Mustardé flap reconstruction following excision of a squamous cell carcinoma in the infraorbital malar region. A case report

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Case Report

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Background
Tumors of the infraorbital malar region require aesthetic reconstruction of the anatomy and function, which sometimes represents a surgical challenge (3). They require complex procedures, especially when they involve the lower eyelid, even more when the full thickness of the eyelid is affected, skin, muscle, tarsus and conjunctiva (4).We present the case of a male in the ninth decade of life with a diagnosis of well-differentiated, keratinizing, warty squamous cell carcinoma infiltrating the deep dermis by incisional biopsy of the left cheek. Repair of the malar region was performed using a Mustardé-type advancement and rotation flap. Reconstruction of the malar region involves adequate resection of the tumor (full thickness) and subsequent dissection of the cheek rotation flap which is appropriately thinned at its upper edge and mobilized to form the skin layer. A flap of this nature must be dissected into the subcutaneous tissue layer allowing a tension- free flap providing support and stability to the recipient area (5).

Keywords: Squamous cell carcinoma, Mustardé flap, Malar region, Lower eyelid.

Squamous cell carcinoma is the second most common non-melanoma carcinoma after basal cell carcinoma (1). It is a malignant neoplasm originating from the epidermal keratinocytes or the oral or genital mucosal epithelium, it develops in adults over 50 years of age. In Mexico the frequency is similar between men and women. It has a higher incidence in the white population and in outdoor occupations (2). Verrucous squamous cell carcinoma is a low-grade variant of squamous cell carcinoma that can appear anywhere on the body, but most occur in areas of sun exposure. They are most frequently seen on the face, predominantly on the cheeks, back of the nose, forehead and lower lip. Other topographies are the back of the hand and leg (1) (2). Squamous cell carcinoma can range from an asymptomatic plaque to a verrucous tumor with the capacity to grow, ulcerate and become infected. The most common precursor of squamous cell carcinoma is actinic keratosis (2). It represents a life-threatening condition due to its potential to spread locally and remotely (1).

The goal of reconstruction using this type of flap is to replace massive tissue loss with functional and aesthetically acceptable coverage, without causing morbidity to the patient. Many reconstruction techniques have been described in the literature, however, there is no ideal technique. One of the most used techniques is the Mustardé-type rotation and advancement flap. First described by JC Mustardé in 1964, which allows the reconstruction of large areas of the skin covering the preauricular region or vertically up to the neck according to the size of the defect to be repaired (6) (8). It is the simplest procedure that provides consistent results, allowing the repair of the cheek, nasal dorsum, and partial and total eyelid defects.

The Mustardé flap offers the advantage of providing similar skin color to the resected area, reliable flap survival, inconspicuous scar and reconstruction in a single surgical procedure. The disadvantages include that the dissection of this flap is extensive and requires general anesthesia to perform, with the possibility of damage to the frontal branch of the facial nerve and possible retraction of the scar (5).

Case report

We present the case of an 86 years-old man, without pathological personal history relevant, referred by its family physician due to tumoration on the left cheek, associated with occasional stabbing pain. Characterized by an exophytic, crateriform neoformation measuring 4 cm x 3.5 cm, irregular in shape, erythematous at the base, well-defined edges, anfractuous surface with a warty and yellowish keratotic appearance, with coniferous projections towards the indurated surface, at the base surrounded by skin with photo-damage, firm to the touch, approximately 12 months of evolution, in which an initial biopsy was performed by the dermatology service of the Lic. Adolfo López Mateos Regional

