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Subjective evaluation of maxillofacial landmarks with different resolutions of cone beam computed tomography**Elham Romoozi**

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Introduction: There are some anatomical considerations that are important while selecting a dental treatment plan, such as measurement of height, width, quality, and density of the alveolar bone for placement of the implant, identification of the possible pathologies, and observation of the periodontal ligament around the impacted teeth to determine the presence or absence of ankylosing. With the advances in technology, the size of the voxels in Cone Beam Computed Tomography (CBCT) has reduced and the resolution of the images has increased. Since this increase in resolution also increases the radiation dose to the patient, we aimed to investigate the accuracy of detection of the anatomical landmarks in implantology with different CBCT resolutions and the possibility of minimizing patient radiation dose by decreasing the resolution.

Method: In this study, the CBCT information archive in a private center was used and images of 30 patients who were referred for implant placement or for examination of impacted teeth as well as their information in DICOM format were investigated. The images were stored in two different resolutions: 0.32 and 0.16. Three radiologists examined the images on two different days and assessed the ability to detect the different landmarks and measurements specified in the relevant forms.

Results: In the measurement of the distance between the alveolar crest and the mandibular canal, the mean difference (based on consensus between observers 1,2, and 3) between the two sets of images with resolutions of 0.16 and 0.32 was less than 0.4 mm. The mandibular canal limits were visible in 72.9% of the images (kappa coefficient = 0.434). The mandibular canal site was visible in 88.6% of the images (kappa coefficient = 0.495). The mental foramen borders were visible in 85% and mental foramen site in 98.2% of the images. The lamina dura was visible in 87.1% of the images (kappa coefficient = 0.286).

Conclusion: Based on the results of this study, the use of CBCT images at a resolution of 0.32 rather than 0.16 appears to provide sufficient accuracy for the detection of the abovementioned anatomical landmarks.

Keywords: CBCT, resolution, anatomical landmarks

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