عنوان مقاله:

Accuracy of CBCT Linear Measurements to Determine the Height of Alveolar Crest to the Mental Foramen

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نویسندگان:

Mahnaz Sheikhi - *Torabinejad Dental Research Center, Department of Oral and Maxillofacial Radiology, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran*

Seyed Ali Gholami - *Department of Oral and Maxillofacial Radiology, School of Dentistry, Yasuj University of Medical Sciences, Yasuj, Iran*

Maryam Ghazizadeh - *Department of Oral and Maxillofacial Radiology, School of Dentistry, Kermanshah University of Medical Sciences, Kermanshah, Iran*

خلاصه مقاله:

Background: Detailed knowledge of the three-dimensional (۳D) anatomical structures in precise treatment planning prior to implant placement is necessary. The choice of imaging techniques plays an important role in achieving the required information to measure exact dimensions. Cone beam computed tomography (CBCT) has increasingly been used for diagnosis and treatment in the fields of periodontology, endodontic, and orthodontics. It is also used as the preoperative evaluation of patients who are candidates for dental implant treatment. Dental implant placement is an important application of CBCT in dentistry. One of the features of CBCT is the possibility of changing the slice thickness while reviewing images. In this study, we examined the linear measurement accuracy of CBCT for determining the height of alveolar crest to the mental foramen in cross-sectional view with different slice thicknesses and in tangential view.Methods: We used five dry human mandibles in this study. Then the distance from the highest tip of alveolar crest to the upper border of mental foramen was measured by digital caliper (as gold standard) and on CBCT images in cross sectional view with ۱, ۳, ۵, ۷ and ۹ mm slice thicknesses and in tangential view. Data were analyzed using IBM SPSS Statistics software version ۲۲, paired t test, and inter class correlation.Results: Data were collected by evaluation of ۵ dry mandible and ۲۴۰ measurements. There were significant differences only in tangential view and ۱ mm slice thickness option in cross-sectional view with the gold standard (P = ۰.۰۰۳ and P = ۰.۰۱۸ respectively). The results did not show any differences between the observers (P < ۰.۰۰۱).Conclusions: Our results indicated that cross-sectional view is more accurate than tangential view, and ۳ and ۵ mm slice thicknesses are preferred for measurement.

کلمات کلیدی:

CBCT, Mental foramen, Slice thickness