



DERMOSCOPY AND SKIN IMAGING

GABOR-DOMAIN OPTICAL COHERENCE MICROSCOPY TO AID IN MOHS RESECTION OF BASAL CELL CARCINOMA

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Background: Optical coherence tomography (OCT) is a noninvasive imaging technique that offers real-time, in-vivo, cross-sectional views of skin. Gabor-domain optical coherence microscopy (GDOCM) is an advanced version of OCT that produces 3D images with a resolution of 2 micron.

Objective: Assess the capability of GDOCM to provide noninvasive cross-sectional and en-face images of skin at the cellular level and evaluate its potential to aid in margin delineation for Mohs resection of basal cell carcinoma (BCC).

Materials and Methods: Twenty-eight patients undergoing Mohs micrographic surgery (MMS) for biopsy-proven BCC were enrolled in the study. A Mohs surgeon marked the visual margin of the tumor. When possible, a set of six GDOCM images was collected at four locations along the margin (3, 6, 9 and 12 o'clock). Each set of six adjacent GDOCM images (each image has a field of view of 1 mm x 1 mm) was collected from 1.5 mm inside the drawn margin up to 4.5 mm outside. After the GDOCM imaging, the standard Mohs procedure was conducted. After the surgery, the distance between the final surgical margin and the initial drawn margin was measured. GDOCM images were reviewed and compared with frozen section histology.

Results: Due to motion during image acquisition, results from 8 out of 28 patients were discarded. In total, 38 margin orientations from 20 patients were examined with GDOCM and traditional histology. In all (11/11) of the multi-stage procedures, GDOCM images showed cancer extending beyond 2 mm from the initial margin marked by the surgeon. In 25/38 (65.8%) cases, GDOCM image review revealed tumor within the final surgical margin.





Conclusions: The ability of GDOCM to define pre-operative tumor margins was assessed. While biopsy remains the gold standard for diagnosis, GDOCM can be useful to delineate tumor margins for BCC prior to MMS.

