

Marjolin Ulcer in a Surgical Scar

To the Editor:

Marjolin ulcers are malignancies arising in nonhealing cutaneous wounds. Although burn wounds are the most common type of cutaneous trauma associated with this entity, there are a multitude of possible lesions that may initiate this disease process including traumatic wounds, venous stasis ulcers, and vaccination sites.^{1,2} The most common type of malignancy reported in a Marjolin ulcer is an aggressive squamous cell carcinoma (SCC).^{1,3} Less commonly, basal cell carcinoma (BCC) also has been reported.^{1,3,4} However, cases of BCCs developing in surgical scars are exceedingly rare. We describe a case of a morphoeic BCC in a long-standing surgical scar in a 50-year-old woman with Crohn disease.

A 50-year-old woman presented with an intermittent ulceration within a horizontal surgical scar on the right side of the upper abdomen of 2 years' duration that had not healed over the course of the last 6 months. The scar was present from surgeries conducted while she was a teenager for complications associated with Crohn disease. She underwent her first abdominal surgery for a partial gastric resection at 16 years of age, followed by multiple laparotomies from a perforated bile duct that occurred during the first surgery. The original incision created for the partial gastric resection was used for all subsequent surgeries.

The patient's medical history was notable for central nervous system vasculitis with vision loss, chronic pancreatitis, Crohn disease, arthritis, multiple superficial BCCs on the back that were successfully treated with imiquimod cream, a nodular BCC on the neck that was surgically removed, and facial actinic keratoses treated with liquid nitrogen. She had Fitzpatrick skin type I. She grew up in a residential area in Southern Ontario and did not have a history of heavy

sun exposure. She did not receive notable radiation from treatment of Crohn disease, and she usually wore a 1-piece bathing suit when swimming outdoors. According to the patient, she had never been exposed to arsenic. The patient's family history was negative for skin cancer and she was a nonsmoker. She was taking methotrexate, prednisone, folic acid, pentazocine, and vitamin B₁₂ injections at the time of presentation for the aforementioned conditions.

On physical examination a 1.5-cm honey-crusted ulcer with surrounding violaceous erythema in a long-standing surgical scar was observed (Figure 1). There was no palpable adenopathy in the inguinal or axillary regions. The suspected diagnosis prebiopsy was an SCC developing within the scar tissue. On histologic examination sections of small nests and strands of basal cell infiltrating thick collagen bundles were visualized. The appearance was consistent with a morphoeic BCC. The pathologist's interpretation indicated that the lesion appeared to be a morphoeic BCC within the scar as opposed to a BCC that appeared morphoeic because of background scarring. Histologic images stained with hematoxylin and eosin showed small nests and strands of basal cells penetrating thick collagen bundles (Figure 2).

Marjolin ulcer was first described in 1828 by the French surgeon Jean-Nicolas Marjolin who published 4 cases of ulcers arising from scar tissue but did not appreciate their malignant capacity. However, the term *Marjolin ulcer* is now widely accepted as meaning any malignant tumor occurring within scar tissue or a chronic nonhealing wound.^{1,2}

The exact incidence of malignant transformation in cutaneous wounds remains unknown, but this phenomenon can occur in individuals of all races and across all age groups.^{1,5-7} The most prevalent malignancy identified on biopsy is SCC, followed by BCC, melanoma, osteosarcoma, fibrosarcoma, and liposarcoma.^{1,2,6,7} With this entity infrequently occurring in the clinical setting, it often is overlooked or misdiagnosed.² In addition, malignancies presenting as Marjolin ulcers have a greater tendency to metastasize and are reported to have a higher associated fatality rate.^{2,8} Thus, early recognition is essential, as a delay in diagnosis can potentially allow the tumor to progress to a life-threatening stage. In our patient, malignancy was clinically suspected based on the

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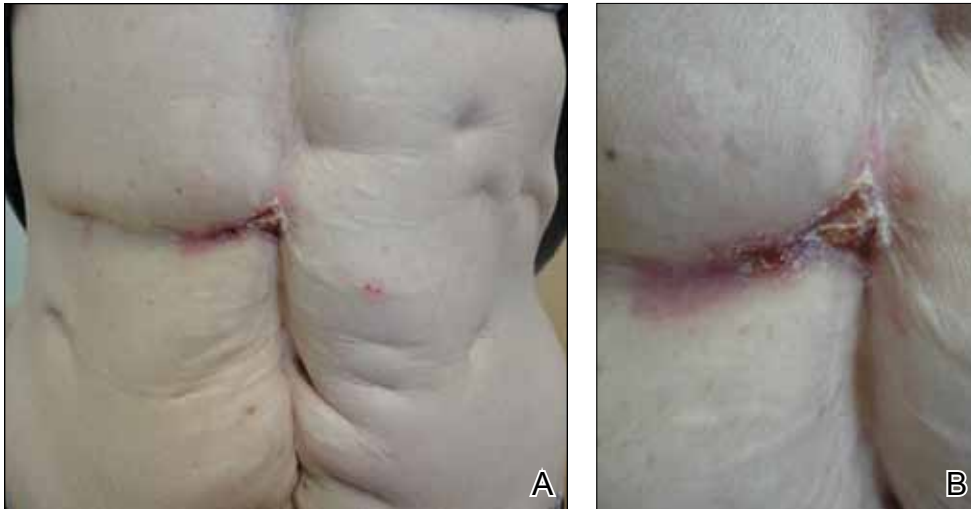


