Auricular Cartilage Roll Flap

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Introduction
Surgical defects of the helical ear present unique challenges to overcome. Depending on the depth and size of your defect you may also have to take cartilage damage into consideration while planning your repair. Other aspects of the repair that require your attention include; auditory function, aesthetics, and patient convenience including hearing aid placement. The authors formulated a novel single stage approach that included a cartilage skin graft to maintain both function and cosmesis.

Case Report
An 86-year-old man presented for Mohs micrographic surgery to treat a biopsy confirmed nodular basal cell carcinoma covering the left scapha. Tumor clearance was achieved after 2 stages and required removal of a large portion of cartilage. The resultant defect was large with missing cartilage and intact posterior auricular skin (figure 1). This left the helical rim with a “sagging” appearance.

A single stage procedure was designed by first making an incision inferior to the original defect to harvest a strip of cartilage from the inferior helical rim (figure 2). A 5-mm wide cartilage graft was subsequently sutured from the superior antihelix to the remaining helical rim cartilage with PDS sutures (figure 3). The posterior auricular skin was then rolled over the cartilage graft. This construct provided immediate rigidity and prevented collapse of the helical rim. To create a smooth contour of the helical rim, redundant skin was removed overlying the cartilage graft donor area. The helical roll and inferior donor sites were saturated in place with 5-0 Polydor and 5-0 nylon. A full thickness skin graft was used to cover the remaining defect (figure 4) (figure 5). The sutures were removed at two weeks and the patient was seen at five months post op (figure 6).

Discussion
When approaching this repair there were several options to consider. Wedge excisions are popular options for defects of the posterior helix. This option, however, is prone to causing several appreciable aesthetic complications including butterfly deformity (pinching the helix into a bi-lobed structure), cupping and webbing. It is especially difficult to avoid altering pinna size, vertical height, and anatomical landmarks using a wedge resection when the defect extends beyond one-fourth of the auricular circumference. Given the size and position of our defect we opted against a wedge resection as we felt it would significantly alter the anatomical and cosmetic appearance of the ear.

A chondrocutaneous advancement flap was another consideration. Helical chondrocutaneous advancement flaps may be used in small defects limited to the helical rim. They have the advantage of providing good color and texture match. Unfortunately, our defect was too large, and this reconstruction would have severely affected the vertical diameter of our patient’s ear.

Other staged reconstructive options, including mastoid flap over cartilage were also eliminated due to patients desire to avoid a multi-step procedure. Our single stage procedure provides an ideal option for repair of larger helical defects that extend through the cartilage but not through the posterior auricular skin. By utilizing an ipsilateral cartilage strip graft along with a skin graft, we were able to recreate the structure of the ear without sacrificing structure or function. Only mild distortion of the helical rim was caused, and overall size compared to the patient’s contralateral ear was preserved. The patient reported minimal pain postoperatively and experienced no complications. Thus, this novel approach provides yet another option to dermatologic surgeons faced with the dilemma of helical repair.

References

Disclosures
The authors have no conflicts of interest to disclose.