

Total Lower Lip Reconstruction with a Submental Perforator Flap Following Squamous Cell Carcinoma Resection: A Case Report

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Abstract

Case Report

Total lower lip defects following oncological resection represent a challenging reconstructive problem, as restoration of oral competence, adequate soft-tissue volume, and satisfactory aesthetic appearance must be achieved simultaneously. We report the case of a 75-year-old man with a history of chronic smoking and arterial hypertension, who underwent resection of a squamous cell carcinoma of the lower lip resulting in a total lower lip defect with preservation of the right oral commissure. Following histopathological confirmation of adequate resection margins and the absence of lymph node involvement, locoregional extension, or distant metastases, secondary reconstruction was performed using a 13 × 5 cm submental perforator flap. The flap was harvested and transferred to reconstruct the entire lower lip. The postoperative course was uneventful, with complete flap survival and no postoperative complications. The patient recovered satisfactory oral function and was able to resume oral feeding. Clinical follow-up was performed every three months during the first postoperative year and subsequently every six months. The submental perforator flap provided reliable tissue coverage and satisfactory functional reconstruction of this extensive lower lip defect.

Keywords: Lower lip reconstruction; submental perforator flap; squamous cell carcinoma; oral reconstruction; head and neck reconstruction.

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INTRODUCTION

Reconstruction of extensive lower lip defects following oncological resection remains a challenging procedure because the lower lip plays a central role in oral competence, swallowing, speech, and facial appearance. The main reconstructive goals are therefore to restore oral sphincter function, adequate soft-tissue volume, and a satisfactory oral aperture while achieving an acceptable aesthetic result.

Several techniques have been described, ranging from local and regional flaps to free tissue transfer. Local flaps provide excellent tissue matching but may cause microstomia when used for near-total or total defects, whereas free flaps provide sufficient tissue but involve greater surgical complexity and may have limitations in terms of tissue match and functional restoration.

The submental flap represents a useful regional alternative because of its proximity to the lower lip, favorable tissue characteristics, reliable vascularity, and limited donor-site morbidity. The perforator-based

design allows a thin and pliable flap to be harvested while preserving the underlying platysma. We report a case of secondary total lower lip reconstruction following squamous cell carcinoma resection using a submental perforator flap, with satisfactory functional and aesthetic outcomes.

CASE DESCRIPTION AND RESULTS

A 75-year-old man was referred to our department following surgical resection of a squamous cell carcinoma of the lower lip. His medical history was notable for chronic tobacco use and arterial hypertension, with no history of diabetes mellitus. The initial oncological procedure resulted in a total defect of the lower lip, with preservation of the right oral commissure. Histopathological examination confirmed complete tumor excision with clear surgical margins of at least 1 cm. A cervico-thoraco-abdomino-pelvic computed tomography scan showed no evidence of locoregional extension or distant metastatic disease. No cervical lymph node dissection was performed. In view of the satisfactory oncological status, secondary reconstruction was planned three weeks after tumor resection.

