

Single-stage reconstruction of an upper third auricular defect with ipsilateral conchal cartilage graft and tunnelized preauricular flap

Reconstrução em estágio único de um defeito no terço superior da orelha com enxerto de cartilagem conchal ipsilateral e retalho pré-auricular tunelizado

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ABSTRACT

Large upper-third auricular defects present complex reconstructive challenges, requiring restoration of both form and function. We describe a single-stage technique combining an ipsilateral conchal cartilage graft for structural support with a tunnelized preauricular transposition flap for soft tissue coverage. This approach provides rigid support to enable the use of glasses and hearing aids, along with good color and texture match. In a 79-year-old patient with a 30 × 28 mm post-Mohs surgical defect, the method yielded a satisfactory outcome with preserved ear contour and function. Only minor issues, such as slight forward auricular displacement, were noted at 8-month follow-up.

Keywords: Mohs Surgery; Dermatologic Surgical Procedures; Carcinoma, Basal Cell

RESUMO

Grandes defeitos no terço superior da orelha representam desafios reconstrutivos, exigindo a restauração da forma e função. Descrevemos uma técnica em estágio único que combina um enxerto de cartilagem conchal ipsilateral para suporte estrutural com um retalho pré-auricular tunelizado para cobertura de tecidos moles. Essa abordagem garante suporte rígido, permitindo o uso de óculos e aparelhos auditivos, com boa compatibilidade de cor e textura. Em um paciente de 79 anos com um defeito pós-Mohs de 30 × 28 mm, a técnica preservou o contorno e a função auricular. Apenas questões menores, como um leve deslocamento anterior da orelha, foram observadas no seguimento de 8 meses.

Keywords: Mohs Surgery; Dermatologic Surgical Procedures; Carcinoma, Basal Cell

How do I do it?

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INTRODUCTION

The reconstruction of upper-third auricular defects presents a unique challenge due to the ear's intricate anatomy and dual role in aesthetics and function. The loss of cartilage and skin, often following oncologic excision, necessitates techniques that preserve contour and rigidity.^{1,2} This is particularly relevant for elderly patients who rely on the auricle's structure for wearing glasses or hearing aids.^{3,4}

Single-stage approaches offer a practical solution, minimizing surgical interventions and reducing complications associated with comorbidities such as diabetes or hypertension.^{3,4}

The use of cartilage grafts and well-vascularized flaps has been shown to effectively restore structural integrity and improve functional outcomes.^{5,6}

METHODS

A single-stage repair combining an ipsilateral conchal cartilage graft with a tunneled preauricular flap was selected. Initially, cartilage from the ipsilateral concha was harvested through an incision in the conchal skin. The cartilage graft was placed over the defect and secured to the remaining cartilaginous framework with 4-0 Vicryl absorbable sutures. The donor site was closed with 5-0 Prolene sutures.

Next, a superiorly based ipsilateral preauricular transposition flap was planned, following natural skin lines. The flap dissection started distally and progressed upward to the level of the helical crus. An incision was made along the roof of the helix, creating a tunnel beneath it. The tunnel was carefully sized to match the flap's width and thickness. The portion of the flap passing through the tunnel was deepithelialized. Next, the preauricular flap was advanced through the tunnel, placed over the defect on the cartilage graft, and secured with 4-0 Prolene sutures. The secondary defect in the preauricular area was closed using 4-0 Vicryl and 5-0 Prolene sutures.

RESULTS

Reconstruction was completed successfully in a single operative session. The immediate postoperative appearance of the ear showed restored contour of the upper third and a well-positioned skin flap with good color match to the surrounding auricular skin. The cartilage graft provided noticeable structural support, maintaining the projection and shape of the ear rim. The preauricular flap showed robust perfusion, and there were no signs of venous congestion or flap compromise in the postoperative period. In addition, minor complications were noted. The patient presented slight forward displacement of the upper



FIGURE 1: Post-MMS defects. MMS, Mohs micrographic surgery



FIGURE 2: Proposed flap design



FIGURE 3: Preauricular flap elevation and defect exposure



FIGURE 4: Immediate postoperative view

third of the ear and the presence of hair-bearing skin in an area typically devoid of hair. However, these issues did not impact the overall functional outcome.

DISCUSSION

Cartilage grafts provide essential support in auricular reconstruction, maintaining contour and preventing long-term deformities.^{1,2} Conchal cartilage, due to its similar curvature, is a favorable donor site for autologous grafts that avoids the morbidity associated with distant grafts.⁴ Preauricular flaps enhance vascularization, reducing the risk of necrosis and ensuring a stable soft tissue cover.^{3,7,8} Despite these advantages, minor complications were observed, including forward auricular displacement and the presence of hair-bearing skin in a typically hairless area. These issues, although not functionally limiting, highlight the importance of optimizing flap tension and graft fixation.^{3,5} Future refinements, such as precise flap positioning and controlled graft sizing, may further improve outcomes. In cases of hair-bearing skin transposition, laser hair removal or minor revisions could enhance cosmetic results.^{6,7}

Previous studies confirm the effectiveness of combining cartilage grafts with preauricular flaps, demonstrating high structural stability and low complication rates.^{1,2,4,8} Our findings reinforce the need for meticulous surgical planning to balance aesthetic and functional demands.



FIGURE 5: Postoperative month 8

CONCLUSION

The single-stage technique for upper-third auricular defect reconstruction, using an ipsilateral conchal cartilage graft and a tunnelized preauricular transposition flap, is a reliable and effective approach. This method successfully restores both the

form and function of the auricle, providing sufficient rigidity to support devices such as glasses and hearing aids. In addition, it avoids the need for multi-stage procedures, which is particularly advantageous for elderly patients or those with comorbidities that increase the risk of postoperative complications. ●

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Statistical analysis; Approval of the final version of the manuscript; Conception and design of the study; Preparation and writing of the manuscript; Acquisition, analysis and interpretation of data; Effective participation in the conduct of the study; Intellectual participation in the propaedeutic and/or therapeutic approach to the cases studied; Critical review of the literature; Critical revision of the manuscript.

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