

Oral presentation

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## Immediate ex-vivo optical coherence tomography of suspicious oral lesions

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### Background

Optical biopsy systems have been investigated for various clinical applications; however the main interest is in the diagnosis of premalignant lesions.

The aim of this study was to compare findings of optical coherence tomography (OCT) with histopathology of various oral lesions to see if this technique could be used as an adjunct or alternative to histopathology in assessing oral dysplasia. The technique is a non-invasive interferometric tomographic imaging modality which allows millimetre penetration with micrometer-scale axial and lateral resolution.

### Materials and methods

Suspicious oral lesions, from 87 patients, were excised and subjected to Swept-Source Fourier-Domain OCT. The acquired OCT images were then compared with histopathology images.

### Results

Epithelium, basement membrane, lamina propria, microanatomical histological structures and pathological processes were clearly identified. Normal microanatomical structures identified in these tissues included an overlying keratin layer, papillae, ducts, glands, and blood vessels. Regions of pathologic features studied included leukoplakias, and erythroplakias. Areas of architectural changes were clearly visible and correlated well with the

histopathological slides to a depth of approximately 1.5 mm.

### Conclusion

This study confirms the feasibility of using OCT to identify various histological structures as well as changes that occurs in these tissues. These preliminary results suggest that OCT may be able to identify dysplasia in oral tissues.