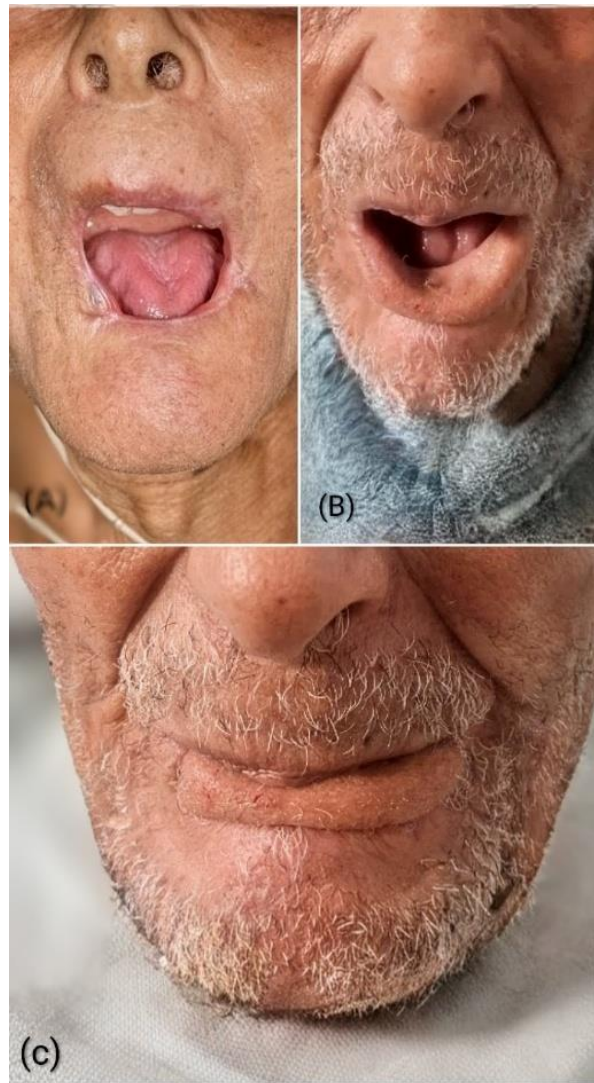


Figure 1: Clinical photographs before and after reconstruction.

- (A) Preoperative view showing the total lower lip defect following oncological resection, with preservation of the right oral commissure.
- (B) One-year postoperative open-mouth view showing the reconstructed lower lip with satisfactory restoration of the lip contour and oral opening.
- (C) One-year postoperative closed-mouth view demonstrating complete oral occlusion and satisfactory oral competence.

Surgical Technique

Three weeks after the initial oncological resection, secondary reconstruction of the total lower lip defect was performed using a submental perforator flap. A 13×5 cm flap was designed in the submental region based on a unilateral submental vascular pedicle. The flap was elevated in the supraplatysmal plane, with careful preservation of the vascular pedicle.

Following flap elevation, the flap was transferred to the lower lip through a subcutaneous tunnel and positioned to reconstruct the entire lower lip while preserving the right oral commissure. No skin de-epithelialization was required. The flap was folded to

provide adequate tissue bulk and to recreate the three-dimensional contour of the lower lip.

Reconstruction of the orbicularis oris muscle was not performed. The soft-tissue arrangement provided sufficient oral closure, allowing the patient to achieve satisfactory oral competence and preventing significant saliva leakage. The flap was carefully inset to restore the continuity and contour of the lower lip.

The donor site was closed primarily without the need for a skin graft. The postoperative course was uneventful, with complete flap survival and no local or systemic postoperative complications.



Figure 2: Surgical procedure

(A) Immediate postoperative aspect following reconstruction of the lower lip.

(B) Preoperative design of the submental perforator flap.

(C) Intraoperative view showing flap elevation and subcutaneous tunneling of the flap toward the lower lip defect.

DISCUSSION

Reconstruction of extensive lower lip defects remains challenging because no single technique simultaneously provides optimal oral competence, mouth opening, aesthetic appearance, and minimal donor-site morbidity. Local flaps such as the Karapandzic and Bernard-Webster flaps provide excellent tissue matching and can preserve oral function, but their use in near-total or total defects may result in microstomia, commissural distortion, or significant perioral scarring.

Free flaps are valuable for very extensive defects because they provide a large amount of tissue and can be combined with static or dynamic support. However, they require microsurgical expertise, involve greater operative complexity and donor-site morbidity, and may provide less satisfactory color and texture matching. Functional outcomes may also be limited when reconstruction does not adequately reproduce the dynamic sphincteric function of the orbicularis oris. Recent evidence suggests that innervated muscular free flaps may improve oral competence compared with fasciocutaneous free flaps, although their use remains more complex.

In this context, the submental perforator flap represents an intermediate regional option, combining

the advantages of a pedicled flap with tissue from an anatomically adjacent and aesthetically favorable donor site. Its main advantages are reliable vascularity, adequate tissue availability, good color and texture match, a concealed donor scar, and avoidance of microsurgical anastomosis. The perforator design also allows a relatively thin flap while preserving the underlying platysma. Its main limitations include the absence of intrinsic motor function and the relatively short pedicle, which may restrict its use in some reconstructions. In our case, despite the absence of formal orbicularis oris reconstruction, satisfactory oral competence was achieved, with no significant salivary leakage and progressive recovery of oral feeding. These results suggest that, in selected patients with preservation of at least one oral commissure, the submental perforator flap can provide a simple and reliable alternative for total lower lip reconstruction.

CONCLUSION

The submental perforator flap represents a reliable and versatile option for the reconstruction of extensive lower lip defects. It provides well-matched local tissue, avoids microsurgical anastomosis, and allows primary closure of the donor site with limited morbidity. In selected patients with preservation of an oral commissure, this technique can achieve satisfactory oral competence and aesthetic outcomes while avoiding

the greater complexity of free tissue transfer. Our experience suggests that the submental perforator flap should be considered as a valuable alternative for selected cases of total lower lip reconstruction.

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