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Systematic review of diagnostic accuracy of reflectance confocal microscopy for melanoma diagnosis in patients with clinically equivocal skin lesions.

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ABSTRACT

BACKGROUND: Melanoma is a cancer of the skin and is increasing in incidence in the UK and Europe. Melanoma is a condition that is often curable if detected at an early stage, which makes accurate diagnosis vital. Reflectance confocal microscopy (RCM) is a tool used to image the skin. It gives high magnification images of the skin, which may provide more accurate diagnosis of lesions that are equivocal on clinical examination and dermoscopy. **OBJECTIVE:** To determine the diagnostic accuracy of reflectance confocal microscopy (RCM), for melanoma diagnosis, as an add-on test to clinical examination and dermoscopy in the diagnosis of equivocal pigmented skin lesions using histopathology as the reference standard. **METHODS:** A search was conducted of MEDLINE, EMBASE and six other electronic databases from inception to present. Forward citation searching and hand searching of reference lists were also conducted. Diagnostic accuracy studies that assess RCM in the diagnosis of melanoma were included in the review. Two contributors conducted the search, data extraction and assessment of methodological quality using QUADAS-2. Statistical analysis was performed using hierarchical bivariate random effects meta-analysis.

RESULTS: 951 titles and abstracts were screened. Five studies comprising 909 lesions were eligible for meta-analysis. Meta-analysis returned a per lesion sensitivity of 93% [95% CI 89-96] and a specificity of 76% [95% CI 68-83].

CONCLUSIONS: The utility of reflectance confocal microscopy (RCM) as an add-on test for the diagnosis of melanoma depends on the trade off between over-excising benign lesions and misdiagnosing melanoma as benign. This becomes important when considering lesions on surgically difficult or cosmetically important areas of the body.