

Case Report: Mustardé Flap Perform for Reconstruction of the Cheek in a Patient with Basal Cell Carcinoma in a Second Level of Care

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ABSTRACT

Basal cell carcinoma is the most common type of skin cancer, originating in the basal cells of the epidermis, the outermost layer of skin. It typically develops in areas frequently exposed to the sun, such as the face, neck, and arms.

BCC grows slowly and rarely metastasizes to other parts of the body, but if left untreated, it can cause significant local tissue damage.

It is present as a pearly or waxy bump, often with visible blood vessels. It may also appear as a flat, scaly patch, sometimes with a rolled border.

Risk factors include prolonged UV exposure, fair skin a history of sunburns, and weakened immune system.

Treatment options include surgical excision, Mohs surgery, topical therapies, radiation, depending on the size, depth, and location of the tumor.

Prevention involves regular sun protection, such as using sunscreen and avoiding excessive sun exposure

Conclusion: Early detection is key to successful treatment and the performance of and appropriate surgical treatment if it is indicated.

KEYWORDS: reconstruction, mustardé flap, basal cell carcinoma

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INTRODUCTION

Basal cell carcinoma has a long history, with early descriptions dating back to the 19th century. The first recorded mention of BCC- like lesions came from Arthur Jacob in 1827, who described a slow-growing, locally invasive ulcer he termed “ulcus rodens” or rodent ulcer. This term reflected the lesion’s ability to erode surrounding tissue, a hallmark of BCC in its more advanced, untreated form. ⁽¹⁾

In the late 19th and early 20th centuries, further work was done to clarify the origins of this cancer. In 1900, Hungarian pathologist Edmund Krompecher identified the cancerous cells as originating from the basal layer of the epidermis,

giving rise to the term “basal cell carcinoma”, his research helped differentiate BCC from squamous cell carcinoma. ⁽²⁾

The evolution of treatment for BCC took a significant leap forward in the mid-20th century with the introduction of Mohs micrographic surgery by Dr. Frederic E. Mohs in 1941. This innovative technique allowed for the precise removal of cancerous tissue while sparing as much healthy tissue as possible, significantly improving outcomes for BCC patients. ⁽³⁾

Basal cell carcinoma is the most frequently diagnosed type of skin cancer, accounting for approximately 80% of non-melanoma skin cancers worldwide. It originates from the

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basal cells, which are located in the deepest layer of the epidermis. ⁽⁴⁾

Basal cell carcinoma primarily affects areas of the skin that are exposed to ultraviolet radiation, in men the anatomic distribution is: head and neck (79.6%), trunk (13.4%), upper limbs (3.8%), lower limbs (1.5%), and genitalia (0.1%). In women, the distribution was head and neck (83.9%), trunk (9.4%), upper limbs (2.5%), lower limbs (2.5%), and genitalia (0.2%). ⁽⁵⁾

While BCC is generally slow-growing and has a low risk of metastasis, it can be locally invasive, leading to significant tissue destruction if not treated promptly. ⁽⁶⁾

The primary risk factor for BCC is a prolonged exposure to UV radiation from sunlight or artificial sources, like tanning beds. ^(7,8)

Other contributing factors include fair skin, history of sunburns, advanced age, and a weakened immune system. Genetic predispositions, such as mutations in the PTCH1 gene, also increase susceptibility to BCC. ⁽⁸⁾

Despite its generally low mortality rate, BCC is a public health concern due to its high incidence, the need for recurrent treatment, and its potential to cause disfigurement. ⁽⁹⁾

CLINICAL CASE

It is a 64-year-old male patient, unemployment, with high blood pressure treated with losartan 50mg orally every 24 hours, diabetes type 2 with 15 years of evolution treated with metformin 850mg orally every 8 hours, he denies surgical diseases, traumas and fractures.

He began around 13 years ago with a small lesion in the right cheek above the lower eyelid and he refers that in 2 occasions previously a doctor tried to remove it, however after 3 years he had a recurrence, which is why he comes to this unit for a proper treatment.

We start to prepare the patient for elective surgery that consist in a wide local excision of the basal cell carcinoma and reconstruction of the cheek, so we requested an evaluation by internal medicine and anesthesiology.

