



2020

## Acute Marjolin Ulcer From A Dog Bite

Brandon S. Henderson, Katalin Z. Kovacs, and Lynne J. Goebel

### Author Affiliations

Brandon S. Henderson (*Marshall University Joan C. Edwards School of Medicine, Huntington, West Virginia*)

Katalin Z. Kovacs (*King's Daughters Medical Center, Ashland, Kentucky*)

Lynne J. Goebel (*Marshall University Joan C. Edwards School of Medicine, Huntington, West Virginia*)

### Corresponding Author

Lynne J. Goebel MD

Marshall University Joan C. Edwards School of Medicine

Huntington, West Virginia

Email: [goebel@marshall.edu](mailto:goebel@marshall.edu)

Follow this and additional works at: <https://mds.marshall.edu/mjm>



Part of the [Neoplasms Commons](#)



This work is licensed under a [Creative Commons Attribution 4.0 License](#).

---

## Recommended Citation

Henderson, Brandon S.; Kovacs, Katalin Z.; and Goebel, Lynne J. (2020) "Acute Marjolin Ulcer From A Dog Bite,"

*Marshall Journal of Medicine*: Vol. 6: Iss. 4, Article 7.

DOI: [10.33470/2379-9536.1289](https://doi.org/10.33470/2379-9536.1289)

Available at: <https://mds.marshall.edu/mjm/vol6/iss4/7>

DOI: [10.33470/2379-9536.1289](https://doi.org/10.33470/2379-9536.1289)

Open Access | 

## Acute Marjolin ulcer from a dog bite

### Abstract

Marjolin ulcers are cancers, usually of squamous cell carcinoma pathology, that occur in scars or wounds. They are classically described in burn victims but can occur with other types of trauma and are rarely seen in association with bite wounds. Marjolin ulcers typically have a latent period of many years post-injury until the development of malignancy, but there are a few case reports of an exceedingly rare acute form. We present a case of a 78-year-old female who developed a Marjolin ulcer one month after sustaining a dog bite to the left index finger.

### Keywords

Marjolin ulcer, squamous cell carcinoma, wounds, dog bite, acute onset

### Introduction

Marjolin ulcers are rare malignant lesions occurring in scars or chronic ulcers first described by Jean-Nicolas Marjolin in 1828 as an ulcer with a verrucous growth and later termed Marjolin ulcers by John Chalmers Da Costa, a professor of surgery at Jefferson Medical College.<sup>1,2</sup> Most often Marjolin ulcers have a squamous cell carcinoma pathology and are located on the lower extremities.<sup>3</sup> Many types of injuries can transform into Marjolin ulcers. Classically, the malignancy occurs after a latent period of many years in previously burned skin but reports of cancerous ulceration after bite wounds, traumatic penetrating injuries such as knife or gunshot inflictions, frostbite, vaccination sites, and pressure ulcers have greatly expanded the definition of this condition from its initial description almost two hundred years ago.<sup>2</sup> There are only a few case reports of an acute form of the disease.<sup>2</sup> We report a patient that presented with an extremely rapid development of a Marjolin ulcer one month after a dog bite.

### Case Presentation

A 78-year-old female with a history of diabetes mellitus received a dog bite to her left index finger. A few days later she noticed redness and swelling. Her daughter thought it was infected and tried to get it to drain with warm compresses and pressure. It drained some yellow liquid but did not completely resolve. She went to urgent care and received a seven-day course of doxycycline and metronidazole and the lesion improved but was still not healed three weeks past the initial presentation. The patient stated the finger was a little more swollen, without drainage and pink in color and it was starting to hurt again (Figure 1). She had an x-ray that was negative for osteomyelitis. She was then referred to a Plastic Surgeon and a biopsy showed squamous cell carcinoma (Figure 2). The patient had a wide excision of the lesion and is now recovering from surgery. She denies having a lesion on the finger prior to the dog bite.



Figure 1. Squamous cell carcinoma (Marjolin ulcer) on the left index finger.