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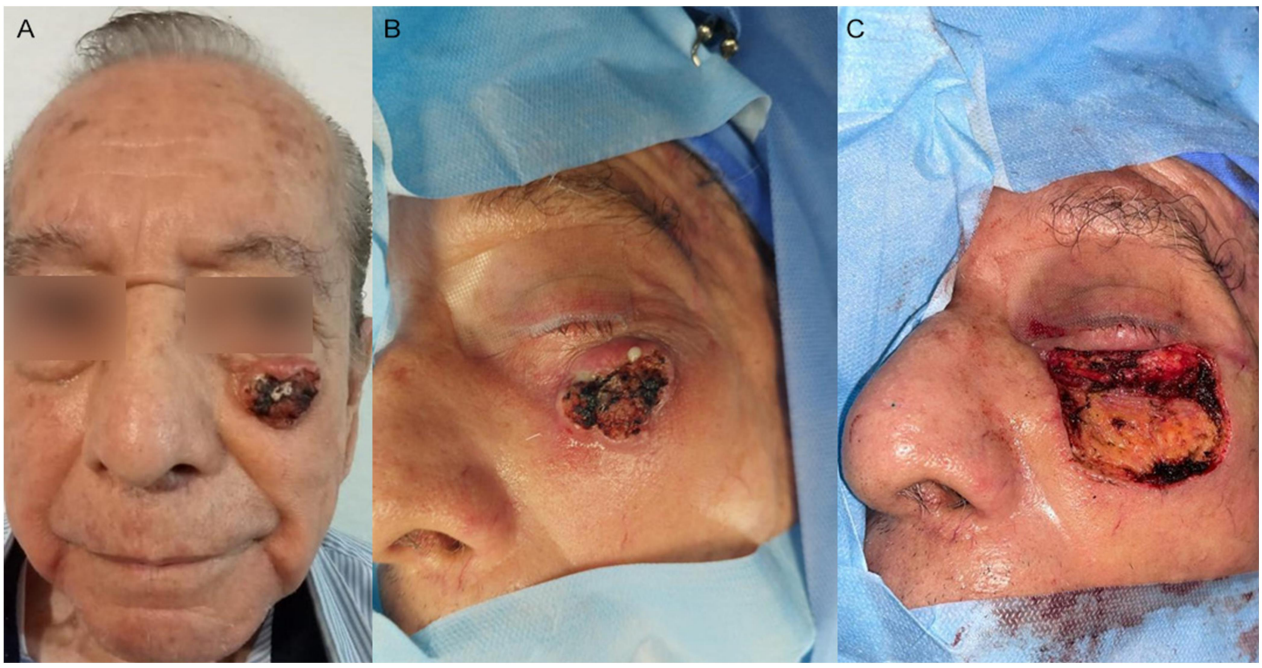

Figure 1. A. First medical consultation. Squamous cell carcinoma in the infraorbital malar region. B. Before delination of the surgical margins. C. Transoperative picture of the resected tumor.

Hospital, ISSSTE. Obtaining a histopathological diagnosis of well- differentiated keratinizing warty squamous cell carcinoma infiltrating the deep dermis with intense chronic inflammatory reaction, associated with formation of epidermoid inclusion cyst. It is sent to the oncology surgery service for evaluation and surgical treatment, being a candidate for a wide local incision, immediate reconstruction and subsequent evaluation by the oncology service for coadyuvant radiotherapy. As part of the interdisciplinary management, resection of the tumor was decided by the surgical oncology service and reconstruction in a single surgical procedure by the plastic and reconstructive surgery service.

Under balanced general anesthesia, tumor resection was performed with a defect in aesthetic subunit 3B, 4A, with a defect of approximately 5 cm x 4 cm. Due to its characteristics, it was decided to perform an intraoperative study with a diagnosis of a cytological pattern compatible with squamous cell carcinoma, obtaining tumor-free resection margins. Following the reconstructive principles described by Mustardé, and in accordance with the rule of quarters, which indicates that if a defect is greater than 50%, an advancement and rotation flap should be performed. Therefore, once the dissection of the defect was completed and the intraoperative study was carried out, the flap was designed, starting from the lateral edge of the defect in the zygomatic region in a cranial direction towards the hairline, continuing in the temporal region and extending curvilinearly to the preauricular region and caudally to the cervical region. Once the delineation is done, we proceed to dissect and lift the flap and superficial musculoaponeurotic system (SMAS) with a cold scalpel; the edge of the medial flap is rotated over the defect. The dermocutaneous closure is carried out in two planes, facing the first with absorbable material with vycril 4-0 and penrose type drainage is placed. The superficial skin plane is approached with simple sutures with 4-0 nylon and 5-0 nylon. Adequate hemostasis and adaptability of the flap, adequate coloring and capillary filling are observed. The surgical procedure is concluded.

