

Repair of Helical Rim Cutaneous Defects

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Three patients presented for reconstruction of partial-thickness helical skin defects after surgical excision of an auricular rim basal cell carcinoma. The defects resulted in exposed cartilage with no

perichondrium and noticeable deformation (Figure 1). [F1] These findings presented a reconstruction conundrum: Could the helical diameter be preserved during reconstruction without sacrificing cartilage?



Figure 1. Helical rim defect in a male patient after excision of a basal cell carcinoma.

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Figure 2. Three-flap method for reconstruction of the cutaneous helical rim defect.

Resolution of the Conundrum

The procedure was performed under local anesthesia. Histologic frozen sections were used for margin control after excision, before flap reconstruction. Bilateral advancement cutaneous flaps were created on opposite sides of the defect by parallel incisions that allowed for a sliding movement of the tissue in a single vector toward the defect. The flaps were designed to cover the anterior and middle portion of the defect, with a defect length-to-flap length ratio of 2:1 (Figures 2 and 3). Once they were in place, a third advancement flap was created by making 2 back-cuts at either edge of the defect and perpendicular to it, at the posterior aspect of the auricle's skin. This flap was designed to cover the posterior portion of the defect, with a defect length-to-flap width ratio of 1:1 and a defect width-to-flap length ratio of 1:1 (Figures 2 and 3). If necessary, the underlying helical cartilage was slightly trimmed or shaved for proper setting of the flaps.

[F2]

After meticulous hemostasis, the wound was closed with polyglactin 910 5-0 sutures (Figure 4).

Discussion of Considerations

The reconstruction of helical rim skin defects is challenging when cartilage is exposed and there is no perichondrium. To achieve a satisfactory aesthetic result, the authors formulated a novel, 3-flap technique that spared the cartilage and maintained the helical diameter.

Auricular defects may be reconstructed by a number of methods.¹⁻⁵ Composite auricular defects are



Figure 3. Advancement of bilateral skin-only helical rim flaps to cover the main anterior and middle portion of the defect (1+2), and a postauricular flap to cover the posterior portion of the defect (3).



Figure 4. Postoperative result.

traditionally reconstructed using reduction methods (such as Antia–Buch chondrocutaneous advancement flap¹ or wedge excision). If the defect is superficial and the perichondrium is intact,



Figure 5. Six-month postoperative result.

full-thickness grafts from the preauricular or postauricular skin provide a good color match and an acceptable outcome. In cases in which there is no perichondrium and the defect has left a small, peripheral area of exposed cartilage, wedge excision may correct the problem. Alternatively, if the posterior skin is intact, exposed cartilage may be excised and the raw surface grafted with posterior skin. When none of these techniques is feasible, frequent dressing changes should be used to keep the cartilage viable until the wound granulates or appropriate delayed closure can be planned.

The reduction procedures were inadequate in these cases because of 2 important shortcomings: they require resection of perfectly healthy cartilage tissue, and they reduce the auricular circumference such that the reconstructed ear may appear smaller than the normal contralateral ear. This technique using 3 advancement flaps successfully overcame these problems. Postoperative complications were minor, consisting mostly of mild pain and ecchymosis, and the aesthetic outcome was satisfactory (Figure 5). Patients returned to their normal daily routine after 3 to 7 days.

Conundrum Keys

This novel method for auricular reconstruction is a good option in cases of helical rim skin defects in which cartilage is exposed and there is no perichondrium. It involves the use of bilateral advancement flaps and a third, postauricular flap, thereby eliminating the need for further resection of the cartilage while preserving a normal helical rim diameter.

Conundrum Keys

AQ : 2

- (1) Novel method for auricular reconstruction—a good option in cases of helical rim defects in which cartilage is exposed and there is no perichondrium.
- (2) Bilateral advancement flaps and a third, postauricular flap eliminate the need for further resection of the cartilage while preserving a normal helical rim diameter.

- (3) Cartilage conserving repair for helical rim skin defects with exposed cartilage.
- (4) Preserves a normal helical rim diameter.

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