94.5% and specificity of 96.8%, Interim dosimetry analysis showed that the doses for IOBs and EOBs were comparable but were slightly different for intraoral membranes.

Discussion/Conclusions: EOBs showed comparable results to IOBs in the detection of approximal caries and had similar effective doses.

Acknowledgments

Dr. Kandasamy Rengasamy, Dr. Alan G. Lurie

References

1 Chan M, Dadul T, Langlais R, Russell D, Ahmad M. Accuracy of extraoral bite-wing radiography in detecting proximal caries and crestal bone loss. J Am Dent Assoc. 2018;149:51-58.
2 Abu El-Ela WH, Farid MM, Mostafa MS. Intraoral versus extraoral bitewing radiography in detection of enamel proximal caries: an ex vivo study. Dentomaxillofac Radiol. 2016;45:20150326.
3 Kamburoglu K, Kolsuz E, Murat S, Yüksel S, Ozen T. Proximal caries detection accuracy using intraoral bitewing radiography, extraoral bitewing radiography and panoramic radiography. Dentomaxillofac Radiol. 2012;41:450-459.
4 Branets I, Stabulas J, Dauer LT, et al. Pediatric bitewing exposure to organs of the head and neck through the use of juvenile anthropomorphic phantoms. J Oral Biol. 2014;1:5.
5 Granlund C, Thilander-Klang A, Ylhan B, Lofthag-Hansen S, Ekestubbe A. Absorbed organ and effective doses from digital intra-oral and panoramic radiography applying the ICRP 103 recommendations for effective dose estimations. Br J Radiol. 2016;89:20151052.

IMPACT OF FIELD OF VIEW AND SCATTER INDUCED NOISE IN DETECTION OF MB2 CANALS.

S. MUTALIK, A. MAINKAR, M. JURADO, S.S. VELASCO, A. TADINADA. UNIVERSITY OF CONNECTICUT SCHOOL OF DENTAL MEDICINE, FARMINGTON, CT

Background: Cone beam computed tomography (CBCT) units provide different fields of view (FOVs) for different clinical applications. Small FOV scans are often used in endodontic treatment planning. However, endodontic pathology is also detected as an incidental finding in large FOV scans. Some machines have introduced a new feature known as *zoom reconstruction.* This essentially allows for a specific area of interest to be carved out of the original data set and made into an independent scan that will allow for evaluation of the area in better detail.

Objective(s): The objective of this study was to evaluate the number of missed canals on small FOV scans and zoom reconstruction gleaned from large field of scans.

Study Design: A total of 30 extracted maxillary first molars were used in this study. The teeth were scanned with small FOV to locate MB2 canals. The results were used as the gold standard. The teeth were endodontically treated and restored. The MB2 canal was not instrumented when it was present or detected clinically. The prepared teeth were mounted on a dry human skull and secured with sticky wax. The skull was scanned with large and small FOV scans. The areas of interest were zoom reconstructed from large FOV scans. Interobserver variations were calculated using kappa statistics. Nonparametric tests were used to compare the reading of the observers with gold standard.

Results: Kappa statistics from 0.605 to 0.650 for small FOV, from 0.350 to 0.650 for large FOV, and from −0.305 to 0.590 for zoom reconstruction. In general, the smaller FOV scans had better agreement with gold standard.

Discussion/Conclusions: Small FOV scans were found to have better detection accuracy compared with small scans gleaned out of a larger FOV scan through zoom reconstruction in its ability to detect missing root canals and pathology.

Acknowledgments

None

References

1 Pauwels R, Araki K, Siewerdsen JH, Thongvigitmanee SS. Technical aspects of dental CBCT: state of the art. Dentomaxillofac Radiol. 2015;44:20140224.
2 Pauwels R, Jacobs R, Bogaerts R, Bosmans H, Panmekiate S. Reduction of scatter-induced image noise in cone beam computed tomography: effect of field of view size and position. Oral Surg Oral Med Oral Pathol Oral Radiol. 2016;121:188-195.
3 Ozaki Y, Watanabe H, Nomura Y, Honda E, Sumi Y, Kurabayashi T. Location dependency of the spatial resolution of cone beam computed tomography for dental use. Oral Surg Oral Med Oral Pathol Oral Radiol. 2013;116:648-655.

RELATIONSHIP BETWEEN GRAY LEVELS IN CONE BEAM COMPUTED TOMOGRAPHY AND HOUNSFIELD UNITS IN COMPUTED TOMOGRAPHY.

A.M. SHANMUGHAN, S.C. SELVAMUTHUKUMAR, K. CHANDRASEKARAN, B. VARMA, R. JOSE, U. MENON. AMIRTA SCHOOL OF DENTISTRY, AMIRTA INSTITUTE OF MEDICAL SCIENCE AND RESEARCH CENTER; THAI MOOGAMBIGAI DENTAL COLLEGE & HOSPITAL, CHENNAI, INDIA

Background: A deficiency of studies on clinical or close clinical materials of biologic nature exists in the conversion of gray values in cone beam computed tomography (CBCT) to more logically useful Hounsfield units (HU) in multidetector CT.

Objective(s): The aim of this study was to assess the HU of various tissue materials in CT with their corresponding gray levels in 3 different CBCT units and compare their correlation individually, to compare the actual HU (aHU) values for each material with derived HU (dHU) values from gray levels using the interpolation method, and to evaluate its reliability.

Study Design: An in vitro study was conducted using a human skull model, which was coated with a soft tissue equivalent and embedded with 6 premeasured titanium implants. It was imaged with 3 different CBCT scanners and 1 CT scanner. The exported DICOM (Digital Imaging and Communications in Medicine) data were viewed in Carestream 3-D imaging software.

The data were analyzed using Pearson's correlation test to evaluate the correlation between observed aHU values from CT and the corresponding gray levels from each CBCT unit. The method of Mah et al. was used to calculate dHU from gray levels and compare them with aHU.

Results: Among the CBCT machines used, the highest correlation for implants and bone was with Kodak 9500; for teeth, Sirona Galileos; and for soft tissue and air space, Planmeca Promax. The dHU values had significant percentage differences from aHU values.