

Short Communications

Retroauricular skin flap and primary Z-plasty for donor site closure in partial ear reconstruction

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Abstract

Helical rim defects are noticeable and may well need reconstruction, especially in men. A method for reconstructing this type of defect together with primary donor site closure by Z-plasty is described.

To close partial helical rim defects, a retroauricular caudally based rotational skin flap is performed to cover a conchal cartilage graft from the same ear that is harvested first and sutured into place to remodel the helical rim. To primarily close the donor site defect a retroauricular Z-plasty was developed which easily allowed primary closure of the donor site.

The technique described here is straightforward, safe and reproducible. The Z-plasty approach for closing the donor site is useful, since the slight disturbance of the hairline is well hidden retroauricularly. This technique can be considered as a single-stage repair modality for the reconstruction of helical rim defects within primary donor site closure.

Key words: Ear Deformities, Acquired; Surgical Flaps

Introduction

Although often small, acquired defects in the superior and posterior margin of the ear after partial auricle loss may be very noticeable and disfiguring, especially in men. Therefore aesthetic reconstruction is needed to correct such deformities. Various techniques have been described to reconstruct the helix including tubed skin flaps,¹ cervical, mastoid and various composite flaps,² as well as chondrocutaneous advancement.¹ In contrast to staged procedures, which may be cumbersome both for the patient and for the surgeon, one-stage procedures have gained more acceptance in the newer literature.³

To overcome the retroauricular donor site problems a Z-plasty technique in a single-staged simple retroauricular rotation flap has been developed to close the donor defect.

Flap design and technique

In patients with acquired helical rim defects (Figure 1(a)(b)) a reconstruction is indicated. Prior to flap elevation local anaesthetic solution is widely infiltrated facilitating the dissection procedure. The skin on the posterior surface of the earlobe is elevated leaving a broad caudally based basis for the flap. A conchal graft is harvested and trimmed to fit the helical defect and sutured to the helical margins. Care must be taken in the region between the mastoid and ear, since there are dense, fibrous adhesions. The flap is then easily advanced anteriorly to cover the conchal graft completely (Figure 2(a)).

To close the donor area, two skin flaps in the shape of a Z-plasty are elevated (Figure 2(b)) posteriorly, the adjacent skin is undermined and the flaps are transposed against each other and sutured into place (Figure 2(c)).

The principle underlying this procedure is based on a wide postauricular caudally pedicled skin flap with the use of ipsilateral conchal cartilage grafts. The resulting donor site is closed by advancement and a retroauricular Z-plasty. The operative technique is shown diagrammatically in Figure 3. The post-operative result shows restoration of the helical rim with no distortion of ear shape (Figure 4(a)(b)).

Discussion

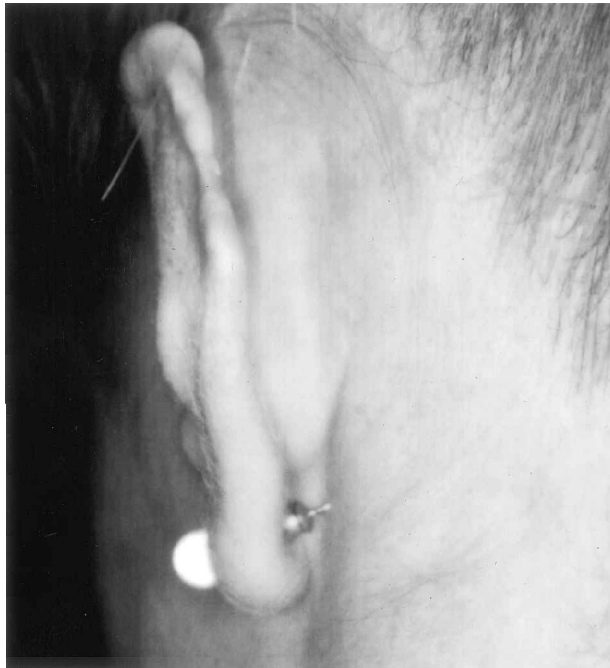
Auricular reconstruction after either previous surgical failures or severe traumatic injuries can present a number of significant challenges. Several techniques have been proposed to correct such deformities.⁴⁻⁷ The primary consideration for the correction of full-thickness defects involving the upper third of the helical rim is the elimination of such disfiguring lesions, especially in men, and the recreation of the normal anatomical curvature of the auricle. Traditionally postauricular and mastoid skin has been used as a convenient and suitable donor site for reconstructions in this area.² However, such reconstructions depend on staged procedures with the use of skin grafts, usually harvested from the contralateral postauricular skin. Unfortunately, this technique frequently cannot avoid notching or pinching of the helical rim contour. The use of a temporoparietal flap to cover cartilage is another valid option.⁵ Since it represents a

