

A CASE STUDY OF NASOLABIAL FLAP IN THE TREATMENT OF ORAL SUBMUCOUS FIBROSIS

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Abstract

Chewing areca nuts can cause Oral Submucous Fibrosis (OSMF), a chronic, sneaky illness that is thought to be a precancerous condition with substantial morbidity. This report describes a case of Grade IV OSMF in a [demographic information], which is characterized by dysplastic alterations, reduced oral opening, and noticeable fibrosis. This case emphasizes early intervention and preventive measures while highlighting the difficulties and approaches for managing advanced OSMF through a multidisciplinary approach comprising clinical evaluation, imaging, and histology. This study set intended to assess the nasolabial flap's effectiveness in treating oral submucous fibrosis (OSMF). This suggests that the Nasolabial flap produced positive outcomes in terms of helping the patients and restoring normal mouth opening. The Nasolabial flap was shown to be a feasible surgical alternative for treating oral submucous fibrosis based on the results of this study because of its low post-operative complication rate, dependable flap vascularity, and ease of operation. The existence of a surgical scar was the only disadvantage noted; this can be rectified by secondary correction techniques. One of the first documented surgical procedures is the open tracheostomy. It entails making a stoma at the anterior neck's skin surface that leads to the trachea. Such a technique has several indications. It can be used to protect the airways during another surgical procedure, in situations of extended artificial breathing where endotracheal intubation must be replaced, and for upper airway obstruction of multiple aetiology.

Introduction

The patient needs to be positioned in a supine position. The head is stabilized on a head ring, and the neck is fully extended by positioning a shoulder roll beneath the upper back region. In order to prevent the midline neck structures from being tilted to one side, the shoulders should be at symmetrical level. Sterile conditions should be maintained during the process and a local antiseptic solution is used. Hospital regulations dictate how intravenous antibiotics are administered. The incision site is positioned halfway between the suprasternal notch and the lower border of the cricoid, and important landmarks are indicated on the skin. Next, 5 to 10 mL of a 0.25% bupivacaine solution along with 1:200,000 adrenaline is injected into this. One member of the surgical team should

have the selected tracheostomy tube on the operating trolley and inspect it for cuff leaks (Figure 1). The skin incision is adequately placed, dissection through fascia and separation of strap muscles vertically with their lateral retraction performed. One should then identify trachea and deal with the thyroid isthmus. The correct site for the tracheotomy is identified and this is performed whilst liaising with the anaesthetist and scrub nurse. The chosen tracheostomy tube should be checked and inserted appropriately. The skin incision is positioned appropriately, the fascia is dissected, and the strap muscles are separated vertically and retracted laterally. The thyroid isthmus should next be addressed and the trachea should be identified. Together with the scrub nurse and anaesthetist, the proper location for the tracheotomy is

determined. It is important to inspect and properly insert the selected tracheostomy tube. The oral cavity, sometimes the pharynx, and infrequently the larynx are all affected by oral submucous fibrosis (OSF), a chronic, debilitating, potentially malignant condition with a complex aetiology. Oral mucosal blanching, rigidity, and intolerance to hot and spicy foods are its hallmarks. As a result of the development of vertical fibrous bands and the loss of elasticity in the labial/buccal tissues, it gradually becomes impossible to open the mouth¹. Malignant transformation rates from OSF to oral squamous cell carcinoma (OSCC) range from 7% to 30%, with conversion rates of 7.6% over a 17-year period reported in long-term follow-up studies.^{2,3} There is a growing tendency of OSF cases in other countries as a result of population movement, and the frequency of OSF has dramatically increased in South Asian countries, creating a serious public health issue.^{1,4-6} The pathogenesis of OSF is multifactorial, with the betel nut component of areca nut, particularly the alkaloid arecoline, playing a significant role in collagen production and the development of oral submucosal fibrosis.⁷ OSF has also been linked to autoimmune variables, dietary deficits, immunological dysregulation, and genetic predisposition.^{8,9} Many elements of OSF, such as molecular alterations linked to differential gene expression and epigenetic modifications, have been further clarified by recent studies, offering potential biomarkers and treatment targets¹⁰ Ten Salivary biomarkers and tissue auto fluorescence are two non-invasive diagnostic techniques that have demonstrated promise in the early diagnosis and tracking of OSF.¹¹ Traditional treatments for OSF include steroids and antioxidants, as well as cutting-edge treatments like pentoxifylline and collagenase, which have been shown to be effective in lowering fibrosis and alleviating symptoms.⁷ In situations of advanced OSF, surgical methods such as tongue flaps and free tissue transfer are becoming more popular.^{4,12} Improving the quality of life for OSF patients requires rehabilitation programs that include speech therapy, physical therapy, and psychosocial assistance.¹³ Additionally, when comparing the results of various treatment techniques, the nasolabial flap has demonstrated excellent effects in resolving functional restrictions associated with OSF and restoring normal mouth opening. According to studies, the nasolabial flap produces satisfactory results; most patients are able to open their mouths normally after surgery.^{12,4} The nasolabial flap has advantages over other surgical procedures like tongue flaps or free tissue transfer in terms of ease of use, consistent vascularity, and reduced incidence of postoperative complications.⁴ For the reconstruction of moderate facial

