

## CASE REPORT

# Nasolabial Flap in Oral Submucous Fibrosis: A Case Series

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## ABSTRACT

The nasolabial flap is a well-known flap for the reconstruction of nasal, labial, and intraoral defects. Successful use of inferiorly based nasolabial flaps in the management of oral submucous fibrosis (OSMF) is projected in this article. We evaluated the use of nasolabial flap in the management of five patients with histologically confirmed OSMF. They all had interincisal opening of less than 20 mm and were treated by bilateral release of fibrous bands, measurement of intraoperative interincisal distance (greater than 35 mm achieved in all patients after release of bands), covering the defects with inferiorly based nasolabial flap. All patients had postoperative physiotherapy and were followed up regularly for 1 year. All flaps healed without evidence of infection, dehiscence, or necrosis.

**Keywords:** Axial pattern flap, Nasolabial flap, Oral submucous fibrosis.

**How to cite this article:** Thakur S, Hada DS, Gupta K, Randhawa G. Nasolabial Flap in Oral Submucous Fibrosis: A Case Series. *Int J Prev Clin Dent Res* 2016;3(3):228-231.

**Source of support:** Nil

**Conflict of interest:** None

## INTRODUCTION

Sushruta, an Indian surgeon, thought to have been born in approximately 700 BC, authored the book entitled *Sushruta Samhita* in which he described over 300 surgical procedures. One of the most well-known procedures described in this work is the use of forehead skin to reconstruct noses that were amputated as a form of criminal punishment. Sushruta's manuscript also contained a description of the nasolabial flap. During the 1800s, pictures of nasolabial flaps began to appear in print. Contemporary surgical descriptions began in 1830 when Dieffenbach used superiorly based nasolabial flaps

to reconstruct nasal alae. In 1864, Von Langenbeck used the nasolabial flap to reconstruct the nose. Fifty-seven years later, Esser described the use of the inferiorly based nasolabial flap to close palatal fistulae. Since these early publications, the nasolabial flap has been described for reconstruction of the floor of the mouth, lips, tongue, buccal mucosa, upper and lower alveolus, maxilla, and oronasal defects.<sup>1</sup>

Oral submucous fibrosis (OSMF) is a chronic debilitating disease associated with restricted mouth opening and poor oral hygiene. Oral submucous fibrosis is characterized by blanching and stiffness of the oral mucosa, which causes progressive limitation of mouth opening and intolerance to hot and spicy food. It is more prevalent in Indian subcontinent and is identified as an important premalignant condition. The treatment aims at good release of fibrosis and to provide long-term results in terms of mouth opening.<sup>2</sup> The nasolabial flap is an arterialized local flap in the head and neck region with an axial blood supply provided either by the facial artery (inferiorly based) or by the superficial temporal artery through its transverse facial branch and the infraorbital artery (superiorly based). Inferiorly based nasolabial flap is a reliable, economical option for the management of OSMF.<sup>3</sup>

## MATERIALS AND METHODS

A total of five patients of OSMF were admitted and surgically treated in our hospital with due permission of the ethical committee. All patients signed an informed consent form before surgery. All these patients had advanced OSMF with interincisal distance not more than 20 mm. Patients' age, sex, etiology, history of gutkha/tobacco chewing, and preoperative mouth opening were documented. All the cases were histopathologically proven. Patients were followed regularly for 1 year and maximum interincisal distance was measured.

## Surgical Technique

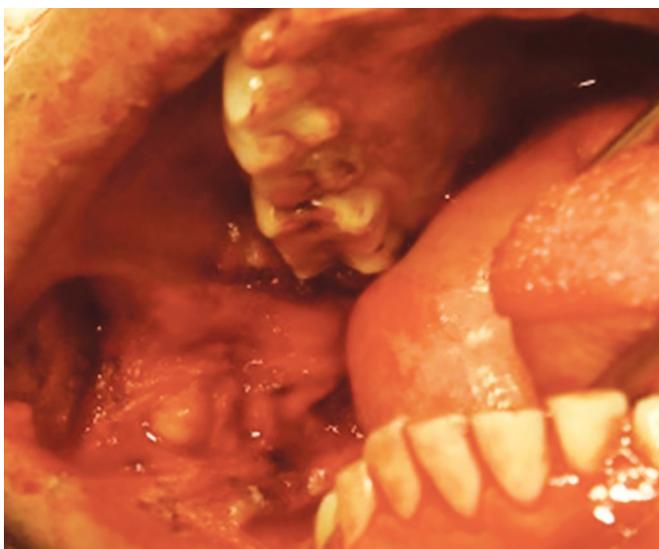
For oral cavity reconstruction, the use of an inferiorly based nasolabial flap is preferred. All cases were performed under general anesthesia with nasal intubation. Fibrotomy was performed transversely from just behind the commissure of the oral cavity extending posteriorly depending upon the location of the fibrotic bands (Fig. 1).

