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Ex vivo fluorescence confocal microscopy for fast evaluation of tumour margins during Mohs surgery.

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ABSTRACT

BACKGROUND:Ex vivo fluorescence confocal microscopy (FCM) enables real-time imaging of skin morphology directly in freshly excised tissue. FCM displays wide field-of-view mosaics with cellular resolution, thus enabling a rapid bedside pathology. An application of interest is rapid detection of residual basal cell carcinoma (BCC) in skin excisions during Mohs surgery. **OBJECTIVES:**We sought to evaluate the sensitivity and specificity of ex vivo imaging with FCM for the detection of residual BCC in Mohs tissue excisions, and to calculate the time invested up to the diagnosis for both FCM and frozen sections. **METHODS:**Eighty consecutive BCCs were prospectively collected and the margins scanned with ex vivo FCM, including excisions with and without residual BCC of all major subtypes. Each mosaic was divided into two or four, resulting in 480 submosaics for study. Every confocal submosaic was assessed for the presence or absence of BCC and compared with standard frozen sections as the gold standard. Furthermore, the time spent for each technique was calculated and compared. **RESULTS:**The overall sensitivity and specificity of detecting residual BCC were 88% and 99%, respectively. Moreover, the new technique reduced by almost two-thirds the time invested when compared with the processing of a frozen section ($P < 0.001$). **CONCLUSIONS:**The results demonstrate the feasibility of confocal mosaicing microscopy in fresh tissue for rapid surgical pathology, potentially to expedite and guide Mohs surgery with high accuracy. This observation is an important step towards the goal of using real-time surgical pathology for skin tumours. © 2013 British Association of Dermatologists. PMID: 24117457 DOI: 10.1111/bjd.12671