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Reconstructive strategy using advancement flaps for bilateral medial malar defects: application of the McGregor and Burow flaps

Estratégia reconstrutiva com retalhos de avanço na correção bilateral da região malar medial: aplicação dos retalhos de McGregor e Burow

DOI: <http://www.dx.doi.org/10.5935/scd1984-8773.2026180494>

ABSTRACT

Reconstruction of the malar region poses a surgical challenge due to its aesthetic relevance and the need to preserve function. We report the case of a 75-year-old man with bilateral basal cell carcinomas of the medial malar region. After tumor excision, reconstruction was performed using advancement flaps: a McGregor flap on the right side and a Burow flap on the left side. Advancement flaps proved effective owing to their simplicity, favorable tissue mobility, and adaptability to facial aesthetic units. The patient had an uneventful postoperative course, achieving satisfactory functional and aesthetic outcomes, highlighting the value of these flaps in facial reconstruction.

Keywords: Surgical Flaps; Basal Cell Carcinoma; Surgical Oncology; Dermatology; Face

RESUMO

A reconstrução da região malar é um desafio cirúrgico devido à importância estética e à necessidade de preservar a função. Relata-se o caso de um homem de 75 anos com carcinomas basocelulares bilaterais em malar medial. Após exérese, optou-se por técnicas com retalhos de avanço: retalho de McGregor à direita e retalho de Burow à esquerda. Os retalhos de avanço mostraram-se eficazes por sua simplicidade, boa mobilidade tecidual e capacidade de adaptação às unidades estéticas da face. O paciente evoluiu sem complicações, com bom resultado funcional e estético, reforçando o valor desses retalhos na reconstrução da face.

Palavras-chave: Retalhos Cirúrgicos; Carcinoma Basocelular; Oncologia Cirúrgica; Dermatologia; Face

Case report

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Funding: None

Conflict of interest: None

Submitted on: 07/12/2025

Final decision: 09/11/2025

How to cite this article:

Pires Júnior LRDB, Bastos CAS. Reconstructive strategy using advancement flaps for bilateral medial malar defects: application of the McGregor and Burow flaps. *Surg Cosmet Dermatol.* 2026;18(1):e20260494.



INTRODUCTION

The malar region represents the largest cosmetic unit of the face, characterized by a slightly convex contour, minimal shadowing or depressions, and heterogeneous skin texture. Despite its skin reservoir, camouflaging surgical scars in this area remains challenging.¹

Anatomically, the malar region is divided into 4 subunits: medial, lateral, zygomatic, and buccal. The medial portion is bounded by the lower eyelid, medial canthus, nasofacial sulcus, perialar region, and the superior portion of the nasolabial fold.² Positioning suture lines along these peripheral boundaries improves scar concealment. When this is not feasible, incisions should follow relaxed skin tension lines (RSTLs) to reduce tension and enhance aesthetic outcomes.³

For small defects in the medial malar region, elliptical excision followed by primary closure with scars aligned along RSTLs is an excellent option. In larger defects, local flaps are preferred, including advancement flaps and their variations.

CASE REPORT

A 75-year-old man, under outpatient follow-up for pemphigus foliaceus and on continuous azathioprine therapy (100 mg/day), presented with a history of multiple basal cell carcinoma

(BCCs) on the face. He was diagnosed with 2 new nodular BCCs (Figure 1): one located in the right medial malar region extending to the lower eyelid and lateral nasal wall (Figure 2), and another in the left medial malar region adjacent to the nasal ala (Figure 3).

