

RECONSTRUCTION OF NASAL AND PERIOCLAR DEFECTS AFTER BASAL CELL CARCINOMA EXCISION: ANATOMICAL SUBUNIT-GUIDED DECISIONS – A NARRATIVE REVIEW

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Summary

Background. Reconstruction after facial basal cell carcinoma excision must simultaneously secure oncologic control, preserve function, and achieve aesthetic integration. This review aimed to formulate a practical framework for nasal and periocular defects, two regions in which size alone does not explain technique selection. **Materials and methods.** A targeted narrative synthesis was performed using a coded matrix of 72 clinical studies published between 2015 and 2026. Twenty-nine studies directly relevant to margin control, reconstruction timing, and repair of nasal or periocular defects were selected.

Results. Technique selection was driven mainly by the anatomical subunit, depth, number of missing layers, recurrence, and margin confidence. Small superficial nasal defects may be managed by primary closure, secondary intention healing in carefully selected concavities, grafting, or local flaps. Alar, tip, and full-thickness defects frequently require structural support and sometimes lining replacement. In the periocular region, defect width and involvement of the lamellae, canthus, and lacrimal system guide the choice among grafting, local flaps, and tarsoconjunctival reconstruction.

Conclusions. No universal technique exists. An algorithm based on subunit, missing layers, and confirmed margins provides more predictable reconstruction and limits functional distortion.

Keywords: basal cell carcinoma; facial reconstruction; nasal defect; periocular defect; local flap; Mohs surgery.

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Introduction

Basal cell carcinoma (BCC) commonly affects the face, and its excision may transform an apparently limited lesion into a defect with disproportionate functional and aesthetic consequences. Recent evidence indicates that reconstructive selection cannot be reduced to defect diameter: the aesthetic subunit, surface convexity or concavity, mobility of adjacent tissue, and number of missing layers substantially modify management [1,2].

The nose and periocular region contain many high-risk facial lesions. On the nose, inap-

propriate repair can produce alar asymmetry, nasal valve narrowing, or loss of natural grooves. Periocularly, reconstruction must protect the globe and preserve eyelid closure, free-margin position, and, where involved, lacrimal drainage. Patient-based assessments confirm that the final outcome encompasses appearance, function, and treatment burden rather than flap survival alone [3].

This narrative review synthesizes clinically applicable principles for the reconstruction of nasal and periocular defects after BCC excision. It focuses on the relationship between defect

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anatomy and method selection, rather than on a quantitative appraisal of study design or reporting completeness.

Material and Method

The source material was a corrected matrix of 72 clinical studies published from 2015 through 2026 and identified in PubMed/MEDLINE through 20 July 2026. For this targeted synthesis, 29 studies directly addressing margin control, reconstruction timing, technique selection, or functional and aesthetic outcomes of nasal and periocular defects were retained.

We extracted the anatomical subunit, defect size and depth, involved layers, reconstructive method, repair timing, complications, and functional or aesthetic outcomes. Studies focused exclusively on other facial regions and those without information useful to reconstructive decision-making were excluded from this targeted analysis. Because of clinical and methodological heterogeneity, evidence was synthesized narratively without meta-analysis or comparative-effectiveness estimation.

Results

Shared principles before reconstruction

Complex reconstruction should begin only after an adequate level of oncologic confidence has been achieved. Recurrent or incompletely excised tumors require more Mohs micrographic surgery stages and create larger final defects than primary lesions [4]. For infiltrative BCC, Mohs surgery can preserve a substantial amount of healthy tissue compared with standard-margin excision [5]. When Mohs surgery is unavailable, intraoperative frozen-section control can guide reconstruction timing [6].

Defect assessment should include the subunit, diameter, depth, cartilage or bone exposure, mucosal loss, and the possibility of mobilizing adjacent tissue without traction on free margins. Immediate repair after margin control is feasible, and recent observational data do not support routinely delaying post-Mohs reconstruction [7]. Secondary intention healing remains selective for small defects, particularly in concave areas, but should be avoided when

contraction may distort the alar or eyelid margin [8].

Nasal defects: the subunit and missing layers dictate technique

The nasal subunit is a major determinant of reconstructive method [9]. Small superficial defects of the dorsum or sidewall may be closed primarily, grafted, or covered with local flaps according to skin laxity. For moderate defects, advancement, rotation, and transposition flaps provide tissue with similar thickness, color, and texture and allow scars to be placed at subunit borders [10,11].

At the nasal tip and supratip, limited skin mobility and surface convexity increase the risk of distortion. The Zitelli bilobed flap and selected rotation or V-Y flaps can provide single-stage repair, but their design must distribute tension and avoid alar retraction [12-14]. At the nasal ala, the goal extends beyond coverage to preservation of contour and the external valve. Shaped local flaps, combined subcutaneous tissue transposition and full-thickness skin grafting, and other composite repairs can reduce alar notching [13,15].

