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A Decade on the Sole: Acral Melanoma In Situ With Partial Regression Managed by Radical Plantar Resection and Full-Thickness Skin Grafting

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Kian Memari [1], Amarilys Montalvo [2], Samira Remal [3], Carolina Rodriguez [3], Lissette P. Lazo [4], Adrian Legaspi [5]

1. Family Medicine, Palmetto General Hospital, Hialeah, USA 2. Podiatry, Palmetto General Hospital, Hialeah, USA 3. Medicine, Nova Southeastern University Dr. Kiran C. Patel College of Osteopathic Medicine, Fort Lauderdale, USA 4. Family Medicine, Nova Southeastern University Dr. Kiran C. Patel College of Osteopathic Medicine, Fort Lauderdale, USA 5. Center for Advanced Surgical Oncology, Palmetto General Hospital, Hialeah, USA

Corresponding author: Lissette P. Lazo, lp591@nova.edu

Abstract

Acral melanoma is an uncommon subtype of cutaneous melanoma occurring on the palms, soles, and nail apparatus. Delayed recognition is frequent because acral lesions may remain asymptomatic, resemble benign melanocytic or trauma-related changes, and arise in areas that are not routinely examined. Melanoma in situ involving a weight-bearing plantar surface presents additional challenges because complete oncologic excision must be balanced against functional preservation and complex wound reconstruction.

We report the case of a 66-year-old Hispanic man with a pigmented lesion involving the left lateral plantar foot that had been present for approximately 10 years and had gradually enlarged without associated pain or pruritus. An outside biopsy demonstrated malignant melanoma in situ with partial regression. Surgical oncology examination identified an approximately 4.0 × 5.0 cm pigmented lesion without clinically apparent lymphadenopathy. The patient underwent radical excision with approximately 0.5-cm gross peripheral margins, followed by reconstruction using a full-thickness skin graft harvested from the anterior abdominal wall. Sentinel lymph node biopsy was not performed because the lesion was classified as melanoma in situ.

The final histopathologic examination demonstrated an atypical lentiginous melanocytic proliferation consistent with acral melanoma in situ, described as a superficial spreading type, without an invasive component or lymphovascular space invasion. Dermal fibrosis and chronic inflammation were consistent with a previous biopsy site, and all surgical margins were negative for melanoma. Postoperative follow-up initially demonstrated graft incorporation with superficial epidermolysis and focal necrosis. A subsequent examination revealed a necrotic eschar covering the surgical site, requiring continued local wound care and consideration of debridement.

This case demonstrates that longstanding, asymptomatic plantar pigmentation should not be considered benign solely because of its chronicity or absence of symptoms. It also emphasizes the importance of histopathologic assessment, complete surgical excision with negative margins, and postoperative wound surveillance following reconstruction of weight-bearing acral defects.

Categories: Podiatry, Oncology, Dermatology
Keywords: acral melanoma, acral melanoma in situ, full-thickness skin graft, melanoma in situ, necrotic eschar, negative margins, partial regression, plantar melanoma, plantar reconstruction, radical resection

Introduction

Acral melanoma is a distinct form of cutaneous melanoma arising on the glabrous skin of the palms and soles or within the nail apparatus. Although relatively uncommon in the general population, acral melanoma represents an important diagnostic and therapeutic challenge because it frequently develops in anatomically concealed locations and may resemble benign pigmentation, chronic trauma, hemorrhage, callus formation, or other nonmalignant dermatologic conditions. Population-based studies have demonstrated differences in the incidence and survival patterns of acral melanoma compared with nonacral cutaneous melanoma, with poorer observed outcomes frequently associated with delayed recognition and more advanced stage at diagnosis [1,2].

Early recognition is particularly important because acral melanoma may remain asymptomatic for prolonged periods. Lesions may exhibit irregular pigmentation, asymmetric borders, or gradual enlargement without pain, pruritus, ulceration, or bleeding. Dermoscopy provides additional diagnostic information, particularly through recognition of the parallel ridge pattern, irregular diffuse pigmentation, and other suspicious acral

pigmentation patterns. In a multicenter study, Saida et al. demonstrated the diagnostic significance of dermoscopic patterns in distinguishing acral melanoma from benign melanocytic lesions [3]. Nevertheless, histopathologic examination remains necessary when clinical suspicion persists, because not all acral melanomas exhibit classic dermoscopic findings [4].

