Narrow band light imaging of oral mucosal in routine dental patients: Assessment of value in detection of mucosal changes

Edmond Truelove DDS, MSD
Professor Department Oral Medicine
University of Washington

The purpose of the study was to evaluate the value of adding narrow band light source (NBLS) imaging (VELscope) of the oral mucosa to the standard oral examination process for detection of any type of mucosal change not visible during routine white light examination. Six hundred and twenty dental subjects presenting for regular dental evaluation or for treatment of acute dental problems were given a standard oral soft tissue examination by dental students supervised by faculty of the clinic. Results of the examination of the oral mucosa were recorded after which the tissues were again examined with NBLS (VELscope) and areas of loss of fluorescence (LOF) recorded. The nature of the tissue change was classified clinically as a normal variation, inflammatory, traumatic, dysplastic, or other, and the patient was classified as normal, needing a follow-up visit, or immediate biopsy. Risk factors related to oral dysplasia were also recorded. Addition of the NBLS assessment added between one and two minutes to the examination process. Of the 620 examinations, an area of loss of fluorescence suggestive of pathology was detected in 69 subjects (11.1%). After second immediate evaluations 41 of the 69 were reclassified as not requiring return and 28(4.5%) were scheduled for follow up or biopsy. Five patients received immediate biopsy using a 4 mm punch biopsy technique, 4 planned to see their regular health care provider, and 19(3%) were scheduled for return. Of the 19 scheduled for reevaluation 15 returned for follow up and in 11 the areas of LOF had resolved. Four patients underwent biopsy due to persistence of LOF. Of the 9 biopsied lesions 3 were found to represent mild dysplasia and 2 were found to have mild to moderate dysplasia. Two patients received a diagnosis of lichen planus and 2 as inflammatory. Nine of the 28 patients had a history of tobacco use, 5 had very poor oral hygiene, and 4 reported autoimmune disease. None of the lesions had been detected using standard white light examination.

Summary: In this quality improvement study of routine dental patients, adding NBLS imaging to the routine clinical examination resulted in detection of changes not seen with white light examination in a significant number of patients (11.1%), and of these a small but important number were found to have otherwise undetected persistent changes representing inflammatory lesions or potentially dangerous oral dysplasia (13%). Adding this adjunctive diagnostic procedure improved the quality of the examination process and detection of lesions not otherwise visualized.