Large, multi-subunit, or full-thickness defects require separate restoration of skin cover, structural support, and lining. The paramedian or cross-paramedian forehead flap remains robust, usually as a staged procedure; diabetes and concomitant cartilage or mucosal loss increase complication risk [16]. Three-layer reconstruction may combine a forehead flap, reversed nasolabial flap, and auricular cartilage [17]. Clinical series show that the same technique may yield different results across nasal subunits, supporting individualized planning [18,19].

Periocular defects: function takes priority

Periocular planning begins with defect width, involvement of the anterior and/or posterior lamella, canthus, free margin, and lacrimal system. Early diagnosis and treatment are associated with better recovery, whereas recurrent tumors and extensive defects increase reconstructive difficulty [20]. Following frozen-section-controlled excision, same-day re-

construction can provide favorable oncologic control [21].

For small or moderate posterior lamellar defects, a free tarsoconjunctival graft can provide adequate support [22]. Limited anterior lamellar defects may be treated by primary closure, full-thickness skin grafting, or a local flap within an approach tailored to periocular aesthetic units [23]. Full-thickness skin grafts have shown high viability and favorable function in eyelid carcinoma series [24]. Complex defects may require glabellar, cheek, Tenzel, Mustardé, or composite reconstruction [25].

Large full-thickness lower-eyelid defects require reconstruction of both lamellae. A lateral eyelid island flap may provide a single-stage alternative for selected large central and medial defects [26]. Quality of life may improve by three months after excision and reconstruction, supporting incorporation of the patient's perspective [27]. In the medial canthus, eyelid and lacrimal involvement must be explicitly assessed because they influence flap selection

and malposition risk [28]. The Hughes tarsoconjunctival flap has favorable long-term functional and aesthetic outcomes with a low revision rate, but it usually requires a staged strategy [29].

Discussions

The evidence supports a three-step decision model: confirm oncologic control, classify the defect by subunit and layers, and select the simplest method that preserves form and function. Primary closure is appropriate only when tension will not displace a free margin. Grafting is useful for superficial, well-vascularized defects, but color or thickness mismatch and secondary contraction can limit results on convex surfaces. Local flaps often provide the best tissue match, but their design must respect traction vectors.

Table 1 summarizes the relationship between defect profile and reconstructive options. It should not be interpreted as a rigid hierarchy:

Table 1. Practical framework for reconstructive selection according to anatomical subunit and defect profile

Subunit/defect profile	Indicative options	Objective and precautions
Nasal dorsum/sidewall, small superficial defect	Primary closure, selective secondary intention healing, full-thickness graft, local flap	Respect subunit borders and avoid tension toward the ala [8-11]
Nasal tip/supratip	Bilobed, rotation, or V-Y flap	Preserve projection, distribute tension, and prevent alar retraction [12-14,18]
Nasal ala	Shaped local flap, nasolabial flap, combined flap-graft	Maintain the rim and external valve; add cartilage support when deep [13,15]
Large or full-thickness nasal defect	Paramedian/cross-paramedian forehead flap, cartilage support, and lining	Layered reconstruction, staging, and comorbidity assessment [16,17,19]
Limited anterior eyelid defect	Primary closure, full-thickness graft, local flap	Avoid ectropion and protect the free margin [20,23-25]
Small/moderate posterior eyelid defect	Free tarsoconjunctival graft or tailored local technique	Restore tarsal support and the conjunctival surface [22]
Large full-thickness lower-eyelid defect	Staged Hughes flap or lateral eyelid island flap in selected cases	Reconstruct both lamellae and preserve eyelid closure [26,29]
Medial canthus/lacrimal involvement	Glabellar, cheek, or another tailored local flap	Assess eyelids and drainage system; prevent malposition [23,28]

Note: Options are indicative and must be adapted to margin status, comorbidities, tissue availability, and team expertise.

biological age, comorbidities, anticoagulant therapy, smoking, donor-tissue availability, and patient preference can modify the choice. For recurrent or aggressive tumors, uncertain margins, or full-thickness defects, collaboration among dermatology, pathology, plastic or oral and maxillofacial surgery, and ophthalmology reduces the risk that reconstruction compromises surveillance or function.

The principal limitation of the evidence is the predominance of retrospective, single-center series with heterogeneous techniques and definitions. Direct comparisons among flaps, grafts, and secondary intention healing are uncommon, and aesthetic assessments are often clinician based. Available data therefore support selection principles rather than identification of a

universally superior technique. Prospective cohorts should report tumor control, complications, function, and validated patient-reported outcomes together.

Conclusions

Reconstruction after nasal or periocular BCC excision should be guided by the anatomical subunit, depth, missing layers, and margin confidence. Small defects may be managed conservatively, whereas alar, nasal tip, canthal, and full-thickness defects require layered planning and protection of function. Selecting the simplest technique capable of restoring form without traction or structural collapse is the most reproducible clinical principle.

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Conflict of interest
NONE DECLARED

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