The management of acral melanoma depends on the presence or absence of invasion, histologic characteristics, surgical margin status, and anatomic location. Melanoma in situ is confined to the epidermis and is classified as stage 0 disease. Complete excision with histologically negative margins is the primary treatment, while sentinel lymph node biopsy is not indicated when invasion is absent [5]. Although a 0.5-cm clinical margin is commonly recommended for melanoma in situ, wider margins or techniques allowing comprehensive peripheral margin assessment may be appropriate in selected lesions with extensive or poorly defined subclinical spread [6].

Surgical management becomes particularly complex when melanoma involves the plantar foot. Weight-bearing skin has specialized structural and biomechanical characteristics, and excision can create substantial soft-tissue defects requiring reconstruction. Full-thickness skin grafts, split-thickness skin grafts, local flaps, and secondary intention healing are among the available approaches. Each technique must be evaluated in relation to the size and location of the defect, vascularity of the wound bed, anticipated mechanical loading, and the patient's functional requirements. Comparative studies have demonstrated that reconstructive methods differ in healing time, cosmetic appearance, and functional outcomes [7].

We describe a patient with a slowly enlarging, asymptomatic pigmented plantar lesion present for approximately one decade. Despite its prolonged clinical course, biopsy demonstrated melanoma in situ with partial regression. Definitive surgical excision confirmed complete removal without invasion, while subsequent graft-related complications highlighted the challenges of restoring durable coverage to the plantar foot.

Case Presentation

A 66-year-old Hispanic man presented to surgical oncology for evaluation of a longstanding pigmented lesion involving the lateral plantar aspect of the left foot. The lesion had initially been small and had progressively enlarged over approximately 10 years. The patient described the pigmentation as consistently black without significant changes in color and denied pain, pruritus, bleeding, or other associated symptoms. He had previously undergone dermatologic evaluation and was reportedly informed that the lesion was not concerning. Subsequent outside biopsy, however, demonstrated malignant melanoma in situ with partial regression, prompting referral for definitive surgical management.

His medical history was notable for a previously documented dermatologic condition. His home medication included trazodone. He had no known drug allergies or pertinent family history among first-degree relatives and was documented as a current intermittent cigarette smoker. Review of systems was otherwise negative, including the absence of constitutional symptoms, lymphadenopathy, abnormal bruising, spontaneous bleeding, or neurologic complaints.

During surgical oncology evaluation in July 2026, the patient appeared clinically stable and was in no acute distress. Examination of the left lateral plantar foot demonstrated an irregular pigmented lesion measuring approximately 4.0 × 5.0 cm (Figure *1*). No clinically apparent regional lymphadenopathy was identified, and the remainder of the examination was nonfocal.



FIGURE 1: Preoperative clinical photograph of the left lateral plantar foot pigmented lesion.

Clinical photograph demonstrating an irregular pigmented lesion involving the lateral plantar aspect of the left foot. The lesion measured approximately 4.0 × 5.0 cm on clinical examination and had progressively enlarged over approximately 10 years. Subsequent histopathologic evaluation established acral melanoma in situ with partial regression.

Given the diagnosis of melanoma in situ with partial regression, definitive surgical excision was recommended to achieve complete local clearance and permit comprehensive histopathologic assessment. The operative plan included peripheral surgical margins of approximately 0.5-1.0 cm, with consideration of margins exceeding 0.5 cm because of the acral location and lesion size. Sentinel lymph node biopsy was not planned because the preoperative diagnosis was melanoma in situ without documented dermal invasion. Reconstruction using a full-thickness skin graft harvested from the abdominal wall was selected to provide coverage of the anticipated plantar defect.

In July 2026, the patient underwent radical resection of the left foot lesion with full-thickness skin graft reconstruction under general anesthesia. After preparation and draping of the anterior abdominal wall and left lower extremity, local anesthetic was infiltrated around the pigmented lesion. A circumferential incision was created approximately 0.5 cm beyond the clinically apparent lesion and extended through the skin into the subcutaneous tissue. The specimen was dissected from the lateral and plantar aspects of the foot using electrocautery and submitted for permanent histopathologic evaluation, with orientation sutures marking the anterior and plantar margins.

The operative documentation described an excision measuring approximately 6.5 × 4.0 cm and a full-thickness skin graft measuring approximately 30 cm^2. The graft was harvested from the left lower anterior abdominal wall, defatted, positioned over the plantar defect, and secured with nylon sutures. A bolster dressing was applied to maintain graft contact with the underlying wound bed and minimize shear-related displacement. The operation was completed without documented intraoperative complications. Estimated blood loss was recorded as negligible, no drains were placed, and the patient was transferred to the post-anesthesia care unit in stable condition.

