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### The SMART approach: Feasibility of Lentigo Maligna Superficial Margin Assessment with handheld Reflectance confocal microscopy Technology.

*Pellacani G, De Carvalho N, Ciardo S, Ferrari B, Cesinaro AM, Farnetani F, Bassoli S, Guitera P, Star P, Rawson R, Rossi E, Magnoni C, Galdi G, Longo C, Scope A.*

#### ABSTRACT

**BACKGROUND:** Lentigo maligna may be challenging to clear surgically. **OBJECTIVE:** To evaluate feasibility of using superficial skin cuts as RCM imaging anchors for attaining negative surgical margins in lentigo maligna. **METHODS:** Included patients presented with lentigo maligna near cosmetically-sensitive facial structures. We evaluated, with handheld-RCM, microscopic clearance of melanoma beyond its dermoscopically-detected edges. Evaluated margins were annotated using shallow skin-cuts. If a margin was positive at 'first-step' RCM evaluation, we sequentially advanced the margin radially outward at that segment by 2mm intervals until an RCM-negative margin was identified. Prior to final surgical excision, we placed sutures at the outmost skin-cuts to allow comparison of RCM and histopathological margin assessments. Primary outcome measure was histopathological verification that RCM-negative margins were clear of melanoma. **RESULTS:** The study included 126 first-step margin evaluations in 23 patients, median age 70 years (range: 43-91). Seventeen patients (74%) had primary in situ melanoma and 6 (26%) invasive melanoma, mean thickness 0.3mm (range 0.2-0.4mm). Six cases (26%) showed complete negative RCM margins on 'first-step', 11 (48%) were negative at 'second-step', and 4 (17%) at 'third-step'. In two additional cases (9%), margins clearance could not be determined via RCM due to widespread dendritic cells proliferation. The RCM-negative margins in all 21 cases proved clear of melanoma on histopathology. Of the 15 cases that returned at one-year-follow-up, none showed any residual melanoma on dermoscopic and RCM examinations. Inter-observer reproducibility showed fair agreement between bedside RCM reader and blinded remote-site reader, with Spearman's rho of 0.48 and Cohen's kappa of 0.43; using bedside reader as reference, the remote reader's sensitivity was 92% and specificity 57% in positive margin detection. **CONCLUSIONS:** Margin mapping of lentigo maligna with handheld-RCM, using superficial skin cuts, appears feasible. This approach needs validation by larger studies. This article is protected by copyright. All rights reserved. This article is protected by copyright. All rights reserved. PMID: 29704275 DOI: 10.1111/jdv.15033