Vital Signs before surgery: Blood Pressure 140/85mmhg, Heart rate 85 beats per minute, respiratory rate 15 breaths per minute, temperature 36.5°C

Laboratory Test:

Hematic Biometry	Hemoglobin 13.5 g/dL	Hematocrit 40.3%	Leukocytes 9.8	Platelet 322
Blood Chemistry	Glucose 189mg/dL	Creatinine 0.9md/dL	Ureic Nitrogen 14.44 mg/dL	Urea 30.9mg/dL
Coagulation test	PT 10.9 sec	INR 0.95	aPTT 31.2	
Blood type	O +			



Figure 1. Basal Cell Carcinoma in right cheek.

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Figure 2. Before the procedure



Figure 3. Closure of the surgical defect with Mustardé flap reconstruction

Before starting the procedure, we indicate a prophylactic single dose of cephalothin 2gr intravenous 1 hour before, then we initiate the surgery by marking the surgical field 5mm around the tumor, with the scalp we resect the skin tumor and

remove the piece for pathology, after that we use electrocautery to do hemostasis.

For the reconstruction of the cheek, a transverse incision is made approximately 5mm below the lower eyelid following the path of Langer's lines and higher than the lateral canthus

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to prevent downward retraction of the flap, the incision is extended towards the right temporoauricular, periauricular and postauricular region to permit a satisfactory elevation and rotation of the skin flap.

It is important to elevate the skin flap superficial to the terminal branches of the facial nerve to prevent any injury. Closure of the surgical defect was accomplished with the use of interrupted 4-0 vicryl to reduce tension of the skin and primary skin closure with 5-0 nylon.

In the postoperative period, we observe complete vitality of the flap during the first 24 hours post-surgery, for the management of the wound we only use microdacyn spray and cover it with gauze.

The patient was discharged without pain, and the only eventually we observed some degree of lid margin ectropion present, so we pretend to do a reconstruction in the future of the lower eyelid.

The definitive histopathological report: Nodular basal cell carcinoma and ulcerated type with free margins



Figure 4. Primary skin closure of the Mustarde Flap after the excision of the BCC

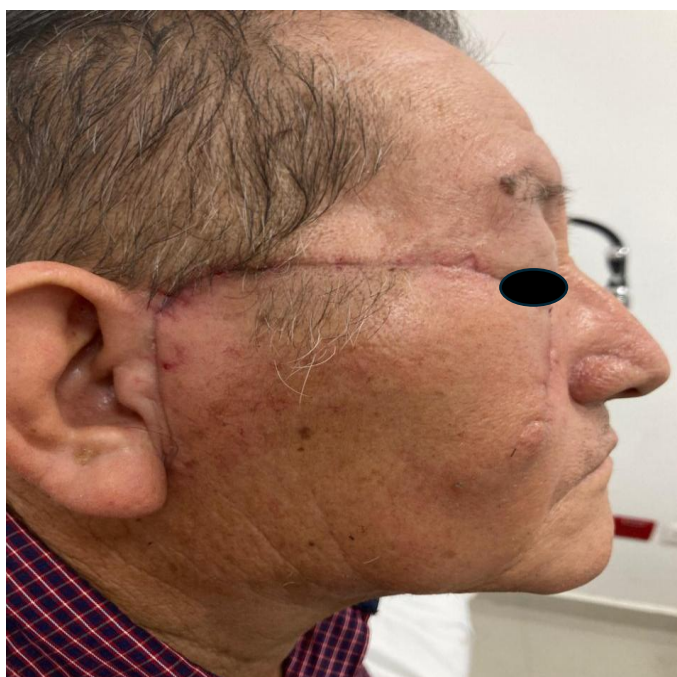


Figure 5. Postoperative appearance after 20 days of surgery with no local complications in the wound.

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DISCUSSION

Basal cell carcinoma is the most common type of skin cancer, and it generally presents a low risk for metastasis. There are various surgical techniques for excision and reconstruction of facial lesions, each one has its own advantages and disadvantages.⁽¹⁰⁾

In addition, the standard treatment for BCC is surgical excision with an adequate tissue margin, nevertheless, there are many modalities that can be used including cryosurgery, curettage, electrodesiccation, radiotherapy, and photodynamic therapy.

