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Case Report

Revolving Door Flap Reconstruction in a Basal Cell Carcinoma of the Concha: A Case Report

Laila Liqali[1]*, Youssef Lakhdar[1], Omar Oulghoul[1], Mohamed Chehbouni[1], Othmane Benhoummad[2], Youssef Rochdi[1] and Abdelaziz Raji[1]

[1]ENT Head and Neck Surgery Department, University Hospital Center Mohammed VI, Marrakech, Morocco

[2]ENT Head and Neck Surgery Department, University Hospital Center Mohammed VI, Agadir, Morocco

***Corresponding Author:** Laila Liqali, ENT Head and Neck Surgery Department, University Hospital Center Mohammed VI, Marrakech, Morocco.

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Abstract

Reconstructing ear defects remains a significant challenge due to the complexity of auricular anatomy and the importance of aesthetic and functional outcomes. The revolving door flap (RDF) technique offers a reliable solution for repairing conchal defects while preserving the natural contour and function of the pinna. Despite its effectiveness, this technique is still underutilized in clinical practice due to its specific procedure.

This report presents the case of a 56-year-old patient with a superficial, slowly growing nodule in the conchal bowl of the left auricle, diagnosed as basal cell carcinoma following biopsy. Surgical excision with clear margins and immediate reconstruction using the RDF were performed in a single operative session. The technique provided excellent coverage, contour preservation, and satisfactory cosmetic results. Beyond reporting outcomes, this article details the surgical steps of the RDF technique, highlighting its practical advantages, especially in maintaining the natural appearance and integrity of the ear. This case reinforces the value of the RDF in auricular reconstruction and encourages wider adoption of this effective yet underused method.

Keywords: *Conchal Reconstruction; Revolving Door Flap; Postauricular Island Flap*

Abbreviations

RDF: Revolving Door Flap; BCC: Basal Cell Carcinoma

Introduction

The complex three-dimensional structure of the human ear makes its reconstruction particularly challenging. Defects resulting from tumor excision or congenital deformities often require advanced surgical techniques to achieve optimal aesthetic and functional outcomes. One such method is the revolving door flap (RDF), a subcutaneous pedicled postauricular island flap that utilizes adjacent skin to restore conchal defects. Originally described by Masson in 1971, the RDF is based on a vertically rotating pedicle, allowing tissue from the postauricular region to cover defects of the concha while maintaining vascular integrity and natural appearance.

Aim of the Study

This case report aims to describe the use of the RDF technique for the reconstruction of a conchal defect following excision of basal cell carcinoma, highlighting its surgical approach, outcome, and clinical utility.

Case Presentation

A 56-year-old male patient with a significant history of chronic sun exposure related to his occupation as a farmer presented with a pigmented cutaneous lesion located in the left auricular concha. The lesion measured approximately 2.5 cm in diameter and involved both the cymba conchae and cavum conchae, extending near the crus of the helix and posterior part of the external auditory meatus (Figure 1). There was no posterior extension of the lesion onto the retroauricular surface of the auricle. Clinical examination, including otoscopy, revealed no evidence of invasion into the external auditory canal, no facial palsy and lymphadenopathy. No further imaging such as CT or MRI was deemed necessary, as the lesion appeared localized without deep tissue invasion. Histopathological analysis of a local biopsy confirmed the diagnosis of basal cell carcinoma (BCC) affecting the conchal region.

Surgical excision of the lesion was performed with a 5-mm safety margin with excision of adjacent conchal cartilage. The resulting defect involved the anterior auricular skin necessitating careful reconstructive planning to restore the ear's form and function. Given the location and complexity of the defect, reconstruction was carried out using the revolving door flap (RDF) technique.

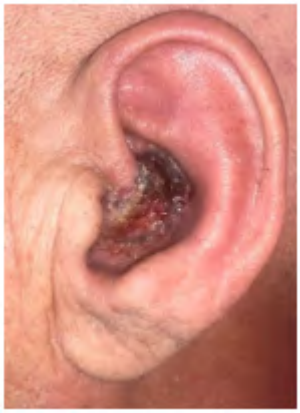

Figure 1: Preoperative image showing a shiny nodule with telangiectatic patches consistent with basal cell carcinoma.

