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Abstract

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The reduction in caries prevalence has not occurred uniformly for all dental surfaces. As the occlusal surfaces are still the most likely sites for the development of lesions, new methods of diagnosis are still being evaluated. This study compared a laser fluorescence (LF) system (DIAGNOdent) with the Ekstrands visual system for *in vitro* detection of occlusal caries. A total of 57 extracted molars with macroscopically intact occlusal surfaces were selected. Two-examiners assessed 110 sites by visual inspection (VI) and LF. After ten days from the first measurement, all teeth were re-evaluated through the same methods by each examiner. Caries extension was histologically assessed (X 40). The methods were compared by means of sensitivity, specificity, intra- and inter-examiner reproducibility and area under the ROC curve. The kappas test showed good intra- and inter-examiner reproducibility for both methods. VI and LF showed similar sensitivities for both examiners, however, VI showed higher specificities than LF. The overall analysis, as demonstrated by the area under the ROC curve, showed that VI had a better performance than the LF device. It was concluded that the Ekstrands visual system is more reliable than the LF device. LF should be considered only as an adjuvant for occlusal caries diagnosis.

Keywords : Lasers; Fluorescence; Dental caries; Molar; Diagnostic techniques and procedures.

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Sociedade Brasileira de Pesquisa Odontol鏎ica

Av. Lineu Prestes, 2227
Caixa Postal 8216
05508-900 S鋓 Paulo SP - Brazil
Tel./Fax: +55 11 3091-7810
e-Mail
bor@sbpqo.org.br