



Refinements in the axial frontonasal flap

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SUMMARY. The frontonasal flap is a useful flap for medial and lateral tip defects of the nose. It can be used as a random rotation flap or as an axial flap. This paper describes modifications to the original designs of these flaps, with improvements in the final scar.

Reconstruction of skin defects of the nose should use remaining nasal skin whenever possible in order to preserve the unique texture and colour of the skin of the nose.¹ Scars are best placed at the junction of aesthetic units, such as between the nose and the cheek, or at the junction of intranasal aesthetic subunits.²

Several flaps mobilise the skin from the nose and the glabella, leaving scars in glabellar frown lines and at the junction of the nose and the cheek. The random rotation flap described by Rieger³ uses a wide skin pedicle on the lateral side of the nose. The frontonasal flap described by Marchac is an axial flap based on a vascular pedicle emerging near the inner palpebral ligament (this pedicle is a branch of the angular artery, joining with the supraorbital arteries).^{4,5} While the former was described for defects on or near the tip, the latter was used for lateral defects of the tip as well, placing the pedicle on the opposite side to the lesion in these cases.

This paper describes, for lateral tip defects, a modification using the axial type flap with the pedicle on the same side as the defect. For medial tip defects,

the random rotation flap is preferred, with a modified lateral incision and resection of the dog ear in the junction of two nasal subunits.

Surgical technique

Lateral tip defects

The original design of Marchac^{4,5} for lateral tip defects with the contralateral pedicle is shown in Figure 1A. The triangular skin excision allowing flap advancement leaves an oblique scar crossing the dorsum of the nose without respecting the subunits of the nose. The advancement of the flap also brings thin skin from the lateral middle third of the nose to the thick skin of the tip, creating a thickness discrepancy. These factors contribute to more visible scars.

Our modification (Fig. 1B) places the pedicle on the same side as the lateral tip defect. In this case, the lower scar extends from the defect to the inner canthus on the same side, at the junction of the aesthetic units of the nose and the cheek, avoiding crossing the dorsum of the nose. The advancement of the flap

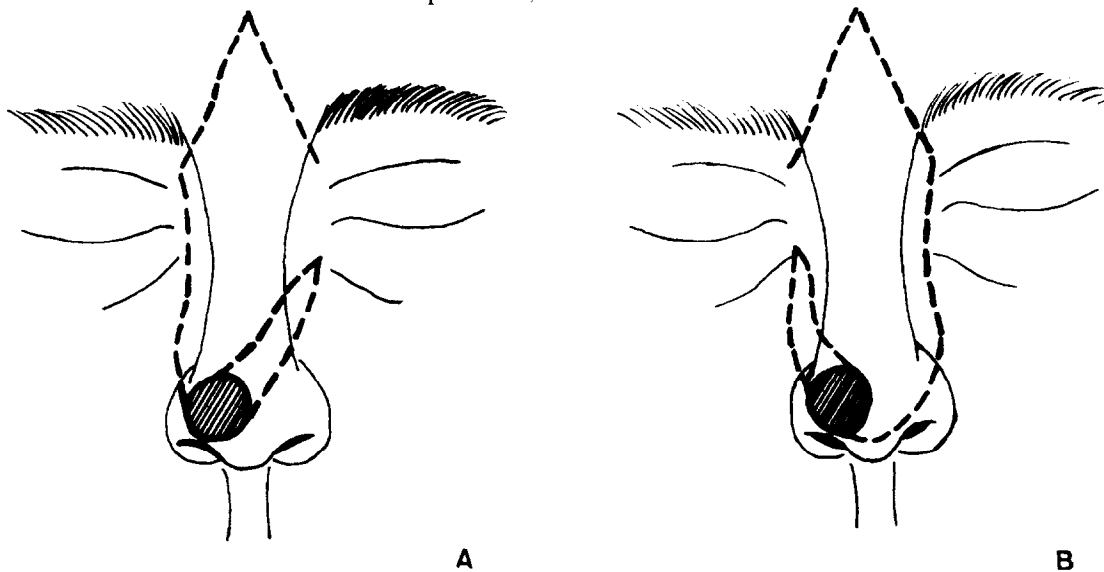


Fig. 1

Figure 1—(A) The axial flap described by Marchac with the pedicle on the opposite side to the lesion. (B) The modified axial flap with the pedicle on the same side as the lesion.

