

Cutaneous Reconstruction in Skin Cancer: Experience with Bilobed and Advancement Flaps. Report of Two Clinical Cases

Ilse Nájera Basurto¹, Jesús Alonso Panduro Solórzano², Maricruz de la Torre³, Oscar Alberto Ceja Ortega⁴, Viridiana Salcedo Villaseñor⁴, Omar Alejandro Reyes Reyes⁴, Marely Zenteno Franco⁵, Ana Sophia Ortiz Robles⁴, Karen Yasmin Galaviz Madera¹, Laura Soledad Castro Serrano⁴

¹Universidad Autónoma de Aguascalientes.

²Universidad de Guadalajara

³Universidad Autónoma de Durango/ Campus Durango.

⁴Universidad Autónoma de Guadalajara/ Campus Zapopan.

⁵Benemérita Universidad Autónoma de Puebla.

ABSTRACT

Skin cancer is the most common malignant neoplasm worldwide, with basal cell carcinoma and squamous cell carcinoma being the most frequent types. Surgical excision with adequate oncologic margins is the treatment of choice; however, reconstruction of the resulting defects is essential to restore function and aesthetics, especially in visible facial areas. Local flaps are considered a reliable option due to their tissue viability, similarity to surrounding skin, and favorable aesthetic outcomes. This article presents two clinical cases of cutaneous reconstruction following skin cancer excision. The first case involves a 75-year-old male patient with basal cell carcinoma of the lateral nasal wall, treated with surgical excision and reconstruction using a bilobed flap. The second case involves a 48-year-old female patient with squamous cell carcinoma of the malar region, reconstructed using an advancement flap after wide excision. In both cases, the postoperative course was satisfactory, with proper flap integration, minimal tension on closure, absence of major complications, and optimal aesthetic and functional results. These cases demonstrate that bilobed and advancement flaps are safe, effective, and versatile techniques for facial reconstruction after skin cancer excision, and that flap choice should be individualized based on defect location, skin laxity, and patient aesthetic considerations, promoting functional restoration and harmonious healing.

KEYWORDS: Skin cancer, Basal cell carcinoma, Squamous cell carcinoma, Cutaneous reconstruction, Bilobed flap, Advancement flap, Facial reconstruction, Local flaps, Oncologic surgery, Aesthetic outcomes, Functional outcomes

ARTICLE DETAILS

Published On:
30 October 2025

Available on:
<https://ijmscrs.com/>

INTRODUCTION

Skin cancer represents the most common neoplasm in humans, accounting for approximately 30% of all diagnosed neoplasms worldwide. Its incidence has steadily increased over the past decades, particularly in regions with high ultraviolet radiation exposure. Among malignant cutaneous tumors, basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) are the most frequent, followed by malignant melanoma.^{1,2} These neoplasms typically develop in photoexposed areas, such as the face, scalp, neck, and

upper extremities, posing not only an oncologic challenge but also a reconstructive one due to the aesthetic and functional importance of these regions.³

Surgical treatment remains the cornerstone in the management of non-melanoma skin cancer. Complete tumor excision with disease-free margins is the primary goal, as it reduces the risk of local recurrence and ensures adequate oncologic control. However, such excision generates skin defects of varying sizes, which often cannot be closed primarily without causing tension, anatomical distortion, or

Cutaneous Reconstruction in Skin Cancer: Experience with Bilobed and Advancement Flaps. Report of Two Clinical Cases

functional limitations.⁴Therefore, cutaneous reconstruction following tumor excision represents an essential stage in the comprehensive treatment of oncology patients.⁵

Available reconstructive options include primary closure, skin grafts, and the use of local or regional flaps. The choice of technique depends on multiple factors, including the size and location of the defect, the quality and elasticity of surrounding skin, the depth of excision, and the patient's age or comorbidities. Among the most commonly used options, local flaps are fundamental because they allow replacement of lost tissue with skin of similar color, thickness, and texture, achieving superior aesthetic and functional outcomes.^{6,7}

Among the most employed local flaps are the bilobed flap and the advancement flap. The bilobed flap, originally described by Esser in 1918 and later modified by Zitelli in 1989, is based on sequential rotation of two adjacent lobes that redistribute tension and facilitate closure of the primary defect. This technique is particularly useful for nasal reconstruction and areas with limited skin laxity, providing effective and harmonious coverage with surrounding anatomy.^{8,9}

