

Medical > In Vivo > Non-Melanoma Skin Cancer Research > Other material**3****Peri-operative delineation of non-melanoma skin cancer margins in vivo with handheld reflectance confocal microscopy and video-mosaicking.**

Flores E, Yélamos O, Cordova M, Kose K, Phillips W, Lee EH, Rossi A, Nehal K, Rajadhyaksha M. *J Eur Acad Dermatol Venereol.* 2019 Feb 27. doi: 10.1111/jdv.15491.

ABSTRACT

BACKGROUND:The surgical removal of non-melanoma skin cancers (NMSCs) is guided by the pathologic examination of margins. However, the preparation of histopathology is time consuming, labor-intensive, and requires separate laboratory infrastructure. Furthermore, when histopathology indicates positive margins, patients must return for re-excisions. Reflectance confocal microscopy (RCM) with a new video-mosaicking approach can noninvasively delineate margins directly on patients and potentially guide surgery in real-time, augmenting the traditional approaches of histopathology. **OBJECTIVE:**To assess a new peri-operative RCM video-mosaicking approach for comprehensive delineation of NMSC margins on patients in vivo. **METHODS:**Thirty-five patients undergoing Mohs micrographic surgery (MMS) in the Mohs surgery unit at Memorial Sloan Kettering Cancer Center, New York, NY were included in the study. RCM imaging was performed before and after the first staged excision by acquiring videos along the surgical margins (epidermal, peripheral and deep dermal) of each wound, which were subsequently processed into video-mosaics. Two RCM evaluators read and assessed video-mosaics, and subsequently compared to the corresponding Mohs frozen histopathology. **RESULTS:**RCM videos and video-mosaics displayed acceptable imaging quality (resolution and contrast), pre-operatively in 32/35 (91%) NMSC lesions, and intra-operatively in 29/35 lesions (83%). Pre-operative delineation of margins correlated with the histopathology in 32/35(91%) lesions. Intra-operative delineation correlated in 10/14 (71%) lesions for the presence of residual tumor and in 18/21 (86%) lesions for absence. Sensitivity/specificity were 71%/86% and 86%/81% for two RCM video-mosaic evaluators, and overall agreement was 80% and 83% with histopathology, with moderate inter-evaluator agreement ($k=0.59$, $p<0.0002$). **CONCLUSIONS:**Peri-operative RCM video-mosaicking of NMSC margins directly on patients may potentially guide surgery in real-time, serve as an adjunct to histopathology, reduce time spent in clinic and reduce the need for re-excisions. Further testing in larger studies is needed. This article is protected by copyright. All rights reserved. This article is protected by copyright. All rights reserved. PMID: 30811707 DOI: 10.1111/jdv.15491