VivaScope

Medical > Ex Vivo > Non-Melanoma Skin Cancer

An international 3-center training and reading study to assess basal cell carcinoma surgical margins with ex vivo fluorescence confocal microscopy

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ABSTRACT

Background: Novel solutions are needed for expediting margin assessment to guide basal cell carcinoma (BCC) surgeries. Ex vivo fluorescence confocal microscopy (FCM) is starting to be used in freshly excised surgical specimens to examine BCC margins in real time. Training and educational process are needed for this novel technology to be implemented into clinic. Objective: To test a training and reading process, and measure diagnostic accuracy of clinicians with varying expertise level in reading ex vivo FCM images. Methods: An international three-center study was designed for training and reading to assess BCC surgical margins and residual subtypes. Each center included a lead dermatologic/Mohs surgeon (clinical developer of FCM) and three additional readers (dermatologist, dermatopathologist, dermatologic/Mohs surgeon), who use confocal in clinical practice. Testing was conducted on 30 samples. Results: Overall, the readers achieved 90% average sensitivity, 78% average specificity in detecting residual BCC margins, showing high and consistent diagnostic reading accuracy. Those with expertise in dermatologic surgery and dermatopathology showed the strongest potential for learning to assess FCM images. Limitations: Small dataset, variability in mosaic quality between centers. Conclusion: Suggested process is feasible and effective. This process is proposed for wider implementation to facilitate wider adoption of FCM to potentially expedite BCC margin assessment to guide surgery in real time. Keywords: basal cell carcinoma; fluorescence confocal microscopy; fresh tissue imaging; rapid margin mapping; surgical excision. © 2021 John Wiley & Sons A/S. Published by John Wiley & Sons Ltd. PMID: 33576022 DOI: 10.1111/cup.13980