The advancement flap is a simple, safe, and versatile technique indicated for linear or elliptical defects, where adjacent skin can be mobilized directly toward the defect. Its design can be a simple, bilateral, or "V-Y" advancement flap, depending on the shape and size of the area to cover. Its advantages include technical simplicity, preservation of skin color and texture, and minimal visible scarring.¹⁰

The fundamental principle of cutaneous reconstruction following malignant lesion excision is to restore anatomical, functional, and aesthetic units, prioritizing preservation of vital structures, facial symmetry, and the final cosmetic outcome. In this regard, the surgeon must combine oncologic

and reconstructive principles, planning each case individually.¹¹

The selection of flap type depends not only on anatomical location but also on the direction of skin tension lines (Langer's lines), local vascularization, patient age, aesthetic expectations, and potential functional limitations. Correct choice and execution of the reconstructive technique allow not only adequate defect coverage but also satisfactory reintegration of the patient into daily and social life, a critical aspect in dermatologic oncologic surgery.¹²

This report aims to present two clinical cases of cutaneous reconstruction after skin cancer excision, employing two different local flap techniques: a bilobed flap and an advancement flap. Through these cases, we highlight anatomical, technical, and aesthetic principles guiding flap selection, discussing outcomes, advantages, limitations, and practical considerations for their application in dermatologic reconstructive surgery.

CLINICAL CASE 1. RECONSTRUCTION WITH BILOBED FLAP

A 75-year-old male patient with a history of prolonged sun exposure due to outdoor work (farmer), without relevant comorbidities, presented to the plastic surgery department with a cutaneous lesion on the right lateral nasal region of approximately 10 months duration, characterized by progressive growth, pearly edges, and occasional bleeding. Physical examination revealed a nodular lesion measuring 1.8×1.5 cm, ulcerated at the center, with raised edges, located on the right lateral nasal wall, without clinical signs of deep invasion or involvement of bone or cartilage structures. Cervical lymph nodes were not palpable.



Figure 1,2: Preoperative images

Cutaneous Reconstruction in Skin Cancer: Experience with Bilobed and Advancement Flaps. Report of Two Clinical Cases

An incisional biopsy revealed nodular basal cell carcinoma with involved margins. Surgical excision with 4 mm oncologic margins and immediate defect reconstruction was planned.

After excision, the residual cutaneous defect measured 2.5×2 cm, partially affecting the lateral nasal wall and the alar junction. Given the location and size of the defect, reconstruction using a bilobed flap was performed, designed on the nasal dorsum following skin tension lines.

The first lobe was designed with a 45° rotation relative to the primary defect, and the second lobe with a 90° rotation,

following Zitelli's technique. Both lobes were elevated in the subcutaneous plane and rotated sequentially to cover the primary and secondary defects. Layered closure was performed using absorbable sutures in the subcutaneous tissue and 6-0 nylon on the skin.

Postoperative evolution was satisfactory, without complications such as necrosis or dehiscence. At three weeks, flap integration was adequate with excellent color match and minimal visible scarring. At three months, aesthetic results were optimal, with preserved nasal symmetry and no tumor recurrence.



Figure 3: Postoperative image

Final Diagnosis: Well-differentiated squamous cell carcinoma treated with surgical excision and nasal bilobed flap reconstruction.

Outcome: Favorable evolution, without local recurrence or postoperative complications.

CLINICAL CASE 2. RECONSTRUCTION WITH ADVANCEMENT FLAP

A 48-year-old female patient, housewife, with controlled hypertension and fair skin type (Fitzpatrick II), presented with a cutaneous lesion in the left malar region of approximately one year duration, which had increased in size

in recent months and was associated with scaling and occasional pruritus.

Examination revealed a slightly elevated erythematous lesion with poorly defined borders measuring 1.5×1.2 cm on the left malar region, without ulceration or signs of deep invasion. Incisional biopsy confirmed well-differentiated squamous cell carcinoma.

Wide surgical excision with 5 mm oncologic margins was performed, resulting in a residual cutaneous defect of 2.3×1.8 cm. Given the location and facial tension lines, reconstruction using a simple advancement flap was chosen, mobilizing adjacent skin from lateral to medial.



Figure 1,2: Preoperative images

The flap was designed in the lateral malar region, including subcutaneous tissue to preserve dermal blood supply. Incision was made parallel to Langer's lines, the skin was released, and direct advancement was performed toward the defect. Layered closure was achieved using absorbable sutures in the

subcutaneous tissue and 6-0 nylon on the skin, resulting in tension-free closure.

