

## عنوان مقاله:

Efficacy of Metal Artifact Reduction Algorithm of Cone-Beam Computed Tomography for Detection of Fenestration and Dehiscence around Dental Implants

## محل انتشار:

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## نویسندگان:

PhD, Department of Oral & Maxillofacial Radiology, School of Dentistry, Hamadan university of Medical Science, - - -  
Hamadan, Iran

MScD, Department of Oral and Maxillofacial Surgery, Dental Implants Research Center, School of Dentistry, - - -  
Hamadan university of Medical Science. Hamadan, Iran

PhD, Department of Oral & Maxillofacial Radiology, School of Dentistry, Hamadan university of Medical Science, - - -  
Hamadan, Iran

PhD, Department of Biostatistics, School of Health Modeling of Noncommunicable Diseases Research Center, - - -  
Health Sciences & Technology Research Institute, Hamadan University of Medical Sciences, Hamadan, Iran

DMD, General Dentist, Hamadan University of Medical Sciences, Hamadan, Iran - - -

## خلاصه مقاله:

Background: Beam hardening and scattering artifacts from high-density objects such as dental implants adversely affect the image quality and subsequently the detection of fenestration or dehiscence around dental implants. Objective: This study aimed to assess the efficacy of metal artifact reduction (MAR) algorithm of two cone-beam computed tomography (CBCT) systems for detection of peri-implant fenestration and dehiscence. Material and Methods: In this experimental study, thirty-six titanium implants were placed in bone blocks of bovine ribs. Fenestration and dehiscence were created in the buccal bone around implants. CBCT images were obtained using Cranex 3D and ProMax 3D CBCT systems with and without MAR algorithm. Two experienced radiologists observed the images. Data were analyzed using SPSS software. The Kappa coefficient of agreement, the area under the receiver operating characteristic (ROC) curve, sensitivity, specificity, and accuracy of different imaging modalities were calculated and analyzed. Results: In both CBCT systems, the use of MAR algorithm decreased the area under the ROC curve and subsequently the diagnostic accuracy for the detection of fenestration and dehiscence. The sensitivity, specificity and accuracy of both CBCT systems were higher in absence of the MAR algorithm. The specificity of ProMax 3D for detection of fenestration was equal with/without the MAR algorithm. Conclusion: Although CBCT is suitable for detection of peri-implant defects, the application of the MAR algorithm does not enhance the detection of peri-implant fenestration and dehiscence.

## کلمات کلیدی:

Cone-Beam Computed Tomography, Metal Artifact Reduction Algorithm, Fenestration, Dehiscence, Dental implants, ROC curve