The final histopathologic examination of the excised left plantar lesion demonstrated an atypical lentiginous melanocytic proliferation consistent with acral melanoma in situ, described in the pathology report as the superficial spreading type. No invasive melanoma was identified, and there was no evidence of lymphovascular space invasion. A focal area of dermal fibrosis with associated chronic inflammation was interpreted as compatible with changes at the previous biopsy site. All examined surgical margins were free of melanoma. These findings established complete histologic excision of stage 0 disease and supported the decision not to perform sentinel lymph node biopsy (Figure *2*).

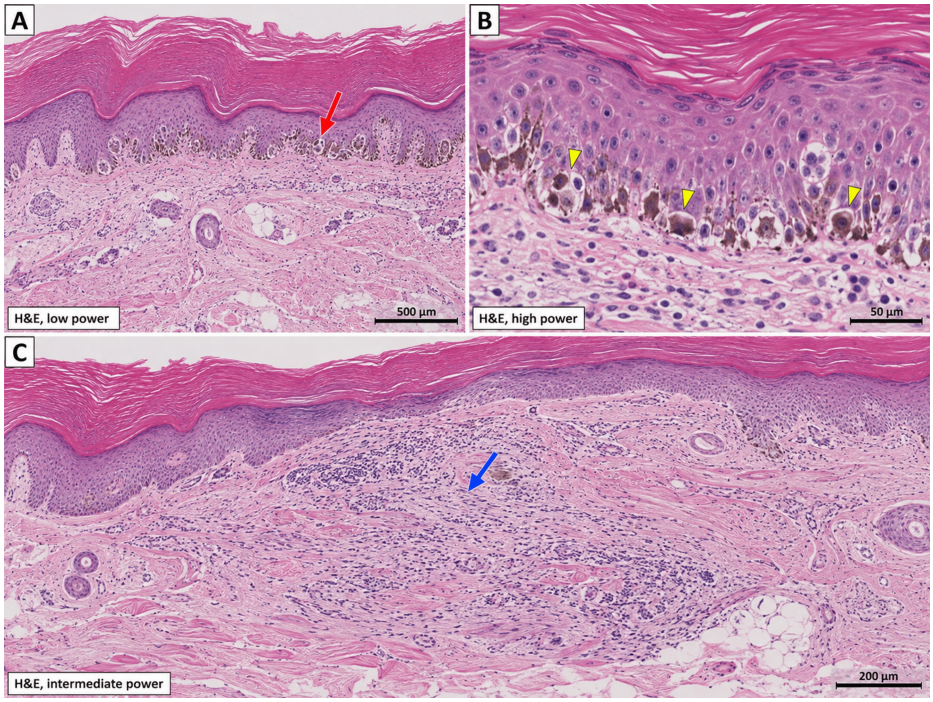


FIGURE 2: Histopathologic examination of the excised left plantar lesion demonstrating melanoma in situ and prior biopsy-site changes.

(A) Low-power hematoxylin and eosin (H&E) image of acral skin (magnification ×40) demonstrating lentiginous proliferation of atypical pigmented melanocytes along the dermoepidermal junction (red arrow).

(B) High-power H&E image (magnification ×400) highlighting atypical melanocytes with nuclear enlargement, variable pigmentation, and irregular distribution along the basal epidermal layer (yellow arrowheads), representing the junctional melanocytic atypia characteristic of acral melanoma in situ.

(C) Intermediate-power H&E image (magnification ×100) demonstrating dermal fibrosis with an associated chronic inflammatory infiltrate (blue arrow), representing changes compatible with a previous biopsy site.

During postoperative follow-up in August 2026, the patient denied bleeding, wound discharge, or other systemic symptoms. Examination demonstrated incorporation of the full-thickness skin graft, although areas of superficial epidermolysis and focal tissue necrosis were present. The abdominal donor site was healing appropriately. The wound was gently cleansed with normal saline and covered with a nonadherent dressing. Conservative wound management was recommended, including gentle cleansing with soap and water and measures to prevent excessive moisture accumulation. Immediate debridement was deferred pending reassessment of the wound bed and surrounding tissue (Figure *3*).