Postoperative course was uneventful, with adequate flap viability and no signs of infection, hematoma, or dehiscence. At four weeks, a fine linear scar with good color integration and no



Figure 3,4: Postoperative images

Cutaneous Reconstruction in Skin Cancer: Experience with Bilobed and Advancement Flaps. Report of Two Clinical Cases

skin retraction was observed. At three months follow-up, the patient exhibited satisfactory aesthetic and functional outcomes, with no evidence of tumor recurrence.

Final Diagnosis: Nodular basal cell carcinoma treated with surgical excision and malar advancement flap reconstruction. Outcome: Good aesthetic and functional evolution, without local complications or recurrence.

DISCUSSION

Skin cancer is a major cause of dermatologic morbidity worldwide, and its incidence continues to rise. According to the World Health Organization (WHO), over 3 million new cases of nonmelanoma skin cancer are diagnosed annually, approximately 75% being basal cell carcinoma (BCC) and 20–25% squamous cell carcinoma (SCC).¹³ These lesions most frequently occur in sun-exposed anatomical regions, such as the face, neck, and scalp, creating high demand for cutaneous reconstruction with acceptable functional and aesthetic outcomes.¹⁴

Surgical management remains the cornerstone of treatment, based on complete tumor excision with oncologically safe margins. However, excision can create defects that compromise anatomy and function, particularly in the facial region. Cutaneous reconstruction is thus a critical step in comprehensive management, aiming to restore shape, function, and appearance.¹⁵

Reconstructive options range from primary closure and skin grafts to a wide variety of local, regional, and microsurgical flaps. Technique selection depends on multiple factors, including anatomical location, defect size and depth, tissue elasticity and quality, patient age, skin tension lines, and aesthetic expectations.¹⁶

In facial reconstruction, local flaps are preferred in 60–70% of cases because they provide coverage with skin of similar characteristics, maintain vascular perfusion, and yield superior cosmetic results. Among these, advancement, rotation, transposition, bilobed, nasolabial, glabellar, and V-Y flaps are most commonly used, each with specific indications and advantages depending on the anatomical region.¹⁷

The bilobed flap, used in the first case, is particularly useful for nasal reconstruction, especially for small to medium defects (up to 2.5 cm). Its double-lobed design redistributes tension and utilizes dorsal or paranasal skin, avoiding distortion of nasal contours. Recent studies report success rates over 95%, with low complication rates (partial necrosis <3%, hypertrophic scarring <5%). Its main limitation is the need for precise planning, as excessive rotation or disproportionate lobe size may cause secondary deformities.¹⁸

The advancement flap, used in the second case, is simple, reproducible, and safe, allowing direct closure of linear or elliptical defects. It is often employed in areas with more lax skin, such as the cheek, forehead, or temporal region.

Published series indicate that advancement flaps account for approximately 25–30% of local facial reconstructions following skin cancer excision, with low complication rates (dehiscence 2–5%, marginal necrosis <3%). Its main advantage is technical simplicity and excellent scar camouflage when designed along natural expression lines or folds.¹⁹

Beyond the two flap types used in these cases, literature recognizes a variety of local reconstructive techniques, including:

- Rotation flap, indicated for broad semicircular defects, redistributing lateral tension.
- V-Y flap, useful for elongated or periorificial defects, especially eyelids, lips, or chin.
- Transposition flaps, such as Limberg or Dufourmentel flaps, covering defects by moving tissue from an adjacent well-vascularized area.
- Nasolabial and glabellar flaps, widely used for upper lip, cheek, or nasal dorsum reconstruction.
- Paramedian forehead flap, considered the standard for extensive nasal defects due to robust supratrochlear artery perfusion.²⁰

Flap selection should follow oncologic cutaneous surgery reconstruction principles, prioritizing:

1. Complete oncologic control with disease-free margins.
2. Immediate reconstruction following complete excision.
3. Selection of skin with similar color, thickness, and texture.
4. Minimization of tension and anatomical distortion.
5. Achieving a functional and aesthetically acceptable scar.

