

# Rotational flap for atypical melanocytic nevus.

## A case report

Harvey Yair Zamora Véliz M.D.  
Emmanuel Dorado Hernández M.D.  
José Luis Villarreal Salgado M.D.  
Victor Hugo Grano González M.D.  
Gustavo Emmanuel García Marin M.D.  
Gerardo Salvador Rea Martínez M.D.  
Florencio Favian Andrade M.D.  
Octavio Gutiérrez Flores M.D.  
Jorge Camacho Medina M.D.  
Mario Hernández Mancillas M.D.

Tepic, Mexico

Case Report

Plastic Surgery



**Background:** Melanocytic nevi, commonly known as moles, freckles or nevi, are circumscribed lesions of the cutaneous melanocytic system and are defined as the benign proliferation of melanocytes.

The scalp is a particularly difficult region for the reconstruction of surgical defects due to the tension and poor compliance of the tissues. Losses less than 3 cm can be closed by tension by approximating the edges. Larger losses create a challenge, since the lack of distention of the scalp does not allow primary closure.

Rotation flaps are of choice as it is a more easily accessible construction option to cover the exposed skull. The edge of the flap, which represents its axis of rotation, must be equivalent to five lengths of the defect, to avoid excessive tension on the sutures

**KEYWORDS:** Melanocytic nevi, Scalp, Rotation flap.

**M**elanocytic nevi, commonly known as moles, freckles or nevi, are circumscribed lesions of the cutaneous melanocytic system and are defined as the benign proliferation of melanocytes<sup>1</sup>.

They can be macules (lesions with a smooth, flat surface, not palpable) and papules or plaques (lesions with a palpable surface less or more than 1 cm in diameter, respectively)<sup>1</sup>.

Acquired nevi are usually symmetrical lesions, with regular edges, uniform color, and a few millimeters in diameter. Sometimes they change and do not comply with the premises of the normal melanocytic nevus, presenting as asymmetrical lesions (A), with irregular edges (B), of multiple colors (brown, black, red, blue) (C) and more than 6 millimeters in diameter. (D). These alterations of the normal-benign pattern define the clinically atypical melanocytic nevus and are also clinical criteria for suspicion of melanoma, so these are lesions that must always be evaluated with a view to indicating their surgical excision and subsequent histopathological analysis or control. periodic clinic<sup>1</sup>.

Scalp defects can be secondary to trauma, burns, cancer, among others. In the 17th century, it was suggested for the first time to drill holes in the exposed skull looking for granulation. In 1871 the granulation tissue resulting from these perforations was covered with a skin graft and in 1908 a graft was achieved on healthy periosteum. Subsequently, a series of local flaps were described to reconstruct the scalp, tissue expansion and finally free flaps<sup>2</sup>.

The scalp is a richly vascularized area made up of multiple layers classically described with the acronym: "SCALP": S (Skin), C (subcutaneous subcutaneous cellular tissue), A (Aponeurosis or galea), L (Loose: space Merckel's subaponeurotic), P (periosteum). The SCALP is relatively inelastic, this is due to the fibrous union that the galea forms with the frontal muscle in front and the occipital muscle behind. As a consequence, most scalp flaps resist traction and transposition, and often require more extensive designs for closure of their defects<sup>3</sup>.

The galea is the aponeurotic layer, richly vascularized, which continues without interruption with the frontal muscle in the anterior part, with the occipital muscle in the posterior area and with the superficial fascia of the temporal muscle on the lateral slope. It is firmly attached to the skin through fibrous trabeculae of subcutaneous cellular tissue. The SCALP is supplied by five vascular pedicles on each side: supratrochlear artery, supraorbital artery, superficial temporal artery with its frontal and parietal branches, posterior auricular artery and occipital artery<sup>3</sup>.

In scalp reconstruction, in addition to considering the location and size of the defect, the presence or absence of the pericranium, the hair implant line and the direction of the hair follicles must be taken into account. In the presence of pericranium, it is possible to use partial thickness skin grafts as temporary coverage, to move on to the definitive stage, which can be performed most of the time with the use of expanders and local flaps on the already expanded scalp, which allows adequate reconstruction

From General Surgery Department, ISSSTE Tepic General Hospital APP, Tepic, México. Received on March 20, 2024. Accepted on March 25, 2024. Published on March 28, 2024.