After complete excision of both lesions with adequate resection margins (Figure 4), reconstruction of the right-sided defect was performed using a McGregor flap (Figure 5). This technique involves a lateral incision following the natural curvature of the lower eyelid, which may extend toward the preauricular region anterior to the hairline depending on the defect size. This curvature is essential to provide adequate flap height. At the lateral end of the incision, a Z-plasty was performed, in which the central limb corresponded to the width of the defect, while the ascending and descending limbs were of equal length and oriented at 60° relative to the central limb, facilitating tissue rotation and advancement. Dissection was performed in the subcutaneous plane, allowing appropriate mobilization and subsequent transposition of the flap in the Z-plasty. A Burrow's triangle was excised perpendicular to the main incision line to accommodate excess skin. Closure was achieved with 5-0 Vicryl for the deep layer and 6-0 nylon for the superficial layer.



FIGURE 1: Preoperative view

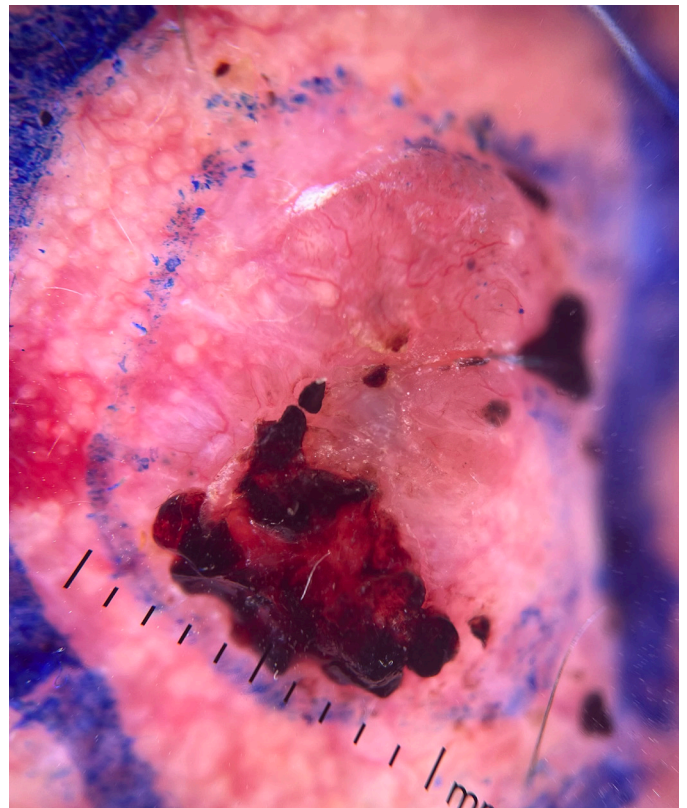


FIGURE 2: Dermoscopic image of basal cell carcinoma on the right malar region

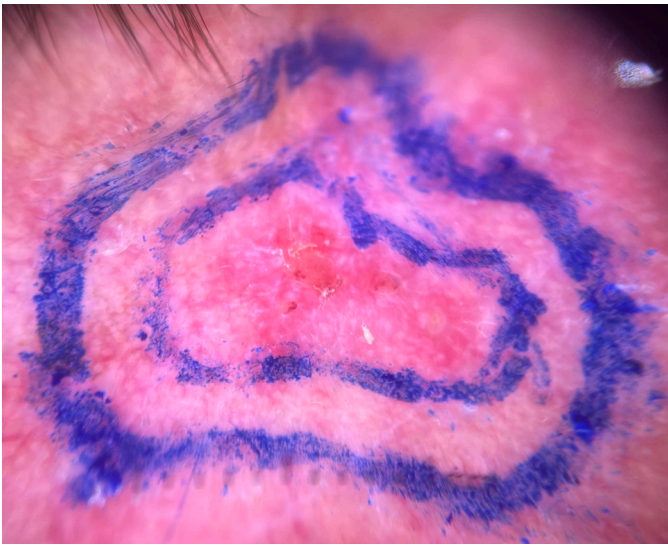


FIGURE 3: Dermoscopic image of basal cell carcinoma on the left malar region



FIGURE 5: Planning of the McGregor flap



FIGURE 4: Intraoperative view

On the left side, the defect was reconstructed using a Burow advancement flap (Figure 6). The defect was initially converted into a triangular shape through an incision extending its base to include the nasolabial fold, aiming to optimize tissue mobilization and improve scar camouflage. Secondary movement of the flap resulted in a skin protrusion (dog ear), which was corrected by excision of a Burow's triangle distant from the



