

Bilobed Flap for Nasal Ala Reconstruction After Basal Cell Carcinoma Excision: Principles, Technique, and Outcomes

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ABSTRACT

Background: Basal cell carcinoma (BCC) is the most common non-melanoma skin cancer, with the nasal ala being a high-risk region because of its convex shape, chronic ultraviolet exposure, and limited skin laxity. Surgical excision remains the definitive management, but reconstruction poses significant aesthetic and functional challenges.

Objective: To provide an in-depth review of bilobed flap design, indications, technical nuances, and outcomes for reconstruction of nasal alar defects following BCC excision, highlighting aesthetic subunits and modern geometric refinements.

Methods: A comprehensive synthesis of established anatomical, oncological, and reconstructive concepts is presented, supported by key publications in nasal reconstruction.

Conclusion: When used in accordance with modern principles, the bilobed flap is a reliable, single-stage solution for small to moderate nasal alar defects after BCC excision, offering excellent contour restoration and minimal morbidity.

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INTRODUCTION

Basal cell carcinoma (BCC) accounts for approximately 80% of all non-melanoma skin cancers and most frequently affects sun-exposed regions, particularly the nose, whose convex surfaces concentrate UV radiation (1). Although BCC rarely metastasizes, progressive local invasion can distort the nasal architecture, compromise the alar margin, and impact nasal airflow.

Surgical treatment focuses on complete margin control, typically with Mohs micrographic surgery or standard excision with 3–4 mm margins for well-defined lesions (1). Once oncologic safety is achieved, the reconstructive challenge remains: restoring the nasal ala, one of the most aesthetically delicate and structurally important subunits.

The nasal ala demands precise contour, symmetry, and preservation of the alar crease. Even subtle distortion is highly visible. Aesthetic subunit principles emphasize that reconstruction should aim to preserve natural borders, color, and thickness of skin (3).

Among local flaps, the bilobed flap, originally described by Esser and modified extensively by Zitelli, has become a mainstay for repairing small to medium defects of the caudal nose, including the ala (2,4). Its geometric design

redistributes tension, minimizes distortion, and avoids the “patch-like” appearance of skin grafts.

This manuscript provides a detailed analysis of the bilobed flap for nasal alar BCC—from oncologic planning to flap geometry, technique, outcomes, and common pitfalls.

Basal Cell Carcinoma of the Nasal Ala

The nasal ala is a structurally complex subunit composed of:

Thin overlying skin

Fibrofatty tissue with distinct elasticity

The alar cartilage, which maintains airway patency

The alar-facial groove, a crucial aesthetic line

BCC often presents as nodular, ulcerative, or infiltrative lesions in this region. The primary goals of management include:

1. Histologic diagnosis and subtype assessment

Subtypes include nodular, superficial, infiltrative, micronodular, or morpheaform. High-risk variants may require wider margins or Mohs surgery (1).

2. Margin control

3–4 mm margins cure most low-risk cases (1).

Larger or ill-defined tumors benefit from Mohs surgery with staged excision for maximal tissue preservation.

3. Assessment for perichondrial or cartilage involvement

Deep invasion may require additional layers of reconstruction (lining + cartilage + skin), often making local flaps insufficient.

When the resulting defect is cutaneous, circular, and ≤ 1.5 cm, the bilobed flap is among the best options for a single-stage reconstruction (3,4).

Indications and Patient Selection

Ideal indications for the bilobed flap in nasal ala reconstruction include:

Defect size ≤ 1.5 cm after complete excision (3,4).

Location on the distal third of the nose, particularly the ala and tip.

Cutaneous or subcutaneous depth, without full-thickness loss. Adjacent skin with moderate laxity, especially lateral/dorsal nasal skin.

Desire for optimal color and texture match, superior to skin grafts.

Relative contraindications:

Thick sebaceous skin (risk of pincushioning) (2).

Defects >1.5 – 2 cm requiring nasolabial or forehead flaps (3).

Full-thickness alar defects requiring composite grafts or cartilage reconstruction.

The bilobed flap excels when the defect lies close to the alar rim, where conventional advancement flaps risk pulling or distorting the margin.

Design Principles of the Modern Bilobed Flap

The Zitelli modification is now the gold standard. This design minimizes tension vectors and reduces standing cutaneous deformities.

Key geometric concepts:

Arc of rotation: 90 – 110° total—significantly less than Esser's original 180° (4).

First lobe:

Placed adjacent to the defect

Diameter = 80 – 100% of defect size

Second lobe:

Drawn at 45° from the axis of the first lobe

Diameter = 50 – 70% of defect size (2,4)

Pivot point:

Positioned in the nasal sidewall or upper dorsum

Ensures force is directed away from alar rim

Extensive undermining reduces tension and prevents alar elevation.

Scars aligned with natural grooves, especially alar-facial crease (3).

Modern refinements significantly reduce:

Pincushion deformity

Trapdoor effect

Alar distortion

Dog-ear formation

Surgical Technique: Step-by-Step

1. Preoperative marking

Draw margins of the tumor and anticipated post-excision defect.

