Title: Assessment of Power Digital Subtraction to Detection of Variant Proximal Caries Depth in Permanent Teeth (in Vitro)

Authors: Azadeh Kheradyar (Resident of Endo of Ghazvin University)

Abstract: Background and purpose: The carious lesions are not well-defined radiolucencies approximately 40% demilitarization is required for radiographic detection of a lesion. However, digital subtraction images permit to detect 1-5% decrease of mineral mass per unit volume. The goal of present study was to assessment of power digital subtraction to compare standard method in detection of variant proximal caries depth.

Methods and materials: In this study 160 non-caries human premolars were studied. Teeth were fixed in XCP film holder with putty. Primary images were prepared in 0/2 s. Then teeth were arranged in 4 groups. 40 intact teeth on proximal surface of 40 teeth were prepared cavity with 0/5 mm depth. 40 teeth with 0/7 mm depth and 40 teeth with 1/1 mm depth. At this stage we were taken second digital X-RAY according to primary situation. Then digital subtraction images were ready. Then three observers examined digital subtraction images. Conclusion: Positive predictive value was in caries with depth of 0/7 mm 87.2%, with depth of 0/7 mm 90.4% and with depth of 1/1 mm 93.1% in the caries with depth of 0/5 mm false positive + false negative were 6/9% but in the caries with depth of 0/5 1 mm FP+FN to 1/8% decreased.

Results: These results indicate with decrease of depth caries error percent increased and positive predictive value increased with increment of depth caries.

digital subtraction radiography, direct radiography, proximal caries

Presentation: Oral