

Reconstruction of upper ear defect with total posterior auricular sulcus graft: report of two cases

Abstract

Reconstruction of the upper third of the ear after excision of cutaneous carcinomas presents a challenge for the dermatologic surgeon due to anatomical peculiarities such as the grooves and depressions of the region. Although flaps are preferable to grafts due to their superior local cosmetic results, we present two cases of grafting with a donor area from the posterior auricular sulcus with good aesthetic outcomes, establishing itself as a viable alternative for defects located in the upper pole of the ear.

Keywords: ear, basal cell carcinoma, squamous cell carcinoma, grafts

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Introduction

Basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) are the two most common types of skin cancer.^{1,2} When located in the upper third of the auricle, reconstruction can become challenging for the dermatologic surgeon due to anatomical peculiarities, such as local grooves and depressions.³ Skin flaps are generally preferred over skin grafts due to local cosmetic similarity. However, flap reconstruction in the upper third of the ear is highly complex due to the combination of a peculiar three-dimensional anatomy, scarcity of adjacent tissue, and the need for rigid structural support.⁴

Grafts can be widely utilized in the reconstruction of defects following BCC and SCC excisions; however, they carry disadvantages such as pigmentary changes around the recipient area, alterations in texture or contour, as well as risks of necrosis or poor integration with the recipient site.^{3,4} We present two cases of skin grafting using donor areas from the posterior auricular sulcus, which yielded favorable aesthetic results and may represent a viable reconstructive option for defects localized in the upper auricular pole.

Methods

Two patients with skin cancer in the upper third of the right auricle were selected and underwent skin grafting, with donor tissue harvested from the posterior auricular sulcus region.

Patient 1: A 76-year-old male, phototype 3, non-smoker, presented with a plaque measuring 12 millimeters (mm) involving the scaphoid fossa, the helix, the superior crus of the antihelix, the inferior crus of the antihelix, and the triangular fossa (Figure 1). Histopathological examination confirmed nodular BCC. Excision was performed with 3 mm margins, resulting in an 18 mm defect.

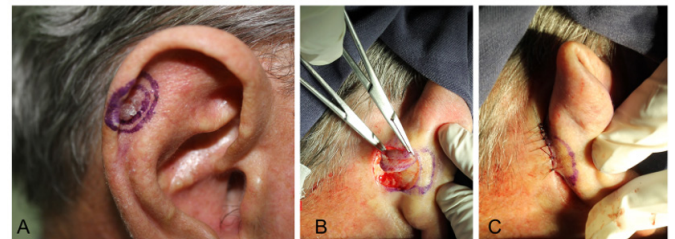


Figure 1 A. Patient 1 with BCC and surgical marking of margins. B. Donor site on the posterior aspect of the ear (initial marking was slightly larger). C. Primary closure of the donor site.

Surgical technique (Patient 1):

- The patient was placed in a supine position;
- Surgical marking with surgical skin marker with 3 mm margins around the lesion on the upper third of the right auricle (Figure 1A);
- Marking of the donor site on the posterior surface of the ear (Figure 1B);
- Antisepsis with 10% topical povidone-iodine;
- Placement of sterile surgical drapes;
- Infiltrative anesthesia with 2% lidocaine with epinephrine around the lesion and the donor site;
- Incision with a #15 blade and harvesting of the donor tissue from the posterior aspect of the right auricle (Figure 1B)
- Primary closure of the donor site with 5-0 nylon, using simple interrupted sutures (Figure 1C)

- i) Incision of the carcinoma with a #15 blade according to previous marking. En bloc resection of the lesion down to the cartilage level (Figure 2A)
- j) Placement of the full-thickness graft onto the recipient site, followed by long cardinal sutures and simple interrupted sutures with 5-0 nylon (Figure 2B)
- k) Fixation of a gauze bolster with cardinal sutures (Brown's tie-over dressing)
- l) Cleansing with normal saline.

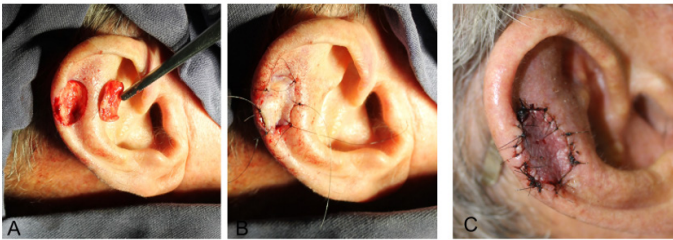


Figure 2.A. Patient 1 with defect following BCC excision. **B.** Graft positioned. **C.** Grafting on the 5th postoperative day (following removal of Brown's tie-over dressing).

Patient 2: An 81-year-old female, phototype 2, presented with an erythematous and squamous plaque measuring 15 mm in its largest diameter. The lesion was located on the upper third of the right auricle, involving the scaphoid fossa, the superior crus of the antihelix, the inferior crus of the antihelix, and the triangular fossa (Figure 3).

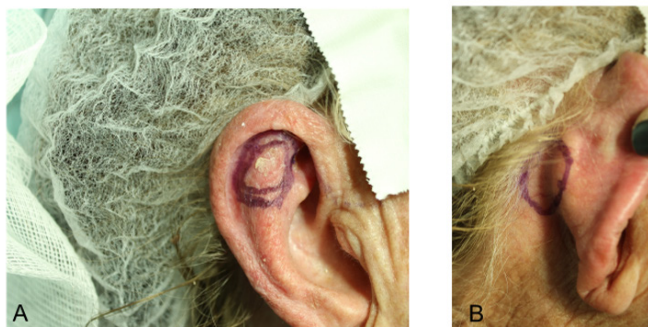


Figure 3.A. Patient 2 with SCC and surgical marking of margins. **B.** Donor site on the posterior aspect of the ear.

