

Reconstructive management of scalp secondary to giant trichilemmal cyst resection. A case report

Carlos Enrique Luna Guerrero M.D.
Jonathan Abraham Escamilla Escobar M.D.
Luis Yair Nevárez Gamboa M.D.
Javier Eduardo Cendejas Acosta M.D.
Jose Luis Villarreal Salgado M.D.
Tania Celina Rodríguez Madrid M.D.
Jose Miguel Moya Valdez M.D.
Cuauhtemoc Lorenzana Sandoval M.D.
Jose De Jesus Vargas Montes M.D.
Luis Armando Lopez Rico M.D.
Cesar Oropeza Duarte M.D.

Background

The trichilemmal cyst constitutes a benign lesion of the hair follicle unit that can become a surgical challenge and an aesthetic problem due to its large dimensions. Therefore, it is crucial to evaluate the segmental vascularity of the scalp to define the type of flap to be performed. We present the case of a 57-year-old male who presented with a giant left frontoparietal trichilemmal cyst measuring 10 cm in diameter. It was managed through complete resection and reconstruction using a rotation and advancement flap. Currently, he has a favorable clinical outcome and is assessed two months after surgery with favorable clinical and aesthetic results.

Keywords: Trichilemmal cyst, scalp reconstruction.

Jalisco, Mexico

Case Report

Plastic Surgery



Scalp tumor lesions are characterized by their wide and heterogeneous clinical spectrum, with the majority being benign in nature. (1) Trichilemmal cysts are common skin lesions that occur in areas with a high density of hair follicles. They typically present as a single lesion, with 90% of cases located on the scalp and 10% on the face, neck, back, vulva, pubis, wrist, elbow, and chest. They are generally small, measuring between 2 to 3 cm, but can reach sizes of up to 20 cm. Their origin is traced to the outer sheath of the hair follicle root, starting as a subcutaneous nodule and later transforming into a large lobulated mass that can ulcerate (2).

The scalp consists of five layers, from superficial to deep: Skin, Subcutaneous Cellular Tissue, Epicranium and Aponeurotic Galea, Subepicranium, and Pericranium (SCALP) (4). It has five vascular territories on each side: the supratrochlear artery, supraorbital artery, superficial temporal artery with its frontal and parietal branches, posterior auricular artery, and occipital artery. (5) These are important aspects to consider for proper surgical planning.

There are various therapeutic alternatives, with surgical treatment being the preferred choice. In this case, we present a 57-year-old male with a giant left frontoparietal trichilemmal cyst, which was managed through complete resection and immediate reconstruction using a rotation and advancement flap.

He achieved favorable clinical and aesthetic results one month after surgery.

Case report

A 57-year-old male with a 10-year history of hypertension presented with a localized tumor in the left frontoparietal region. The tumor was exophytic, well-defined at the borders, firm in consistency, not adherent to deep planes, and had progressively increased in size over the past 2 years. He sought medical attention due to this progressive growth.

He was evaluated by our service, where an incisional biopsy was performed, confirming a trichilemmal cyst. Due to its size, it was decided to perform total excision and immediate reconstruction using a rotation and advancement flap. Currently, at 4 and 8 weeks post-surgery during follow-up in the outpatient clinic, the patient has satisfactory wound healing and a favorable aesthetic outcome.

Discussion

The trichilemmal tumor is a benign lesion that arises from the outer root sheath of the hair follicle and shows trichilemmal keratinization (9). Initial cystic lesions are believed to proliferate and progress into true tumors, which can, in turn, undergo subsequent malignant transformation (2). Biopsy is essential for

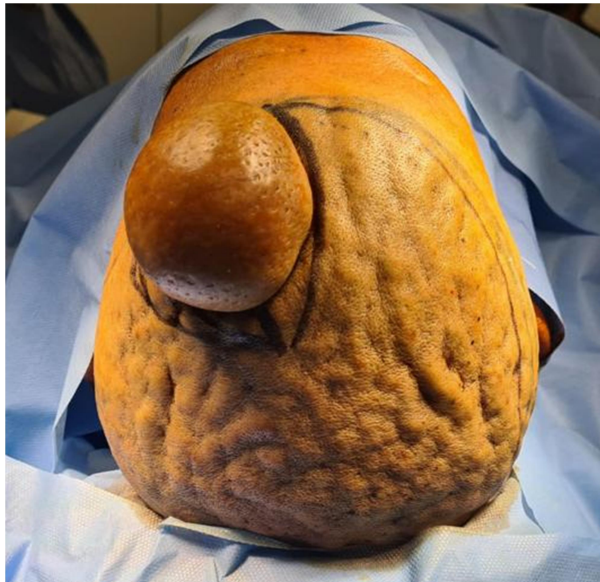


Figure 1. Pre-operative assessment and marking.

an accurate diagnosis and to guide the therapeutic approach.