Discussion

The zygomatic-cheek flap described by Mustardé arises from the need to reconstruct extensive areas of neoplasia in the lower eyelid. In the mid-1960s, intraoperative studies were not routinely performed, so the excision of skin tumors required a wide resection far beyond the visible limits of tumor extension. At the end of the 1960s, frozen section

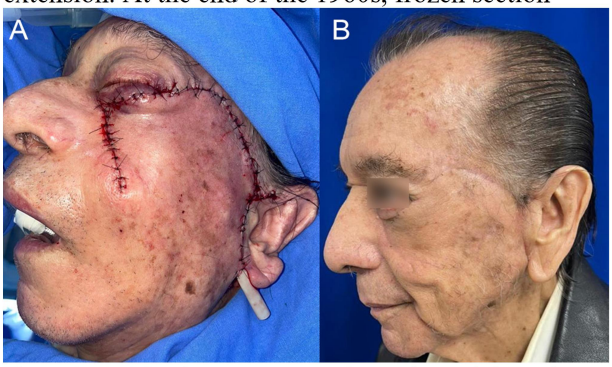

Figure 2. A. The dermocutaneous closure is carried out in two planes, facing the first with absorbable material with vycril 4-0 and penrose type drainage is placed. The superficial skin plane is approached with simple sutures with 4-0 nylon and 5-0 nylon. B. Post op picture 30 days after surgery.

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analysis of surgical margins began to be performed continuously in collaboration with the Department of Surgical Pathology at the University of Alabama Hospitals, which substantially reduced tumor recurrence.

The Mustardé-type flap meets the basic criteria for an ideal skin flap: matching texture and skin color of the recipient area to be performed in a single surgical procedure (8). The laxity of the skin allows the modification of the flap to extend and successfully repair large defects, redistributing the tensile force of the vectors favoring the closure of wounds that are not susceptible to primary closure alone. Correct placement of tracking sutures is essential to redirect tension vectors and avoid distorting free margins, successfully hiding the incision lines, minimizing scarring and reducing the formation of ectropion in the lower eyelid and surgical dehiscence (7).

Conclusion

Reconstruction of defects in the malar region, nasal dorsum and lower eyelid constitutes a surgical challenge. Aesthetic restoration of anatomy and functionality are the surgical objectives when deciding the type of flap to be used. There is no reconstructive technique that is considered ideal for covering defects in the lower eyelid and cheek. Knowledge of the various surgical techniques and their scope allows the reconstructive surgeon to select the type of flap adjusted to the particular needs of each patient.

Conflicts of interests

There was no conflict of interest during the study, and it was not funded by any organization.

References

1. Scolari de Britez E, Re L, Di Martino Ortiz B, Rodriguez Masi M, Bolla de Lezcano L. Carcinoma epidermoide verrugoso. Presentación de caso clínico y revisión de la literatura. Gaceta Dermatológica (Asunción) 2020-2021; 15 (1): 29-33.
2. Barron Tapia T, Peniche Rosado J, Peniche Castellanos A, Arellano Mendoza I, Leon Dorantes G, Mercadillo Pérez P. Carcinoma epidermoide de piel. Rea Med Hosp Gen Mex 2004; 67 (2): 71-77.
3. Hernández Aguilar F, De la Paz Martínez D, Rogel Rodriguez F, Romero Espinosa J, Moreno Ibarra D, Salazar Vizuet I. Reconstrucción del párpado inferior mediante colgajo tipo Mustardé e injerto de concha auricular. Cirugía Plástica 2018; 28 (1): 27-31.
4. Mustardé JC. Major Reconstruction of the Eyelids: Functional and Aesthetic Considerations. Clinics in Plastic Surgery 1981; 8 (2): 227-236.
5. Lagares Borrego A, De Lope Falcón C, Franco Góngora JM, Barrera Pulido FJ, Gómez Cía T. Reconstrucción de párpado inferior mediante colgajos miocutáneos en isla de los músculos orbicular y nasal. Cir. Plást. Iberolatinoam 2009; 35 (1): 35-42.
6. Escobar Gómez DA, Morales Eslava BA, Aguilar Matías TA. Mustardé Flap for lower eyelid reconstruction. A case report. Am J Med Surg. November 2022; 10 (1): 4-7.
7. B. Patel S, R. Buttars B, B. Roy D. Mustardé flap for primary nasal sidewall defect post- Mohs micrographic surgery. JAAD Case Reports 2022; 23:151-154.
8. Callahan M, Callahan A. Mustardé Flap Lower Lid Reconstruction after Malignancy. Ophthalmology. April 1980; 87 (4):

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