

# Lip prosthesis as a palliative care modality for a head and neck cancer patient—A case report

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## ABSTRACT

The present case report describes the prosthetic management following partial loss of free-fibular osteocutaneous flap in an irradiated patient diagnosed with recurrent head and neck cancer. The patient presented with constant drooling of oral fluids due to an anatomically deficient lower lip. Salvage reconstructive surgery was not considered feasible due to past history of recurrence, multiple surgeries and radiotherapy, and financial constraints. An adhesive-retained interim silicone prosthesis was fabricated to alleviate the functional and psychosocial morbidity. The prosthesis served to restore the oro-facial seal to prevent constant drooling of oral fluids. It also aided in providing an excellent aesthetic solution to palliate the psychological suffering experienced by the patient due to lost facial contours.

## 1. Introduction

The gingivo-buccal sulcus (GBS) is the most common site for oral cancer in Indian subcontinent.<sup>1</sup> Surgery with/without adjuvant therapy (radiotherapy and/or chemotherapy) is the mainstay of treatment for such cancers. Around 35.5 % of GBS tumors recur which warrant the need for salvage surgeries.<sup>2</sup> Fascio-cutaneous or osteocutaneous free tissue transfers are considered as a gold standard in reconstruction of jaws undergoing ablative surgeries. However, free-flaps placed in a previously radiated field are associated with an increased risk of flap complications.<sup>3</sup> Flap loss, fistula formation, flap thrombosis and infections are certain complications documented in the literature.<sup>4</sup>

Partial or total flap loss results in structural defects with functional and cosmetic deficits and disabilities.<sup>5</sup> Reconstruction of lip in irradiated patients is particularly challenging and any deficit needs to be corrected. Disfigurement, constant drooling of saliva, incompetent labial structures are problems due to flap loss involving peri-oral tissues.<sup>6</sup> Prosthetic rehabilitation is a suitable treatment modality, especially when salvage reconstruction is not possible. A cosmetically-pleasing interim prosthesis may serve to palliate the psychological suffering in a patient with multiple surgeries. However, the mobile soft tissues and three-dimensional curvature of the labial structures pose a challenge to fabricate a well-adapted prosthesis.<sup>7</sup>

The present report describes the fabrication of an adhesive-retained interim lip prosthesis to provide an effective seal with an anatomically-deficient lower lip resulting from flap failure. The primary objective of the prosthetic treatment was to improve cosmesis and quality of life of the patient, recently treated for recurrent HNSCC. This report attempts

to elucidate the rationale and steps adopted during prosthetic intervention, thus reiterating the need to focus on patient-specific needs and palliation.

## 2. Clinical report

A 55-year-old man was diagnosed with moderately-differentiated squamous cell carcinoma (SCC) of right buccal mucosa (cT3-cN0-cM0) in 2019. He underwent bite composite resection with right posterior marginal mandibulectomy followed by reconstruction with a free anterolateral thigh flap (FALT) (Fig. 1). He received adjuvant external beam radiotherapy (60 Gy/30#). The patient was disease-free for 23 months until he was diagnosed with recurrent SCC lower lip in 2021 (rcT2-rcN0-rcM0). He underwent middle one-third mandibulectomy followed by reconstruction with free-fibular osteo-cutaneous flap (FFOCF). The patient developed oral incompetence due to flap shrinkage and partial flap loss after 3 months (Fig. 2). He underwent z commissuroplasty on the right side along with left-side lip advancement to alleviate his problems. The corrective surgery did not yield functional results. The patient was referred to a maxillofacial prosthodontist with complains of constant drooling of saliva leading to social embarrassment.

Extra-oral examination revealed anatomically-deficient, free-flap reconstructed lower lip extending between the commissures bilaterally as visualized in Video 1. Lip incompetency was observed, with 1 cm oral aperture measurable at maximal intercuspal position, resulting in constant egress of oral fluids. The bulky skin-paddle extended intra-orally covering the neo-alveolus and obliterating the right buccal and labial

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**Fig. 1.** Pre-operative photo prior to free-fibular osteo-cutaneous flap reconstruction (FFOCF). Note the free anterolateral thigh flap with respect to the right buccal mucosa.



**Fig. 2.** Post-operative photo following vascularized free flap reconstruction. Note the anatomic lip deficiency even at the relaxed mouth position.

vestibule. The patient was completely edentulous on the reconstructed side with contralateral mandibular molars remaining in the native mandible. Interim prosthetic rehabilitation of the complex oromandibular defect was planned using an adhesive-retained silicone lip prosthesis to improve cosmesis and achieve an adequate oral seal. The intent of fabrication of the prosthesis was to palliate - the psychological suffering of the patient and thereby, to improve his quality of life. An informed consent was taken from the patient for the current intervention informing him about all the available treatment options.

Supplementary video related to this article can be found at <https://doi.org/10.1016/j.jobcr.2024.04.001>

An impression of the lower facial defect in the relaxed mouth position was made in irreversible hydrocolloid (Imprint; Dental Products of India) and poured in Type III dental stone (Ultrastone; Kalabhai Pvt Ltd.) (Fig. 3). A pattern of the interim prosthesis was fabricated using modelling wax (Elite modelling wax; Elite Dental Products) to reproduce the lost facial contours and lower lip. The prosthesis margins were terminated at the line of demarcation between the flap and the surrounding skin to accentuate the camouflage (Fig. 4). Anatomic contours such as lower lip anatomy, vermillion border and mento-labial sulcus were carefully defined in the wax pattern. This wax pattern was evaluated clinically to verify the fit and marginal adaptation (Fig. 5).

