

Identifying oral squamous cell carcinoma (OSCC) using a diffuse reflectance probe (DRS). Phase 1: Developing a protocol

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Background:

Detection of primary oral squamous cell carcinoma (OSCC) while the disease is at an early stage influences prognosis, with early detection linked to favourable survival rates. Optical techniques can analyse oral mucosa non-invasively in real time and have the potential to provide early and accurate diagnosis. Diffuse reflectance spectroscopy (DRS) using visible light has high sensitivity and specificity in identification of malignancies in other body tissues. A multidisciplinary team has been assembled to apply this technique to the oral mucosa.

Methods:

This is a multi-phase clinical trial. Phase I involved development of protocols for analysis of oral mucosa. We recruited ten volunteers with healthy and premalignant oral conditions. We varied sensor integration times and laser power while keeping constant source wavelengths, source-detector distance and reflectance standard, with the goal of a user-friendly exposure time which reliably obtains light spectra capable of spectral fitting.

Results:

Several parameters were tested and one set of values certified. These will be used in Phase II, which will involve further recruitment with the goal of establishing a baseline assessment of the probe's sensitivity and specificity.

Conclusions:

Creating a protocol in advance facilitates study workflow and promotes scientific rigour.