; consuming approximately 5 packets per day. Interincisal opening (IIO) was 13 mm [Fig-1].



**Fig-1:** Preoperative interincisal opening was 13mm

Fibrous bands were palpable bilaterally on the buccal mucosa and retromolar region, blanched and leathery floor of the mouth, the palate was involved and the uvula was shrunken. Given the nature of presentation and the advanced nature of the disease, it was decided to proceed with inferiorly based nasolabial flaps for management.

### II. Surgical Procedure

The treatment plan was discussed with the patient and an informed consent was signed. After thorough medical and anaesthetic evaluation, the patient was prepared for surgical intervention. The procedure was carried out under general anesthesia. Intubation was carried out using a flexible bronchoscope. The patient received preoperative antibiotics, premedication and other suitable medications. The intraoral incisions were made bilaterally to incise the fibrous bands using a knife along the buccal mucosa at the level of occlusal plane. Incision began from the anterior faucial pillars and extended up to 1cm from the corner of mouth. The collagen bands were incised up to the muscle layer. After the release of fibrotic bands, a defect of approximately 5.5 cm x 2 cm was created. Using Fergusson's mouth gag forcible mouth opening was carried out. Interincisal distance was 50 mm measured and a bite block was placed [Fig-2].



**Fig-2:** Intraoperative interincisal opening was 50mm

All third molars were removed at this stage. The marking for the bilateral inferiorly based nasolabial flap design was done using methylene blue ink. The flap was outlined on cheek and raised with sufficient subcutaneous tissue and fat to ensure a good blood supply but remained superficial to facial muscles. The medial incision line followed the nasolabial fold on superior two thirds and was placed 3-4mm medial in inferior one third. The base of flap was 1.5 to 2.5cm wide. Width greater than this makes rotation of flap difficult while narrower than this can compromise the blood supply. The medial and lateral incision lines tapered superiorly approximately 0.5 to 0.75cm inferior to medial canthus. The inferior limit of the flap was at the level of oral commissure because just below this several branches of facial artery or inferior labial artery pass into nasolabial skin and subcutaneous tissue. Flap was raised from superior to inferior in supramuscular plane by using dissecting scissors and electrocautery. The angular branch was tied off. The transbuccal tunnel was made in the region of the modiolus just medial to the pedicle. The flap was then transferred into the oral cavity in a tension free manner [Fig-3].



**Fig-3:** The flap was then transferred into the oral cavity in a tension free manner

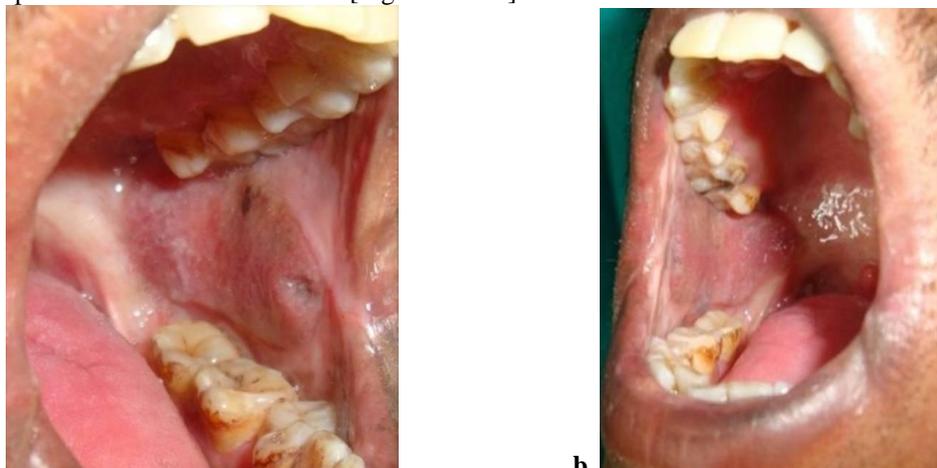
The intraoral flap was sutured by placing interrupted sutures using 3-0 vicryl. Donor site was closed primarily in layers using 3 - 0 vicryl suture for deeper layer and 5 - 0 Ethilon for final skin closure. Nasogastric feeding was carried out for 7 days postoperatively. A mouth prop was placed between the teeth to maintain the interincisal distance for first 48 hours. The mouth was covered with wet gauze to prevent dryness of mouth and was maintained wet by pouring saline. The prop was removed intermittently, every two hours for fifteen minutes. Interincisal opening was measured daily for first 7 days and physiotherapy was advised. Mouth opening exercises using Hiester's mouth gag were taught. IIO was maintained over 35 mm for 7 days during immediate postoperative period. Flap viability was checked using needle prick at the most distal tip of flap in the retromolar area after 24 hrs, 48 hours, and 7 days and after pedicle division respectively. Success of the flap was determined 7 days after pedicle division by reassessment of vascularity, adaptability to underlying surface and appropriate coverage of the raw surface following excision of bands and evaluation of scar. Usefulness of flap was determined by assessing whether flap dimensions were adequate to cover the denuded area and if it prevented scar contracture thus maintaining the increased interincisal opening. All sutures were removed on the seventh postoperative day. The patient was advised to use combination of Vitamin E cream (Evion) and Benzoyl Peroxide Cream 2.5% (Persol forte) twice daily after suture removal. Flap division and correction of the

unaesthetic triangular base of the scar was done after three weeks. Patient was evaluated for IIO and various other parameters regarding the surgical procedure daily for first seven days then weekly till four weeks and then monthly for first six months. On sixth month post operative, IIO was found to be maintained to 38mm [Fig-4].



