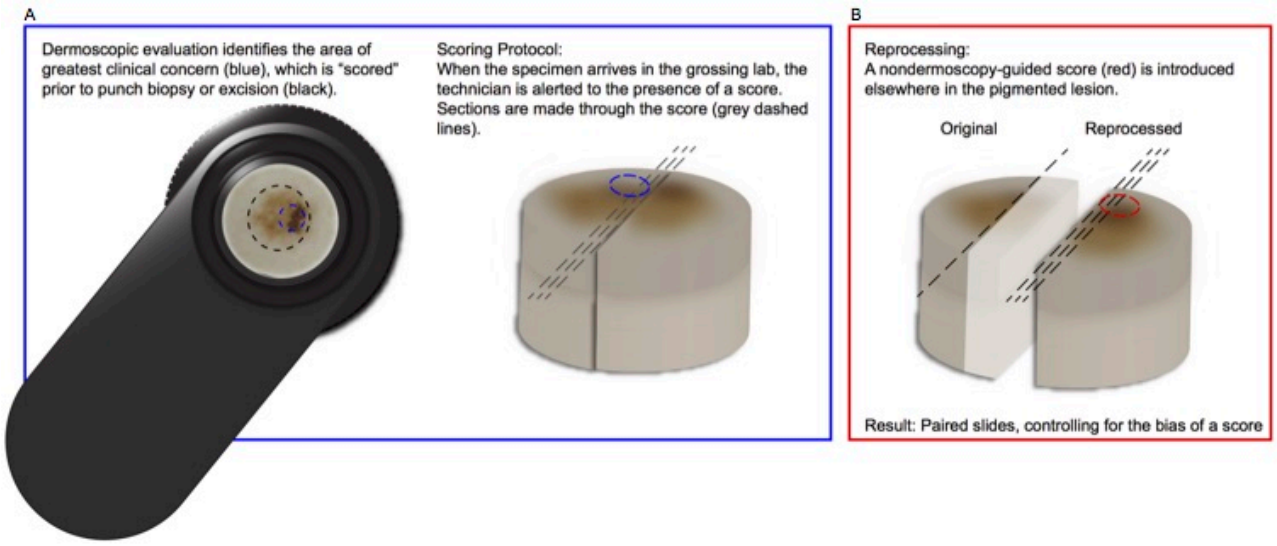
Keeping Score: dermoscopy for the diagnosis of melanocytic lesions

Among people at high risk for melanoma, skin cancer screening is valuable for early detection of a new malignant melanoma. When dermatologists identify a suspicious lesion, a biopsy is performed and the removed skin sample is sent to the histopathology lab for preparation of a tissue slide that can be assessed by a pathologist. In the histopathology lab, a technician cuts the tumor into thin slices that are approximately 3-to-5 microns thick. These slices are laid onto a glass slide. The tissue on the slide may represent 1/1000 of the entire removed tissue sample. In the vast majority of cases, this process allows for adequate morphologic assessment of the neoplasm and appropriate treatment recommendations. Sometimes, however, the earliest microscopic signs of melanoma may be subtle and only focally present in the removed tissue sample. In such cases, the critical area may not be present in the sections placed on the slide and sent to the pathologist for review.



A) Demonstration of dermoscopy used to score and then section a specimen B) To create a control, a nondermoscopy-guided score was introduced elsewhere in the lesion to dictate an alternative, but clinically plausible, plane of section

A dermatoscope is a handheld instrument that can magnify skin lesions by 10-fold or more. This allows a dermatologist to see pigment patterns and blood vessels within deeper layers of the skin, which provide valuable clues for diagnosis. Dermatologists in our clinic routinely use dermoscopy to mark the most suspicious area of a lesion before removal, a technique called “scoring.” The scored area is used to guide histologic sectioning. Scoring assures that any subtle or focal areas that concerned the dermatologist will be in the tissue slide prepared by the laboratory technician

and available for pathologic diagnosis.

In this study, we sought to assess if scoring helped to identify which part of a lesion was most influential for diagnosis. We selected 150 specimens that were scored by dermatologists in our pigmented lesion clinic. We then created a second, nondermoscopy-guided score elsewhere in the lesion to serve as a control. Using a double-blinded, randomized design, we compared diagnoses resulting from dermoscopy-guided scores and the control scores. Slides resulting from both techniques were evaluated by 3 pathologists for level of atypia, and the dermoscopic features that prompted the dermatologist to place the original score were also evaluated.

We found that higher grades of atypia were diagnosed on microscopic sections identified by the clinician's scoring. In fact, 4 cases of invasive melanoma were identified on dermoscopy-guided sections that would have been otherwise missed. The 4 dermoscopic features that were highly specific for guiding the clinician to place a score in a higher grade area were negative pigment network, regression structures, radial streaming, and irregular blotches.

Our study showed that dermoscopy-guided scoring identifies areas that are important for microscopic evaluation. In some cases, a diagnosis of melanoma might have been missed if not for scoring. While it is possible that our experimental design may overestimate the usefulness of this technique, we believe that this study provides strong evidence that dermoscopy can improve the diagnosis of pigmented lesions by guiding the pathologist to the most suspicious area in a skin biopsy.

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