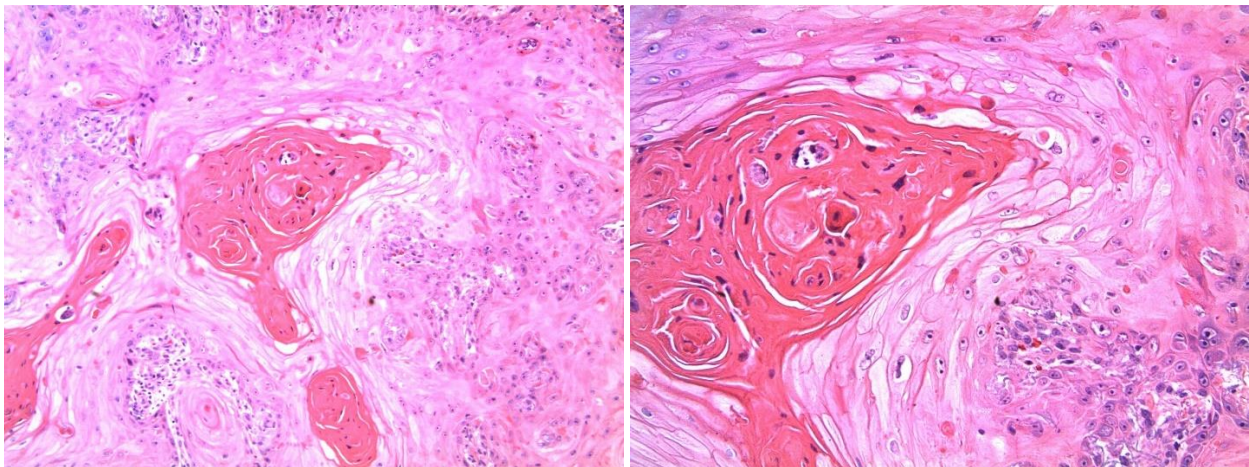


Figure 2. Squamous cell carcinoma at 100x (Left) and 200x (Right) Resolution, Hematoxylin and Eosin stain.

## Discussion

Our patient had an acute Marjolin Ulcer following a dog bite. This is exceedingly rare both for the acute presentation and the inciting wound. Marjolin ulcers usually present in chronic wounds or scar tissue following a burn and other non-healing injuries such as pressure sores, lacerations, trauma, and osteomyelitis.<sup>4</sup> The period between the initial injury and the development of a Marjolin ulcer is typically between twenty and forty years.<sup>5,6</sup> Marjolin ulcers that develop more than twelve months after the initial injury are termed chronic ulcers and are the predominant form.<sup>1</sup> An acute form of a Marjolin ulcer, such as the one presented in this case, develops less

than twelve months after the initial injury and is extremely rare. A review of 83 cases of Marjolin ulcer revealed only 7% to be acute.<sup>2</sup> An inverse relationship between a patient's age and the time to malignancy diagnosis has been suggested as older patients seem to have a much shorter period between the initial injury and the development of a Marjolin ulcer.<sup>5</sup>

Histopathologically, Marjolin ulcers are typically squamous cell carcinoma but some are basal cell carcinoma or melanoma.<sup>3</sup> Rapid diagnosis of squamous cell carcinoma is important as squamous cell pathology has a greater likelihood of recurrence or metastasis compared to basal cell carcinoma.<sup>7</sup> Unfortunately, delayed diagnosis of a Marjolin ulcer is common as they are often misdiagnosed as infections.<sup>5</sup>

Currently, there exist various hypotheses on the malignant transformation of scar tissue.<sup>5,8,9</sup> One possible mechanism is diminished vascular supply to the scarred zone. The decreased blood flow due to local fibrosis causes an interruption in the removal of carcinogenic material and prevents the immune system from detecting and destroying abnormal cells.

