

Complex Marjolin's Ulcer of the Scalp — Case Report

Úlcera de Marjolin complexa de couro cabeludo — Relato de caso

Lucas Ruffo de Medeiros¹  Frederico Alonso Sabino de Freitas¹  Marcus Vinícius Jardini Barbosa¹ 

¹ Medicine Program, Centro Universitário Municipal de Franca, Franca, SP, Brazil

Address for correspondence Marcus Vinícius Jardini Barbosa, MD, PhD, Alameda dos Flamboyants, 700—Morada do Verde, CEP: 14404-409, Franca, SP, Brazil (e-mail: drmbarbosa@gmail.com.br).

Rev Bras Cir Plást 2026;41:s00461822824.

Abstract

Keywords

- ▶ scalp
- ▶ squamous cell carcinoma
- ▶ squamous cell carcinoma of head and neck
- ▶ post-traumatic cancer
- ▶ plastic surgery procedures

Resumo

Palavras-chave

- ▶ couro cabeludo
- ▶ carcinoma de células escamosas
- ▶ carcinoma de células escamosas de cabeça e pescoço
- ▶ câncer pós-traumático
- ▶ procedimentos de cirurgia plástica

Marjolin's ulcer is a rare and aggressive malignant neoplasm that arises from chronic wounds, the most common type being squamous cell carcinoma. The paper describes a 50-year-old woman with a 30-year-old scalp ulcer following traumatic avulsion, which progressed to invasive carcinoma with intracranial extension. The patient presented with seizures, hemiparesis, and a large vegetating lesion. Imaging revealed extensive bone destruction and brain involvement. A wide surgical resection was done, followed by dura mater reconstruction with fascia lata, and microsurgical latissimus dorsi flap coverage. Despite initial recovery, the patient experienced local recurrence and died 2 months postoperatively. The case highlights the challenges of managing advanced Marjolin's ulcer, particularly in the scalp, where delayed diagnosis and deep invasion worsen prognosis. Early excision with adequate margins remains the gold standard, but intracranial extension necessitates multidisciplinary care. This report underscores the importance of prompt treatment for chronic wounds to prevent malignant transformation.

A úlcera de Marjolin é uma neoplasia maligna rara e agressiva que surge a partir de feridas crônicas, sendo o tipo mais comum o carcinoma de células escamosas. O artigo descreve o caso de uma mulher de 50 anos com uma úlcera no couro cabeludo há 30 anos, decorrente de uma avulsão traumática, que evoluiu para um carcinoma invasivo com extensão intracraniana. A paciente apresentou convulsões, hemiparesia e uma grande lesão vegetante. Os exames de imagem revelaram extensa destruição óssea e comprometimento cerebral. Foi realizada uma ampla ressecção cirúrgica, seguida de reconstrução da dura-máter com fâscia lata e cobertura com retalho microcirúrgico de músculo latíssimo do dorso. Apesar da recuperação inicial, a paciente apresentou recidiva local e faleceu 2 meses após a cirurgia. O caso destaca os desafios no manejo da úlcera de Marjolin em estágio avançado, especialmente no couro cabeludo, onde o diagnóstico tardio e a invasão profunda pioram o

Study developed at the School of Medicine, Centro Universitário Municipal de Franca (Uni-FACEF), Franca, SP, Brazil.

received
September 3, 2025
accepted
November 24, 2025

DOI <https://doi.org/10.1055/s-0046-1822824>.
ISSN 2177-1235.

Editor-in-Chief: Dov Charles
Goldenberg.

© 2026. The Author(s).

This is an open access article published by Thieme under the terms of the Creative Commons Attribution 4.0 International License, permitting copying and reproduction so long as the original work is given appropriate credit (<https://creativecommons.org/licenses/by/4.0/>)
Thieme Revinter Publicações Ltda., Rua Rego Freitas, 175, loja 1, República, São Paulo, SP, CEP 01220-010, Brazil

prognóstico. A excisão precoce com margens adequadas continua sendo o padrão-ouro, mas a extensão intracraniana exige cuidados multidisciplinares. Este relato reforça a importância do tratamento imediato de feridas crônicas para prevenir a transformação maligna.