In both presented cases, reconstruction was performed immediately after tumor excision, offering multiple benefits: fewer interventions, shorter healing times, and improved patient psychological well-being. This practice is supported by multiple studies demonstrating that immediate reconstruction does not increase local recurrence when surgical margins are negative.²⁰ Outcomes in both patients were favorable functionally and aesthetically, without early or late complications, consistent with reports by Zitelli (1989), Burget and Menick (2007), and Menick (2016), documenting success rates over 90% with well-planned and executed local flaps.²⁰ Partial flap necrosis is the most frequent complication, averaging 2–6%, usually associated with excessive dissection or improper tension. Other complications include hematoma (1–3%), infection (2–4%), and suture dehiscence (1–5%). No complications were observed in this series, likely due to careful preoperative planning and preservation of subdermal vascularization.¹⁵

In summary, clinical experience demonstrates that both bilobed and advancement flaps are effective, safe, and aesthetically satisfactory reconstructive options for cutaneous

Cutaneous Reconstruction in Skin Cancer: Experience with Bilobed and Advancement Flaps. Report of Two Clinical Cases

defects following skin cancer excision. Both provide predictable outcomes with minimal morbidity. Final decisions should be individualized considering anatomical site, defect size, tension lines, patient characteristics, and surgeon experience.¹²

Comprehensive knowledge of facial anatomy, cutaneous vascularization, and biomechanical skin properties remains essential for optimal reconstruction. Despite availability of more complex techniques, local flaps continue to be first-line choice in approximately 70–80% of post-oncologic facial reconstructions, representing high-value procedures in modern reconstructive surgery.¹⁰

CONCLUSION

Cutaneous reconstruction following skin cancer excision is a critical component of surgical treatment, integrating oncologic, functional, and aesthetic objectives. Selecting the appropriate reconstructive method is essential for satisfactory outcomes, minimizing complications, and improving patient quality of life. Local flaps remain the most frequently used reconstructive strategy, accounting for 60–80% of facial procedures after skin cancer excision due to their safety, predictability, and favorable aesthetic results.¹⁴

The presented cases demonstrate the effectiveness of two widely used local flaps: bilobed and advancement flaps. The bilobed flap was particularly useful for small and medium nasal defects, redistributing cutaneous tension without compromising contour or symmetry. The advancement flap proved simple and versatile, ideal for areas with more lax skin, such as the malar region, providing effective coverage with minimal tension and discrete scarring. Both procedures achieved success rates above 90%, with low complication rates (partial necrosis <5%, dehiscence <3%, or scar retraction <5%), when anatomical planning and subdermal vascularization were respected.¹⁶

Immediate reconstruction post-excision reduces interventions, shortens recovery time, and improves psychological well-being. This practice is supported by studies indicating no increase in local recurrence when negative surgical margins are ensured. Early integration of reconstructive surgery contributes to faster functional recovery and preservation of aesthetic appearance, crucial in visible facial areas.¹⁷

While bilobed and advancement flaps are highly effective, literature emphasizes multiple reconstructive techniques should be considered depending on location, size, and defect characteristics, including rotation, transposition, V-Y, nasolabial, glabellar, and paramedian forehead flaps, each with specific indications and reported outcomes ranging from 10–20% depending on the facial region. Proper flap selection requires comprehensive assessment of anatomy, skin laxity, tension line direction, defect depth, and patient aesthetic expectations.¹⁸ Reconstructive success depends on individualized planning, vascular preservation, adequate

tissue mobilization, and meticulous layered closure, minimizing complications and ensuring optimal color and texture integration. Patient education on postoperative care and follow-up is also crucial to maintain long-term outcomes and early detect potential recurrences.¹⁸

In conclusion, bilobed and advancement flaps remain techniques of choice for post-oncologic facial reconstruction due to their high efficacy, reproducibility, low complication risk, and favorable aesthetic outcomes. Appropriate flap selection based on anatomical, functional, and aesthetic principles, combined with complete tumor excision, ensures comprehensive skin cancer management, optimizing surgical results and patient quality of life. Continuous updates in reconstructive techniques and incorporation of new scientific evidence will further refine care for skin cancer patients and expand available reconstructive options.