Surgical technique

Concept

The revolving door flap (RDF) is based on the principle of a vertically rotating subcutaneous pedicle, allowing the flap to pivot from the postauricular to the preauricular surface-much like the wings of a revolving door moving around a central shaft.

The elevated flap consists of anterior and posterior segments that rotate independently around a central, non-elevated base situated in the retroauricular groove. This base acts as a subcutaneous pedicle, ensuring a reliable vascular supply through an arterial network formed primarily by branches of the posterior auricular artery and the superficial temporal artery.

The subcutaneous tissue within the groove provides flexibility and mobility, enabling the flap to rotate without compromising blood flow. Once elevated, the anterior and posterior portions of the flap are passed through a surgically created cartilage opening, allowing them to reach the preauricular defect site and effectively cover the area while preserving the ear's natural contour.

Surgical steps

Anesthesia and patient preparation

The procedure may be performed under local or general anesthesia, depending on the size and extent of the lesion. The surgical field is prepared using standard aseptic technique, and local infiltration with 2% lidocaine with epinephrine is administered to provide analgesia and minimize intraoperative bleeding.

Excision of the lesion

A 5-mm safety margin is marked circumferentially around the lesion to ensure complete excision.

The lesion is excised using a scalpel or electrocautery, including a clear margin of healthy surrounding tissue.

If cartilage involvement is present, a partial resection of the auricular cartilage is performed.

Hemostasis is achieved using electrocautery or sutures, as needed, to control bleeding.

Flap design and elevation (Figure 2)

The postauricular skin is mapped to replicate the anterior auricular defect using a surgical template. The flap is designed in

an island shape, centered on the retroauricular groove. The flap is outlined approximately 15 - 25% larger than the recipient defect to ensure tension-free closure and adequate coverage. For the retro-auricular wing, three marking needles are used to delineate the anterior, superior, and inferior borders of the donor site. The mastoid wing's boundaries are best determined by gently applying the external edge of the auricular defect onto the retroauricular skin surface, with a slight allowance to ensure complete coverage. Incisions are made along the pre-marked outline, and the flap is elevated carefully, beginning from the periphery. The central portion of the flap, located in the retroauricular groove, is preserved intact. This area serves as a subcutaneous pedicle, through which the posterior auricular artery and its branches pass, ensuring an adequate blood supply. The resulting structure is a posteriorly based island flap from the postauricular and mastoid region, with a well-preserved central neurovascular pedicle to support robust perfusion and flap viability.

Flap rotation and securing (Figure 2)

The flap is rotated through a cartilage slit, allowing smooth transition to the anterior auricular defect. After creating a cartilage slit, the flap sections were rotated along their vertical axis, similar to a revolving door mechanism; represented as two "wings" moving on its "shaft".

They were transferred to the anterior auricular surface by passing through the cartilage defect while applying gentle posterior traction on the pinna.

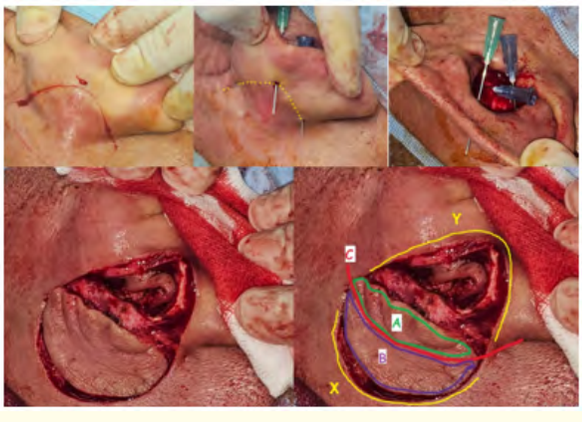

Figure 2: Schematic axial view of flap design and elevation using needle mapping.

Region A (green outline): Retroauricular wing; Region B (blue outline): Mastoid wing; Line C (red line): Central shaft; Point X (yellow line): Inferior suture edge; Point Y (yellow line): Superior suture edge.