FIGURE 6: Planning of the Burow flap

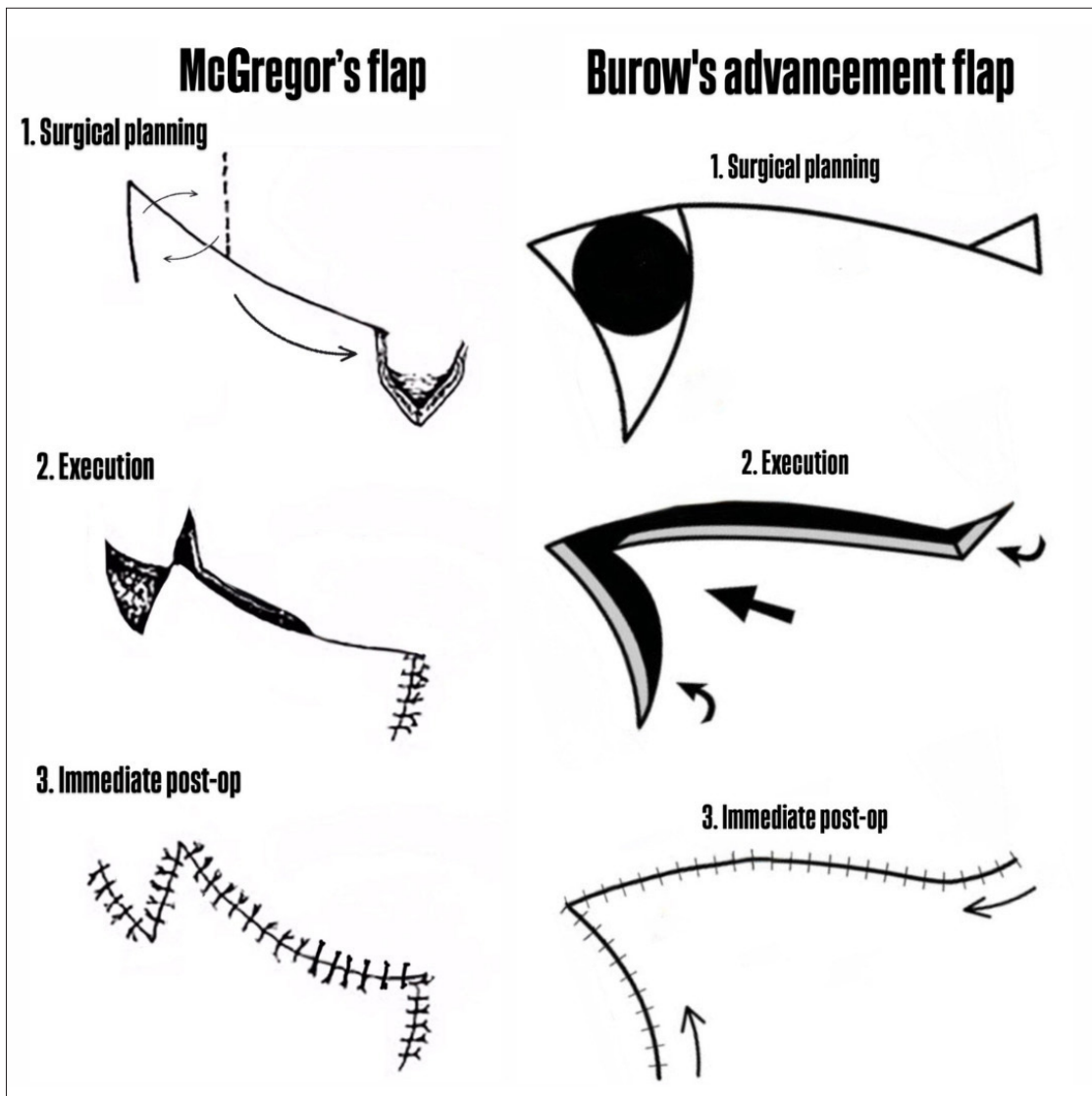


FIGURE 7: Illustration of the McGregor and Burow flaps

primary defect. Dissection was performed in the subcutaneous plane, and closure was achieved with 5-0 Vicryl for the deep layer and 5-0 nylon for the skin (Figure 7).

