lines or, potentially, prevention of their progression.
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Reliability of the Helical Advancement Flap for Auricular Reconstruction

Sir:

The chondrocutaneous helical rim advancement flap, first described in 1967 by Antia and Buch, has been used for its technical simplicity as a single-staged procedure, low risk of complications, and excellent cosmesis.[1] Surgical complications and viability of the helical advancement flap have been studied to a modest degree. Complications such as tip necrosis, hematoma, bleeding, infection, hypertrophic scarring, and contour deformity have been observed in past studies.[2–4] At the time of publication, this was the largest case series of its kind. By examining the results of this cohort of patients, the authors have found the helical advancement flap to be a reliable tool for the reconstructive surgeon.

Seventy-eight cases of helical reconstruction following oncologic reconstruction were reviewed (Fig. 1). The defect location dictates whether tissue will be advanced on an inferiorly or superiorly based pedicle. The anterior incision is made just under the edge of the helical furrow. The incision is then continued transversely across the rim of the auricle to include the near border of the wound to be closed. On the posterior aspect of the ear, a Burow triangle is completed, with the hypotenuse including the limits of the defect, and the apex of the triangle lying on the posterior aspect of the ear. The flap is then elevated along the length of the anterior incision (Fig. 2).

Fig. 1. The defects were all less than 2 cm in diameter, limited primarily to the skin, subcutaneous tissue, and down to the perichondrium.

Forty-seven reconstructions (60 percent) were of the middle helix using an inferiorly based flap, and 31 were of the superior helix. Of the 78 patients, 17 (22 percent) were diabetics. Twenty-four patients (31 percent) were tobacco users, and 12 of 78 (15 percent) were diabetics and tobacco users.

Partial necrosis of the distal end of the flap was observed in two smokers (2.6 percent). One required a revision flap (1.3 percent). Four patients developed postoperative hematoma (5.1 percent), with three

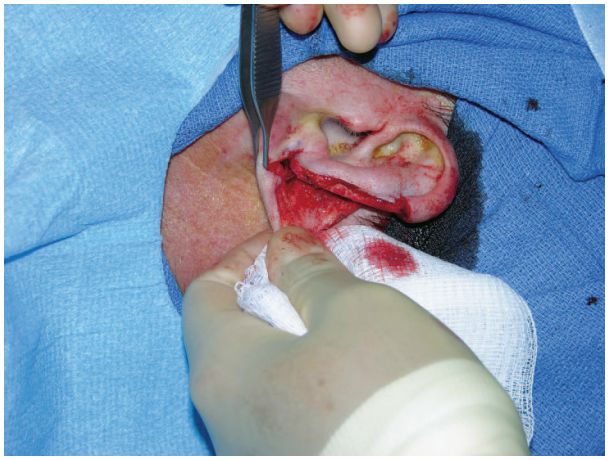

Fig. 2. The flap is undermined in the subcutaneous plane back to the apex of the Burow triangle. On verification that the flap is adequate, the Burow triangle is then excised.

cases requiring a return to the operating room for control of bleeding. Remarkably, none of these were currently undergoing aspirin therapy.

Infection developed in two patients (2.6 percent). Both cases were managed effectively with antibiotics. Hypertrophic scarring was noted in five patients (6.4 percent), all of whom responded to three or fewer corticosteroid infiltrations (triamcinolone 25 mg/ml). No contour deformities, including collapse or flattening of the helical rim, were observed.

The helical advancement flap shows great versatility when considering defects from 1.5 to 3 cm. Our review of an unprecedented 78 cases affirms that the procedure carries an extremely low risk of complications, with no total flap failures. The rate of hematoma formation (5.1 percent) deserves mention. Fibrin sealants or possibly the use of drains or bolsters should be considered. However, hematomas rarely cause flap failure if properly evacuated. Hypertrophic scarring and keloids may be managed with intralesional corticosteroid injections with application of pressure, massage, and radiotherapy for refractory cases. Measures can also be taken to further improve cosmesis, with examples being the Burow triangle to decrease flap tension and use of Z-plasty to minimize undesired notching of the auricle. In addition, edge eversion may be improved with a vertical or buried mattress suture diminishing the risk of notching.[2]

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DISCLOSURE

The authors have no conflicts of interest to report.

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Staggered Wedge Technique for Ear Reconstruction

Sir:

Simple wedge resection is widely used for reconstruction of full-thickness helical rim defects smaller than 1.0 to 1.5 cm.[1] For reconstruction of defects up to 2.5 cm, crescentic or star excisions can be used. However, these techniques can frequently cause skin contraction and ear cupping.

For defects smaller than 2.5 to 2.8 cm, we use a modification of the classic wedge resection, in which a full-thickness Burow triangle is excised superiorly or inferiorly to the helical rim defect. The principle of staggering the wedge, similar to the one of staggering an ellipse,[2] allows a better distribution of elastic forces than other techniques.

The lesion is outlined and the excision margins are decided. The planned defect is converted into a full-thickness rectangle. The width of defect is marked as AB. A Burow triangle of antihelix and concha is planned cranially or caudally to the helical defect. The triangle base is marked as A1B1 and has to be the same length as AB (defect). The triangle has to be isosceles and the bisector of the vertex angle has to be oriented toward a point localized at the root of the helix; this point is at the center of an ideal hemicircumference drawn at the level of the ear upper pole. The triangle is excised full thickness. The helical and antihelical edges are advanced and sutured together. The continuity of the helix and antihelix is reestablished in three layers, resulting in a Z suture line (Fig. 1).

We treated 52 consecutive patients from 2001 to 2004. Surgical margins were 0.5 cm for squamous cell carcinoma, 0.3 cm for basal cell carcinoma, and 0.2 cm for chondrodermatitis nodularis. The defect size after tumor resection with surgical margin control ranged from 12 to 28 mm. Patients had a follow-up period of 6 to 24 months.

All the defects were closed primarily without tension along the suture line. There were no early or late