abnormalities, such as intraoral defects brought on by OSF, the nasolabial flap has proven to be a reliable and adaptable option.^{14,15,16} However, when choosing the best course of treatment, it is crucial to take into account the unique characteristics of each patient as well as the degree of OSF involvement. The nasolabial flap has a long and well-established history in the field of surgical surgery, having been utilized for millennia to correct intraoral abnormalities.¹⁴ The flap's high percentage of survival and adaptability in restoring moderate facial abnormalities are attributed to its robust vascular supply.^{15,16,17} The nasolabial flap is appropriate for repairing abnormalities in the face, nose, lips, and intraoral region. Depending on the vascularity needed, it can be based superiorly or inferiorly.¹⁸⁻²⁰ years old The purpose of the current case study was to assess the nasolabial flap's performance in treating oral submucous fibrosis surgically.

Case Report

Consent that is informed. The patient or patients provided written informed consent for the publication of their anonymised data in this article. For oral cavity repair, an inferiorly based nasolabial flap was recommended. The medial incision line in its superior two-thirds was 3 to 4 mm medial to the lower third of the nasolabial fold and closely matched the nasofacial fold. This was done to enhance the arc of rotation and lessen distortion following flap transfer. The base of the flap was between 1.5 and 2.5 cm wide (Figure 1). While a flap with a narrower base can only give a tiny amount of tissue and has a reduced blood supply, a flap with a wider base is more challenging to rotate into position. The medial and lateral poles of the incision taper upward around 0.5 to 0.75 cm anterior to the medial canthus. The flap's lower edge was level with the oral commissure. Lateral deficiencies of the oral cavity (lateral third of palate, socket, floor of mouth, and retromolar triangle) were filled using unilateral nasolabial flaps. The inferior 2 to 2.5 cm of the flap was deepithelialized using a No. 15 scalpel blade (Figure 2). Metzenbaum scissors were used to form a trans buccal tunnel posterior to the upper buccal sulcus for palatal and retromolar trigone defects. In a similar manner, a trans buccal tunnel was constructed posterior to the lower buccal sulcus in order to concurrently close the socket and the lateral floor of the mouth defect.¹⁴ A two-stage nasolabial flap was utilized to treat the lesion in the anterior tongue or the central third of the oral cavity (middle palate, floor of the mouth, upper and lower alveoli). The flap was raised in a seromuscular plane from superior to inferior using dissecting scissors. The facial artery's angular branch is often severed in the superior portion of the dissection. One to two fingers

could fit inside the tube with ease (1.5–2.0 cm). After that, the flap was implanted using a series of

interrupted 3-0 absorbable sutures and moved intra-orally without tension.¹



Figure: 1 & 2 Patient Showing Tracheostomy



Figure: 3 & 4 Nasolabial Flap Raised in a Supramuscular Plane of Dissection and the Inferior 2 cm De-Epithelialized in Preparation for Single-Stage Transfer