FIGURE 3: Postoperative full-thickness skin graft site with superficial epidermolysis and focal necrosis.

Clinical photograph obtained during postoperative follow-up in August 2026 demonstrating the left lateral plantar surgical site after radical resection and full-thickness skin graft reconstruction. The graft was described as incorporated, with superficial epidermolysis and a focal area of necrotic tissue. These findings required continued wound care and close surveillance for graft-related complications.

At a subsequent examination in August 2026, the patient again denied active bleeding or discharge but reported development of a black eschar over the operative site. Physical examination showed that the left lateral foot wound was covered by necrotic eschar (Figure *4*). Debridement was recommended to facilitate removal of devitalized tissue and reassessment of the underlying wound bed. However, the patient declined the procedure at that visit because of anticipated pain. He was instructed to apply petroleum jelly to soften the eschar and return for reassessment, with premedication planned before a subsequent debridement attempt if tolerated.



FIGURE 4: Postoperative necrotic eschar overlying the left lateral plantar surgical site.

Clinical photograph obtained during later postoperative follow-up in August 2026 demonstrating a necrotic eschar covering the left lateral plantar surgical defect following radical resection and full-thickness skin graft reconstruction. Debridement was recommended but deferred at the patient's request. Local wound care and short-interval reassessment were planned.

The clinical progression from initial lesion recognition through definitive excision and postoperative wound surveillance is summarized in Table *1*.

Time point	Clinical event	Key findings	Clinical significance
Approximately 10 years before surgical evaluation	Initial lesion recognition	Small pigmented lesion of the left lateral plantar foot, followed by slow enlargement	Demonstrates the prolonged asymptomatic course and potential for delayed recognition
Before July 2026	Dermatologic evaluation and biopsy	Outside pathology identified melanoma in situ with partial regression	Established the indication for definitive excision and margin assessment
July 2026	Surgical oncology evaluation	Pigmented lesion approximately 4 × 5 cm; no clinically apparent lymphadenopathy	Defined the local extent of disease and guided operative planning
July 2026	Definitive surgical treatment	Radical resection, documented excision approximately 6.5 × 4.0 cm, and full-thickness skin graft reconstruction of approximately 30 cm²	Achieved local tumor excision and coverage of the plantar defect
After definitive excision	Final histopathologic examination	Acral melanoma in situ without invasion or lymphovascular space invasion; negative surgical margins	Established stage 0 disease and complete histologic clearance
August 2026, initial postoperative follow-up	Graft assessment	Graft incorporation with superficial epidermolysis and focal necrosis	Required conservative wound care and continued surveillance
August 2026, subsequent postoperative follow-up	Wound reassessment	Necrotic eschar covering the operative site; patient declined debridement	Demonstrated delayed wound-healing complications requiring further management

TABLE 1: Clinical Timeline

The operative and histopathologic characteristics of the lesion, including surgical margin status, reconstruction method, and postoperative complications, are summarized in Table *2*.

Domain	Finding	Interpretation
Anatomic site	Left lateral plantar foot	Acral location with distinct diagnostic and functional considerations
Preoperative lesion size	Approximately 4.0 × 5.0 cm	Large clinically apparent pigmented lesion
Symptom profile	No pain or pruritus	Absence of symptoms may contribute to delayed evaluation
Lesion duration	Approximately 10 years	Prolonged course with gradual enlargement
Initial biopsy	Melanoma in situ with partial regression	Supported definitive excision and careful histopathologic evaluation
Definitive operation	Radical local resection	Primary oncologic treatment
Documented excision size	Approximately 6.5 × 4.0 cm	Operative specimen measurement
Reconstruction	Full-thickness skin graft, approximately 30 cm²	Reconstruction of the plantar surgical defect
Donor site	Left lower anterior abdominal wall	Source of full-thickness graft
Final histopathology	Acral melanoma in situ, described as the superficial spreading type	No dermal invasive component identified
Prior biopsy-site changes	Focal dermal fibrosis with chronic inflammation	Compatible with previous biopsy-site healing
Lymphovascular space invasion	Not identified	No lymphovascular involvement on final histopathology
Surgical margins	All margins negative for melanoma	Histologic clearance achieved
Sentinel lymph node biopsy	Not performed	Not indicated for melanoma in situ without invasion
Postoperative findings	Epidermolysis, focal graft necrosis, and subsequent eschar formation	Demonstrated the need for ongoing wound management

TABLE 2: Pertinent Surgical and Pathologic Features

Discussion

This case illustrates several important aspects of the diagnosis, pathology, surgical treatment, and reconstruction of acral melanoma in situ. The first is the possibility of substantial diagnostic delay when a pigmented lesion is located on the plantar foot and remains asymptomatic. The patient described a lesion that had been present for approximately one decade, was consistently black, and had enlarged slowly without pain, pruritus, or other symptoms. These characteristics may falsely reassure patients and clinicians, particularly when a plantar lesion is attributed to chronic friction, trauma, callus formation, or benign pigmentation.