Closure of donor site

The retro auricular wing ('A' in figure 3) was positioned to cover the anterior portion of the defect, aligning with the conchal region, and sutured to the anterior defect margin. For, the mastoid wing ('B' in figure 3) it was aligned with the posterior defect margin near the helix. What is left of the flap was repositioned to match the defect margins. The central shaft made of subcutaneous tissue remained attached to the auriculo-mastoid groove. At last, the skin edges (X-Y) are sutured to close the post auricular new groove. The postauricular donor site is closed primarily with minimal tension.

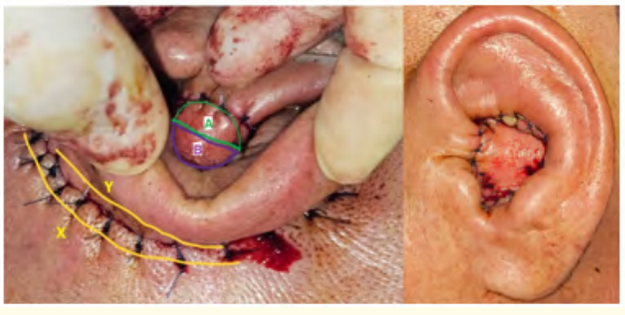

Figure 3: Final RDF positioning covering conchal defect.

Region A (green outline): Retroauricular wing; Region B (blue outline): Mastoid wing; Point X (yellow line): Inferior suture edge; Point Y (yellow line): Superior suture edge.

Follow up and postoperative outcome

Histopathological examination confirmed a nodular basal cell carcinoma with squamous differentiation, excised with clear surgical margins. The patient was prescribed a five-day course of oral antibiotics and standard flap care. The auricular contour was well preserved, with a discreet donor-site scar. At the three-month follow-up, the reconstructed ear demonstrated good aesthetic and functional outcomes, with minimal scarring and a natural appearance (Figure 4). The patient was followed for two years, with no signs of tumor recurrence.

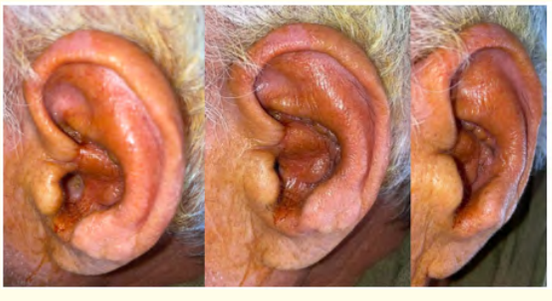

Figure 4: Three-month postoperative result showing preserved auricular contour and minimal scarring.

Discussion

The postauricular revolving door island pedicle flap has been increasingly utilized for reconstructing extensive anterior ear defects involving the helix, antihelix, and scapha in the absence of perichondrium [1].

Initially described by Masson in 1972, this technique is predominantly applied for surgical defect repair following oncologic resection. However, its efficacy has also been demonstrated in cases involving necrotic cartilage and antihelical skin loss secondary to second-degree burns [2,3].

This flap harvests a variable amount of skin from the ipsilateral retroauricular and mastoid regions, depending on the defect's size and location. Reports in the literature indicate its capability to cover defects up to 6 × 6 cm [4]. The retroauricular skin benefits from a robust vascular supply, and using island flaps in this region reduces the risks of necrosis and hematoma formation. The myocutaneous flap derives its vascularization from the posterior auricular artery, a branch of the external carotid artery [5].

The revolving door flap technique requires a delicate mapping of the postauricular skin to prevent adherence of the ear. In the present case, this approach facilitated coverage of the exposed cartilage while simultaneously restoring the normal auricular contour and addressing the lop-ear deformity; therefore; optimizing cosmetic outcomes as well [6,7].

The advantages of this technique include superior color, texture, and thickness matching, single-stage reconstruction, and minimal donor-site deformity. These attributes contribute to functionally and aesthetically satisfactory outcomes [8].

