

Postauricular Revolving Door Island Flap: An Updated Review

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Abstract

Reconstruction of the anterior auricular defect and the concha bowl of the ear, which allows improving its contour, is possible through an elegant flap such as a retroauricular rotation flap.

This retroauricular flap was first described by Massom in 1972 and is known as flip-flop-flap, trap door flap, or saloon door flap. Stucker and Sanders likewise reported their experience with flap closure. This immediate reconstructive technique is a safe and simple one-stage closure procedure of large anterior auricular defects (scapha, antihelix, helix, cavum conchae) with loss of cartilaginous support and excellent aesthetic results. The ear surgical defect is reconstructed with a postauricular (revolving door) island pedicle flap based on the postauricular vessels, it relies on highly vascular underlying tissues, principally the posterior auricular muscle. The blood supply to the auricle is derived from the external carotid artery through its posterior auricular artery. A full-thickness flap is designed with a subcutaneous central pedicle in the retroauricular region, the flap is passed through the window to resurface in the anterior region of the ear and cover the defect.

Keywords: Trap Door Flap; Flip-Flop Flap; Saloon Door Flap; Ear Reconstruction; Concha Defects

Introduction

The ear can be exposed to multiple injuries such as trauma (lacerations, avulsions) or when exposed to ultraviolet light (cancer).

The reconstruction of the anterior auricular defects is a challenge due to the topography of the ear and healing by the second intention is not an option due to the poor aesthetic outcome [1].

The skin of the face and the postauricular region has similarities and qualities, which make the postauricular region the donor area. There are various surgical procedures for auricular defects such as grafts and flaps, within the flaps we have: postauricular revolving door island flap, a preauricular transposition flap, postauricular pull-through flap, tubed pedicle flap [1,2]. These flaps sometimes

fail and there are hematomas, dehiscence, and infections that occur; all the above may require a second surgery.

The revolving door island flap known as well as flip-flop flap, trap door flap, or saloon door flap is one of these techniques, first described and developed by Mason in 1972 [3], as a method of reconstructing concha-helix defects. The closure of the auricular bowl defects has been reported by various authors including Stucker and Sanders [4].

Description

The surgical process begins with the evaluation of the defect area, to measure size and depth. In cases where the resection is

secondary to cancer, the healthy tissue around the flap should be verified (Figure 1A and 1B).

closure of the defect in donor area by simple suture [1-5] (Figure 4). The flap is then sutured to cover the concha defect (Figure 5).

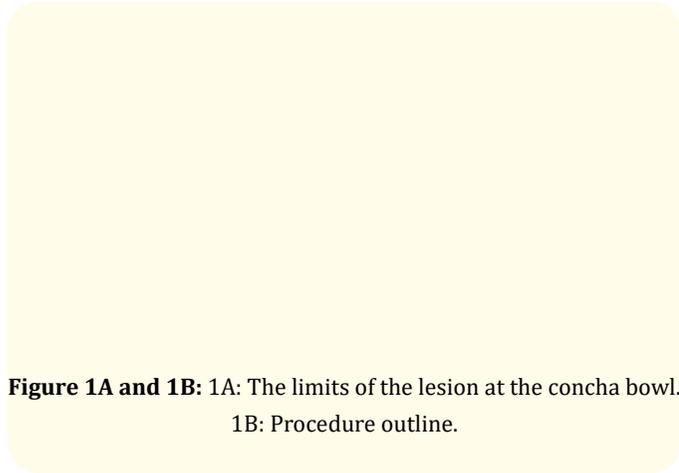


Figure 1A and 1B: 1A: The limits of the lesion at the concha bowl. 1B: Procedure outline.

The hydrodissection useful to facilitate the resection of the affected tissue, we use epinephrine mixed with lidocaine 2%, it is also working as a local anesthetic.

The lesion and the underlying cartilage are removed (Figure 2A and 2B).

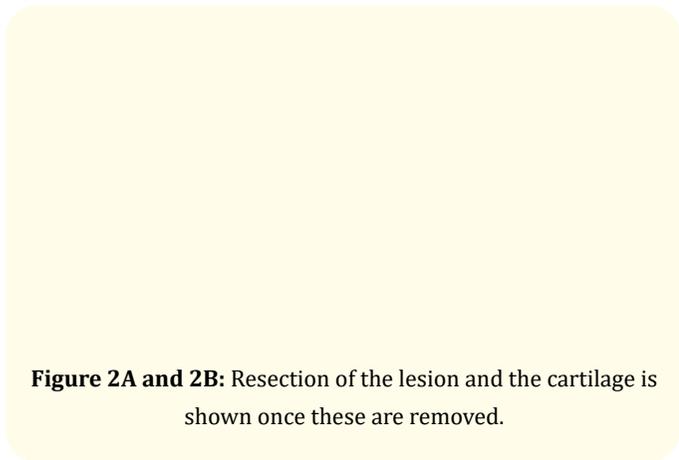


Figure 2A and 2B: Resection of the lesion and the cartilage is shown once these are removed.

