



One-Stage Reconstruction of the Large, Full-Thickness Central Upper Lip Defect with Bilateral Inferiorly Based Nasolabial Island Flaps

Mehmet Ceber

Namik Kemal University, Faculty of Medicine, Department of Plastic, Reconstructive and Aesthetic Surgery, Tekirdag / Turkey

Abstract:

Background: The reconstruction of large, full thickness upper lip defects presents many surgical challenges because of the several cosmetic subunits and unique landmarks. In elderly edentulous patients, functional restoration of the upper lip is a critical priority and large, full-thickness postoncologic defects require tissue recruitment rather than redistribution. I used bilateral inferiorly based nasolabial island flaps in a sandwich-like manner for reconstruction of the large, full-thickness central upper lip defect following excision of squamous cell carcinoma.

Case Report: A 90-year-old man was referred for surgical treatment of a biopsy-proven squamous cell carcinoma on his upper lip. Tumour was excised widely with frozen-section control. The result of full-thickness defect involved almost 75% of the upper lip. Bilateral inferiorly based nasolabial island flaps with the facial artery as its pedicle were raised, tunnelled subcutaneously under a bridge of lateral upper lip skin and placed on one another in a sandwich-like manner, such that the skin of the two flaps formed the outer and inner lining of the newly reconstructed upper lip. The postoperative period was uneventful. At the 6th month postoperative examination, color and thickness of the flaps were similar to those of the original skin of the lip. The volume of the upper lip and mouth opening were sufficient. The patient had adequate oral competence.

Conclusion: The bilateral inferiorly based nasolabial island flaps in a sandwich-like manner are reliable and effectively used for the reconstruction of large, full-thickness central upper lip defects in a single-stage procedure in elderly edentulous patients and allow a satisfactory functional outcome.

Introduction

The reconstruction of large, full thickness upper lip defects presents many surgical challenges because of the several cosmetic subunits and unique landmarks [1]. A number of techniques have been described, the choice depending on the extent of the defect in addition to the surgeon's expertise, indicating that there is no ideal procedure [2-8]. Most of these techniques restore lip continuity, but may cause microstomia, poor oral continence, significant perioral scarring and poor aesthetic outcome [9]. Therefore, for every individual patient, reconstructive goals must be prioritized. Reconstructive priorities for elderly patients with a large full-thickness postoncologic defect are clearly different than those of younger with a remaining deficiency after cleft lip repair. It is believed

that in elderly edentulous patients, functional restoration of the upper lip is a critical priority and large, full-thickness postoncologic defects require tissue recruitment rather than redistribution.

I would like to present a new reconstruction technique in an elderly edentulous patient with a large, full-thickness central upper lip defect following excision of squamous cell carcinoma. I used bilateral inferiorly based nasolabial island flaps with the facial artery as its pedicle in a sandwich-like manner for reconstruction of the upper lip defect.

Case Report

A 90-year-old man was referred to our department for surgical treatment of a biopsy-proven squamous cell carcinoma on his upper lip. On physical examination a large tumour which was nodular, painless, hard, and semimobile on the the central upper lip, between 1.5 cm away from the left oral commissure and 3 cm away from the right oral commissure was observed [Figure 1]. Tumour was accompanied by induration and fibrosis in the surrounding tissues. Physical examination revealed no palpable regional

Address for Correspondence: Mehmet Ceber, Namik Kemal University Faculty of Medicine, Department of Plastic, Reconstructive and Aesthetic Surgery, 59100, Tekirdag / Turkey, Tel: +90(541)776 4290; Fax: +90 282 26203 10; E-mail: mdceber@yahoo.com

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lymphadenopathy. There were no pathologic lymph nodes in the neck according to the magnetic resonance imaging. There was no evidence of distant metastasis.



Figure 1: Preoperative view showing squamous carcinoma on the upper lip.

Tumour was excised widely with frozen-section control under general anesthesia. Excisional borders were vertically, 1 cm away from the inferior border of the columella to the labiogingival sulcus and, horizontally, 1 cm away from the left commissure and 2.5 cm away from the right commissure. The resulting full-thickness defect was horizontally 6 cm and vertically 2.5 cm and involved almost 75% of the upper lip [Figure 2]. Reconstruction was undertaken after the margins were shown to be free of tumour by frozen sectioning. The flaps were planned bilaterally with their medial and lateral borders just on the nasolabial region. The length of the flap was equal to the horizontal length of the defect. In addition, the width of the flap was equal to the vertical length of the defect. Bilateral inferiorly based nasolabial island flaps with the facial artery as its pedicle were raised [Figure 3], tunneled subcutaneously under a bridge of lateral upper lip skin and placed on one another in a sandwich-like manner, such that the skin of the two flaps formed the outer and inner lining of the newly reconstructed upper lip. In the course of this tunneling



Figure 2: The defect after tumour excision.

procedure, the modiolus is carefully preserved to prevent distortion of the commissure, and development of subsequent microstomia. The donor sites were closed primarily. There was no tension on the flap. The duration of the operation was 60 minutes.