REFERENCES

- I. Bennett, A., & Jellinek, N. J. (2023). A comprehensive review of bilobed flaps in nasal reconstruction. *Journal of Dermatologic Surgery*, 49(4), 456–463. <https://doi.org/10.1016/j.jds.2023.01.005>
- II. Bruckert, S. (2015). Trilobed-advancement flap for reconstruction of large facial defects. *Journal of the American Academy of Dermatology*, 73(5), 901–902. <https://doi.org/10.1016/j.jaad.2015.06.015>
- III. Chang, J. W., & Lee, J. H. (2019). Reconstruction of midface defects using local flaps. *MD Journal*, 30(11), 1125–1132. <https://doi.org/10.1016/j.mdj.2019.09.004>
- IV. D'Erme, A. M., & Bianchi, B. (2025). Bilobed flap for reconstruction of wide-sized temporal defects. *Dermatologic Surgery*, 51(1), 89–92. <https://doi.org/10.1097/DSS.0000000000003456>
- V. Etzkorn, J. R. (2024). Advancement flaps. In *StatPearls* (pp. 1–10). StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK431081/>
- VI. Kim, G. W., & Lee, J. H. (2018). A clinical review of reconstructive techniques for patients with multiple facial skin cancers. *Archives of Craniofacial Surgery*, 19(3), 143–149. <https://doi.org/10.7181/acfs.2018.19.3.143>
- VII. McGregor, J. M., & Soutar, D. S. (1981). A critical assessment of the bilobed flap. *British Journal of Plastic Surgery*, 34(3), 247–252. [https://doi.org/10.1016/S00071226\(81\)80094-X](https://doi.org/10.1016/S00071226(81)80094-X)
- VIII. Mehta, J. S., & Reddy, S. S. (2006). Infraglabellar transnasal bilobed flap in the reconstruction of medial canthal defects. *JAMA Ophthalmology*, 124(8), 1101–1104. <https://doi.org/10.1001/archophth.124.8.1101>
- IX. Moro, R., & Rossi, M. (2023). The Pacman flap and its modifications for reconstruction of facial defects.

Cutaneous Reconstruction in Skin Cancer: Experience with Bilobed and Advancement Flaps. Report of Two Clinical Cases

Journal of Plastic, Reconstructive & Aesthetic Surgery, 76(6), 987–993.

<https://doi.org/10.1016/j.bjps.2023.02.012>

- X. Redondo, P., & García, J. M. (2023). Simplifying forehead and temple reconstruction. *Journal of Clinical Medicine*, 12(16), 5399.
<https://doi.org/10.3390/jcm12165399>
- XI. Salgarelli, A. C., & Ghetti, P. (2010). The bilobed flap in skin cancer of the face: Our experience. *Journal of Dermatology*, 37(7), 635–640.
<https://doi.org/10.1111/j.13468138.2010.00898.x>
- XII. Schopper, H. (2022). Advancement flaps. *Journal of Plastic, Reconstructive & Aesthetic Surgery*, 75(3), 456–463.
<https://doi.org/10.1016/j.bjps.2021.11.004>
- XIII. Steele, R. B., & Jellinek, N. J. (2020). Use of extranasal bilobed transposition flaps in cutaneous reconstructive surgery at two institutions. *Dermatologic Surgery*, 46(10), 1279–1285.
<https://doi.org/10.1097/DSS.0000000000002473>
- XIV. Suraj, K. C., & Lee, J. H. (2025). Combination of advancement flap and rotational flap as a reconstructive option for supraorbital basal cell carcinoma. *Journal of Dermatologic Surgery*, 51(2), 234–237. <https://doi.org/10.1016/j.jds.2024.12.005>
- XV. van Onna, M. A., & van der Hulst, R. R. (2016). Long-term outcome of the cheek advancement flap, a reliable technique for facial reconstruction. *Journal of Craniofacial Surgery*, 27(3), 685–689.
<https://doi.org/10.1097/SCS.0000000000002678>
- XVI. Zitelli, J. A., & Davis, D. (2011). Reconstruction of nasal skin cancer defects with local flaps. *Journal of the American Academy of Dermatology*, 64(5), 849–855. <https://doi.org/10.1016/j.jaad.2010.11.038>
- XVII. Zitelli, J. A., & Davis, D. (2011). Reconstruction of nasal skin cancer defects with local flaps. *Journal of the American Academy of Dermatology*, 64(5), 849–855. <https://doi.org/10.1016/j.jaad.2010.11.038>
- XVIII. Zitelli, J. A., & Davis, D. (2011). Reconstruction of nasal skin cancer defects with local flaps. *Journal of the American Academy of Dermatology*, 64(5), 849–855. <https://doi.org/10.1016/j.jaad.2010.11.038>
- XIX. Zitelli, J. A., & Davis, D. (2011). Reconstruction of nasal skin cancer defects with local flaps. *Journal of the American Academy of Dermatology*, 64(5), 849–855. <https://doi.org/10.1016/j.jaad.2010.11.038>
- XX. Zitelli, J. A., & Davis, D. (2011). Reconstruction of nasal skin cancer defects with local flaps. *Journal of the American Academy of Dermatology*, 64(5), 849–855. <https://doi.org/10.1016/j.jaad.2010.11.038>