

Reconstruction of retroauricular surgical defect using the “jigsaw puzzle” advancement flap

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Abstract

We present the case of a 55-year-old male patient who came to our attention because of a basal cell carcinoma of the right retroauricular area, near the mastoid-auricle border. The tumor had a size of about 1.5 cm. Repairing retroauricular surgical defects may be actually very challenging, firstly because an incorrect reconstruction may result in severe deformities which are extremely hard to conceal; so, we decided to employ the “jigsaw puzzle” advancement flap, a versatile flap, firstly successfully used in the reconstruction of a nasal ala defect.

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Case Report

We report the case of a 55-year-old male patient who came to our attention because of a basal cell carcinoma of the right retroauricular area, next to the mastoid-auricle border. The tumor was rather broad, with a size of about 1,5 cm; however, it was easily excised in one stage with adequate margins and the final size of the surgical defects measured about 2 cm (Figure 1); once oncologic eradication was been achieved, we started to plan the reconstruction, which is actually the most difficult element of surgery. We finally decided to employ the “jigsaw puzzle” advancement flap. After tumor excision, we realized an advancement flap with dog-ears lateral to the surgical defect along the retroauricular fold (Figure 2); then the flap was incised and the dog ears were excised, only leaving the flap attached (Figure 3); the excess fat was trimmed. The flap was anchored to the surgical defects by a 4-0 absorbable suture; a deep subcutaneous suture was employed to reduce the risk of obliteration of the retroauricular fold. The closure was completed with a cutaneous 4-0 nylon suture (Figure 4).

Discussion and Conclusions

The reconstruction of particular anatomic regions of the ear may show various complications: in order to obtain a good result that guarantees both oncological eradication and a satisfactory aesthetic outcome, it's essential taking into account several factors, such as the anatomical complexity of site and the peculiarities of tissues; moreover, asymmetry, distortion or loss of convexity or concavity of surfaces may unfortunately follow surgery.

The “jigsaw puzzle” advancement flap was firstly described in 2005 by Goldberg *et al.*, for the reconstruction of a nasal ala defect.¹ The same technique was also performed in different challenging anatomical sites, such as the lateral upper lip defect,^{2,3} or even tragus, antitragus and posterior helical rim of the auricular region.⁴ To the best of our knowledge, the same technique was used to repair a surgical defect in a similar site only by Alkalay *et al.*,⁵ obtaining a very good reconstruction of the retroauricular area. Repairing retroauricular surgical defects may be actually very challenging and difficult, firstly because an incorrect reconstruction may result in severe deformities which are extremely hard to conceal. The choice of the most suitable reconstruction technique is essential to obtain the best result. Different reconstruction options are possible, always taking into account the size of the auricle and of the lesion, the mobility of the skin and the final aesthetic result. Primary closure may be the easiest option, but it's suitable just in case of small-size defects or large auricle with a surplus of skin: otherwise, the final aesthetic result would be poor, with an excessive reduction of the space behind the ear, causing asymmetry and making impossible for the patients to wear spectacles, if needed; in our case, the size of the defect was too large to get a primary closure. The V-T flap is another avail-

able option, though it foresees a large detachment of the auricle and the vascularization could be suffering: in our case, however, the anatomical site was not adequate to perform such type of flap, firstly because of lack of tissue. Also, the bilobed flap could be an option, mostly in order to reduce the risk of obliteration of the retroauricular space.⁶ A skin graft, at last, is always a suitable option, but we have to underline the risk of engraftment failure, the need to use sometimes a different type of skin and, last but not least, the longer recovery times. According to all these considerations, we decided to employ the “jigsaw puzzle” advancement flap.

Planning this kind of flap for the auricular region it's necessary to consider at least two essential factors: dimension and position of the scar. The size of the flap is established measuring the length of the surgical defect in the direction of flap advancement.

The advantages of this technique are multiple: the skin of the area used as a flap is similar in thickness and texture and it's a simple and quick-to-perform method, which guarantees a certain preservation of the final aesthetics of the area (Figure 5).

Even if a large dissection of tissue was required, the surgical



Figure 1. Preoperative view of the tumor and “jigsaw puzzle” flap draft.



Figure 2. Tumor excision.

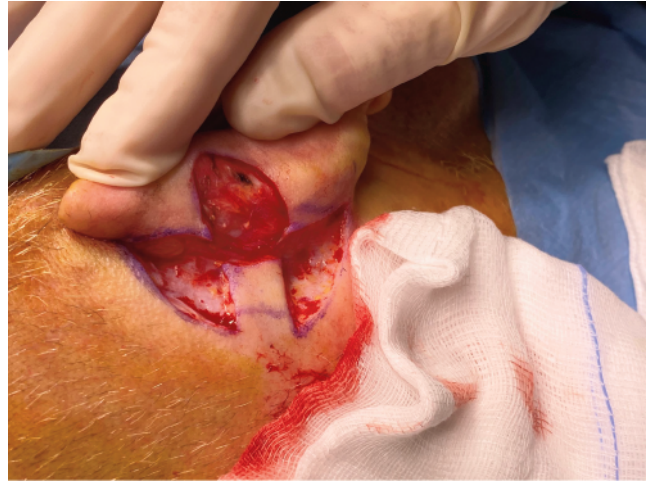


Figure 3. Realization of retroauricular “jigsaw puzzle” flap.



Figure 4. Completed closure.



Figure 5. Postoperative control.

scar remained completely hidden and the aesthetics and functionality of the ear were not altered.

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