Third Time’s a Charm: How to spot a Marjolin’s Ulcer

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Statement of Purpose

Historically, Marjolin’s ulcer was associated with burn scars. Today however, Marjolin’s ulcer is understood as a malignant transformation which may occur in many types of chronic wounds. Malignant transformation may arise after several years and is known to be more life-threatening. This case study report demonstrates the importance of remaining vigilant when treating atypical, non-healing wounds due to the Marjolin’s ulcer phenomenon and limb.

Literature Review

The association between malignant changes and burn scars dates back to the observations made by the Roman encyclopaedist Aurelius Cornelius Celsus from the 1st century.1,2,4,6,9,10 Currently, this association has broadened to include inflammatory skin lesions such as acne, molluscum contagiosum, dermatitis artefacta, urinary fistula, leprosy ulcer, osteomyelitis, decubitus ulcer, venous stasis ulcer, and trauma induced injuries. The pathologic eponym is derived from French surgeon, Jean-Nicholas Marjolin, who is credited with describing the ulcer of the in the 19th century.2,4,5,8 The development of Marjolin’s ulcer can be classified as primary or chronic variant in which the onset of the acute variant is defined as developing within 12 months while the chronic variant develops beyond the span of a year.1,2,6 Although the pathogenicity of this disease process is still unclear, most researchers agree that multiple etiologic factors including tissue injury, lymphatic obliteration, increased susceptibility to carcinogens, immunologic factors, genetic predisposition and prolonged healing play a role in its development.2,6,8 Marjolin’s ulcer can develop over a latent period of approximately 30 years until malignant.1,3,5,8 Clinical identification of the malignancy usually occurs around the fifth decade of life.2,3,4,11 Although, Marjolin’s ulcer can technically appear in any anatomic location, the lower extremity is the most common area of involvement.5,8 Squamous cell carcinomas (SCC) are the most common histopathologic finding with a reported incidence of 71%. Basal cell carcinoma is the next most common, occurring in 12% of reported cases and a wide range of malignancies including melanoma, with cases of SCC developed from Marjolin’s ulcer have been reported to be a more aggressive form of skin carcinoma.3,6,8,9,10 Research suggests that SCCs have a metastatic rate of 25% to 30% associated with Marjolin’s ulcer and a rate of 61% when associated with a pressure sore.1,2,4,6,11 In contrast to Marjolin’s ulcer, most SCCs have metastatic rates of 0.5-3.0%.12 Recurrence is seen in 16% of cases, which is another indication of the Marjolin’s ulcer that makes proper management so critical.2,3,5

Case Study

This case involves a 65-year-old male with a past medical history of prostate cancer, a 10-pack/year smoking history and no history of diabetes mellitus. The patient presented initially to his primary care physician after home-care of a plantar hyperkeratotic lesion resulting in bleeding, at which point the patient was referred to an orthopedic surgeon. The orthopedic surgeon reported that the lesion was secondary to persistent metatarsal heads and recommended reconstructive surgery. The patient was then prescribed a removable cast walker and worked up for diabetes, believing this to be the underlying etiology of the foot ulcer. Seeking a second opinion before surgery, the patient visited a podiatrist who concurred with the original diagnosis.

The patient then presented to clinic for his third consultation: a moderate hypertrophic lesion sub 3rd and 4th metatarsal heads as the right foot was noted. (Figure 1) The lesion was friable, lobulated, measuring 2cm x 3cm, with a macerated center and pinpoint bleeding upon debridement. Prior radiographs were then reviewed. A second set of digital radiographs were ordered. (Figure 2) Two punch biopsies were taken and sent for histopathologic examination due to the suspicious nature of the lesion: one from the necrotic center and another from the lateral border of the lesion. The biopsies yielded a pathologic diagnosis of well-differentiated squamous cell carcinoma extensively involving the base of each biopsy. Due to the patient’s past medical history of prostate cancer, oncology was consulted. Magnetic resonance imaging (MRI) was ordered to determine the size and invasiveness of the lesion. (Figure 3) After the MRI revealed that the carcinoma extended to, but, did not involve bone, a wide excision of the lesion with bilateral flap closure was determined to be the treatment of choice. The patient was then gait trained prior to surgery in preparation for non-weight bearing (NWB) status in the postoperative period.

During the operation, the lesion was excised to the depth of the subtissue. A 3mm circumferential margin of clinically uninvolved skin and subtissue substance, as well as additional subcutaneous tissue at the donor cutaneous, was excised. The margins of excision were tagged, labeled and sent for pathology to aid in frozen section analysis. Pathology confirmed tumor cells along the deep margin. The remaining subtissue at the deep tissue was then resected. After pathology was able to determine clear margins throughout, the wound site was irrigated and closed using a bi-lobed flap. (Figures 4 & 5)

Following the procedure the patient was placed on strict NWB status in a below knee cast for 4 weeks. The patient was then transferred to protected weight bearing status in a removable cast walker for an additional 4 weeks. The patient’s progress was monitored closely until complete healing of the surgical wound site. (Figure 6) Once healing was complete, the patient was prescribed ambulatory orthotics to off-load pressure at the surgical wound site. He is now 15 months postoperative and ambulating without pain.

Analysis and Discussion

It is estimated that 9.3% or 29.1 million Americans suffer from diabetes mellitus with 1.7 million new cases annually.2 The growing epidemic of type II diabetes in America has made pedal complications relating to this disease process commonplace in clinical practice. However, as this case demonstrates, Marjolin’s ulcer presents a unique challenge for clinicians to be aware of, in a situation where a suspected diabetic foot ulceration with adequate vascularity does not respond reasonably to established treatment protocols.2,5,8,11,12 Although the ulcer was circumscripted, it was difficult to determine the exact location of the lesion when the ulcer was healing, with a secondary problem of limb pain, which is likely due to the presence of a foot ulcer as well as any associated bone and joint pain. Further, the patient did not desire to undergo amputation.

It has been suggested that routine biopsies at regular intervals throughout the span of any chronic non-healing wound is required.3,12 It is our contention that proper education, proper wound management and awareness for signs suggesting a malignant transformation by clinicians and patients alike will prove to be critical in limb salvage and prevention of metastatic disease.6

References