Mark lobe outlines before anesthetic infiltration.

Respect relaxed skin tension lines and the alar crease.

2. Tumor excision

Remove BCC to the level of perichondrium or cartilage as indicated.

Verify clear margins via frozen sections or Mohs surgery.

3. Flap elevation

Perform undermining in the submuscular plane, lifting nasalis muscle when needed (2).

Maintain an adequate subdermal plexus to reduce flap congestion.

Additional lateral undermining reduces tension across the alar rim.

4. Transposition

Rotate the first lobe into the primary defect with minimal distortion.

Rotate the second lobe into the secondary defect.

Avoid excessive twisting that could compromise venous return.

5. Refinement

Excise Burow's triangles if needed.

Check symmetry with the opposite ala.

Close epidermis with 6-0 nylon or polypropylene.

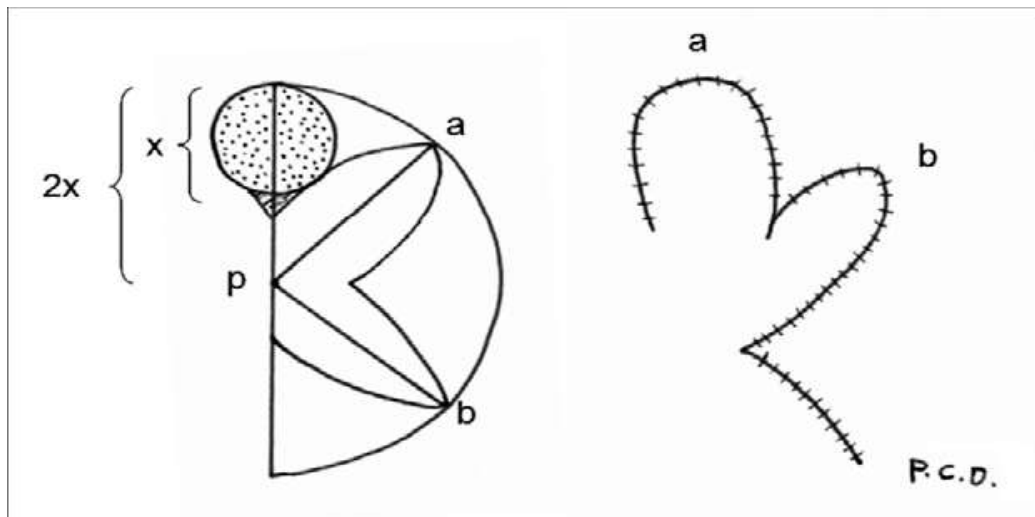


Figure 1. geometric design scheme of the bilobed flap

6. Postoperative care

Light compression dressing

Avoid pressure on the ala

Suture removal at 5–7 days

Outcomes

Published series consistently show excellent results for properly selected nasal alar defects (4–6). Benefits include:

Superior color and texture match compared with skin grafts

Preservation of natural nasal contour

Minimal distortion of the alar margin

High patient satisfaction

Low rates of flap necrosis

In a review of bilobed flaps for facial BCCs, including nasal ala defects, the technique was noted to be practical, reproducible, and cosmetically reliable (5).

Complications

1. Pincushion deformity

Most common complication

Due to inadequate undermining or thick sebaceous skin (2,4)

2. Alar distortion/elevation

Occurs if tension vectors pull the alar margin

Prevented by wide undermining and proper lobe sizing

3. Venous congestion

Usually transient

Avoid overly tight closure or excessive flap rotation

4. Scar irregularities

Minimized by placing incisions along natural aesthetic lines

When the design follows geometric principles, complication rates are very low.

DISCUSSION

Reconstruction of the nasal ala after BCC excision must balance oncologic clearance with restoration of a highly visible and functionally important subunit. Among the available techniques—skin grafts, V-Y flaps, nasolabial flaps, and forehead flaps—the bilobed flap offers unmatched benefits for small circular defects of the caudal nose.

Compared with full-thickness skin grafts, the bilobed flap provides:

Better color match

Superior texture

Prevention of contour depression

Less contraction over time (3)

Compared with nasolabial flaps, it avoids bulkiness, donor-site morbidity, and multistage procedures.

Zitelli's refinements have made the bilobed flap a high-precision tool, ideal for achieving natural contour restoration and symmetry. Widely cited literature confirms that respecting the 90–110° rotation arc and sizing the lobes appropriately minimizes complications and improves aesthetic results (4,6).

Overall, the bilobed flap remains a crucial component of the reconstructive armamentarium for facial surgeons.

CONCLUSION

The bilobed flap is a reliable and elegant reconstructive option for small to moderate nasal alar defects following basal cell carcinoma excision. When properly designed and executed, it preserves nasal symmetry, restores natural contour, and offers excellent color and texture match, with low complication rates.

Its versatility, single-stage nature, and aesthetic advantages make it a fundamental technique that every facial reconstructive surgeon should master.

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