Figure 3: Bilateral inferiorly based nasolabial island flaps were raised.

The postoperative period was uneventful. Nutrition was established with a feeding tube for one week postoperatively. At the 6th month postoperative examination, color and thickness of the flaps are similar to those of the original skin of the lip. The volume of the upper lip and mouth opening (42 mm) were sufficient [Figure 4]. The patient had adequate oral competence [Figure 5]. There was no local recurrence or regional metastasis of the tumour during the following 6 months. Although he has not vermillion of his upper lip, the patient was satisfied with his reconstructed lip. Intraoral examination showed various hair fibers growing from the surface of the inner flap into the oral cavity. Patient was aware of these hairs and felt uncomfortable about them. Patient was advised to have laser epilation of these hair fibers but he refused despite adequate explanations of the procedure. The donor sites were well-camouflaged into the nasolabial folds that were created aesthetically after transposed flaps inset. The donor sites did not distort the perioral structures. Since flaps were

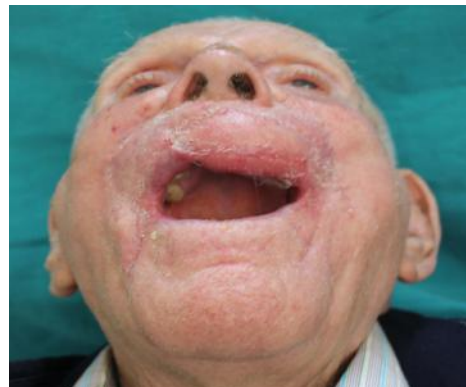


Figure 4: Photograph at postoperative 6th month showing adequate mouth opening and there was no symptom of microstomia.

used a little big, a subsequent corrective surgery was required. However, the patient was satisfied with his reconstructed lip and did not request the corrective surgery.



Figure 5: Photograph at postoperative 6th month showing adequate oral competence.

Discussion

There are two goals to achieve in upper lip reconstruction. The main goal is functional restoration of the upper lip. The principal function of the lips is oral competence. Moreover, the reconstructed lip should allow adequate opening for food and dental prosthesis. The second goal is to ensure an aesthetically pleasing surgical outcome.

Although many surgical techniques using local flaps from adjacent tissue have been described for the reconstruction of large, full-thickness upper lip defects, they have some disadvantages. Most of these techniques restore lip continuity, but may cause microstomia, poor oral continence, cause significant perioral scarring and poor aesthetic outcome [9]. Therefore, for every individual patient, reconstructive goals must be prioritized.

The nasolabial flaps had been widely used for reconstruction of nasal alar, tip, columella, cheek, anterior floor of the mouth, gingivobuccal sulcus, buccal mucosa, tongue and lower alveolar defects and oronasal fistula in palate [10-17]. Several authors have used nasolabial flaps unilaterally or bilaterally for upper lip reconstruction according to the extent of the defect [2,3,6,7]. Their utility in large full-thickness upper lip defects continue to be a challenge for reconstructive surgeons to avoid the above mentioned disadvantages (lip distortion, microstomia, poor oral continence, perioral scarring) [9].

It is believed that reconstructive priority for an elderly edentulous patient with a large full-thickness postoncologic defect is functional restoration of the upper lip and large, full-thickness postoncologic defects require tissue recruitment rather than redistribution. Considering the lip functions, the facial artery as its pedicle in a sandwich-like manner were suitable

choice for my patient. It is thought that bulkier flaps would allow better apposition of the lips which is paramount for oral competency in elderly edentulous patients. Therefore, I would suggest using the bilateral nasolabial island flaps for its bulkier nature. A design of sandwich-like manner makes up the bulk of lip thickness and increases oral competency.

The advantages of this technique are an easy design, a similar color, texture match, thickness of the newly reconstructed upper lip and balance of the lip and commissures. This technique doesn't disrupt follicular integrity allowing men to retain the growth of moustache hair. In men, this procedure provides skin with hair which allows the scar to be hidden with a mustache. The disadvantages of this technique aren't reconstructing the delicate anatomy of the Cupid's bow area of the upper lip and retaining the growth of beard in inner lining of upper lip.

In conclusion, the bilateral inferiorly based nasolabial island flaps in a sandwich-like manner, which I performed for reconstruction of a large, full-thickness central upper lip defect, can be prepared easily in a short time without donor site morbidity. Also, this procedure is reliable and suitable for reconstructions in a less invasive manner, in elderly edentulous patients with comorbidity preserving the intercommissural distance and preventing the complication of microstomia and can be performed in one-stage.

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