



# COMPARING OPTIMUM DIAGNOSTIC TOOLS FOR PROXIMAL CARIES DETECTION IN MODERN DENTISTRY

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Abstract  
Keywords

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## OBJECTIVES

1. To determine the percentage agreement between clinical examination(VTE) , bitewing(BW) and panoramic(OPG) radiography for detection of proximal carious lesions.
2. To determine the diagnostic yield(DY) between clinical investigation and combination of different radiographic methods.



Improved interproximal panoramic radiograph



Posterior teeth bitewing radiographs

## METHODS

ICDASII system was used as proximal caries detection criteria with clinical, improved interproximal panoramic by Planmeca ProMax3 and bitewing images by Gendex expertDC to diagnose the posterior surface of teeth (N=929). Kappa statistics was used to calibrate the agreement between two standardized examiners.

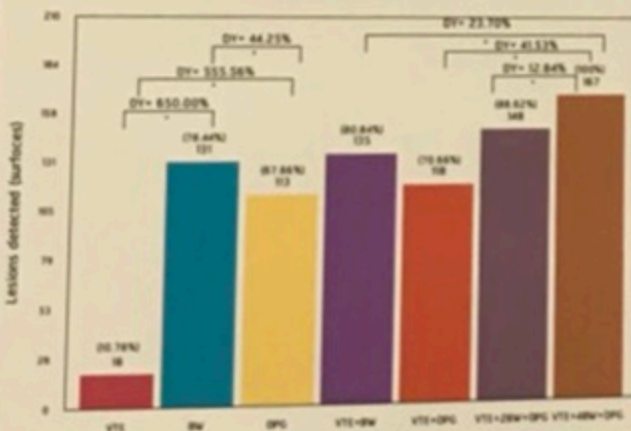


Figure 1. The comparison of lesion detected by different type of examination and the diagnostic yield of each methods (Significant different lesion detected between methods ( $p < 0.05$ ))

N of caries	Lesions detected	Kappa	Chi-square P value df=1, N=167	Diagnostic yield
167		0.87	0.00*	23.70% (VTE+BW+OPG - VTE+BW)
167		0.80	0.00*	41.53% (VTE+BW+OPG - VTE+OPG)
167		0.93	0.00*	12.84% (VTE+BW+OPG - VTE+2BW+OPG)

Figure 2. The relationship of each type of examination compare with VTE+BW+OPG

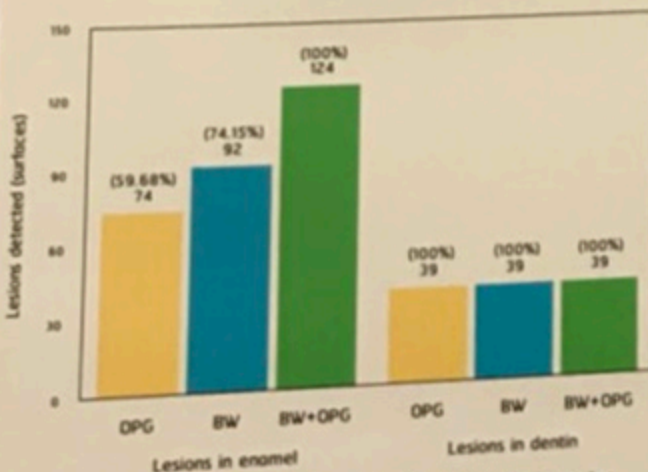


Figure 3. Comparison between OPG, BW and BW+OPG examinations for proximal caries detection in enamel and dentin surfaces

## RESULTS

167 of carious lesions were detected, 10.78% were detected by VTE alone. Addition of radiographs had more lesions detected; 78.44% by BW and 67.66% by OPG(Figure1). The results indicated poor agreement between VTE and radiographies. The agreement of VTE+4BW+OPG and VTE+2BW+OPG was obtained almost perfect value (Kappa = 0.9)(Figure2). For additional diagnostic yield, VTE performed less than radiographies, BW performed more than OPG and the greatest was VTE+BW+OPG. In dentin surface, there was no difference between OPG, BW and BW+OPG. In enamel surface, there was difference between each technique: BW+OPG>BW>OPG(Figure3).

## CONCLUSION

The expanded technology in radiographic imaging is now allowed clinician to be diagnosed and evaluated the treatment options. OPG can detect proximal caries in the progress stage of dentin same as BW. Therefore, in the clinical situations, this interproximal mode can be used to determine and evaluate proximal lesions as the optional instead of intraoral bitewing.