**Fig-4:** On sixth month post operative, IIO was found to be maintained to 38mm

Intraorally flaps were found to be successful [Fig-5a and 5b].



**Fig-5:** On sixth month post operative, flaps were found to be successful. (a) Left intraoral view. (b) Right intraoral view.

### **III. Discussion**

Pindborg (1966) defined 'Oral Submucous Fibrosis' as "A chronic progressive scarring disease of oral cavity and oropharynx characterized by epithelial atrophy and juxtaepithelial inflammatory reaction with progressive fibrosis of lamina propria and deeper connective tissues resulting in stiffness of oral mucosa and causing progressive decrease in mouth opening"[1].

Oral submucous fibrosis (OSMF) is defined as a chronic disease of oral mucosa characterized by inflammation and progressive fibrosis of the lamina propria and deeper connective tissue layers. The pathogenesis of the disease is not well established, but is believed to be multifactorial [2]. A number of factors trigger the disease process by causing a juxtaepithelial inflammatory reaction in the oral mucosa. Suggested contributory factors include areca nut chewing, ingestion of chillies, nutritional deficiencies, genetic and immunologic processes and other factors. Presenting symptoms are burning pain, progressive inability to open the mouth, difficulty in mastication and swallowing. Speech and hearing deficits may occur because of involvement of the tongue and the eustachian tubes [2, 3]. Oral submucous fibrosis is a potential premalignant condition with an incidence of oral cancer in 3 - 7.6% cases [3, 4].

The treatment for patients afflicted with oral submucous fibrosis focuses on relieving the symptoms and improving the mouth opening by therapeutic and/or surgical means. Medical management, which forms the first line of treatment, includes topical, intralesional and systemic medications. The commonly used agents include placental extracts, steroids, vitamins and hyaluronidase. However, the role of these medications in advanced cases of oral submucous fibrosis with established restricted mouth opening is limited.

According to Khanna and Andrade's grouping of OSMF based on clinical and histopathologic features, it is a well established fact that in oral submucous fibrosis there is decreased vascularity to the affected region by fibrosis due to contraction and narrowing of blood vessels as a result of increased pressure on them by fibrous tissue bands [4]. Medicinal modalities of treatment like topical application of gold, iodides & intralesional injection of hyaluronidase, hydrocortisone, placental extract & triamcinolone along with oral administration of vitamins, iron supplement and antioxidants are of temporary benefit and are of limited use in treating moderately advanced and advanced cases of OSMF.

In patients with moderate to advanced oral submucous fibrosis, surgical therapy is beneficial. Materials used for covering the defect following the excision of bands include skin grafts, tongue flaps, buccal fat pad, amnion graft, nasolabial flaps and palatal island flaps. Additional procedures like temporalis myotomy and bilateral coronoidectomy may be performed to enhance mouth opening.

The use of nasolabial flaps in treatment of OSMF is more suitable for juxtaposed defects, in particular those of buccal mucosa, and is becoming increasingly popular. The nasolabial flap provides a good example of the transposition flap principle. The reason of it showing satisfactory results could be the fact that it is not a part of the crippled oral disease. In older patients, the donor scar is quite inconspicuous.

Kavarna NM and Bhatena HM in their article in 1987 have reported that bilateral full thickness nasolabial flaps have been used successfully in three patients to give long-term relief of severe trismus caused by oral submucous fibrosis [5]. They had used two-stage flap measuring approximately 4×1.5×2 cm bilaterally. The pedicle were divided after 3 weeks and inset of flap was done such that divided base of flaps come up to the vermilion border at angle of mouth. They had achieved an average mouth opening of 25 mm.

S.Bhattacharya, MSD Jaiswal (1990) used inferiorly based nasolabial flap to cover buccal defects caused by incising fibrosed bands [6]. They advocated incorporation of underlying vessel in the flap & selective defatting of the flap and its pedicle to improve arc of rotation.

Gomes DC, Chaudhri C conducted study on 12 patients of oral malignancy of buccal mucosa region with severe oral submucous fibrosis [7]. The malignant buccal mucosa sites were reconstructed with pectoralis myocutaneous flaps after wide local resection. They advocated release of opposite nonmalignant fibrosed buccal mucosa and reconstruction with inferiorly based nasolabial flaps. All their patients had preoperative IIO of 1.5cm or less. The average mouth opening at 3 months was 3.13 cm and average follow up period was 13.08 months. No reduction in mouth opening had been noted during that period.

SM Balaji in his article stating study of 19 patients has compared nasolabial flap to tongue flap for covering defects created by excision of fibrous bands [8]. He had used inferiorly based nasolabial flap but rotated 180° so that skin faces the raw buccal surface and suturing the margins of mucosa to the flap closes the defect in mucosa. On comparison of graft shrinkage, post operative mouth opening, need for secondary surgery, functional disfigurement and esthetic outcome of surgery, nasolabial flaps interpolated into the oral cavity offer an expedient solution to soft tissue deficit produced after excision of bands.

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