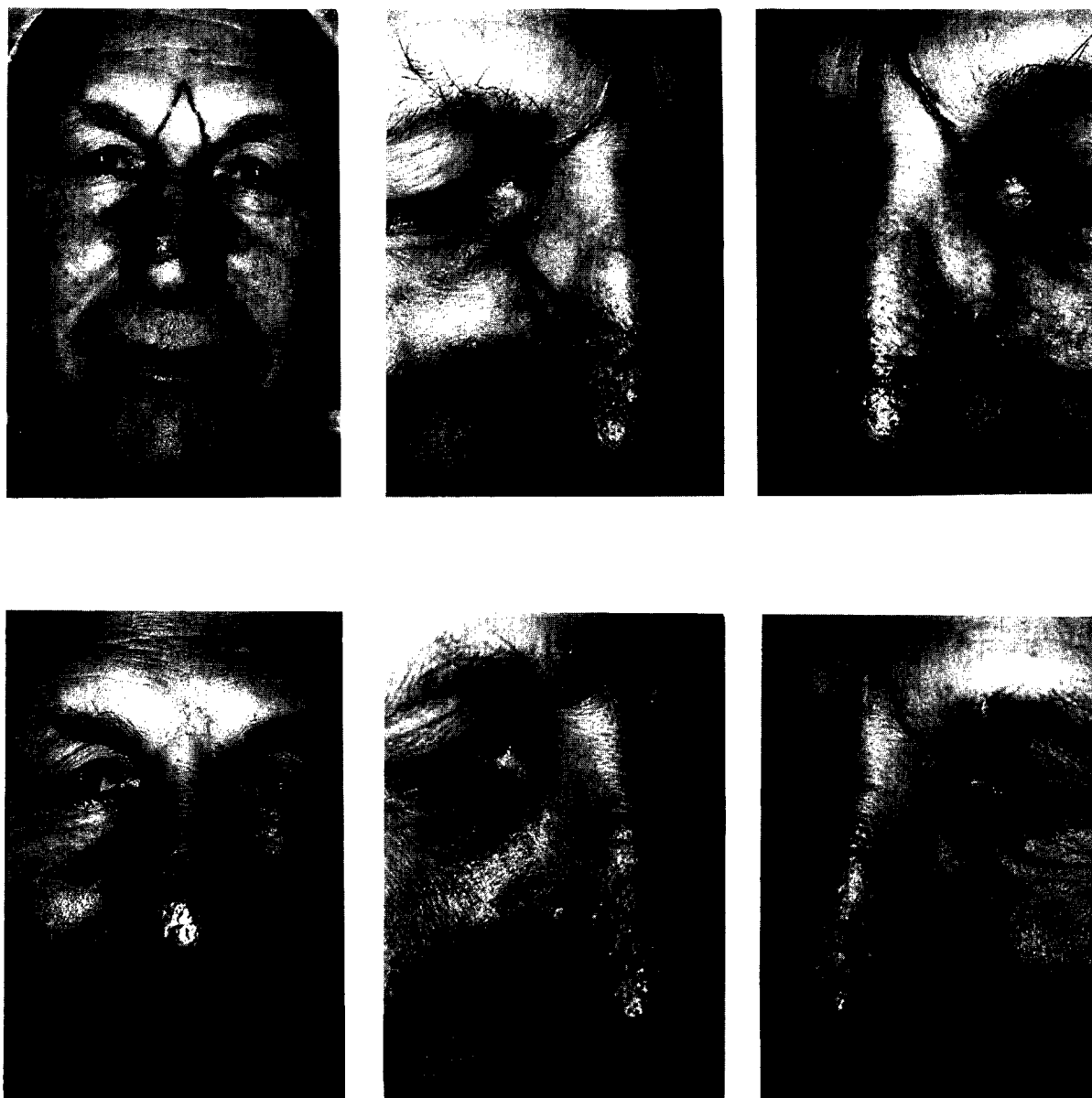


Fig. 2

Figure 2—(Top). Design for a lateral lesion. Pedicle on the same side as the lesion. (Bottom). Result five months postoperatively.

brings the thick skin of the tip to the thick skin of the ala, thus minimising thickness discrepancy. The scar is at the junction of two aesthetic subunits, the tip and the ala. A clinical example is presented in Figure 2.

