Marjolin ulcer reconstruction with rotational flap. A case report

Christian Daniel Luna Rodriguez M.D.
Irvin Oswaldo Rodriguez Juarez M.D.
Raul Lopez Chavez M.D.
Alben Eduardo Rosas Ojeda M.D.
Jose Jesus Rodriguez Andrade M.D.
Daniela Delgado Iñiguez M.D.

La Paz, Mexico

Background
Within the classification of pathological scars, scars after a burn that degenerate into squamous cell carcinoma, are called Marjolin's Ulcer. They generally present with nodules or plaques with irregular margins and surface, heterogeneous in color, painless, which present a slow growth mainly in a burn scar. These lesions are more frequent in patients with fair skin, being the main risk factor chronic exposure to sunlight. When Marjolin's ulcers occur, they appear many years after the burn and are characterized by being aggressive with a poor prognosis. A case report from a 58-year-old male, with a history of a third-degree burn for 3 years on the back and abdomen presented a plaque on a scar on his back of 8 years of evolution which had presented recurrent infections.

Keywords: Marjolin ulcer, flap reconstruction

Case report

Plastic Surgery

OPEN ACCESS

Initially, Celso detected lesions in scars or chronic wounds which degenerated into ulcers, however, until 1828 Jean Nicolas Marjolin described these lesions where he found a particular relationship with burns.[1]

Within the classification of pathological scars, scars after a burn that degenerate into squamous cell carcinoma, are called Marjolin's Ulcer.[2] The eponym was established by the writings of DaCosta and Fordice in 1903, as well as by the first significant series of Treves cases in 1930.[1-3]
Marjolin's ulcers are not only associated with being lesions that appear in a scar after a burn, but there are also case reports where they are equally associated with a traumatic wound and currently all ulcers that degenerate from scar tissue are considered.[3] They generally present with nodules or plaques with irregular margins and surface, heterogeneous in color, painless, which present a slow growth mainly in a burn scar.[4]

These lesions are more frequent in patients with fair skin, being the main risk factor chronic exposure to sunlight. When Marjolin's ulcers occur, they appear many years after the burn and are characterized by being aggressive with a poor prognosis.[5]

Case report

A 58-year-old male, with a history of a third-degree burn for 3 years on the back and abdomen. Subsequently, he presented a plaque on a scar on his back of 8 years of evolution, which had presented recurrent infections, had a biopsy report dated September 12, 2022, compatible with benign fibroblastic proliferation morphologically compatible with a keloid scar without malignancy. He came to our office on September 21, 2022, where, on physical examination, an exophytic mass was found in the region of the back at flank level (lower left quadrant), fetid with greenish discharge 6x5 cm in diameter, by 2.5cm in elevation. No lymphadenopathy was palpable.

He comes with a culture report, with a positive result for pseudomonas sensitive to Piperacillin/Tazobactam, Ceftazidime, Imipenem, Amikacin, Gentamicin and Ciprofloxacin, treatment is given with Ciprofloxacin 250mg every 12 hours. A Computerized Axial Tomography (CT) was performed where it did not show lymphadenopathy or metastasis, only a thickening of the surface of the back without involvement of subcutaneous cellular tissue.

From the General Surgery Department at Hospital General con Especialidades Juan María Salvatierra SSA. La Paz, Mexico. Received on May 1, 2023, Accepted on May 6, 2023. Published on May 9, 2023.