Figure 1. Complete visualization of the surgical scar with the associated ulcer in the epigastric region (A). Magnified view of a honey-crusted ulcer with surrounding violaceous erythema (B).

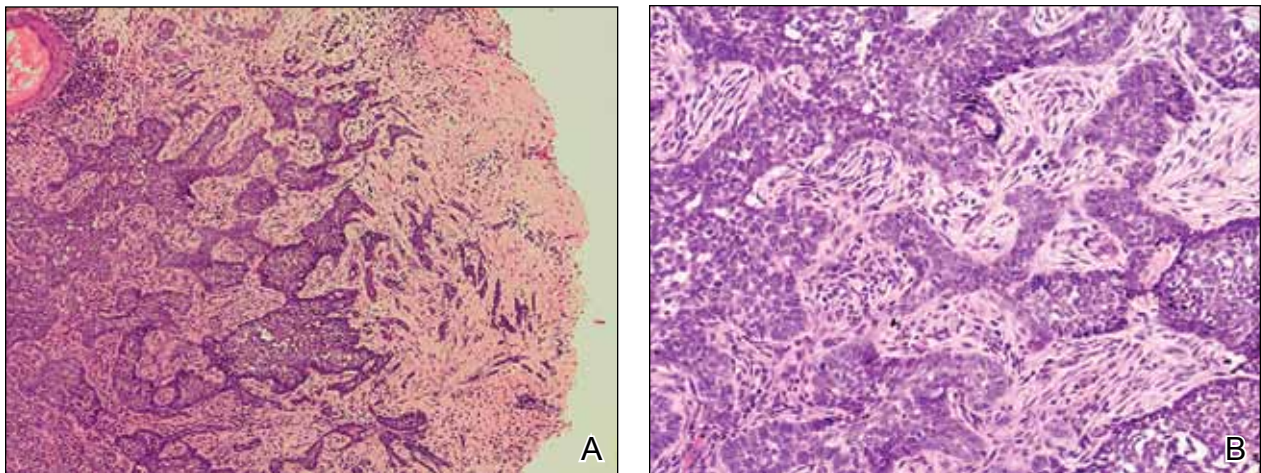


Figure 2. Histology showed small nests and strands of basal cells penetrating thick collagen bundles (A and B) (both H&E, original magnifications $\times 40$ and $\times 100$).

presence of an ulcer that was not healing despite adequate wound care and the location in a scar that was present for more than 30 years. The surgical scar had been a place of repeated trauma given the number of surgical procedures and the perforated bile duct, which can increase the potential for malignant transformation. Furthermore, the patient also was on immunosuppressive therapy for an extended period of time, possibly contributing to the development of this cancerous lesion and prior cutaneous malignancies.

The pathogenesis of a Marjolin ulcer is unclear, though many hypotheses have been suggested.^{1,2,6,9} Theories investigating decreased vascularity, lowered immune surveillance, decreased regenerative capacity, genetic mutations, and injury-related

release of toxins have all been postulated as possible explanations for the increase in potential of malignant transformation.^{1-3,6,9} However, despite the pathogenesis, the mainstay of treatment remains wide local excision with at least 2-cm margins.^{1-3,10} Alternatively, Mohs micrographic surgery can be considered for Marjolin ulcers, but it is less frequently conducted in comparison to wide local excision. Radiation therapy often follows excision as adjuvant therapy, depending on the type of tumor.^{2,10} Prophylactic lymph node dissection is not indicated in most cases, but regional node dissection is suggested when palpable lymphadenopathy is present.^{1,2,10} Moreover, amputation is indicated with deep bone or joint involvement.^{1-3,10} Recurrence

rates are high, ranging from 20% to 50%, and metastases to the brain, liver, lungs, kidneys, and lymph nodes have been reported.^{1,3} The prognosis of the cutaneous malignancy in this setting is not as favorable, and the 5-year survival rate is cited at approximately 60%.³ Overall prognosis depends on several factors including location, type of malignancy, immune status, progression of disease, and lymph node metastasis. Our patient's presentation with a BCC instead of the more common SCC should carry a good overall prognosis, though she will need to be closely followed for recurrence after wide local excision.

This novel presentation of a morpheaform BCC in a surgical scar may serve as a reminder to consider this diagnosis and biopsy nonhealing ulcers within any type of chronic wound or scar.

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