Introduction

Marjolin's ulcer is a rare and severe condition characterized by the malignant transformation of scars or chronic wounds into a squamous cell carcinoma. Skin lesions with impaired healing due to chronic irritation, repeated trauma, or other factors that persist for decades are more prone to malignancy.¹⁻³

This condition is classified as acute if malignant transformation occurs within less than 12 months and chronic if it evolves over 12 months.^{1,4} The incidence of malignancy ranges from 2 to 6%, with an average latency of over 30 years between the initial injury and neoplasia. Epidemiologically, the extremities are affected in 58% of cases,⁵ while the scalp is less commonly involved.⁶

The pathophysiology involves repeated ulceration and prolonged stimulation of cell proliferation due to reepithelialization and possible spontaneous mutations.⁶ Early diagnosis is crucial, allowing for less complex reconstruction procedures. Clinical exams frequently show an ulcer with raised and hardened edges, foul odor, vegetating appearance, and purulent discharge. Histological exam confirms the diagnosis.⁷

Surgical excision is the most effective treatment, and lymph node dissection being suggested in some cases due to the risk of predominantly lymphatic spread of the tumor. Chemotherapy has shown limited efficacy, while radiotherapy is reserved for selected cases.¹ Meningeal or brain

involvement is extremely rare and associated with high morbidity and mortality.⁴ Considering the unpredictable progression, tissue damage, and poor prognosis, early diagnosis and excision are essential for better clinical outcomes;¹ with a surgical margin of at least 3 cm being recommended.³

Therefore, this study aims to describe a rare case of Marjolin's ulcer involving complete scalp infiltration and brain tissue invasion.

Case Report

A 50-year-old retired woman presented with a main complaint of "seizures for 1 month." She reported focal seizures in the right upper limb (RUL) for 1 month and RUL paresis with decreased consciousness for 2 weeks associated with asthenia, adynamia, weight loss, and recent-onset fever. She reported a scalp wound of 30 years, due to a boat accident with scalp avulsion. The wound alternated between secondary healing and recurrent ulceration, with worsening progression over the past 2 years.

Physical exam revealed a debilitated, dehydrated, and apathetic patient, with right-sided hemiparesis and allopsychic disorientation. The scalp exhibited an extensive vegetating, infiltrative lesion with necrotic areas and foul odor, measuring 20 × 15 cm, located on the frontoparietal region (►Fig. 1).

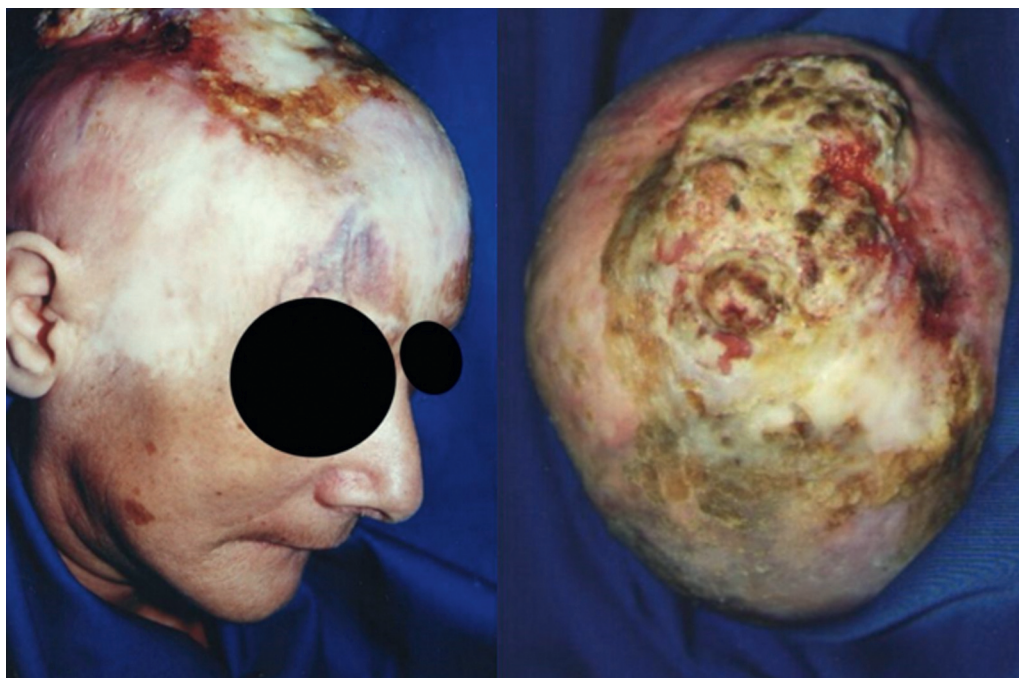


Fig. 1 Preoperative aspect of the tumor.