DOI 10.5281/zenodo.7918866

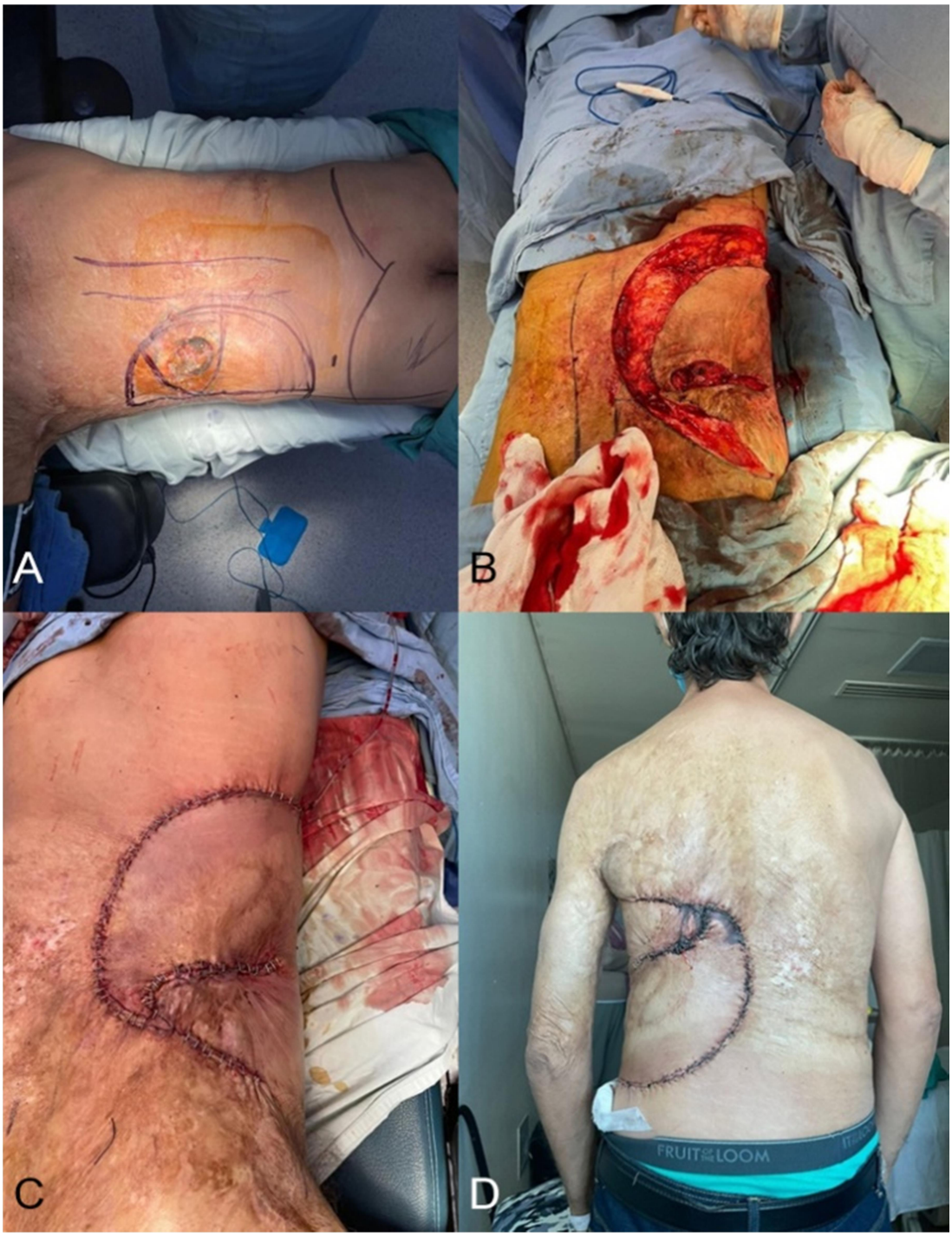

Figure 1. A. Surgical markings. B. Resected area before flap rotation. C. Immediate post-surgical. D. 2 weeks post-op.

It was scheduled for surgery on October 21, 2022. A resection of the tumor was performed with macroscopic margins of 2cm, where a trans-surgical histopathological study was sent, where they reported well-differentiated, keratinizing, invasive, abscessed epidermoid carcinoma, with surgical edges greater than 0.8cm, inferior 1cm, internal 3cm, external 3.4cm, bed 1.5cm without lymphovascular or perineural invasion, so we proceeded to rotate the fasciocutaneous flap.

