

## عنوان مقاله:

In vitro Evaluation of the Relationship between Gray Scales in Digital Intraoral Radiographs and Hounsfield Units in CT Scans

## محل انتشار:

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## خلاصه مقاله:

Background: Jaw bone quality plays an essential role in treatment planning and prognosis of dental implants. Regarding several available methods for bone density measurements, they are not routinely used before implant surgery due to hard accessibility. Objective: An in vitro investigation of correlation between average gray scale in direct digital radiographs and Hounsfield units in CT-Scan provides a feasible method for evaluating alveolar bone quality prior to implant surgery. Methods: ۲۶ sheep's mandibles in which a square shape ROI marked by gutta percha, were prepared. Three direct digital radiographs (CCD sensor) from every specimen were taken using ۸۰، ۱۰۰ and ۲۰۰ milli-seconds. Then, the average gray levels for ROIs were calculated using a costume-made software. Next, the specimens were scanned using a ۱۶-slice spiral CT and the Hounsfield Unit of each ROI was calculated. Pearson analysis measured the correlation between Hounsfield units and average gray levels. Results: There was a positive correlation between Hounsfield unit and average gray level in the radiographs and the correlation was better in higher exposure times. Conclusion: It is possible to estimate Hounsfield unit and bone density in the jaw bones using average gray scale in a digital radiograph. This approach is easy, simple and available and also results in lower patient exposure comparing other bone densitometric analysis methods.

## کلمات کلیدی:

Hounsfield Units, Gray Level, Bone Density, Implant

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