Another possible theory for the mechanism as well as the rapidity in which the injury may turn cancerous is due to chronic irritation or repeated trauma leading to a diminished epithelium.<sup>3,4</sup> In the case presented, repeated drainage of the wound could cause epithelial irritation. In addition, the wound location near the proximal interphalangeal joint is subject to frequent flexion and extension with repeated stretching of the skin causing chronic irritation and a cycle of damage and repair.<sup>3</sup> This cycle presents a greater opportunity for the development of malignant mutations due to a higher frequency of regenerative mitotic activity in the epidermal cells.<sup>3,4,10</sup>

Treatment for squamous cell carcinoma in a Marjolin ulcer is primarily surgical. Recommended treatment options depend on the location and severity of the ulcer and include wide local excision, Mohs surgery for cosmetic reasons in the case of facial lesions, or proximal amputation for extreme cases.<sup>11</sup> Metastasis rates are higher in Marjolin ulcers (27%) than for other squamous cell carcinoma skin lesions (3%) perhaps due to delayed diagnosis. The recurrence rate is 20-50%.<sup>12</sup> One factor associated with increased recurrence is the age of the patient, with younger patients more likely to have a recurrence after initial surgical treatment. Overall, the 5-year survival ranges from 43-58%.<sup>11</sup>

## Conclusion

The infrequent occurrence of acute Marjolin ulcer limits clinician experience with this problem and may lead to delayed diagnosis with its detrimental effect on mortality. Most wounds should show signs of healing in four to six weeks. We present this case of a rapid development of Marjolin ulcer in a non-healing bite wound to increase awareness for this rare diagnosis allowing for greater detection and earlier treatment with subsequent improvement in mortality.

## References

1. Hobbs M, Campbell E, Braun KA, Wong L. Multiple synchronous acute Marjolin ulcer: a report of 2 cases and literature review. *JAAD Case Rep.* 2019;5(6):511-3.
2. Fazeli MS, Lebaschi AH, Hajirostam M, Keramati MR. Marjolin's ulcer: clinical and pathological features of 83 cases and review of literature. *Med J Islam Repub Iran.* 2013;27(4): 215-224.
3. Pekarek B, Buck S, Osher L. A comprehensive review on Marjolin's ulcers: diagnosis and treatment. *J Am Col Certif Wound Spec.* 2011;3(3):60-4.
4. Pavlovic S, Wiley E, Guzman G, Morris D, Braniecki M. Marjolin ulcer: an overlooked entity. *Int Wound J.* 2011;8(4):419-24.
5. Ochenduszkiewicz U, Matkowski R, Szynglarewicz B, Kornafel J. Marjolin's ulcer: malignant neoplasm arising in scars. *Rep Pract Oncol Radiother.* 2006;11(3):135-138.
6. Copcu E. Marjolin's ulcer: a preventable complication of burns? *Plast Reconstr Surg.* 2009;124(1):156e-64e.
7. Losquandro WD. Anatomy of the skin and the pathogenesis of nonmelanoma skin cancer. *Facial Plast Surg Clin North Am.* 2017;25(3):283-289.
8. Majumder A, Srivastava S, Ranjan P. Squamous cell carcinoma arising in a keloid scar. *Med J. Armed Forces India.* 2019;75(2):222-224.
9. Mello LF, Barcelos MG, Meohas W, Pinto LW, Melo PA, Nogueira Neto NC, Smith J. Chronic ulceration of the leg following extensive scarring due to a snake bite complicated by squamous cell carcinoma. *Skeletal Radiol.* 2000;29(5):298-301.
10. Chalya HL, Mabula JB, Gilyoma JM, Rambau P, Masalu N, Simbila S. Early Marjolin's ulcer developing in a penile human bite scar of an adult patient presenting at Bugando Medical Centre, Tanzania: a case report. *Tanzan J Health Res.* 2012;14(4):288-92.
11. Shah M, Crane JS. Marjolin Ulcer [Internet]. Treasure Island (FL): StatPearls Publishing; c2020 [updated 2020 Jan 2; cited 2020 May 5]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK532861/>
12. Metwally IH, Roshdy A, Saleh SS, Ezzat M. Epidemiology and predictors of recurrence of Marjolin's ulcer: experience from Mansoura University. *Ann R Coll Surg Engl.* 2017;99(3): 245-249.