Figure: 5 & 6 Post Surgery Improved Mouth Opening Status of Patient

Discussion

Prominent clinical signs and symptoms used to diagnose oral submucous fibrosis (OSF) include progressive difficulty opening the mouth, oral ulceration, intolerance to spicy food (burning

sensation), altered salivation, depapillation (paleness of the oral mucosa), altered tongue mobility, blanching, rigidity, and stiffening of the oral mucosa.⁹ The development of a noticeable vertical fibrous ridge in the cheeks and the stiffness of the buccal mucosa,

which resembles a board, are characteristics that set the condition apart.⁴ The soft tissue fibrosis we see in our patients frequently manifests as trismus, feeding difficulties, and swallowing issues.¹⁰ Early in the course of the disease, medical therapy is advised; however, in cases of moderate to severe OSF, surgery becomes necessary at a late and irreversible stage.²² Skin grafts, insular mucoperiosteal flaps, bilateral tongue flaps, superficial temporal fascial flaps with split skin grafts, radial forearm flaps, and anterolateral side flaps are among the surgical techniques used, along with fibrous band release and post-incision defect reconstruction.²³ The nasolabial flap provides a long-term, relapse-free, and economical therapeutic method for mucosal lesion repair in inferiorly based oral cavity restoration, along with alternatives such as buccal fat pad transplantation.²⁴ The facial artery (for inferior basis flaps) or the superficial temporal artery via the transverse facial and infraorbital arteries (for superiorly based flaps) give blood to the nasolabial flap, a vascularized regional lobe in the head and neck region.^{23,24} A Bard Parker blade #15 was used to make an incision line that closely followed the nasofacial fold during the procedure. Similar to the Qayyum et al. study, the flap base's breadth was between 1.5 and 2.5 cm to guarantee a sufficient blood supply.²⁰ Narrower based flaps may compromise blood flow, while wider based flaps can be challenging to rotate into position.¹ To facilitate transfer, a trans buccal tunnel, with a size of 1.5 to 2 cm to accommodate 1 or 2 fingers comfortably, was created at the posterior biting margin, allowing tension-free movement into the oral cavity. Wider-based flaps can be difficult to twist into place, while narrower-based flaps may impair blood flow. To make transfer easier, a trans buccal tunnel was made at the posterior biting margin. It was 1.5 to 2 cm in size and could comfortably fit one or two fingers, allowing for tension-free movement into the oral cavity. Other benefits of employing the nasolabial flap include the close proximity of the defect and the ease with which the donor site can be closed; the extraoral scars that occur are hidden within the nasolabial fold.^{18,19} The trapdoor effect, which appears as a raised bulging deformity of tissue within the semi-circular boundaries of a U-, C-, or V-shaped scar, is one of the complications related to the nasolabial flap technique.^{20,22,25} The development of a surgical scar, disappearance of the nasomaxillary crease, and postoperative intraoral hair growth are other possible side effects. The nasomaxillary crease can be replicated using a periosteal suture to solve these issues, and the flap's bulkiness can be reduced by carefully removing any extra fat, leaving a scar that is well-camouflaged. Additionally, long-term follow-up data and evaluations of functional outcomes beyond mouth

opening would be helpful to thoroughly assess the overall impact of the nasolabial flap on patients' quality of life, even though our study reported satisfactory results in terms of mouth opening improvement. In addition, the existence of difficulties including the trapdoor effect, postoperative hair growth, and the formation of surgical scars highlights the necessity of carefully choosing patients, designing flaps, and using surgical procedures to reduce side effects.

Conclusion

Finally, the nasolabial flap's promise as a useful treatment option is demonstrated by our case series on its usage in the surgical management of oral submucous fibrosis (OSF). Our results demonstrated that the nasolabial flap might effectively improve mouth opening and lessen symptoms associated with OSF. Benefits of the procedure include simplicity, dependable vascularity, and low rates of postoperative complications. However, careful patient selection and surgical techniques are required to lower potential dangers. Although our study contributes to the body of knowledge about the management of the nasolabial flap in OSF, additional research with comparative analyses and long-term follow-up evaluations is required to reinforce the body of knowledge. All things considered, the nasolabial flap appears to be a promising surgical method for resolving the functional restrictions and enhancing the quality of life of OSF patients.

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