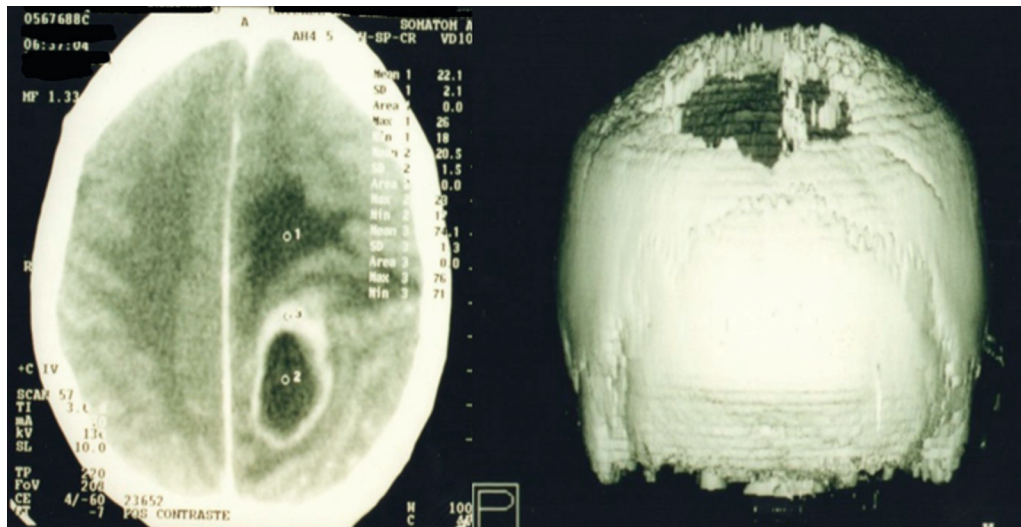


Fig. 2 Computed tomography (CT) of the skull – hypodense, extra-axial lesion located in the left cerebral hemisphere and three dimensional reconstruction demonstrated extensive frontoparietal bone destruction.

The diagnostic hypothesis was Marjolin's ulcer, and a cranial computed tomography (CT) scan revealed a hypodense, extra-axial lesion in the left cerebral hemisphere with contrast enhancement, mass effect, sulcal effacement, mid-line shift, and an extensive frontoparietal bone destruction (► **Fig. 2**).

The patient underwent primary lesion resection involving all layers, with 5 cm safety margins. The procedure included: bone resection, resection of the dura mater, and affected brain tissue. The dura mater was reconstructed with a fascia lata graft (► **Fig. 3**); the latissimus dorsi muscle was transferred via microsurgery to cover the defect (► **Fig. 4**). Vascular anastomoses of the thoracodorsal vessels were performed on the facial artery (end-to-end) and external jugular vein (end-to-side), with a saphenous vein graft interposition. The patient showed postoperative improvement, with good re-

perfusion of the transferred muscle. A split-thickness skin graft was applied to the granulating area 2 weeks postoperatively (► **Fig. 5**).

At the 40-day follow-up, local recurrence was detected, accompanied by worsening neurological symptoms and progressive decline. The patient died 2 months postoperatively.