The disadvantage of these techniques is that they are limited because they do not offer histological confirmation of clearance. Comparing the standard excision with Mohs micro-surgery, it is well known that MMS reduces the recurrence rate and defect size simplifying reconstruction, and this technique advocates judicious use given the higher cost and should be reserved for high-risk BCC.⁽¹¹⁾

The Mustardé flap is a reconstructive technique that is characterized by the advancement and medial rotation flap to cover surgical defects in the lower eyelid and cheek region.⁽¹²⁾

Furthermore, we decided to use this type of flap because it has certain characteristics that are ideal for a post-excision reconstruction, the following characteristics were considered by the surgeon for the performance, the adaptability and aesthetics, since it all allows an adequate skin coverage respecting the natural lines of the skin and minimizing visible scarring. By using this technique, it avoids the damage to underlying structures, so we preserved the facial nerve and function.

On the other hand, it is a simple and efficient technique that can be performed in a standard surgical setting, compared to the MMS it requires higher cost and, in our hospital, we do not have many resources, that is why we prefer to perform this flap because it is very accessible for performance in various healthcare institutions.

Recurrence rates are lower with conventional surgery compared to non-surgical treatments.⁽¹³⁾

In this particular case we can mention that the most frequent histological type is the nodular subtype and generally it is presented on the face as was the case of our patient.⁽¹⁴⁾

For the surgical margins it is recommended a 5mm margin with a recurrence rate of 0.39% compared with 2mm margin that has a 3.96%.⁽¹⁵⁾

In summary, there are plenty surgical techniques that exist for managing basal cell carcinoma, The Mustardé flap stands out as an effective and safe option for facial reconstruction with aesthetic outcomes and preserved functionality, makes it a valuable choice in clinical practice.

CONCLUSION

The facial reconstruction following the excision of basal cell carcinoma presents a clinical challenge that requires a careful planning and execution to ensure a complete tumor removal and preservation of the functionality and aesthetics of the affected area.

In this case, the application of the Mustardé flap proved to be an effective choice for covering the surgical defect on the cheek of a patient with nodular basal cell carcinoma. On the other hand, this approach not only facilitated the restoration of skin continuity but also optimized aesthetic outcomes by maintaining the integrity of adjacent facial structures.

It is known that basal cell carcinoma, although generally are slow-growing and with a low potential for metastasis and can cause a very important local damage if it's not treated appropriately. Clinical experience demonstrates that surgical resection with adequate margins is crucial for preventing tumor recurrence.

In this case, a 5mm resection margin was used, which has been associated with notably low recurrence rates compared to narrower margins.

The decision to use the Mustardé flap for this patient was based on its ability to provide adequate coverage in delicate areas such as the periocular region, where preservation of the facial function and appearance is critical. In this specific type of flap, the rotation and advancement of skin, allows for a design that adapts to facial anatomy, facilitating natural wound healing and the reduction of tension suture lines.

Moreover, the key to success is the postoperative care after the procedure, with close monitoring ensuring flap vitality and the enhanced recovery of the patient after surgery. Although our patient develops a mild ectropion of the lower eyelid margin, this was considered manageable, and future correction was planned, underscoring the importance of a multidisciplinary approach in the care of oncology patients. Finally, this case reaffirms the importance of early detection and appropriate treatment of basal cell carcinoma, as well as the selection of effective surgical techniques such as the Mustardé flap, which contribute to improving the quality of life for patients.

It is essentially to follow up our patients after surgery for any recurrence because patients with basal cell carcinoma have a higher risk to develop new lesions, early detection is key to successful treatment and the performance of an appropriate surgical treatment to achieving optimal outcomes.

REFERENCES

1. Jacob, A (1827). Observations respecting an ulcer of peculiar character, which attacks the eyelids and other parts of the face. Dublin Hospital Reports, 4, 232-239.