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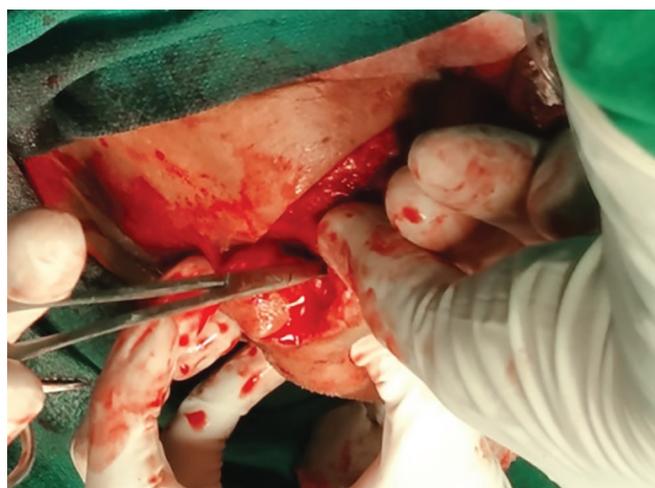
**Fig. 1:** Release of fibrotic bands



**Fig. 2:** Surgical marking of nasolabial flap



**Fig. 3:** Harvesting of nasolabial flap



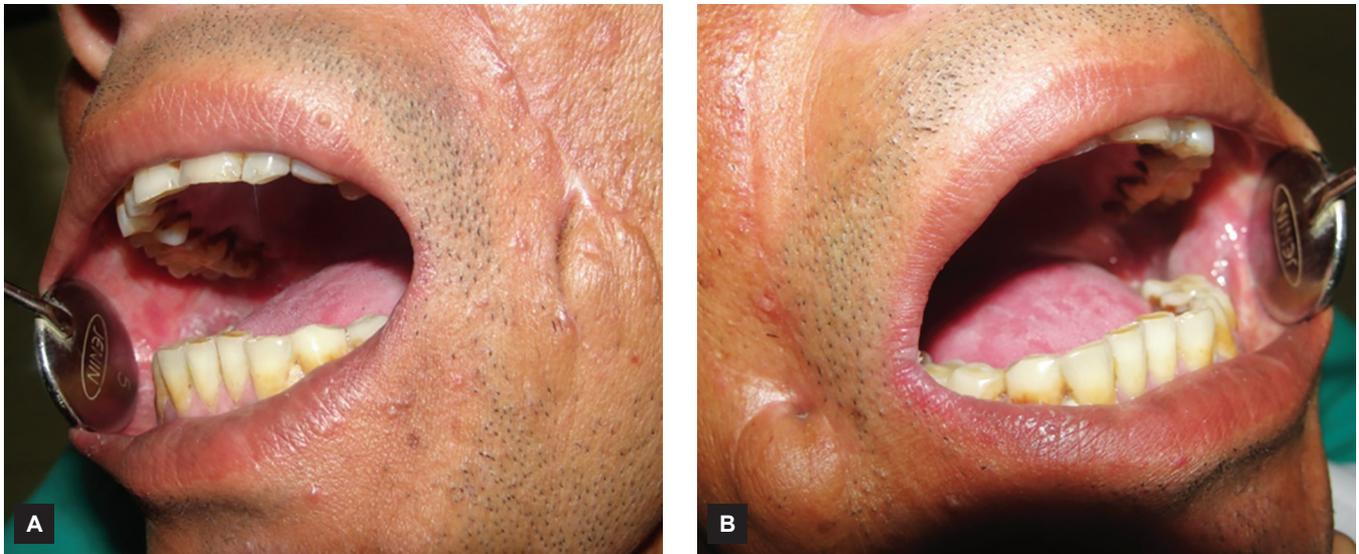
**Fig. 4:** Transbuccal tunnel

Intraoperative mouth opening was more than 35 mm in all patients immediately after release of bands. The maxillary and mandibular third molars were extracted. Nasolabial flaps from the tip of nasolabial fold to the corner of mouth were marked and bilaterally raised in the plane of the superficial musculoaponeurotic system (Figs 2 and 3).