Discussion

It is estimated that the incidence of Marjolin's ulcer occurs in 1.3-2.2% of all chronic wounds, the mean time from the onset of the ulcer to the diagnosis of the squamous neoplasm is 9 years. After 30 years of onset after thermal insult, the mean age of onset is in the fifth decade of life, burns are more frequent in females, however the

DOI 10.5281/zenodo.7918866

opposite sex has a 3 times greater risk of presenting scar degeneration.[3,7]

In order to be able to consider a Marjolin ulcer in burn scars, they must present the characteristics established in the postulates of Second, Ewing and Warren, which consist of being located inside and not on the periphery of the scar, not presenting signs of previous degeneration, which the histology is compatible with the neighboring structures and that there is a time interval between the thermal aggression and the burn injury, which, the latter has served to classify Marjolin's ulcer as acute if it is less than 5 years old and chronic if it is older.[3,6]

Although the pathogenic mechanism of Marjolin's ulcer is unknown, it is believed that carcinogenesis originates from the moment of injury where cell lysis occurs, leading to the release of toxins, coupled with the presence of multiple high-capacity cells, mitosis with ischemia and poor lymphatic drainage with exposure to radiation, resulting in hyperplasia of the basal layer that will lead to atypical changes, this is established as the Bostwick Theory.[3,7]

Marjolin's ulcers are usually more aggressive compared to the known natural history of disease of squamous cell carcinomas, with a higher rate of mortality and invasion. The delay in diagnosis has a significant influence due to the factor of late attendance of the patient for medical assessment.

A 2 cm margin of safety is considered and in cases of invasion amputation of affected extremities is recommended. Lymph node dissection is controversial; however, it is still being practiced to date since the percentage of metastases to regional lymph nodes varies between 34.8-36 %.[3,7]

There are reports of treatment with CO2 in initial lesions without invasion and of small dimensions. For the treatment of lesions that are difficult to approach surgically, Mohs Surgery is frequently used, however the procedure requires highly trained personnel. Survival of 66-80% is 2 years. Despite this, the prognosis varies according to the degree of tumor differentiation as well as the level of invasion, with lymph nodes, lungs, and liver being more frequent, its recurrence after surgery is of 23% with a latency period of 4.6 months.[7]

In our case, thanks to the availability of the histopathology service in the surgical act, we were able to assess the safe margins, after which we carried out follow-up by an outpatient clinic and referred to the State Oncology Center who carry out extension studies where apparently adjuvant therapy is not required, therefore, once the patient presented adequate evolution, we continue monitoring for surveillance in case of recurrence.

Conclusion

Most squamous cell carcinomas are well localized, and their treatment is usually surgical with extensive conventional surgery such as grafts or flaps, or other local procedures such as cytostatic and ionizing radiation, however, Marjolin's ulcers behave biologically more aggressive and show a great tendency to local recurrence, lymphatic spread, and sometimes, distant invasion, being significantly relevant to have an early diagnosis for a prompt treatment.

Conflicts of interests

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

Acknowledgements

We deeply appreciate those who contributed to this case report.

References

1. Hurtado Ríos, William; Taranto Ortíz, Alicia. Úlcera de Marjolin. Medicina (Guayaquil). 2000; 6(4): 307-311.
2. Silva R. Cicatrización. In: Saúl A. eds. Saúl. Lecciones de dermatología, 16e. México. McGraw Hill; 2015. P. 392-395
3. García-Morales I, Pérez-Gil A, Camacho FM. Úlcera de Marjolin: carcinoma sobre cicatriz por quemadura. Actas Dermosifiliogr [Internet]. 2006;97(8):529–32. Available from: http://dx.doi.org/10.1016/s0001-7310(06)73457-3
4. Brunicardi, F. C., Andersen, D. K., & Billiar, T. R. (2015). Cirugía de la mano y la muñeca. En Principios de cirugía. (16.ª ed., pp. 1809-1813). McGraw Hill.
5. Doherty, G. M. (2011). Cirugía plástica y reconstructiva. En Diagnóstico y tratamiento quirúrgicos. (13.ª ed., pp. 961-967). Lange.
6. García, J. A., Martinez, D. A., Campillo, A., & Aguayo, J. L. (2016). Úlcera de Marjolin: experiencia de 10 años en una unidad de pie diabético. Cirugía y Cirujanos. (4.ª ed., Vol. 84, pp. 340-343).
7. Miquet, L. M., Orozco, M. A., Posada, D. A., & Chavez, M. A. (2019). Úlcera de Marjolin. Acta Médica. (3.ª ed., Vol. 20, pp. 1-6).

Daniela Delgado Iñiguez
School of Medicine
General Surgery Department
Hospital General con Especialidades
Juan maría Salvatierra SSA
La Paz, Mexico

 DOI 10.5281/zenodo.7918866