**Figure 1.** Design of the flaps

even in large defects. Local advancement flaps have a limited role in scalp reconstruction given the low elasticity of the tissue, so rotation flaps are the ones of choice<sup>4</sup>.

### Case report

A 67-year-old male patient from a rural occupation, with a history of systemic arterial hypertension, and dyslipidemia, both under treatment with Metoprolol, Losartan and Bezafibrate.

On clinical examination, the patient presented with chronic dermatosis located on the scalp in the right frontoparietal region, consisting of a flat neof ormation with irregular edges and a brown color measuring 3 × 5 cm in diameter with 3 dark brown exophytic neof ormations with irregular edges



**Figure 2.** Elliptical incision with a 6 mm safety margin.



**Figure 3.** Exceresis.

separated on its surface measuring 1 × 2 cm in diameter each approximately. It has gradually increased in size over the last year and is accompanied by itching.

Initially evaluated by the dermatology service with a clinical diagnosis of atypical melanocytic nevus to rule out malignant melanoma. Due to the size of the lesion, he is sent to the plastic and reconstructive surgery service where he is evaluated and scheduled for surgical resection.



**Figure 4.** Flap rotation.





**Figure 5.** Defect closure.

After marking the flap, as well as asepsis and antisepsis, with general anesthesia, an elliptical incision is made with a 6 mm safety margin and the lesion is removed (Figure 1, 2 and 3).

Subsequently, a flap is formed, performing subgaleal dissection and it is rotated until the defect is covered and closure begins in planes with placement of a Penrose-type drain, which is removed upon discharge. The procedure was completed without complications or eventualities (Figure 4 y 5).

After surgery, the flap was found to have adequate color and temperature, with no evidence of necrosis, and was covered with staples and suture without dehiscence.

Go to post-surgical appointment 14 days later to remove sutures and staples. Histopathology was collected, which reported a micronodular intradermal nevus with surgical edges free of residual lesion. The functional and aesthetic objective was met in this case (Figure 6).

## Discussion

Melanocytic nevi on the skin of the head usually adopt the same clinical characteristics as on the rest of the integument, but hair care (comb, dye, etc.) can modify its appearance. Trauma, erosion, color and surface changes, among others, occur. When clinical follow-up is problematic or the lesions bother the patient, excision is recommended<sup>1</sup>.

In today's era, partial or total loss of the scalp is an unusual surgical condition. Its low incidence has probably influenced surgeons' lack of interest in its treatment. Losses less than 3 cm can be closed by tension by approximating the edges. Larger losses



**Figure 6.** Patient 14 days post-surgery.

create a challenge, since the lack of distention of the scalp does not allow primary closure<sup>3</sup>.

Measuring the dimensions of the defect that must be reconstructed allows the surgeon to get an idea of how much he needs to reconstruct, but it does not say much about how much he has available. By identifying what percentage of the scalp the defect corresponds to, the surgeon quickly has an idea of the area to reconstruct and how much scalp is available to do so. If you have a defect that involves 33% of the scalp, it means that theoretically there is 67% of the scalp usable for reconstruction. Following one of the principles of plastic surgery "losses of tissue should be replaced with similar tissue", the best tissue to reconstruct is the scalp and should be used whenever available<sup>2</sup>.

Most published scalp algorithms rely on the diameter or area of the surgical defect as an essential criterion for deciding the ideal reconstructive technique. However, this measure does not take into account the interpersonal variability of skin elasticity, as well as other factors within the same person such as the anatomical region within the scalp or previous treatments that increase fibrosis in the area (radiotherapy or scars). of previous interventions<sup>7</sup>.

The blood supply is exposed in five pairs of arteries coming from the carotid system that enter the scalp, radially, which anastomose to form an interconnected network. In scalp reconstruction, in addition to considering the location and size of the

defect, the presence or absence of the pericranium, the hair implant line and the direction of the hair follicles must be taken into account<sup>3</sup>.

In world literature, there are descriptions of different types of flaps such as: swirl flap that mobilizes peripheral tissues in 360°, double flaps in opposition, bilobed flaps, Limberg rhombus flaps and rotation flaps. Although it is true that there are various designs, they all satisfy the objective but also, they all have the common difficulty that it is an inelastic tissue, therefore, the configuration of the flap must be carefully evaluated to avoid the need to close the donor area with dermoepidermal grafts<sup>5</sup>.