The main differential diagnoses for trichilemmal cysts include sebaceous cyst, clear cell hidradenoma, cutaneous metastasis, squamous cell carcinoma, and angiosarcoma (3).

The treatment for this lesion involves surgical excision, often extending to the galea, or Mohs surgery, as despite its benign behavior, it has a strong tendency for recurrence (7)

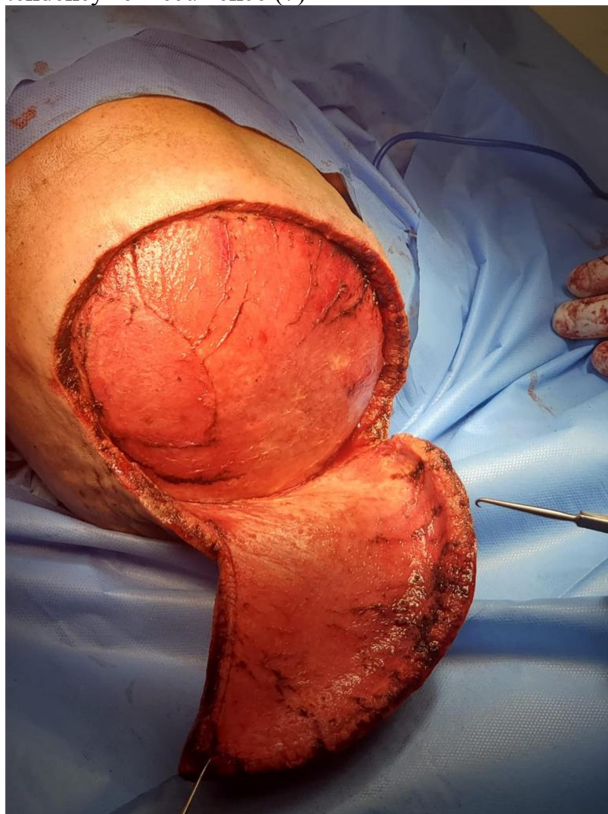


Figure 2. Dissection and flap advancement.



Figure 3. Immediate post-operative result.

To facilitate the reconstruction therapy, various techniques are available, including second intention closure, primary closure, skin grafting, local tissue transfer, regional tissue transfer, tissue expansion, and free tissue transfer (6).

The scalp is essentially inelastic, so different flap types must be carefully evaluated (8). The choice of flap depends on the defect's location and its orientation toward one of the arteries that supply the scalp. An appropriate geometric design of peripheral tissues is necessary for the formal rotation of the flap. These can be in the form of pedicle flaps, free tissue



Figure 4. Two months after surgery.

flaps, or composite flaps, depending on the size and thickness of the tissue needing repair (10).

There are well-established indications for each surgical option, including second intention closure, which is useful for patients who are not candidates for surgery due to various factors or have multiple defects. Primary closure is considered for small defects under 3 cm (11). Skin grafting is an option when the periosteum is intact, and there is adequate granulation tissue with proper perfusion. Other reconstruction alternatives include local and regional flaps, such as the Limberg flap for medium-sized defects (10-50 cm²) at the vertex and H and V-Y flaps for defects in the anterior and frontal regions greater than 2 cm. Occipital zone defects can be reconstructed using cervical and Orticochea-type flaps, with temporoparietal region reconstruction employing O-Z, V-Y, rhomboid, and bilobed flaps (11).

In this particular case, the patient presented a large defect to be covered, so the decision was made to use a rotation and advancement flap, which offers adequate primary closure, minimal suture line tension, and a satisfactory aesthetic result with a scar hidden under the hair.

Complications associated with the procedure that should be considered during postoperative monitoring include flap ischemia and necrosis, infection, dehiscence, bleeding leading to hematoma, and postoperative contracture due to excessive tension during closure (10).