Histopathological examination confirmed SCC in situ. Excision was performed with 3 mm margins, resulting in a 21 mm defect (Figure 4 & Figure 5).

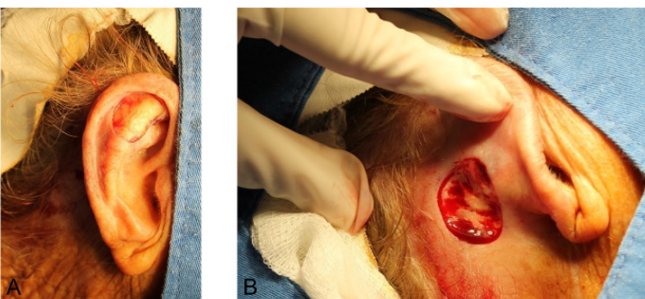


Figure 4.A. Patient 2 with defect following SCC excision. **B.** Donor site defect.



Figure 5.A. Patient 2 with graft placement onto the recipient site. **B.** Sutured graft.

Surgical technique (Patient 2): Identical to Patient 1.

Results

Patients had an uneventful postoperative course during the initial days following surgery. Wound healing was favorable, with satisfactory aesthetic outcomes observed during the postoperative period (Figure 6 & Figure 7).

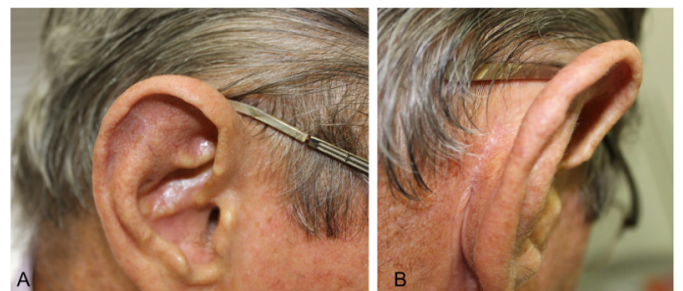


Figure 6.A. Patient 1 six months after skin grafting. **B.** Scar "camouflaged" within the posterior auricular sulcus.

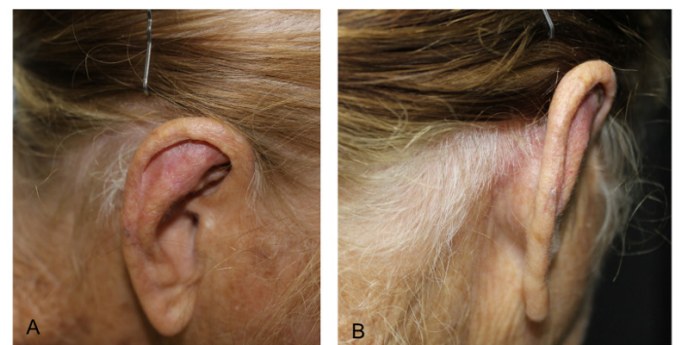


Figure 7.A. Patient 2 six months after skin grafting. **B.** Scar "camouflaged" within the posterior auricular sulcus.

Discussion

Beyond their aesthetic importance, the ears play an essential functional role by providing support for eyeglasses, face masks, and hearing aids. Preserving their shape and ensuring symmetry with the contralateral side during reconstruction can be challenging for the dermatologic surgeon.⁵

Although the wedge excision technique may be employed for reconstructions of the upper third of the ear, it carries a risk of creating dimensional disparity between them.⁴ Interpolation flaps with donor sites from the posterior auricular regions may also be used, but they require two-stage surgical procedures.^{4,5} Other types of flaps, such as rhomboid transposition and bilobed flaps, are difficult to execute due to the combination of complex three-dimensional anatomy and the scarcity of adjacent tissue.⁴

Full-thickness grafts are indicated for the resolution of virtually all defects. However, depending on the donor site, dyschromia (hypo- or hyperchromia), thickness discrepancies, and poor integration with the recipient area may occur.³

Ideal areas for receiving a graft are flat sites, without undulations, grooves, or depressions, as surface irregularities hinder the integrity between the grafted skin and the recipient region.⁴ Supraclavicular, infraclavicular, pre-auricular, and the inner surface of the arms are cited as donor sites for the auricular region.³ However, the posterior auricular sulcus can be an excellent indication, as seen in the presented cases, since it receives minimal ultraviolet exposure and exhibits less photodamage.

Individuals rarely pay attention to the posterior region of the ear; furthermore, even upon close inspection, the donor site scar is often unnoticeable, as it remains camouflaged within the natural depression of the posterior auricular sulcus. The donor tissue from this area has a thin, ideal thickness for this region, adapting well to the local natural grooves and depressions. Therefore, it represents an additional reconstructive option for defects in the upper third of the auricle.

Conclusion

Skin grafting harvested from the posterior auricular sulcus region can be a viable reconstructive alternative for defects localized in the upper pole of the auricle.

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Conflict of interests

The authors declare there is no conflict of interest.

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