Characterization of skin details, including grooves and surface texture, was completed, and the wax pattern was sealed to the definitive cast. A 2-piece mold was fabricated in dental stone (Ultrastone, Kalabhai Pvt Ltd) and dewaxing was carried out. Room temperature vulcanizing silicone (A-2000; Factor II, inc.) was dispensed (1:1 by volume) and intrinsic pigments (Functional Intrinsic kit KT-399; Factor



**Fig. 3.** Type III dental stone model of the defect following an impression of the lower facial defect in the relaxed mouth position in irreversible hydrocolloid (Imprint; Dental Products of India). Note the three-dimensional contours of the tissues.

II, inc.) were added to obtain the base shade. The material was packed in the mold, secured with a clamp and left to cure overnight as per manufacturer's instructions. The silicone prosthesis was retrieved and extrinsic colorants (Extrinsic coloration system KT-199, Factor II, inc.) were added to accurately match the surrounding skin shade. The interim prosthesis was secured with the help of skin-adhesive (Daro Hydrobond; Factor II, inc.) and delivered to the patient (Fig. 6) and video 2. The patient reported an improvement in appearance, self-confidence, and

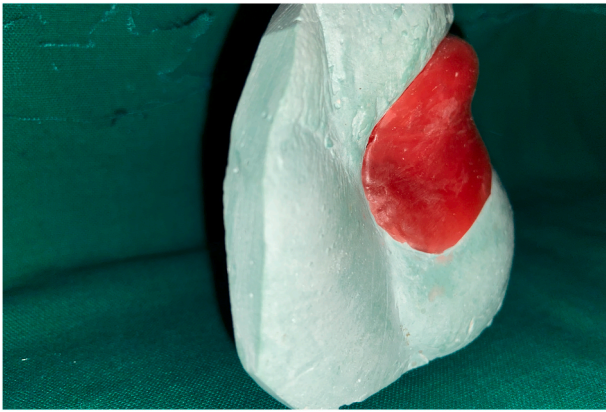


Fig. 4. Wax Pattern fabrication with carving of the contours and careful reproduction of the interim prosthesis margins.



Fig. 5. Clinical assessment of the interim lip prosthesis with special focus on the margin adaptation.

the ability to re-socialize.

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### 3. Discussion

The present report describes the use of interim prosthetic rehabilitation as a reliable and effective modality to manage the complex oromandibular defect. The anatomic aberration (loss of lower lip) hindered his ability to lead a normal life and maintain sociability.



Fig. 6. Final interim prosthesis. The interim prosthesis was secured with the help of skin-adhesive.

Various techniques have been cited in the literature to retain a labial prosthesis. These include use of tissue undercuts, adhesives, mechanical devices, and osseointegrated implants.<sup>8</sup> Cheng et al. reported the use of resin-bonded retentive elements bonded to patient's teeth to retain a lip prosthesis.<sup>9</sup> Alqarni et al. described the fabrication of an extraoral lip prosthesis retained by magnets to an intraoral implant-retained mandibular prosthesis in a completely edentulous patient.<sup>10</sup> In the present case, an adhesive-retained interim silicone prosthesis allowed restoration of lower facial contours in all the three planes, thereby simulating the contours and helping in obtaining an efficient oro-facial seal. The fabrication was straightforward with no requirement of a robust armamentarium. The life-like texture of the silicone enhanced the aesthetics, improving the body-image related distress reported verbally by the patient.

Loco-regional recurrence of the previous tumor precluded placement of primary dental implants at the time of osteocutaneous fibula free-flap. Secondary placement of implants was not considered due to insufficient span of disease-free interval at the time of his presentation. The patient continued to be on nasogastric feed even after prosthetic rehabilitation as there was a high chance of aspiration and secondary lung infection.

The patient was counselled and made aware of the inherent drawbacks of the prosthesis such as frequent use of adhesive, surface discoloration and roughening of the edges with time. This mode of prosthetic rehabilitation restored only the structural integrity but not the functional deficit of the lower lip due to lack of muscle activity.

The patient continues to remain on a regular 3-monthly follow-up to ensure careful tumor surveillance. Primary oncologist's opinion has been sought for secondary dental implants in conjunction with a scalp rotation flap for definite prosthetic rehabilitation.

#### 4. Conclusion

The clinical report describes an interim and simple yet effective prosthetic rehabilitation of a complex oro-mandibular defect secondary to partial microvascular flap loss. An adhesive-retained silicone prosthesis provided a successful, interim, palliative solution to the physical and functional distress experienced by the patient treated for loco-regional recurrent SCC.

#### Patient consent

Patient consent was recorded for use of the photos and videos for educational purpose.

#### Declaration of interests

None.

#### CRediT statement

Sandeep Gurav: Conceptualization, methodology, Supervision. Gurkaran Preet Singh: Methodology, Investigation including the fabrication of the prosthesis and its clinical analysis, Writing-review and editing. Radhika Jain: Data curation, Writing- Original Draft. Gorakh Ahire: Laboratory procedures of the fabrication of the prosthesis including silicone mixing and shade matching.

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#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jobcr.2024.04.001>.

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