Conclusion

Giant trichilemmal tumors are rare, and their treatment of choice is entirely surgical. In this case, reconstructive management was decided using a rotation flap, which is a surgical technique that represents one of the best options for covering large defects. It allows for adequate primary closure with proper distribution of tension along the suture line. Additionally, it adheres to one of the basic principles in plastic surgery, "tissue losses should be replaced with similar tissue," to the extent possible, considering that the defect should not exceed 50% of the total scalp area. The patient achieved a favorable postoperative result two months after surgery.

Conflicts of interests

The authors have no conflicts of interest to declare.

References

1. Poleo L, Merchán E, Ball E, Sardi J, Solano M, Morante NV, et al. Tumores de cuero cabelludo: estudio epidemiológico [Internet]. Svderma.org. [citado el 20 de agosto de 2023]. Disponible en:

- https://revista.svderma.org/index.php/ojs/article/viewFile/1421/1398
2. Urbizo Vélez J, Contreras Rojas I, Levi Alfonso J. Tumor triquilemal proliferante. Presentación de un caso. Rev habanera cienc médicas [Internet]. 2012 [citado el 21 de agosto de 2023];11:605–10. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1729-519X2012000500005
3. Civetta PM, Latorre K, Hurtado M, Blaglieri N. Quiste triquilemal proliferante. Dermatol Argent [Internet]. 2020 [citado el 3 de septiembre de 2023];26(2):76–7. Disponible en: <http://dermatolarg.org.ar/index.php/dermatolarg/article/view/2083>
4. Guillén J, Isaacs-Vargas J, Longo-Calderón A. Rotación de colgajo en Ying-Yang. Corrección de scalp frontoparieto-occipital. Rev. méd. (Col. Méd. Cir. Guatem.) [Internet]. 14 de abril de 2021 [citado 19 de agosto de 2023];160(1):48-51. Disponible en: <https://www.revistamedicagt.org/index.php/RevMedGua temala/article/view/271>
5. Balaguer-Cambra, J., Landín Jarillo, L., Hidalgo Gallego, J. C., Francés Gorospe, M. J., & Codina García, J. (2006). Reconstrucción de cuero cabelludo mediante colgajo de galea frontal: a propósito de un caso. *Cirugía Plástica Ibero-Latinoamericana*, 32(1), 49-53.
6. Aldana C, Insfrán W, Sandoval J, Balmelli B. RECONSTRUCTION OF THE SCALP. CIR PARAGUAYA [Internet]. 2018 [citado el 19 de agosto de 2023];42(2):25–7. Disponible en: http://scielo.iics.una.py/scielo.php?script=sci_arttext&pid=S2307-04202018000200025
7. Hermosa-Gelbard A, Moreno García del Real C, Vañó-Galván S. Tumoración en cuero cabelludo de gran tamaño de larga evolución con adenopatías ipsilaterales. Actas Dermosifiliogr [Internet]. 2018 [citado el 21 de agosto de 2023];109(1):63–4. Disponible en: <https://www.actasdermo.org/es-tumoracion-cuero-cabelludo-gran-tamano-articulo-S000173101730042X>.
8. Médica R, Cuauhtly G-S, Ulises F-H, Juan V-F, José V-S, Gallegos C, et al. Colgajo de rotación para carcinoma basocelular gigante en región craneal [Internet]. Medigraphic.com. [citado el 3 de septiembre de 2023]. Disponible en: <https://www.medigraphic.com/pdfs/revmed/md-2017/md172q.pdf>
9. Vista de Tumor tricolémico proliferante maligno en cuero cabelludo con extensión al cuello: Reporte de Caso. (acorl.org.co)
10. De Rungs-Brown DR, González-Guevara M, ManzoHernández M, Alegre-Tamez E. Major Reconstruction with Rotation flaps in the temporal scalp area and auricular hélix reconstruction with retro auricular flap due to complex abrasion: surgical technique. Anales Médicos de la Asociación Médica del Centro Médico ABC [Internet]. 2022;67(3):234–8. Avalaible from : <https://www.medigraphic.com/pdfs/abc/bc-2022/bc223m.pdf>
11. Brawley CC, Sidle D. Scalp reconstructive flaps. Plast Aesthet Res [Internet]. 2022; Avalaible from: <https://oaepublishstorage.blob.core.windows.net/bd1f602ecb7c-40fa-b8d5-800d79ee7849/4538.pdf>.

Carlos Enrique Luna Guerrero
Reconstructive and plastic surgery
Institute of Security and Social Services for State Workers
Regional Hospital “Dr. Valentín Gómez Farías”
Jalisco, México