susceptibility, whereas zirconium implants could be correctly depicted with only minor distortion artifacts. However, in CT and CBCT, titanium and titanium−zirconium alloy implants generated less severe artifacts than zirconium.

Discussion/Conclusions: MRI images were less affected by the artifacts from zirconium implants, whereas CT and CBCT images showed fewer artifacts from titanium and titanium−zirconium alloy implants. CBCT, especially at low dose settings, produced the least amount of radiation compared with high-resolution settings and 2 CT machines.

Acknowledgments

The authors would like to thank Dr. Deahl, Dr. Mealey, and Dr. Danaci for their valuable contributions to this study.

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EVALUATION OF BONE HEALING AFTER APICAL RESECTION BY ULTRASONOGRAPHY.

K. KAMBUROGLU, G. SONMEZ, F. YILMAZ. ANKARA UNIVERSITY, ANKARA, TURKEY

Background: Apical resection is a reliable method for the treatment of teeth with persistent periapical lesions or in cases where nonsurgical treatment is not successful. Generally, outcome assessment of apical resection is based on 2-D periapical radiographs. Ultrasound imaging is based on reflection of sound waves at the interface between 2 different tissues and is also recognized as the most risk-free imaging modality.

Objective(s): Our aim was to evaluate healing of bone after apical resection by using ultrasonography.

Study Design: Ethical approval and patient consent were obtained. Three patients with periapical lesions of endodontic origin were examined with cone beam computed tomography (CBCT) and ultrasonography before surgery. ACUSON S 2000 color Doppler ultrasonography unit with 15 MHz intraoperative probe was used to obtain ultrasound images. In all patients, root canal treatment and apical resection surgery were performed. In 1 patient, during apical surgery, bone graft (Creos Greft, Nobel Biocare Services AG, Zurich, Switzerland) and resorbable collagen membrane (Creos xenoprotect, Nobel Biocare Services AG, Zurich, Switzerland) were used. The other cases were left to secondary healing. Three months after apical resection, periapical radiographs and ultrasonographic examination were performed for follow-up assessment.

Results: The resection area was filled with bone, and hyperechogenic bone healing was monitored by ultrasonography in the patient in whom bone graft and membrane were placed. In 1 patient, the resection area was filled with soft tissue, and ultrasound showed an echogenic area surrounded a hyperechogenic bone border. No internal vascularization was detected. In the other patient, ultrasonography showed a well-contoured anechogenic area with no vascularization, and 3 months after apical surgery, the tooth was extracted.

Discussion/Conclusions: Ultrasound imaging can be a useful tool for the monitoring of apical surgery outcomes without ionizing radiation. Further research is essential with inclusion of more patients.

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EVALUATION OF CBCT SCANS WITH METALLIC ARTIFACTS FOR ASSESSMENT OF DIAGNOSTIC QUALITY.

K. BABALOLA, A. TADINADA. UNIVERSITY OF CONNECTICUT, FARMINGTON, CT

Background: Cone beam computed tomography (CBCT) is increasingly being used in dentistry for diagnosis and treatment planning. However, the presence of metals in the form of coronal restorations, implants, and endodontic post and cores results in the generation of artifacts. Beam hardening artifacts, streaks, and scatter are the main types of metallic artifacts and, when present, cause image degradation that may compromise the accuracy of diagnosis. Depending on the severity of the artifact and the diagnostic task, images may be unusable.

Objective(s): The objective of this study was to retrospectively evaluate CBCT scans with metallic artifacts and assess whether or not the presence of metal affects diagnosis of a specific entity.

Study Design: A total of 105 scans from the archives of the Department of Oral and Maxillofacial Radiology at University of Connecticut, School of Dental Medicine, were evaluated for this study. The scans were divided into 3 groups comprising referrals for implant site evaluation, for endodontic evaluation for root canal morphologies/anatomy, and for crown/root fractures, respectively. Inclusion criteria were scans that had metallic artifacts. The scans were analyzed to determine if these artifacts positively or negatively influenced diagnosis. All images were evaluated by a radiology resident in training (K.B.) and a board certified Oral and Maxillofacial Radiologist (A.T.).

Results: Of the scans analyzed for implant treatment planning, 100% were deemed to be of diagnostic quality. For root canal morphology and anatomy, 94% were adequate for diagnosis, whereas 6% were not. For evaluation of fractures, 63% were adequate for diagnosis, and 37% were not adequate for diagnosis.

Discussion/Conclusions: In this study, a large percentage of the scans were adequate for diagnosis despite the presence of metallic artifacts except for root fractures.

Acknowledgments

I acknowledge Dr. Tadinada's mentorship and great support for this study.