Medial tip defects

The original design of Rieger⁹ for medial tip defects is shown in Figure 3A. The incision extends horizontally from the defect to the alar base, and then follows the line of junction between the nose and cheek. A dog ear may have to be excised, but the base of the flap must not be narrowed excessively. The exact location of this resection is not specified.

Our preferred design is presented in Figure 3B. The incision extends from the defect following a curved line along the side of the nose, respecting the alar subunit, and then lying in the line of junction between the nose and the cheek. The dog ear is always resected,

removing skin both from the tip and the alar subunit, so that the scar is finally in the natural groove between the ala and the tip. A clinical example is presented in Figure 4.

Discussion

Skin defects of the nasal tip and adjacent areas can be repaired with full-thickness skin grafts, local flaps or distant flaps. Local flaps present many advantages: they are one-stage procedures, bringing into the defect adjacent skin often similar in colour and texture. The design of the flap is essential in determining the zone of adjacent skin brought into the defect. The most similar skin will offer the best result.

The nose is an aesthetic unit of the face,⁶ and topographic subunits of the nose have been defined²: they are the dorsum, tip, alae, sidewalls and soft triangles. The subunit approach to nasal reconstruc-

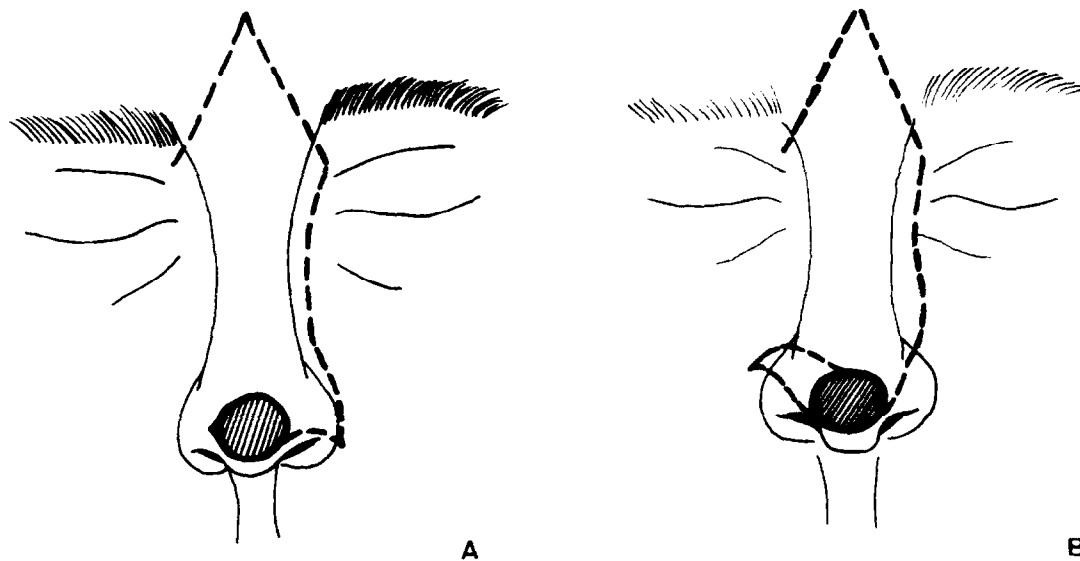


Fig. 3

Figure 3--(A) The random rotation flap described by Rieger. (B) The modified random flap with dog ear resection.

