

# MRI Images in the Diagnosis of Marjolin's Ulcer

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A 62-year-old female presented to the Surgery Outpatient Department with a four-month history of a wound on the lateral aspect of her right thigh, with an underlying history of trauma a few days prior. She had suffered a flame burn injury 50 years ago. There was a progressive increase in the size of the wound over the past four months, with an associated pricking type of pain. The patient denied other symptoms such as fever or discharge. Local examination revealed a 14×12 cm solitary ulcer on the posterolateral aspect of the right thigh with irregular margins and rolled-out edges [Table/Fig-1]. The base was formed by muscle induration, associated with slough and an absence of any discharge or bleeding. Multiple wedge biopsies from the wound margins and base were performed, revealing moderately differentiated Squamous Cell Carcinoma (SCC).

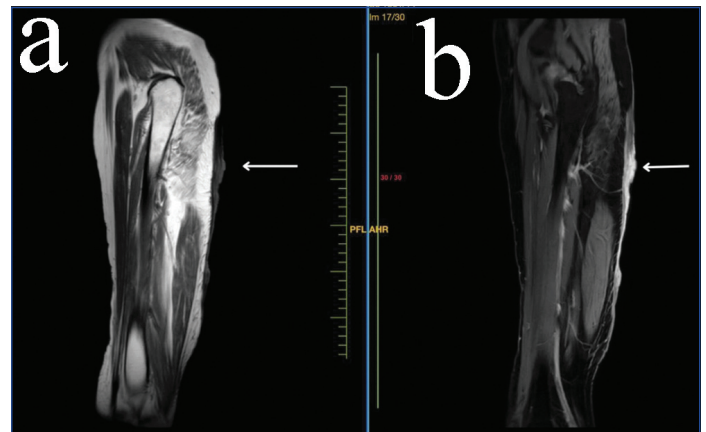


**[Table/Fig-1]:** Image with wound over the lateral aspect of thigh at the time of presentation.

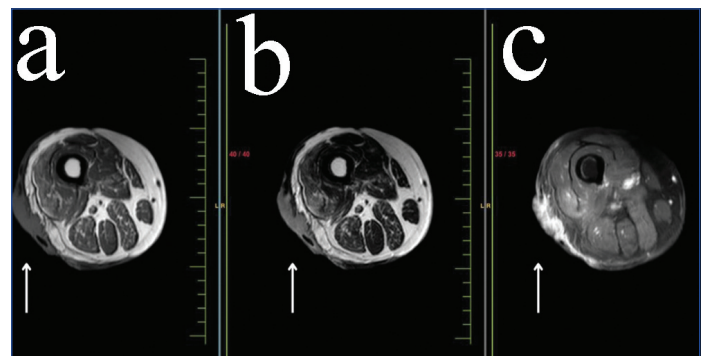
The patient was advised to undergo an Magnetic Resonance Imaging (MRI) of the thigh for further management planning. The MRI revealed heterogeneously enhancing soft-tissue thickening at the ulcer margins, approximately 13.3×4.1×1.5 cm in size, involving the skin and subcutaneous tissue in the posterolateral aspect of the thigh [Table/Fig-2].

The lesion appeared heterogeneously hyperintense [Table/Fig-3], showing diffusion restriction and no blooming on Susceptibility Weighted Imaging (SWI). Hyperintensity was seen deep in the lesion in the subcutaneous plane and showed mild postcontrast enhancement [Table/Fig-4]. The underlying bones and muscles appeared normal. Mild inguinal lymph nodes on the right-side appeared rounded and showed postcontrast enhancement.

The differentials that were considered for this case were actinic keratosis, allergic contact dermatitis, atopic dermatitis, atypical



**[Table/Fig-2]:** Sagittal sections of the right thigh show altered signal intensity lesions over the posterolateral aspect, which appear hypointense on T1W1 (a) and show enhancement in post-contrast T1W1.



**[Table/Fig-3]:** MRI images of axial sections of the right thigh show an altered signal intensity lesion appearing hypointense on T1 (a) and hyperintense on T2 (b) and heterogeneously enhancing on post contrast T1W1 (c).



**[Table/Fig-4]:** Contrast-enhanced T1 weighted coronal section image shows heterogeneously altered enhancing lesions.

fibroxanthoma, limbal dermoid, osteomyelitis, ulcer osteoma, and basal cell carcinoma. The MRI findings, along with histopathological examination, confirmed the diagnosis.

The patient was initially treated with vinegar dressing, followed by wide local excision of the Marjolin ulcer [Table/Fig-5] and Vacuum-Assisted Closure (VAC). After two weeks, the VAC dressing was removed, and the patient was managed with a sterile dressing with gentamicin for a few weeks. The patient was referred to a plastic surgeon, and a thick skin graft was placed over the excised ulcer [Table/Fig-6]. A frozen section was sent when the ulcer was excised, which suggested no infiltration of malignant cells,



[Table/Fig-5]: Clinical image- Post-local debridement of ulcer.



[Table/Fig-6]: Clinical image showing split thickness graft placed over the debrided area.

and Histopathological Examination (HPE) revealed SCC (PT3Mx) (Stage IB).

A Marjolin ulcer is the unusual occurrence of cutaneous SCC in the presence of a scar or ulcer. It typically arises at an old thermal burn scar [1]. Marjolin ulcers generally appear 30 years after a skin injury. They can afflict persons of all ages, with males diagnosed 2-3 times more frequently than women [2]. They can affect the legs, feet, head, and neck, lasting from six weeks to a year after the incident. Marjolin ulcers are most commonly found on the legs and feet but can also develop on the head and neck. The incidence is around 1-2% of all burn scars [3,4].

Radiologically, MRI is vital for the assessment of the involvement of underlying soft tissue structures and bony involvement. Marjolin ulcer presents as a soft tissue mass in MRI. On contrast enhancement, the ulcer shows avid enhancement due to increased vascularity. As the ulcer progresses, MRI helps determine the extent of invasion of the ulcer and underlying structures such as muscle, bone, and deeper layers. In chronic cases, regional lymphadenopathy suggests the possibility of metastasis [5]. Due to the destructive and progressive nature of the ulcer, MRI is essential in identifying bony destruction, marrow involvement, and periosteal reaction.

Marjolin ulcer is a rare malignant tumour that requires prompt discovery, proper diagnosis, and treatment. Histopathology supports the diagnosis, and MRI is essential for determining the size and extension of the lesion, underlying muscle and bone involvement, and metastasis.

## REFERENCES

- [1] Tian J, Zou JP, Xiang XF, Tang JB, Cheng B. Marjolin's ulcer: A case report and literature review. *World Acad Sci J.* 2020;3(1):5.
- [2] Cocchetto V, Magrin P, de Paula RA, Aidé M, Razo LM, Pantaleão L. Squamous cell carcinoma in chronic wound: Marjolin ulcer. *Dermatol Online J.* 2013;19(2):7. Available from: <https://escholarship.org/uc/item/7zf8466k>.
- [3] Bazaliński D, Przybek-Mita J, Barańska B, Więch P. Marjolin's ulcer in chronic wounds – Review of available literature. *Współczesna Onkol.* 2017;3:197-202.
- [4] Saaq M. Marjolin's ulcers in the post-burned lesions and scars. *World J Clin Cases.* 2014;2(10):507.
- [5] Furtado C, Datta P, Zeitoun R. Radiological appearances of metastatic Marjolin ulcer in a chronic pressure sore: A case report and literature review. *Radiol Case Rep.* 2022;17(10):3907-10.

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