The flap uses the skin harvested of the postauricular and mastoid region as an island, should be based over the sulcus to limit the distance of rotation and be slightly larger than the defect because during the healing process it might shrink, incise the subcutaneous layer parallel to the sulcus and create a window, then rotates the flap 180 degrees through the window like a hinge on its pedicle and pass through the conchal cavity defect (Figure 3), with primary

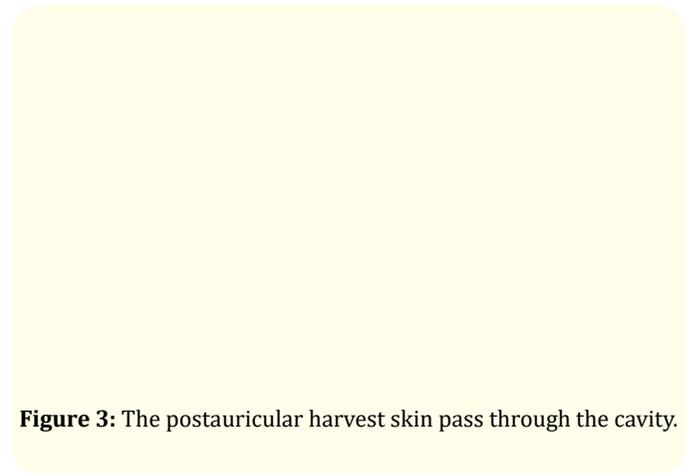


Figure 3: The postauricular harvest skin pass through the cavity.

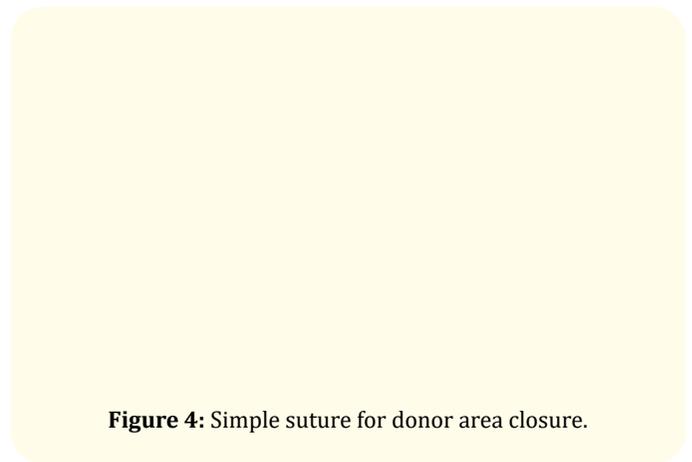


Figure 4: Simple suture for donor area closure.

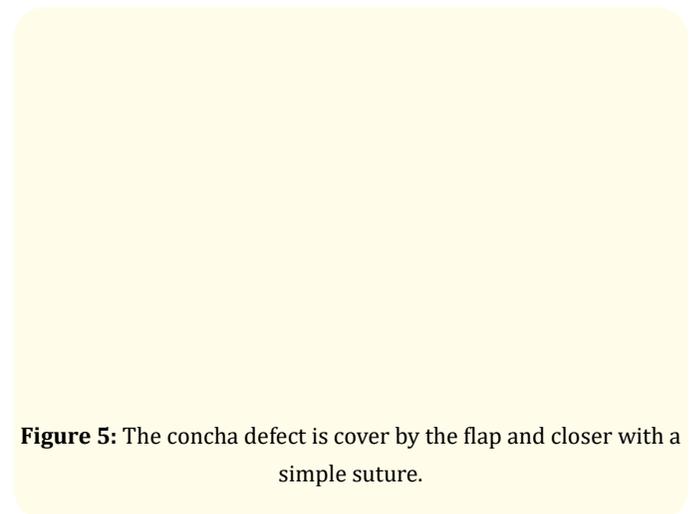


Figure 5: The concha defect is cover by the flap and closer with a simple suture.

The structural integrity of the ear and the cavum conchae is restored with the skin of the donor area through this surgical procedure (Figure 6), with good healing without complications [6] both in the donor and recipient areas, allowing better results in larger defects, even when the underlying cartilage needs to be removed [1,7,8].

Figure 6: One month follow-up.

Discussion

Once the excision of the lesion is completed, the size of the recipient area is considered to begin the reconstruction through the postauricular island flap.

Concha defects can be repaired using the postauricular revolving door island flap. Along the posterior auriculae sulcus, the vertical axis of the flap is designed, which must be larger than the recipient area defect. The incision is made in the posterior helical rim of the ear, preserving the skin at the level of the pedicle. The flap is tongue shape with a length-to-width ratio of 4:1. At the level of the postauricular sulcus, a wide slit is designed that will allow the flap to pass without resistance and minimizing the possibility of ischemia. Once the flap passes the slit, it is pulled until it covers the anterior defect of the concha. Primary skin closure is used for both the donor and recipient sites. Once recovered, the patient is discharged and a week later, the sutures will be removed during follow-up. Complications usually do not occur and total healing happens after 15 days, with excellent postoperative cosmetic results [9].

Conclusion

Reconstruction of anterior auricular defects that may lack perichondrium can be solved through the postauricular revolving door island flap in one step has a good skin color match and texture, and excellent aesthetic results [9] in the recipient or in the donor area, which can be closed primarily, and the scar remains hidden.

The understanding of flap design and transfer is essential for this unique and elegant flap with low morbidity and satisfactory outcomes.

Conflicts of Interest

None declared.

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Ethical Approval

The present article was carried out following the principles of the Declaration of Helsinki.

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