Title:	Influence of object location in cone beam computed tomography (NewTom 5G and 3D Accuitomo 170) on gray value measurements at an implant site
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Abstract:	The aim of this study was to determine the gray value variation at an implant site with different object location within the selected field of view (FOV) in two cone beam computed tomography (CBCT) scanners. A 1-cm-thick section from the edentulous region of a dry human mandible was scanned by two CBCT scanners: 3D Accuitomo 170 (J. Morita, Kyoto, Japan) and NewTom 5G (QR Verona, Verona, Italy). Five FOVs were used with each CBCT scanner. Within each FOV, the specimen was located at different positions. The scans were converted to DICOM format. Data analysis was performed using 3Diagnosys (ver. 3.1, 3DIEMME, Cantu, Italy) and Geomagic software (Studio 2012, Morrisville, NC). On one of the scans, a probe designating the site for pre-operative implant placement was selected. The inserted virtual implant was transformed on the same region on each CBCT scan by a three-dimensional registration algorithm. The mean voxel gray value of the region around the probe was

	derived separately from all CBCT scans. The influence of object location within each FOV on variability of voxel gray values was assessed. In both CBCT systems, object location had a significant influence on gray value measurements (F (4,16) = 3.71, p = 0.0255 for Accuitomo and F (4,16) = 9.31, p = 0.0000 for NewTom). Gray level values from CBCT images are influenced by object location within the FOV.
Keyword:	Cone-Beam Computed Tomography; Bone Density; Dental Implants; Patient Positioning; Maxillofacial Region; Voxel Values; Grey Levels; Density; Reliability; Conversion; Cbct; Unit
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