The epidemiologic and clinical behavior of acral melanoma differs in several respects from nonacral melanoma. Bradford et al. demonstrated distinct incidence and survival patterns among patients with acral lentiginous melanoma, while Phan et al. identified tumor thickness and clinical characteristics as important prognostic factors in a clinicoprognostic series [1,2]. Subsequent clinicopathologic studies have reinforced the importance of stage at diagnosis and the difficulty of recognizing lesions arising in less visible acral locations [8]. Although acral melanoma has distinct molecular characteristics and a generally lower ultraviolet-associated mutational burden than many nonacral melanomas, its clinical outcome is strongly influenced by the extent of disease at the time of diagnosis [9,10].

The absence of symptoms should not be interpreted as evidence against malignancy. Acral melanoma may initially present as an irregularly pigmented macule or patch and may remain clinically subtle until enlargement or other changes prompt evaluation. Dermoscopy can improve early recognition through identification of the parallel ridge pattern, asymmetric pigmentation, and other suspicious features [3,4]. However, histopathologic examination remains the diagnostic standard for clinically atypical acral pigmentation. In this case, the decision to obtain a biopsy ultimately established melanoma in situ and

allowed surgical treatment before an invasive component was identified.

The histopathologic findings are noteworthy because the outside biopsy demonstrated melanoma in situ with partial regression. Histologic regression in melanoma refers to changes associated with attenuation or disappearance of neoplastic melanocytes, often accompanied by inflammatory infiltration, dermal fibrosis, melanophages, or vascular alterations. The interpretation of regression requires careful distinction from scarring and inflammatory changes resulting from prior biopsy or trauma [11]. This distinction is particularly relevant in the present case, in which the outside biopsy was described as showing partial regression, whereas the definitive excision demonstrated focal dermal fibrosis and chronic inflammation interpreted as a previous biopsy-site reaction.

Regression in melanoma in situ remains an area of clinicopathologic debate. Cartron et al. emphasized that criteria developed for invasive melanoma should not be applied uncritically to melanoma in situ and that available evidence does not establish a need to modify treatment solely because regression is present in a lesion otherwise confirmed to be in situ [12]. Therefore, the outside finding of partial regression supports careful review and adequate sampling but does not independently establish a previously invasive tumor or justify assigning a higher pathologic stage.

The final surgical pathology report described an atypical lentiginous melanocytic proliferation consistent with acral melanoma in situ, superficial spreading type. These descriptors are reported as documented by the interpreting pathologist. The central staging distinction is the absence of dermal invasion. The report also documented no lymphovascular space invasion and confirmed that all surgical margins were negative. Consequently, the lesion was appropriately managed as melanoma in situ rather than invasive melanoma. These findings support the decision not to perform sentinel lymph node biopsy, which is not indicated for stage 0 disease without invasion [5].

Selection of surgical margins is particularly important in acral melanoma because broad excision may compromise function on the plantar surface. Contemporary guidelines support complete excision of melanoma in situ with histologically negative margins [5]. Nevertheless, a fixed 5-mm clinical margin may not provide complete clearance in every lesion, especially when microscopic extension exceeds the clinically visible boundary [6]. In the present case, the surgical team planned margins of approximately 0.5-1.0 cm and performed resection with approximately 0.5-cm gross margins. Final histopathology confirmed negative margins, demonstrating adequate clearance in the examined specimen. This is clinically more meaningful than the gross margin measurement alone.

The reconstructive challenges associated with plantar surgery should be considered alongside oncologic management. Plantar skin is adapted to withstand repetitive pressure and shear, with limited mobility and unique structural properties. Removal of a large lesion can result in a defect that cannot be closed primarily without excessive tension or distortion. Reconstruction may therefore require a full-thickness skin graft, split-thickness graft, local flap, or secondary intention healing. In a retrospective comparison of plantar melanoma excisions, Jung et al. reported that full-thickness skin grafting was associated with faster healing than secondary intention healing, although secondary intention produced favorable functional and cosmetic results after complete re-epithelialization in their study population [7]. The optimal reconstruction strategy must therefore be individualized.