Rotation flaps are of choice as it is a more easily accessible construction option to cover the exposed skull. The edge of the flap, which represents its axis of rotation, must be equivalent to five lengths of the defect, to avoid excessive tension on the sutures<sup>3</sup>.

These can be taken in the form of pedicled flaps, free tissue flaps or composite flaps, depending on the size and thickness of the tissue that needs to be repaired. The anatomical and physiological characteristics of this tissue have made it an excellent option for the reconstruction of a wide variety of defects that involve everything from the base of the skull, to the ear and scalp, among others<sup>7</sup>.

Once the appropriate size flap required is exposed, an incision is made at the periphery of the fascia with care to preserve the random vasculature. It is at this point that the flap can be rotated towards the defect to be covered<sup>7</sup>.

Once this flap is rotated, a closed suction drain can be placed to avoid post-surgical complications such as seroma formation. Subsequently, the skin flaps should be approximated with deep absorbable sutures to reduce tension and then the skin with nonabsorbable sutures to provide support<sup>7</sup>.

## Conclusions

Defects in the scalp present a challenge for surgeons due to its limited elasticity, although it has the advantage of having abundant irrigation, so various individualized therapeutic options can be designed. It is also important to recognize lesions suspicious of malignancy early to perform aggressive surgical treatment, which will help improve the prognosis in case the disease turns out to be malignant.

The rotation flap used in our patient led to the complete eradication of the skin lesion with an excellent and satisfactory aesthetic result for the patient, proving that the best tissue to reconstruct the scalp is the scalp itself.

## Conflicts of interest

The authors have no conflicts of interest to declare.

## Acknowledgements

I want to thank to all the doctors of the Plastic and Reconstructive Surgery Department of Hospital “Dr. Valentin Gómez Farias” for their kind advise and suggestions, especially to Dr. Emmanuel Dorado for his great support and teaching.

## References

1. Vidal D, Valenzuela N, Pimentel L, Puig L. Nevus melanocíticos .Clínica y tratamiento. Farmacia Profesional [Internet]. 2001 Apr 1;15(4):85–91. Available from: <https://www.elsevier.es/es-revista-farmacia-profesional-3-articulo-nevus-melanociticos-clinica-tratamiento-12003988>
2. Blanco CER. Reconstrucción del cuero cabelludo. Revista Colombiana de Cirugía Plástica y Reconstructiva [Internet]. 2018 Jun 25;24(1). Available from: <https://www.ciplastica.com/ojs/index.php/rccp/article/view/66>
3. Araujo-López A, Barragán-Chávez J, Hernández-García A, Caracheo-Rodríguez R, Flores-Yáñez R, Ruiz-Centeno G, et al. Reconstrucción de cuero cabelludo mediante colgajo en espiral. El Residente. 2020;15(1):30–5.
4. RECONSTRUCCIÓN DE CABEZA Y CUELLO. Revista Médica Clínica Las Condes [Internet]. 2016 Jan 1;27(1):29–37. Available from: <https://www.sciencedirect.com/science/article/pii/S0716864016000067>
5. Gallegos-Sierra C, Flores-Hernández U, Morales-Flores EA, Velázquez-Flores JE, VillarrealSalgado JL. Rotational flap for giant basal cell carcinoma on the cranial region. Revista Médica MD. 2018; 9(2); 206-9.
6. Djawad K, Wahab S, Nurdin A. Successful basal cell carcinoma defect reconstruction using combination of rotation and advancement flap: Two case reports. Dermatology Reports [Internet]. 2021 Aug 5 [cited 2024 Mar 20];13(2):9087. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8404426/>
7. Rungs-Brown DRD, González-Guevara M, Manzo-Hernández M, Alegre-Tamez E. Reconstrucción mayor con colgajos de rotación de piel cabelluda en zona de escalpe temporal y reconstrucción de pabellón auricular con colgajo retroauricular por abrasión compleja: técnica quirúrgica. Anales Médicos de la Asociación Médica del Centro Médico ABC [Internet]. 2022 Oct 14 [cited 2024 Mar 20];67(3):234–8. Available from: <https://www.medigraphic.com/cgi-bin/new/resumen.cgi?IDARTICULO=107660>

Harvey Yair Zamora Véliz  
General Surgery Department  
ISSSTE Tepic General Hospital APP  
Tepic, Mexico