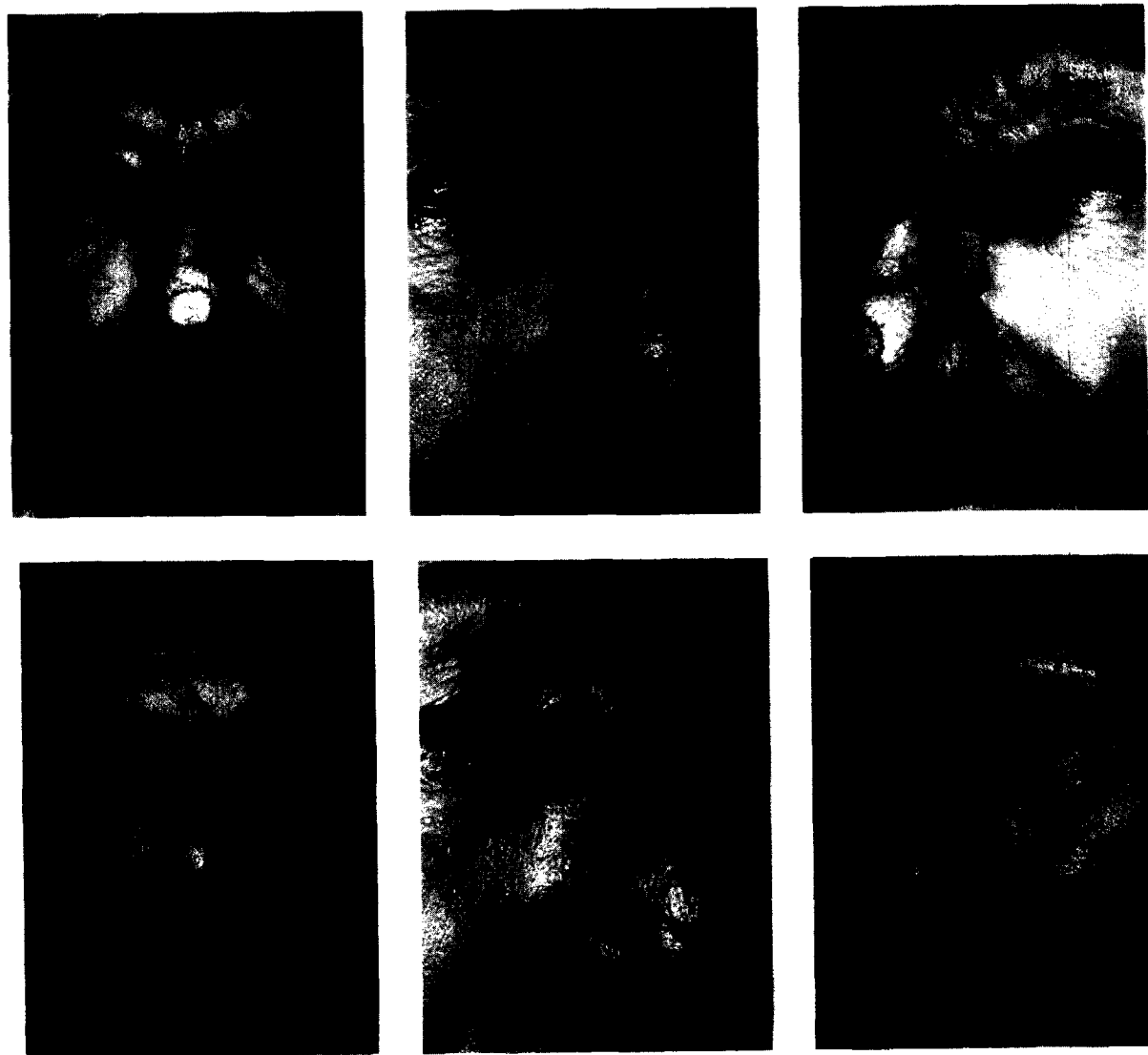


Fig. 4

Figure 4--(Top). Design for a medial lesion. (Bottom). Result five months postoperatively. Open tip rhinoplasty performed with flap advancement.

tion permits correctly located scars around flaps to mimic the normal shadowed valleys and lighted ridges of the nasal surface. These scars will be less noticeable than scars crossing a smooth surface of the nose.

Many local flaps do not respect the subunit principle.⁷⁻¹² The original design of the axial frontonasal flap by Marchac^{4,5} for a lateral tip defect creates a scar crossing the dorsum of the nose. In our design this subunit principle is respected. Furthermore, as stated by Marchac,^{4,5} visible scars appear where there is a skin thickness discrepancy between the flap and the skin. Our design brings thick skin of the tip to thick skin of the ala.

The original design of Rieger³ includes the alar skin in the flap. As this flap rotates to cover the defect, some distortion appears at the alar base. An incision in the valley between the tip and the ala avoids the distortion of the alar base. The dog ear should always be resected: this is a safe procedure since the flap does not rely on a large skin pedicle. The scar is located in the valley between the tip and the ala, respecting the subunit principle.

Glabellar distortion is minimal, since glabellar advancement of the flap can easily be closed in a VY fashion without the necessity for a Z-plasty as proposed by Rieger.³

In conclusion, with the presented modified designs, the scars are better placed according to the subunit principle and less skin thickness discrepancy is present. These factors contribute to less visible scars and a better aesthetic result.

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