Dynamic Reconstruction of Subtotal Upper Lip Defect with Local Flaps After BCC Excision

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Introduction

- Reconstruction of the upper lip is uniquely challenging due to complex aesthetics and its critical role in speech, oral competence, and facial expression
- Existing options frequently sacrifice either dynamic sphincter function or aesthetic contour
- We present a reconstructed with a multilayered local flap technique incorporating bilateral levator labii superioris (LLS) muscle transposition

Case Presentation

- A 46-year-old man presented with a 10-year history of a progressively enlarging, infiltrative basal cell carcinoma (BCC) of the central upper lip (Figure 1)
- Mohs excision produced a subtotal, through-and-through defect involving ~90% of lip width, with preservation of the bilateral oral commissures (Figure 2)



Figure 1. Preoperative view demonstrating infiltrative BCC of the central upper lip with distortion of the vermilion border, extension toward the columellar base, and loss of normal upper lip contour

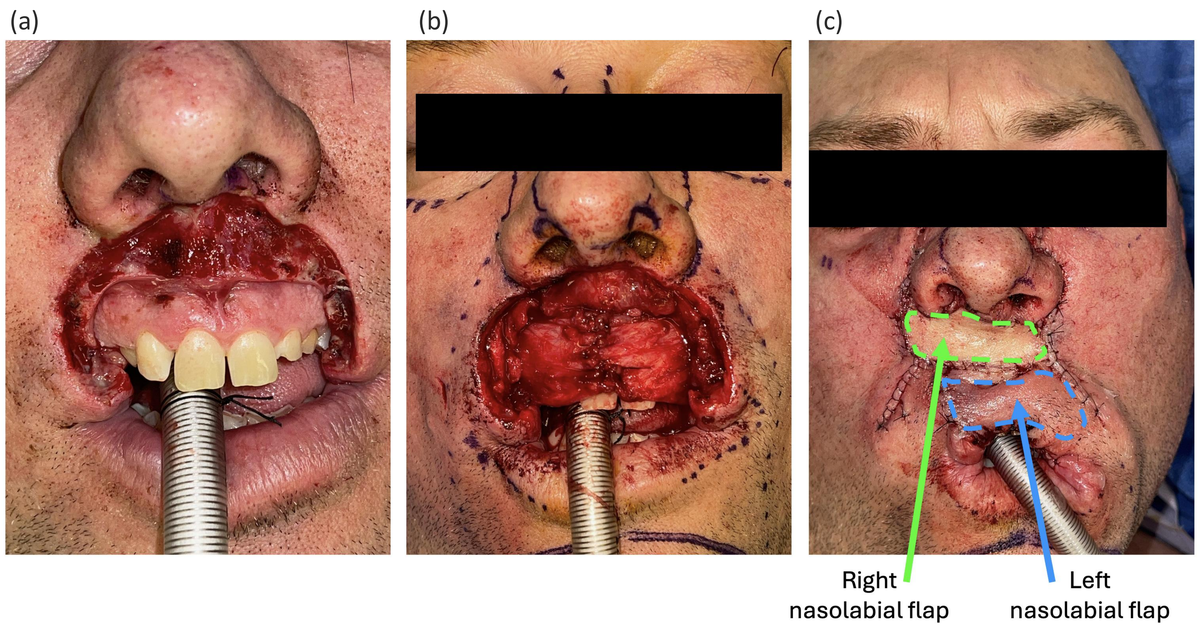


Figure 2. Intraoperative photos taken the day of surgery. (a) Post-Mohs subtotal, through-and-through defect. (b) Bilateral levator labii superioris (LLS) identification, mobilization, and medial transposition. (c) Completed first-stage reconstruction: bilateral LLS transposition, buccal mucosal advancement flaps, and opposing nasolabial flaps for cutaneous coverage (green arrow = right nasolabial flap; blue arrow = left nasolabial flap)

Clinical Pearls

• Preserve the oral commissures whenever possible. Commissure position often does more for perceived oral competence than exact restoration of muscular continuity
• Opposing nasolabial flaps can meet in the midline for central defects too wide for a single flap. Stagger which flap is superiorly versus inferiorly based to avoid a conspicuous vertical seam at the join
• Counsel patients up front that a secondary revision, such as Z-plasty, scar release, or grafting, is part of the plan for defects this large, not a sign the first operation fell short

Limitations: This is a single case with qualitative functional assessment only; oral competence and puckering were assessed clinically rather than with objective measures such as EMG or dynamic ultrasound. Follow-up ended 3 months after the index procedure, before longer-term photographic and functional data could confirm the durability of the reconstruction

