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Advances in the use of reflectance confocal microscopy in melanoma

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ABSTRACT

In vivo reflectance confocal microscopy (RCM) is a noninvasive high-resolution skin imaging tool that has become an important adjunct to clinical exam, dermoscopy and histopathology assessment, in the diagnosis and management of melanoma. RCM generates a horizontal view of the skin, whereby cellular and subcellular (e.g., nuclei, melanophages, collagen) structures, to the level of the upper dermis, are projected onto a screen at near-histological resolution. Morphologic descriptors, standardized terminology, and diagnostic algorithms are well established for the RCM assessment of melanoma, melanocytic, and nonmelanocytic lesions. Clinical applications of RCM in melanoma are broad and include diagnosis, assessment of large lesions on cosmetically sensitive areas, directing areas to biopsy, delineating margins prior to surgery, detecting response to treatment and assessing recurrence. This review will provide an overview of RCM technology, findings by melanoma subtype, clinical applications, as well as explore the accuracy of RCM for melanoma diagnosis, pitfalls and emerging uses of this technology *ex vivo*. **KEYWORDS:**algorithm; confocal microscopy; cutaneous oncology; diagnosis; in vivo confocal microscopy; mapping; melanoma; melanoma subtype; noninvasive skin imaging; pathology correlations PMID: 30190930 PMCID: PMC6122529 DOI: 10.2217/mmt-2018-0001