The patient had an uneventful postoperative course, with satisfactory functional, oncologic, and aesthetic outcomes (Figure 8).

DISCUSSION

Successful facial reconstruction requires careful consideration of multiple factors. In the present case, the patient posed a particularly challenging scenario, with bilateral involvement of the primary cosmetic unit of the face, a history of multiple prior surgical procedures, and immunosuppression — factors that required careful reconstructive planning.

Advancement flaps were selected due to their simplicity and efficacy. First described more than 2000 years ago by Aulus Cornelius Celsus in *De Medicina Octo Libri*,⁴ this type of flap is based on the sliding of adjacent tissue along a single direction vector. Among its variations, U-plasty is widely used across multiple anatomic sites.^{5,6} When applied to the nasal dorsum in combination with Burow's triangles lateral to the glabellar pedicle, it is referred to as the Rintala flap, as described in 1969.⁷ H-plasty (or O-H flap) consists of bilateral advancement and is particularly suited to areas with parallel skin tension lines, such as the forehead and eyebrows⁶; however, their dissection may pose a risk of paresthesia or dysesthesia due to proximity to the supratrochlear and supraorbital nerves.⁸ T-plasty (or A-T flap), in turn, is useful in regions with limited tissue mobility, such as the



FIGURE 8: Postoperative result at 60 days

lip border and hairline.^{9,10} The O-L flap represents a unilateral advancement and is termed a Burow flap when combined with excision of Burow's triangles. Its main advantage lies in redistributing dog ears to less conspicuous areas, thereby improving tissue accommodation,¹⁰ as demonstrated in the present case, in which lateral skin laxity was used to facilitate closure of the surgical defect.

Despite these advantages, advancement flaps have reduced tissue mobility (compared with more complex flap designs) and require larger incisions to enhance their efficacy. Since the lateral cheek rotation flap described by Mustardé in 1966, several techniques have been developed based on advancing lateral facial skin medially to reconstruct defects. Although there is relative skin laxity in this region, advancement is limited; without adjunctive measures to reduce tension on the flap, it tends to be pulled back to its original site postoperatively.¹¹

To address these limitations, McGregor introduced, in 1973, an approach combining lateral periorbital Z-plasty with


advancement flaps, thereby increasing tissue mobility and reducing tension on the lower eyelid. After 15 years of experience with this technique, he reported favorable outcomes, including preservation of the natural appearance of the lateral canthus.¹² In the present report, this approach was successfully applied to reconstruction of the lower eyelid and medial malar region, yielding a favorable outcome and supporting its role as a valuable option in the reconstructive armamentarium.

In conclusion, advancement flaps represent an effective option for reconstruction of the malar region, given the relative laxity and mobility of the skin in this area. They allow adequate coverage of skin defects with favorable alignment of incision lines along facial aesthetic units. The ability to combine these flaps with adjunctive techniques, such as Z-plasty and Burow's triangles, further expands their applicability to more complex cases, enabling satisfactory outcomes even in challenging scenarios. ●

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Statistical analysis, Approval of the final version of the manuscript, Conception and design of the study, Preparation and writing of the manuscript, Acquisition, analysis and interpretation of data, Effective participation in the conduct of the study, Intellectual participation in propaedeutic and/or therapeutic approach to the cases studied, Critical review of the literature, Critical revision of the manuscript

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Approval of the final version of the manuscript, Conception and design of the study