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Implementation of fluorescence confocal mosaicking microscopy by "early adopter" Mohs surgeons and dermatologists: recent progress.

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J Biomed Opt. 2017 Feb 1;22(2):24002. doi: 10.1117/1.JBO.22.2.024002.

ABSTRACT

Confocal mosaicking microscopy (CMM) enables rapid imaging of large areas of fresh tissue ex vivo without the processing that is necessary for conventional histology. When performed in fluorescence mode using acridine orange (nuclear specific dye), it enhances nuclei-to-dermis contrast that enables detection of all types of basal cell carcinomas (BCCs), including micronodular and thin strands of infiltrative types. So far, this technique has been mostly validated in research settings for the detection of residual BCC tumor margins with high sensitivity of 89% to 96% and specificity of 99% to 89%. Recently, CMM has advanced to implementation and testing in clinical settings by "early adopter" Mohs surgeons, as an adjunct to frozen section during Mohs surgery. We summarize the development of CMM guided imaging of ex vivo skin tissues from bench to bedside. We also present its current state of application in routine clinical workflow not only for the assessment of residual BCC margins in the Mohs surgical setting but also for some melanocytic lesions and other skin conditions in clinical dermatology settings. Last, we also discuss the potential limitations of this technology as well as future developments. As this technology advances further, it may serve as an adjunct to standard histology and enable rapid surgical pathology of skin cancers at the bedside.

PMID: 28199474 PMCID: PMC5310648 DOI: 10.1117/1.JBO.22.2.024002