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Mohs micrographic surgery and secondary intention healing of a plantar melanoma in-situ

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Abstract

This report details an acral melanoma in-situ on the right plantar foot that was successfully treated with Mohs micrographic surgery and secondary intention wound healing.

Keywords: melanoma; melanoma in-situ; margins; surgical repair; secondary intentions

Case Synopsis

A 76 year-old woman was referred to our surgical clinic for evaluation of a macule on her right plantar foot. Although the patient had the lesion biopsied approximately two years ago by an outside dermatologist and excision was recommended, she declined the procedure at that time. She presented to our office in November 2014 because the patch had continued to grow larger. On examination, a 3.8 x 5.3 cm irregularly hyperpigmented patch was present on the right plantar foot (**Figure 1**).

A biopsy was performed, which demonstrated an increased number of atypical melanocytes distributed in an irregular fashion within the epidermis. Some melanocytes were noted to have hyperchromatic and angulated nuclei. The histologic findings supported a diagnosis of melanoma in-situ (**Figure 2**).

The patient was agreeable to surgical management, and after risks and benefits were explained, Mohs micrographic surgery was performed. Clinically obvious tumor and the surrounding 6 mm of normal



Figure 1. Irregularly hyperpigmented 3.8 x 5.3 cm patch was present on the right plantar foot.

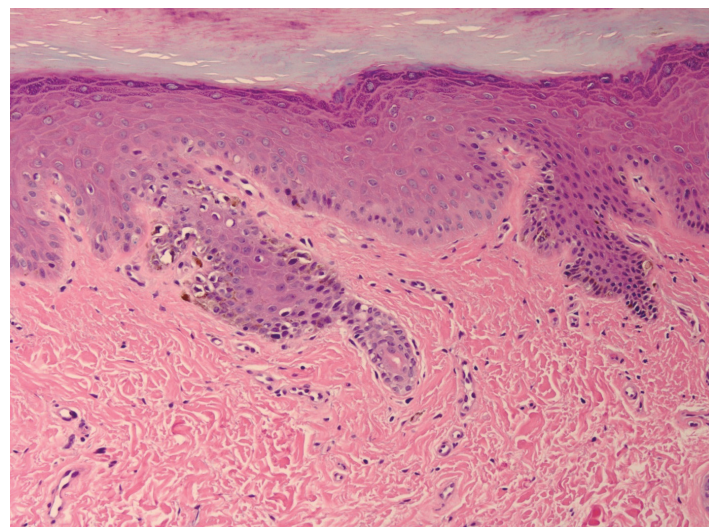


Figure 2. Melanoma in-situ. Increased numbers of atypical melanocytes distributed in an irregular fashion within the epidermis. Some melanocytes were noted to have hyperchromatic and angulated nuclei. H&E, 20x.

tissue were marked beyond that point. A debulking layer of visible tumor and subsequent specimen with 6 mm margins of normal skin was then taken down to subcutaneous fat. Review of the first Mohs layer showed melanocytic crowding and lentiginous hyperplasia. A second stage was then taken with an additional 4 mm margins (for a total of 1 cm margins). The slides appeared clear on horizontal sections and were sent for permanent section for confirmation.

Options for repair of the surgical defect, including secondary intention healing and full-thickness skin grafting, were discussed with the patient. She did not want a skin graft and the decision was made to allow the wound to heal by secondary intention. The patient was instructed to change the dressing daily and she was seen periodically for wound checks. Other than mild tenderness, the patient had no post-operative complications. At her 12 week post-operative visit, the surgical wound had completely granulated (**Figure 3**).



Figure 3. Twelve week post-operative visit. Complete granulation is evident at the prior melanoma in-situ surgical site.

Case Discussion

Malignant melanoma is the most common cause of death from skin cancer in Caucasians and its incidence has been rising worldwide [1,2]. Melanoma is classified into 4 main subgroups according to histological features, which include: nodular melanoma, superficial spreading melanoma, lentigo maligna melanoma, and acral lentiginous melanoma (ALM).

ALM, a subtype of melanoma first described by Reed in 1976, is characterized by a predilection for acral regions such as the palms, soles, and nails. ALM, although relatively rare in Caucasians, is the most common melanoma in patients with darker pigmented skin-types (despite the overall low incidence of melanoma in these populations, [2]). Although the natural course of ALM in-situ is uncertain, there are reports of recurrence and progression to invasive melanoma with lymph node metastases [3]. The prognosis of invasive ALM is generally considered to be worse than other subtypes. Lesions on the sole, for example, are often overlooked by patients and are diagnosed at a later stage [2,4].

The standard therapy for acral melanoma in-situ is wide local excision; many centers use 5 mm margins [4,5]. Mohs micrographic surgery (MMS) has also been increasingly utilized and studies have supported its successful use in treating the condition [6].

There is evidence that the standard 5 mm margins may not be adequate. Kunishige et al. found that 86% of melanoma in-situ tumors were excised with a 6-mm margin using MMS, whereas 9 mm removed 98.9%. They predicted recurrence rates between 8-20% with 5 mm margins and a maximal recurrence rate of only 1.4% with 9 mm margins [7]. Furthermore, there has been speculation that so-called "field cells," which reside in histologically-appearing normal skin but contain genetic abnormalities, may lead to recurrence if not adequately excised [5].

After wide excision, substantial defects develop that can be repaired using various methods, including primary closure, secondary intention healing, local and distant flaps, and skin grafting. The location of the lesion, medical comorbidities, age, and lifestyle of the patient must be considered before the choice of wound repair is made [1,2,4]. Primary closure on the foot is often not possible because of the lack of mobility of the skin on the sole and horizontal-growth of the tumor, which increases the reconstructive complexity [1]. Skin grafting (both split and full-thickness) and flaps (including the medial plantar flap) are frequently used to repair defects of the feet [1].

Healing by secondary intention has also been increasingly described. Jung et al., in a recent retrospective review of 25 patients with melanoma on the soles of the feet, compared 13 patients who were allowed to heal by secondary intention to 12 of those who were repaired by full-thickness skin graft. They found that secondary intention healing was superior to full-thickness skin grafting in cosmetic, functional, and clinical outcomes (as rated by both patients and physicians), although these wounds did take marginally longer to heal (median 12 weeks to complete re-epithelialization versus 8 weeks for skin graft). There were no significant differences in surgical complications between the two groups [2]. Benefits of secondary intention healing on the foot include avoiding a secondary wound for tissue harvesting, a smaller scar because of the natural contraction of the wound, and granulation tissue that acts as a cushion to absorb impact while walking [1]. Potential drawbacks include a longer-term healing period, regular and frequent dressing changes, and the requirement of careful observation [1]. There is recent evidence that negative pressure therapy may be of benefit to help minimize wound complications in foot melanomas left to heal by secondary intention [4], although our patient had no complications.

Conclusion

Secondary intention healing may be a viable repair option for plantar melanoma in-situ with minimal patient morbidity and wound complications

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