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- II. Herrera-Acosta, E. (2003). Carcinoma basocelular: concepto e historia. *Monografias de Dermatología*, 16, 65–66
- III. Mohs, F.E. (1941). Chemosurgery: A microscopically controlled method of cancer excision. *Archives of surgery*, 42 (2), 279-295.
- IV. Ricotti, C., Bouzari, N., Agadi, A., & Cockerell, C. J. (2009). Malignant skin neoplasms. *The Medical Clinics of North America*, 93(6), 1241–1264. <https://doi.org/10.1016/j.mcna.2009.08.011>
- V. Kauvar, A. N. B., Cronin, T., Jr, Roenigk, R., Hruza, G., Bennett, R., & American Society for Dermatologic Surgery. (2015). Consensus for nonmelanoma skin cancer treatment: basal cell carcinoma, including a cost analysis of treatment methods. *Dermatologic Surgery*, 41(5), 550–571. <https://doi.org/10.1097/DSS.0000000000000296>
- VI. Lomas, A., Leonardi-Bee, J., & Bath-Hextall, F. (2012). A systematic review of worldwide incidence of nonmelanoma skin cancer: Worldwide incidence of nonmelanoma skin cancer. *The British Journal of Dermatology*, 166(5), 1069–1080. <https://doi.org/10.1111/j.1365-2133.2012.10830.x>
- VII. Bisceglia, M., Panniello, G., Galliani, C. A., Centola, M., D’Errico, M. M., Minenna, E., Tucci, F. A., & Ben-Dor, D. J. (2020). Metastatic basal cell carcinoma of the skin: A comprehensive literature review, including advances in molecular therapeutics. *Advances in Anatomic Pathology*, 27(5), 331–353. <https://doi.org/10.1097/PAP.0000000000000267>
- VIII. Arits, A. H. M. M., Schlangen, M. H. J., Nelemans, P. J., & Kelleners-Smeets, N. W. J. (2011). Trends in the incidence of basal cell carcinoma by histopathological subtype: Incidence of basal cell carcinoma. *Journal of the European Academy of Dermatology and Venereology: JEADV*, 25(5), 565–569. <https://doi.org/10.1111/j.1468-3083.2010.03839.x>
- IX. Madan, V., Lear, J. T., & Szeimies, R.-M. (2010). Non-melanoma skin cancer. *Lancet*, 375(9715), 673–685. [https://doi.org/10.1016/S0140-6736\(09\)61196-X](https://doi.org/10.1016/S0140-6736(09)61196-X)
- X. Karia, P. S., Ward, B., & Han, J. (2020). Basal cell carcinoma: A comprehensive review. *J Am Acad Dermatol*, 82(4), 961–983.
- XI. Alsaif, A., Hayre, A., Karam, M., Rahman, S., Abdul, Z., & Matteucci, P. (2021). Mohs micrographic surgery versus standard excision for basal cell carcinoma in the head and neck: Systematic review and meta-analysis. *Cureus*, 13(11), e19981. <https://doi.org/10.7759/cureus.19981>
- XII. Lucas Fuenzalida M. Keilo Villalobos C. Rodrigo Miranda P. Patricio Cabané T. (2023). Colgajo de Mustardé como tratamiento de un carcinoma basocelular. A propósito de un caso. *Rev. Cir*, 307–313.
- XIII. Vílchez-Márquez, F., Borregón-Nofuentes, P., Barchino-Ortiz, L., Ruíz-de-Casas, A., Palacios-Álvarez, I., Soria-Rivas, A., Descalzo-Gallego, M. A., García-Doval, I., Ríos-Buceta, L., & Redondo-Bellón, P. (2020). Carcinoma basocelular cutáneo: diagnóstico y tratamiento en atención especializada dermatológica. *Guía de Práctica Clínica de la AEDV. Actas Dermo-Sifiliograficas*, 111(4), 291–299. <https://doi.org/10.1016/j.ad.2019.07.006>
- XIV. Ciążyńska, M., Kamińska-Winciorek, G., Lange, D., Lewandowski, B., Reich, A., Sławińska, M., Pabianek, M., Szczepaniak, K., Hankiewicz, A., Ułańska, M., Morawiec, J., Błasińska-Morawiec, M., Morawiec, Z., Piekarski, J., Nejc, D., Brodowski, R., Zaryczańska, A., Sobjanek, M., Nowicki, R. J., ... Lesiak, A. (2021). The incidence and clinical analysis of non-melanoma skin cancer. *Scientific Reports*, 11(1), 4337. <https://doi.org/10.1038/s41598-021-83502-8>
- XV. Gulleth, Y., Goldberg, N., Silverman, R. P., & Gastman, B. R. (2010). What is the best surgical margin for a Basal cell carcinoma: a meta-analysis of the literature. *Plastic and Reconstructive Surgery*, 126(4), 1222–1231. <https://doi.org/10.1097/PRS.0b013e3181ea450d>