However, disadvantages of the revolving door island pedicle flap technique include the potential for auricular pinning to the head, in addition to some surgical pitfalls such as necrosis, chondritis, infection, and the potential requirement for a postauricular drain though none of these complications were present in our case [9]. Hematoma formation represents another significant risk, particularly in patients receiving anticoagulation therapy. This risk can be mitigated through meticulous hemostasis. As with any reconstructive technique, careful preoperative planning and meticulous soft tissue management are crucial for minimizing complications and preventing further anatomical deformity [10-12].

Dessy., *et al*. demonstrated that the revolving door flap yielded superior cosmetic outcomes compared to full-thickness skin grafts for auricular conchal defect reconstruction following wide skin tumor excisions in a cohort of 40 skin cancer patients [13]. Similarly, Papadopoulos., *et al*. reported that reconstruction of the antihelix and concha using the postauricular island flap resulted in excellent or adequate aesthetic outcomes in 74% and 24% of cases, respectively [14].

Despite its advantages, this technique is often overlooked in favor of simpler methods such as skin grafting [7].

Conclusion

The revolving door flap demonstrates superior efficacy in anterior auricular reconstruction, combining vascularized tissue preservation with excellent aesthetic outcomes and minimal donor site complications. Despite its learning curve and management challenges, this technique consistently outperforms traditional grafting methods through enhanced color matching and sensory preservation. Increased surgical training and broader clinical adoption of this approach could significantly advance the standard of care in auricular reconstruction.

Acknowledgements

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Conflict of Interest

The authors declare no conflict of interest in connection with this publication. The patient has given informed consent for the use of their clinical data and photographs for scientific purposes.

Bibliography

1. Reddy LV and MF Zide. "Reconstruction of skin cancer defects of the auricle". *Journal of Oral and Maxillofacial Surgery* 62.12 (2004): 1457-1471.

2. Schonauer F., *et al*. "Versatility of the posterior auricular flap in partial ear reconstruction". *Plastic and Reconstructive Surgery* 126.4 (2010): 1213-1221.

3. Masson JK. "A simple island flap for reconstruction of concha-helix defects". *British Journal of Plastic Surgery* 25.4 (1972): 399-403.

4. Talmi YP., *et al*. "Anatomy of the postauricular island revolving door flap (Flip-flop flap)". *Annals of Plastic Surgery* 39.6 (1997): 603-607.

5. Janfaza Parviz., *et al*. "Surgical anatomy of the head and neck". Harvard UP (2011).

6. Jackson IT., *et al*. "The versatile revolving door flap in the reconstruction of ear defects". *European Journal of Plastic Surgery* 17.3 (1994): 131-133.

7. Humphreys TR., *et al*. "The postauricular (revolving door) island pedicle flap revisited". *Dermatologic Surgery* 22.2 (1996): 148-150.

8. Ruiz M., *et al*. "Revolving-door flap: an alternative for the coverage of acute burn defects of the auricle". *Burns* 37.6 (2011): e41-e43.

9. Krespi YP and BR Pate Jr. "Auricular reconstruction using postauricular myocutaneous flap". *Laryngoscope* 104.6.1 (1994): 778-780.

10. Golash A. "The revolving door flap: revisiting an elegant but forgotten flap for ear defect reconstruction". *Indian Journal of Plastic Surgery* 53.1 (2020): 64-70.

11. Talmi YP., *et al*. "Technique of auricular reconstruction with a postauricular island flap 'flip-flop flap'". Operative *Techniques in Otolaryngology-Head and Neck Surgery* 11.4 (2000): 313-317.

12. Sage RJ., *et al*. "Antihelical cartilage grafts for reconstruction of Mohs micrographic surgery defects". *Dermatologic Surgery* 38.12 (2012): 1930-1937.

13. Dessy LA., *et al*. "Reconstruction of anterior auricular conchal defect after malignancy excision: revolving-door flap versus full-thickness skin graft". *Journal of Plastic, Reconstructive and Aesthetic Surgery* 63.5 (2010): 746-752.

14. Papadopoulos ON., *et al*. "One-stage reconstruction of the antihelix and concha using postauricular island flap". *Clinical and Experimental Dermatology* 33.5 (2008): 647-650.