

Using a metallic ink pen to assist in the demarcation of skin lesions under reflectance confocal microscopy



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Abbreviation used:

RCM: reflectance confocal microscopy

CLINICAL CHALLENGE

Reflectance confocal microscopy (RCM) is an increasingly used, noninvasive imaging technique with near-histologic resolution and high diagnostic accuracy for skin neoplasms.¹ Arm-mounted RCM enables accurate lesional navigation by correlating a dermoscopic image with the corresponding RCM mosaic; however, some subtle, small, or nonpigmented lesions are hard to locate on mosaics. In addition, when handheld RCM is used, lesion demarcation has been performed with the aid of paper rings to create boundaries and reference points.² However, paper rings may not be optimal for the demarcation of larger, irregularly shaped lesions, and gentian ink from standard surgical marking pens cannot be detected on RCM.

SOLUTION

We manually demarcate lesions of various shapes and sizes using a metallic ink pen (Sharpie metallic marker, [Sanford LP, Oak Brook, IL]; considered safe for skin contact according to the Material Safety Data Sheet ID No. 39100, unknown safety data for open wounds). We let the ink dry for 5 minutes before imaging to avoid smearing. We use an arm-mounted or handheld RCM (VivaScope 1500 or 3000; Caliber Imaging & Diagnostics, Rochester, NY). Demarcation with the metallic ink is clearly recognizable at all skin levels up to a depth of 150 to 200 μm and appears as a hyperreflective artifact (Fig 1).

The RCM technique is based on differences in refractive indices. The hyper-reflective metallic ink allows for enhanced visualization of the location of the lesion on the skin and the areas observed within RCM.

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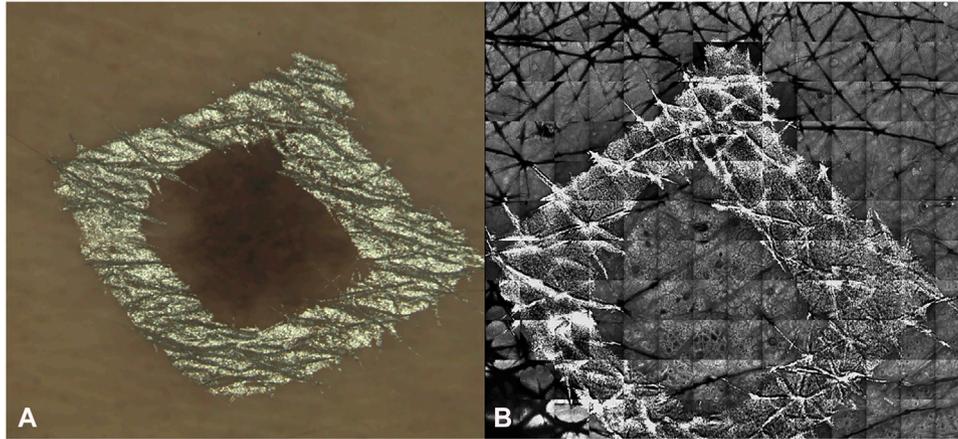


Fig 1. Lesion demarcation using a metallic ink pen. **A**, Clinical appearance of a demarcated lesion. **B**, Reflectance confocal microscopy mosaic shows the hyperreflective signal of the metallic ink. The lesion is clearly outlined (8×8 mm at a depth of $150 \mu\text{m}$). Images were obtained with a VivaScope 1500 (Caliber Imaging & Diagnostics, Rochester, NY).

Manual delineation using a metallic pen can improve accurate demarcation of subtle, small, nonpigmented, irregular, and larger skin lesions on wide-probe RCM as well as with handheld RCM.

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