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(a)

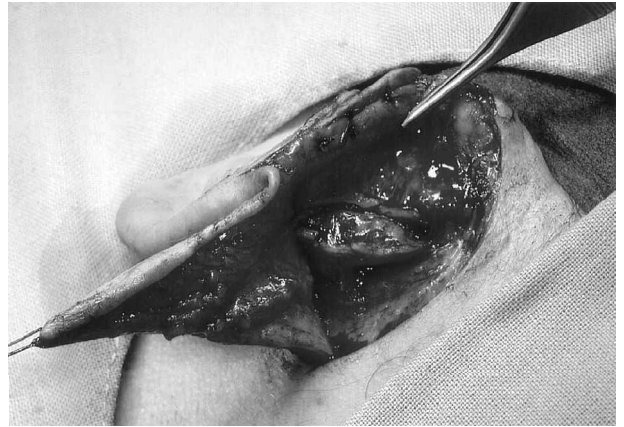


(b)

FIG. 1

A 29-year-old female patient presenting with a post-traumatic defect of the upper helical rim (a) lateral aspect. (b) retroauricular aspect.

rather aggressive reconstructive approach in which radical scar excision is followed by immediate coverage of a newly sculpted cartilage framework with a temporoparietal fascial flap and skin graft it is followed by a considerably higher donor site morbidity.⁵ Therefore these indications may be limited to larger defects.



(a)



(b)



(c)

FIG. 2

Scar excision followed by transplantation of an autologous chondral cartilage graft from the same ear (a) to reconstruct the helical curvature and elevation of a caudally based skin flap. (b) Caudally based retroauricular flap in place over cartilage graft; design of Z-plasty to close the donor site and (c) Z-plasty mobilized to close donor site and prevent tension on retroauricular site.



FIG. 3

Schematic drawing of flap elevation and of Z-plasty to primarily close the donor site defect without distortion of the ear shape.

It is useful to approach defects with the concept of aesthetic subunits to optimize the reconstructive result. Two problems are encountered in the restoration of helical rim contour. On the one hand the chondral scaffold has to be restored and on the other hand an appropriate skin cover is required that should closely resemble the original lost skin. The flap described here utilizes the skin that is directly adjacent to the defective area and is very similar to the original appearance. Compared to other flaps from the retroauricular region this provides a thin and cosmetically acceptable cover. Using autologous conchal cartilage grafts allows for adequate reconstruction of the helical rim curvature. Since the donor site can be primarily closed by Z-plasty there is no tension on the reconstructed helical rim. The Z-plasty approach to close the donor site may lead to a slight disturbance of the hairline, but this is well hidden retroauricularly, so no further visible defects should result from this procedure.

The technique described here is straightforward, safe and reproducible. This technique can be considered as a single-stage repair modality for the reconstruction of helical rim defects with primary donor site closure.

References

- 1 Antia NH, Buch VI. Chondrocutaneous advancement flap for the marginal defect of the ear. *Plast Reconstr Surg* 1967;**39**:472–7
- 2 Brent B. Earlobe construction with an auriculo-mastoid flap. *Plast Reconstr Surg* 1976;**57**:389–91
- 3 Alanis SZ. A new method for earlobe reconstruction. *Plast Reconstr Surg* 1970;**45**:254–7
- 4 Brent B, Byrd HS. Secondary ear reconstruction with cartilage grafts covered by axial, random, and free flaps of temporoparietal fascia. *Plast Reconstr Surg* 1983;**72**:141–52
- 5 Park SS, Wang TD. Temporoparietal fascial flap in auricular reconstruction. *Facial Plast Surg* 1995;**11**:330–7
- 6 Millard DR Jr. The chondrocutaneous flap in partial auricular repair. *Plast Reconstr Surg* 1966;**37**:523–30
- 7 Fata JJ. Composite chondrocutaneous advancement flap: a technique for the reconstruction of marginal defects of the ear. *Plast Reconstr Surg* 1997;**99**:1172–5

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RE Horch, M.D., takes responsibility for the integrity of the content of the paper.

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(a)



(b)

FIG. 4

Post-operative result. Retroauricular flap healed in over conchal graft and donor site closed without distortion of the ear shape (a) lateral aspect (b) retroauricular aspect.