Discussion

Marjolin's ulcer is defined as a malignant transformation of chronic wounds that fail to heal properly or heal by secondary intention. It is commonly associated with burn scars and trauma, but can also arise from other conditions.^{6,8} The pathophysiology of malignant transformation remains unclear, but some authors suggested impaired

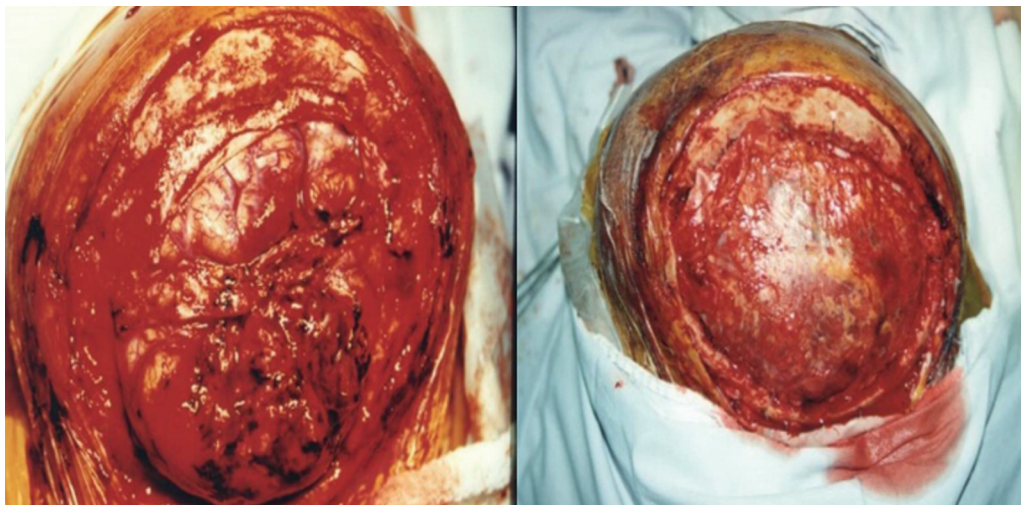


Fig. 3 Resection of the tumor involving all layers (bone, dura mater, and affected brain tissue). Dura mater was reconstructed with a fascia lata graft (immediate postoperative aspect).

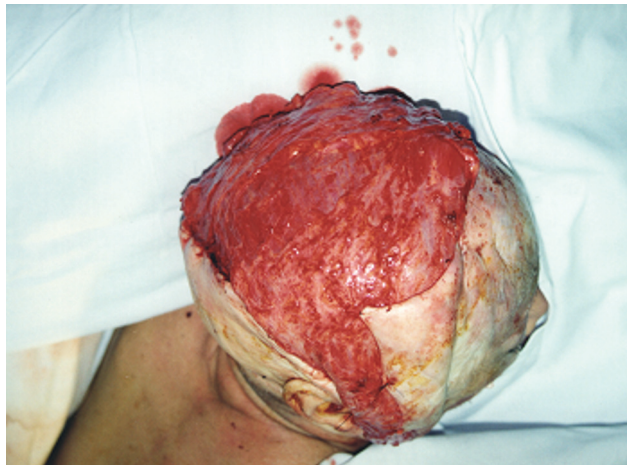


Fig. 4 Latissimus dorsi muscle transferred microscurgically to cover the area (immediate postoperative aspect).

immune response due to poor vascularization of scar tissue,⁹ and proto-oncogene overexpression.¹⁰ Scalp involvement is extremely rare;⁶ as such, the mechanisms of underlying scalp Marjolin's ulcer require further elucidation due to limited case reports.⁶

This case involved a traumatic total scalp avulsion that evolved to a chronic wound. It is a rare report of infiltrative Marjolin's ulcer with intracranial involvement. Scalp ulcers invading the skull and deep tissues pose significant challenges for resection and reconstruction, with low cure rates.⁶

Well-differentiated lesions have a better prognosis,^{8,10} and lymph node involvement is a crucial prognostic factor, as it represents the primary metastatic route. A study of 31 Marjolin's ulcers reported a 3-year survival rate of 94% for well-differentiated tumors and 38% for poorly differentiated ones, with no survivors among patients with distant metastases.⁷⁻⁹ In this case, the tumor was undifferentiated, with no detectable nodal metastases. However, the patient presented with extensive cranioencephalic destruction, which certainly contributed to the poor prognosis.

