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1 | Evaluation of breast tissue with confocal strip-mosaicking microscopy: a test approach emulating pathology-like examination.

Abeytunge S, Larson B, Peterson G, Morrow M, Rajadhyaksha M, Murray MP.
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ABSTRACT

Confocal microscopy is an emerging technology for rapid imaging of freshly excised tissue without the need for frozen- or fixed-section processing. Initial studies have described imaging of breast tissue using fluorescence confocal microscopy with small regions of interest, typically 750 × 750 ?? ? m 2 . We present exploration with a microscope, termed confocal strip-mosaicking microscope (CSM microscope), which images an area of 2 × 2 ?? cm 2 of tissue with cellular-level resolution in 10 min of excision. Using the CSM microscope, we imaged 34 fresh, human, large breast tissue specimens from 18 patients, blindly analyzed by a board-certified pathologist and subsequently correlated with the corresponding standard fixed histopathology. Invasive tumors and benign tissue were clearly identified in CSM strip-mosaic images. Thirty specimens were concordant for image-to-histopathology correlation while four were discordant. PMID: 28327961 PMCID: PMC5361391 DOI: 10.1117/1.JBO.22.3.034002