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Title: Comparative study of the effect of direct and indirect digital radiography on the assessment of proximal caries

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Abstract: Sole clinical assessment of proximal tooth contacts leads to unacceptable false negative results especially in cases of tight proximal contacts where precise clinical assessment is not possible. Therefore radiographic evaluation seems imperative for proximal caries detection. 70 posterior permanent teeth were divided into blocks of 5 teeth. Digital and conventional Bitewing radiographs with D-speed and E-speed films were taken from samples. Conventional radiographs were digitalized with a scanner whereas Direct digital images were saved in either standard or filtered mode. Presence of proximal caries was evaluated by three observers and samples were scored accordingly. As golden standard, teeth were then sectioned horizontally for histological evaluation of caries depth. Diagnostic specificity of each radiography method was evaluated with sub curve analysis of ROC. Spearman test was used for inter and intra observers agreement. No significant difference was reported between the sensitivity and specificity of the four studied methods of radiography (P>0.05). The digital filtered image had the highest sensitivity. The highest specificity was attributed to D-speed films. Indirect digital images of scanned D-speed and E-speed films and direct standard and filtered digital images (CMOS receptor) have high specificity and there is no significant difference in the diagnosis of proximal caries between them.

dental caries, digital radiography, bitewing

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