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Comparison of digital and conventional radiography for the detection of proximal surface caries

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Conventional intraoral radiography continues to be the most widely used for the diagnosis of dental caries.

But conventional intraoral film has several shortcomings, including processing error, increased radiation dose,etc.

Recently, various digital radiographs substitude for conventional radiography to overcome these disadvantages.

The digital radiographies are numerous advantages, including elimination of processing errors, lower radiation dose , image quality enhancements such as contrast and density modulation.

The purpose of this study was to compare the diagnostic ability of artificial proximal defects to conventional intraoral radiography , direct digital image(CDX2000HQ) and indirect digital image(Digora).

Artificial defects were made in proximal surfaces of 60 extracted human molars using #1/2, #1, and #2 round bur. Five dentists assessed proximal defects on conventional intraoral radiography, direct digital image and indirect digital image. ROC(Receiver Operating Characteristic) analysis and Two-way ANOVA test were used for the evaluation of detectability, and following results were acquired,

1. The mean ROC area of conventional radiograph, direct digital image(CDX2000HQ) and indirect digital image(Digora) were 0.6766, 0.7538, 0.6791(Grade I), 0.7176, 0.7594, 0.7361(Grade II) and 0.7449, 0.7608, 0.7414(Grade III) respectively.
2. Diagnostic ability of direct digital image was higher than other image modalities. But there was no statistically significant differences among other imaging modalities for Grade I,II,III lesion($p>0.05$).

In conclusion, when direct and indirect digital system are comparable with conventional radiography, these systems may be considered to an alternative of conventional intraoral radiography for the diagnosis of proximal surface caries.

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Comparative study on the apical sealing ability according to the obturation technique

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The purpose of this study was to evaluate the efficiency of the four obturation techniques. In this study, eighty teeth were instrumented and randomly divided into 4 groups of 20 teeth each, according to the obturation techniques

Group A was used with Microseal. in Group B, Thermafil. in Group C, continuous wave techniques, in Group D cold lateral condensation methods were used.

After obturation, the teeth were taken a digital radiograph in mesiodistal and buccolingual directions to study the quality of the obturation. Afterward, the teeth were immersed in black India ink and subseqently cleared. The most coronal extent of dye penetration was measured using stereomicroscope

Results obtained from the study above were as followings:

1. There was no significant difference among any of the groups. All four obturation techniques showed the same results in the apical sealing abilty.
2. The degree of dye penetration between the two sealers showed significant difference. Samples using AH26 were less leakage than sealapex.($P<0.05$)
3. The quality of the obturation and apical sealing ability were no correlation
4. In the Thermafil group, overfilling was seen when compared with the other techniques significantly.

As a result, the four obturation techniques are no significant difference for apical sealing ability among them.. Thus the other advantages must be considered. For example, operator's experience, working time etc. It is reasonable that choose the obturation method with careful consideration about these matters.