Clinical treatment remains controversial and ineffective. Chemotherapy may be used as adjuvant therapy for metastatic cases but offers limited survival benefits. Radiotherapy is reserved for inoperable cases or postoperative consolidation, though its efficacy is debated due to poor vascularization of ulcerated tissue.¹

Surgical excision with margins of at least 3 cm (extending to 5 cm in some cases) is the most effective treatment, reducing recurrence risk.¹ In this case, a 5 cm margin was adopted but failed to prevent recurrence. Prophylactic lymph node dissection is suggested due to aggressive progression, with indications based on tumor grade or sentinel lymph node biopsy.¹

After the resection, functional and aesthetic reconstruction should be considered to improve quality of life. Skin grafts are suitable for monitoring recurrence, while flaps are preferred for covering noble structures. Microsurgical flaps are indicated for extensive resections with limited local flap options or planned postoperative radiotherapy.^{1,9} In the presented case, the exposed brain tissue was covered with a fascia lata graft, and a microsurgical latissimus dorsi flap



Fig. 5 Final aspect of the split-thickness skin graft applied to the granulating area, 2 weeks postoperatively.

was used for extensive calvarial reconstruction. A meshed split-thickness skin graft was applied 15 days later. Despite no surgical complications, the advanced tumor stage and the patient's clinical condition led to local recurrence, progressive decline, and death.

Conclusion

Concurrent Marjolin's ulcer of the scalp and cranioencephalic involvement is rarely reported in the literature, which complicates the establishment of effective treatment protocols, leading to delayed diagnosis and reduced cure rates. Although case reports are considered low-level evidence,⁵ they provide valuable insights for managing rare conditions, which are often excluded from large multicenter studies.

Data Availability

Data will be available upon request to the corresponding author.

Authors' Contributions

LRM: Conceptualization, methodology. FASF: Formal analysis. MVJB: Writing – review & editing.

Financial Support

The authors declare that they did not receive financial support from agencies in the public, private, or non-profit sectors to conduct the present study.

Conflict of Interests

The authors have no conflict of interests to declare.

References

- 1 Rodovalho NN, Duarte LRA, Guimarães IS, Souza IH, Magalhães LO, Silva MP. Marjolin ulcer: The importance of early diagnosis and excision. *Rev Bras Cir Plást* 2022;38(02):1–6. Doi: 10.5935/2177-1235.2023RBCP0654-EN
- 2 Mousa AK, Elshenawy AA, Maklad SM, Bebars SMM, Burezaq HA, Sayed SE. Post-burn scar malignancy: 5-year management review and experience. *Int Wound J* 2022;19(04):895–909. Doi: 10.1111/iwj.13690

- 3 Machado AF, Fontinele DRS, Vieira SC. Marjolin's ulcer in pressure injury scar: Case report. *Rev Bras Cir Plást* 2021;36(02):231–235. Doi: 10.5935/2177-1235.2021RBCP0073
- 4 Sengul G, Hadi-Kadioglu H. Penetrating Marjolin's ulcer of scalp involving bone, dura mater and brain caused by blunt trauma to the burned area. *Neurocirugia (Astur)* 2009;20(05):474–477, discussion 477. Doi: 10.1016/s1130-1473(09)70147-2
- 5 Simão TS, Almeida PCC, Faiwichow L. Úlcera de Marjolin: visão atualizada [Marjolin's ulcer: Updated view]. *Rev Bras Queimaduras* 2012;11(04):251–253
- 6 Xiao H, Deng K, Liu R, et al. A review of 31 cases of Marjolin's ulcer on scalp: Is it necessary to preventively remove the scar? *Int Wound J* 2019;16(02):479–485. Doi: 10.1111/iwj.13058
- 7 Leonardi DF, Oliveira DS, Franzoi MA. Úlcera de Marjolin em cicatriz de queimadura: revisão de literatura [Marjolin's ulcer in burn scar: Literature review]. *Rev Bras Queimaduras* 2013;12(01):49–52
- 8 Simman R, Caudil J. Marjolin Ulcers of the Scalp Post Trauma and of the Neck Post Radiation, Diagnosis, and Reconstruction. *Eplasty* 2022;22:ic10
- 9 Bostwick J III, Pendergrast WJ Jr, Vasconez LO. Marjolin's ulcer: an immunologically privileged tumor? *Plast Reconstr Surg* 1976;57(01):66–69
- 10 Smith J, Mello LF, Nogueira NC Neto, et al. Malignancy in chronic ulcers and scars of the leg (Marjolin's ulcer): a study of 21 patients. *Skeletal Radiol* 2001;30(06):331–337 Doi: 10.1007/s002560100355