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Surgical Technique

Mucosal Reconstruction: Bilateral buccal mucosal advancement flaps were elevated via releasing incisions along the gingivobuccal sulcus and advanced medially for tension-free closure of the intraoral defect. A bridle stitch was placed circumdentally to prevent retraction
Dynamic Muscular Reconstruction: Bilateral LLS muscles were dissected preserving neurovascular supply, disinserted from the orbital rim, and rotated from a vertical to horizontal orientation. Muscle flaps were sutured laterally to residual orbicularis and medially to each other to reconstruct a dynamic muscular ring
Cutaneous Reconstruction: Bilateral opposing nasolabial flaps reconstructed the external skin. The left flap was rotated inferiorly to recreate the vermilion border; the right, superiorly-based flap completed cutaneous coverage

Postoperative Course

- At 3-month follow-up, the patient demonstrated preserved oral competence and dynamic function
- A planned secondary revision (asymmetric Z-plasty and full-thickness submental skin graft) improved contour and addressed subnasal scar contracture, with maintained dynamic function (Figure 3)

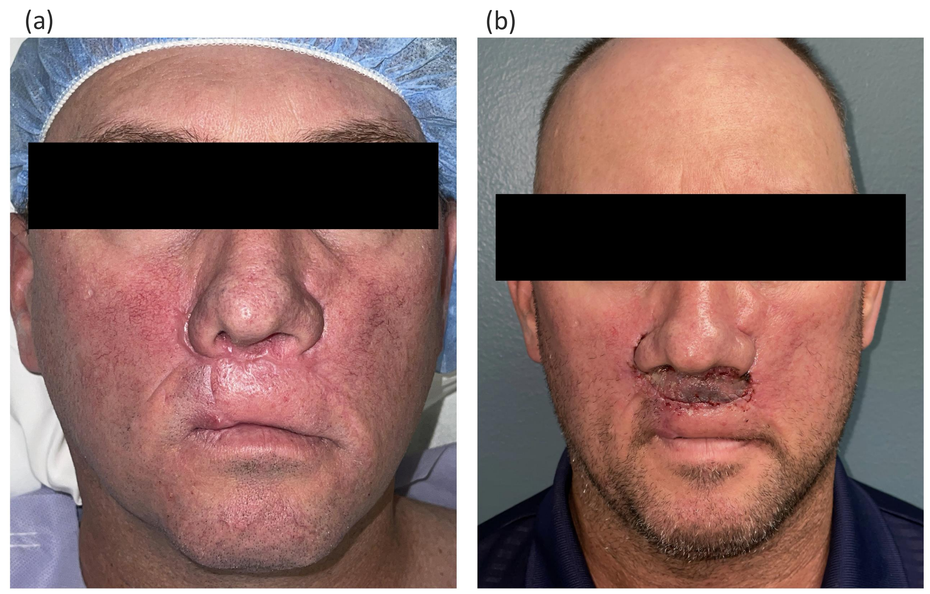


Figure 3. (a) Three-month postoperative view prior to revision, demonstrating preserved oral competence, maintained lip aperture, and dynamic movement. (b) Early postoperative view following secondary revision with contour refinement and full-thickness skin grafting, showing improved lip symmetry and graft viability

Discussion

- Reconstruction of a subtotal upper lip defect requires restoring three distinct layers (mucosa, muscle, and skin) while preserving oral competence, articulation, and aesthetic symmetry
- Dynamic reconstruction via innervated regional muscle transfer is established for the lower lip, most notably with depressor anguli oris flaps, but LLS transposition for the upper lip has not been previously reported
- Because the LLS is normally an elevator-evertor rather than a circumferential sphincter, this raises a natural question: does reorienting its vector restore genuine sphincteric function, or does observed competence instead reflect the intact commissures and lateral orbicularis oris?
- Postoperative puckering, straw drinking, and preserved oral aperture are consistent with successful dynamic reconstruction, though the transposed muscle's independent contribution was not objectively isolated
- A staged secondary revision optimized contour, consistent with standard practice in complex lip reconstruction

Conclusion

- Subtotal, through-and-through upper lip defects can be reconstructed using a multilayered strategy that restores mucosa, muscle, and skin as distinct layers
- Bilateral levator labii superioris (LLS) transposition offers a novel dynamic component to this approach, extending a principle previously described only for the lower lip
- This technique provides a reproducible option for large upper lip defects in appropriately selected patients

References: 1. Salibian, Zide. Plast Reconstr Surg. 2019;143(2):572-582. 2. Yih, Howerton. J Oral Maxillofac Surg. 1997;55(4):383-389. 3. Moncrieff et al. Lancet Oncol. 2009;10(7):700-708. 4. Vanison et al. Curr Opin Otolaryngol Head Neck Surg. 2019;27(3):219-226. 5. Ettl et al. J Clin Med. 2023;12(11):3636. 6. Wang et al. World J Surg Oncol. 2018;16(1):194. 7. Yotsuyanagi et al. Plast Reconstr Surg. 1999;103(3):850-856. 8. Alfonso et al. Ann Plast Surg. 2022;88(3):282-287. 9. Turan. Ann Plast Surg. 2024;93(5):589-596. 10. Cook. Dermatol Surg. 2013;39(2):281-289.