**ID: 3537**

**Congress: 12 th International Congress of Iranian Academy of Restorative Dentistry 24-26 October 2012 Tabriz-Iran**

**Title:** Effect of image enhancement on detection potency of non-cavitated proximal caries in digital radiographic images

**Authors:** Reza Es'haghi, Farzad Esmaili,

**Abstract:**

Objectives: The aim of this study was evaluation of image enhancement effect on non-cavitated proximal caries detection in Kodak RVG 5100 and Digora (Soredex) digital receptors images enhanced with contrast and Highlights/Shadows filter.

Methods: One hundred thirty proximal non-cavitated posterior teeth surfaces were radiographed using two RVG and Digora digital receptors. Then images were enhanced with increased contrast and Highlights/Shadows filter separately and examined by three observers for presence or absence of carious lesions using a 5-point confidence scale. Definitive caries diagnosis was based on a histological assessment using a stereomicroscope after sectioning the teeth. Diagnostic results of images with or without image enhancement were compared to histological assessment results as a gold standard and ROC (Receiver Operating Characteristic) curve analysis and calculation of sensitivity, specificity, positive and negative predictive value and overall accuracy were done.

Results: Areas under ROC curve in RVG receptor images after enhancement with both methods were higher than images without enhancement but this differences were not statistically significant (P> 0.05). Area under ROC curve in Digora receptor in high contrast image is significantly higher than images without enhancement (P=0.014). Area under ROC curve in Highlights/Shadows filtered images in Digora receptor did not have any significant different with pre-enhanced images (P=0.181).

Conclusion: In this study image enhancement through increased contrast only in Digora receptor images improved accuracy of proximal caries detection. Image enhancement using Highlights/Shadows filter in any of receptors did not improve the detection of proximal carious lesions.

**Radiographic image enhancement, dental caries, digital radiography**

**Presentation:** Poster