In this patient, a full-thickness skin graft harvested from the anterior abdominal wall was used to reconstruct the plantar defect. The graft was secured with sutures and protected by a bolster dressing, consistent with established graft-management principles intended to maintain contact with the wound bed and reduce shear. Although the initial postoperative examination documented graft incorporation, subsequent superficial epidermolysis, focal necrosis, and eschar formation demonstrated the potential limitations of graft healing in weight-bearing locations.

Graft survival depends on adequate wound-bed vascularity, close apposition, effective immobilization, control of shear forces, and the absence of hematoma, seroma, or infection. Smoking may impair tissue perfusion and wound healing and was a relevant potential risk factor in this patient, who was documented as an intermittent cigarette smoker. Nevertheless, the available clinical findings do not establish a single cause for the observed epidermolysis or necrosis. The postoperative course underscores the importance of differentiating complete oncologic resection from successful functional reconstruction, because negative melanoma margins do not guarantee uncomplicated healing.

The development of a necrotic eschar required continued surveillance and consideration of debridement. In the absence of documented active bleeding or wound discharge, the surgical team initially pursued conservative wound care with subsequent reassessment. When the eschar developed, debridement was recommended but deferred at the patient's request because of anticipated pain. This aspect of the case demonstrates the importance of individualized postoperative management, patient preferences, pain control, and repeated evaluation of tissue viability.

Long-term follow-up after melanoma in situ treatment should emphasize surveillance for local recurrence

and new primary melanoma, examination of the operative site, and education regarding self-inspection of acral surfaces. Patients should be encouraged to examine the soles, interdigital spaces, and nail apparatus because abnormalities at these locations can be overlooked. Follow-up should also assess wound integrity, graft durability, pain, and return to functional ambulation [4,5].

The available postoperative documentation described early graft-related complications and a plan for further wound management; subsequent healing, completion of debridement, long-term ambulation, and extended recurrence surveillance were not established in the submitted record. Accordingly, the documented oncologic outcome is complete histologic excision, whereas the final functional outcome remains dependent on subsequent wound recovery.

This case emphasizes two complementary clinical priorities: early recognition and biopsy of suspicious pigmented acral lesions, and coordinated surgical and reconstructive care after diagnosis. Clinicians should avoid dismissing chronic plantar pigmentation because of its long duration or lack of symptoms, and surgical planning should anticipate the unique wound-healing challenges of the weight-bearing foot.

Conclusions

Acral melanoma in situ may remain asymptomatic and slowly progressive for years, creating opportunities for delayed diagnosis when plantar pigmentation is attributed to benign or trauma-related changes. In this case, a lesion present for approximately one decade was ultimately diagnosed as melanoma in situ with partial regression and treated by radical excision with full-thickness skin graft reconstruction. Final pathology confirmed melanoma confined to the epidermis, no lymphovascular space invasion, and negative surgical margins, supporting stage 0 classification and the decision to omit sentinel lymph node biopsy. Although complete oncologic clearance was achieved, postoperative epidermolysis, focal necrosis, and eschar formation highlighted the challenges of plantar reconstruction. Careful evaluation of suspicious acral pigmentation, timely biopsy, appropriate margin assessment, and longitudinal surveillance of both tumor recurrence and wound healing remain essential to optimizing outcomes. Plantar reconstruction requires additional attention to functional loading and wound surveillance, but the central clinical lesson is the importance of accurate staging, deliberate margin management, and subsequent skin examination.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Carolina Rodriguez, Kian Memari, Samira Remal, Lissette P. Lazo, Amarilys Montalvo, Adrian Legaspi

Acquisition, analysis, or interpretation of data: Carolina Rodriguez, Kian Memari, Samira Remal, Lissette P. Lazo, Amarilys Montalvo, Adrian Legaspi

Drafting of the manuscript: Carolina Rodriguez, Kian Memari, Samira Remal, Lissette P. Lazo, Amarilys Montalvo, Adrian Legaspi

Critical review of the manuscript for important intellectual content: Carolina Rodriguez, Kian Memari, Samira Remal, Lissette P. Lazo, Amarilys Montalvo, Adrian Legaspi

Supervision: Lissette P. Lazo

Disclosures

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