The flap was raised superficial to the facial muscles as two triangular flaps from the hairless skin of the nasolabial fold. The triangles were tunnelled through the cheek (Figs 4 and 5), brought into the mouth, interdigitated, and sutured to the margins of the defect. The secondary defect was closed by direct suturing, and a small triangular area was left unsutured near the base of the flap to avoid constriction of the base. Three weeks postoperatively the pedicles were divided, and the base was returned and sutured in its original place. Physiotherapy was started from the 5th postoperative day and the patients were instructed to continue the



**Fig. 5:** Inset of nasolabial flap



**Figs 6A and B:** Adequate mouth opening and adaptation of nasolabial flap after 1 year

**Table 1:** Comparison of pre-, intra-, and postoperative interincisal opening

Patient no.	Age in years	Sex	Preoperative interincisal mouth opening	Intraoperative interincisal mouth opening	Postoperative (1 year) interincisal mouth opening
1	28	M	15	40	36
2	37	F	17	37	35.1
3	45	M	20	41	37.5
4	26	M	16	40	37
5	31	M	11	38	35.5

physiotherapy themselves for up to 6 months to prevent relapse. Patients were followed up at regular intervals.

**RESULTS**

Adequate mouth opening was achieved and maintained with minimum intraorally as well as extraorally scarring (Figs 6A and B) and (Table 1). Healing was excellent without evidence of infection, dehiscence, or necrosis. The extraoral esthetic result was satisfactory in most of the patients, and revision of the donor site was not necessary. The presence of intraoral hair, transferred with the flap, was found in one patient (Fig. 7). This problem was usually managed by subsequent de-epithelialization. Oral function remained unimpaired in all other patients. In this subset of reconstructions, all patients were able to maintain their weight with a soft diet.



**Fig. 7:** Intraoral hair growth

**DISCUSSION**

The idea of using the spare skin of the nasolabial fold to reconstruct nearby defects dates back to 1830 when Dieffenbach used superiorly based nasolabial flaps to reconstruct defects of the ala of nose. In 1917, Esser used inferiorly based nasolabial flaps to repair palatal fistulae. Since then, modifications of the flaps have been described by several surgeons, ranging from the conventional

pedicled flap (superiorly or inferiorly based) to subcutaneously pedicled flaps and facial artery island flaps.<sup>4</sup>

The skin of the nasolabial fold is nourished by multiple small branches from the alar branch of the superior labial artery, which is a branch of the facial artery, and by the terminal branches of the facial artery, which is called the angular artery near the dorsum of the nose. Further, superolaterally, the skin is nourished by the infraorbital

artery (a branch of the ophthalmic artery) and the transverse facial artery. Hence, it is possible to design both an inferiorly based nasolabial flap, with the facial artery as its pedicle, and a superiorly based nasolabial flap with the infraorbital and transverse facial arteries as its pedicle.<sup>5</sup>

Tongue flaps are bulky and when used bilaterally cause disarticulation, dysphagia, and increased chances of aspiration. In addition, the tongue is involved with the disease process in 38% cases.<sup>6</sup> The use of bilateral, small, bipaddled radial forearm flaps for reconstruction of bilateral buccal defects requires two flaps with two microsurgeries. The procedure is more time-consuming and technically demanding. Island palatal flaps again have limitation that they fail to reach posteriorly.<sup>7</sup> Buccal fat pad may also be used to cover the defects after excision of the fibrous bands. Paissat<sup>8</sup> found harvesting of buccal pad fat is easy, but the anterior reach of the flap is often inadequate and cannot be used for larger defects.

We used inferiorly based nasolabial flaps for the reconstruction of mucosal defects after excision of fibrous bands. The advantages of nasolabial flap include its close proximity to defect, easy closure of donor site, and a well-camouflaged scar. Our experience with the flap used for the purposes previously mentioned is encouraging. Repair of defects of the floor of the mouth up to 4 to 5 cm in diameter is well suited to this technique.<sup>9</sup> It provides adequate bulk at the recipient site, making postoperative rehabilitation easier. The flap is easily accessible in the same surgical field, and easy and quick to harvest, thus reducing operating time.<sup>10</sup> The nasolabial flap is a simple, effective, and safe flap with a low complication rate. Although not encountered in this series of patients, other authors have reported complications (infection, minor or major flap necrosis, wound dehiscence) occurring in a small minority of their patients.<sup>11</sup>

It may be concluded from this study that the nasolabial flap is a simple and viable option in the reconstruction of selected oral defects in a low-resource setting where microvascular expertise is not available. The use of the flap in reconstruction, rather than using primary closure or a skin graft, improves the functional results. The procedure can be performed with minimal complications.

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