A case of recurrent lentigo maligna diagnosed with precise reflectance confocal microscopy—guided biopsy technique

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CLINICAL PRESENTATION
An 87-year-old woman presented for a 12-month follow-up examination after radiation therapy for management of a 20 × 25-mm lentigo maligna on her left cheek (Fig 1, A).

DERMOSCOPIC APPEARANCE
Dermoscopy demonstrated asymmetric structureless light-brown pigmentation with scattered brown dots, angulated pigmented lines, focal fine-pigmented semicircles, and areas of a dense vascular network (Fig 1, B).

CONFOCAL MICROSCOPY APPEARANCE
Lesion assessment with handheld reflectance confocal microscopy (Vivascope 3000, Caliber ID, Rochester, NY) demonstrated diffuse epidermal disarray with intermittent areas of pagetoid dendritic cells with small dendrites, along with a singular focus of folliculotropic pagetoid dendritic cells with large dendrites, at the dermoepidermal junction (Fig 2, A).

BIOPSY TECHNIQUE
A precise biopsy was performed after reflectance confocal microscopy identification of a singular focus of perifollicular dendritic cells. A 3-mm biopsy punch was used to perforate a round window in hypoallergenic adhesive paper tape (Micropore, 3M, St. Paul, MN), which was then adhered over the area of concern within the lesion (Fig 3, A and B). Further assessment with the handheld reflectance confocal microscopy tool was performed through the perforation, with subsequent repositioning of the tape until the area of perifollicular dendritic cells was identified within the window (Fig 2, B). The tape was left in situ and a 3-mm punch biopsy was performed through the perforation.

HISTOPATHOLOGIC DIAGNOSIS
Histopathology initially demonstrated basal keratinocyte pigmentation and a mild increase of junctional melanocytes, and lacked any significant radiation-induced fibrosis after initial bread-loaf sectioning. Diagnostic features of melanoma were not identified. The presence of folliculotropic dendritic cells at the margins of the biopsy site as noted on reflectance confocal microscopy was subsequently communicated to the histopathologist. Further biopsy sectioning showed confluent lentiginous proliferation of atypical melanocytes at the dermoepidermal junction and involved a hair follicle, consistent with lentigo maligna on hematoxylin-eosin staining, within 0.5 mm of the specimen edge (Fig 4, A and B). Additional Sox10 staining was not

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DISCUSSION

The application and benefit of reflectance confocal microscopy as an aid for diagnosis in the management of lentigo maligna have been well established. Because lentigo maligna commonly presents as large lesions on the head and neck, use of the handheld Vivascope 3000 is often required to perform complete lesional assessment, along with margin delineation to identify subclinical spread. Although the Vivascope 3000 allows rapid en face evaluation of larger lesions, in situ correlation of identified areas of concern with the handheld device remains a challenge. Techniques previously reported to address this difficulty include the use of a 10-mm adhesive paper ring placed around lesions of concern, or, for larger lesions, demarcation with medical tape. Adhesive tape fibers produce a characteristic patterning when viewed with reflectance confocal microscopy, which allows easy delineation from background skin (Fig 2, B).

By using the technique detailed above, we build on previously reported applications of adhesive tape to guide reflectance confocal microscopy and, to our knowledge, are the first to describe this precise reflectance confocal microscopy biopsy technique. With this technique, biopsies can be made with greater certainty that concerning features of malignancy on reflectance confocal microscopy are appropriately

Fig 1. A, A 20 × 25-mm pigmented patch on the left cheek. B, Dermoscopy demonstrated asymmetric structureless light-brown pigmentation with scattered brown dots, angulated pigmented lines, focal fine-pigmented semicircles, and areas of a dense vascular network.

Fig 2. A, A 750 × 750-μm Vivascope 3000 image demonstrating large pagetoid dendritic cells (*), few large round atypical cells (#), and diffuse epidermal disarray. B, A 4.5 × 4.5-mm Vivascope 1500 mosaic demonstrating a 3-mm perforation within the micropore tape adhered over the area of concern within the lesion. Perifollicular pagetoid dendritic cells (*) observed through the perforation at the 4 o’clock margin.
targeted within millimeters, and it allows precise confocal imaging information to be relayed to histopathologists to help guide their assessment. This case highlights the challenges lentigo maligna presents for clinicopathologic correlation and demonstrates how the use of the described refined reflectance confocal microscopy—guided biopsy technique can aid in obtaining accurate diagnosis to improve patient outcomes.

REFERENCES

1. Guitera P, Pellacani G, Crotty KA, et al. The impact of in vivo reflectance confocal microscopy on the diagnostic accuracy of lentigo maligna and equivocal pigmented and nonpigmented macules of the face. J Invest Dermatol. 2010;130:2080-2091.

2. Guitera P, Moloney FJ, Menzies SW, et al. Improving management and patient care in lentigo maligna by mapping with in vivo confocal microscopy. JAMA Dermatol. 2013;149:692-698.

3. Navarrete-Dechent C, Cordova M, Aleissa S, et al. Lentigo maligna melanoma mapping using reflectance confocal microscopy correlates with staged excision: a prospective study. J Am Acad Dermatol. 2020. https://doi.org/10.1016/j.jaad.2019.11.058.

4. Navarrete-Dechent C, Cordova M, Aleissa S, et al. Use of paper tape to guide reflectance confocal microscopy navigation of large skin lesions. J Am Acad Dermatol. 2019. https://doi.org/10.1016/j.jaad.2019.07.039.

5. Marino ML, Rogers T, Sierra Gil H, Rajadhyaksha M, Cordova MA, Marghoob AA. Improving lesion localization when imaging with handheld reflectance confocal microscope. Skin Res Technol. 2016;22:519-520.