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Comparison of three methods based on CBCT images in visualization of the mandibular canal

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Objectives: The location of mandibular canal is an important factor in selecting the proper site for implant placement at posterior of mandible. The purpose of this study was to compare three methods based on CBCT-derived images in visualizing the mandibular canal.

Method & Materials: In method I, panoramic-like reformatted views were used. Method II was based on crosssectional views. And method III was a combination of method I and method II. The observers determined the degree of the visualization of the mandibular canal in two predetermined areas, premolar and molar.

Results: There was no significant difference between the combination and the cross-sectional method. (P>0.05) However, significant differences were found between the panoramic and the other two methods (P<0.05).

Conclusion: The best method for identifying the mandibular canal to an optimum level with CBCT-derived images is to use a combination of reformatted panoramic and cross-sectional views and also cross-sectional images were significantly better than panoramic reconstruction in identifying the mandibular canal.



Figure 1: CBCT panoramic reformation (Method I)





Figure 2: CBCT Cross-sectional reformations (Method II)

Figure 3: Combination method (Method III)

Recent Publications

- Carmo Oliveira M, Tedesco T K, Gimenez T and Allegrini S (2018) Jr. Analysis of the frequency of visualization 1. of morphological variations in anatomical bone features in the mandibular interforaminal region through conebeam computed tomography. Surgical and Radiologic Anatomy 40.10:1119-1131.
- 2. Weckx A, Agbaje J O, Sun Y, Jacobs R and Politis C (2016) Visualization techniques of the inferior alveolar nerve (IAN): a narrative review. Surgical and Radiologic Anatomy 38(1):55-63.
- Naitoh M, Yoshida K, Nakahara K, Gotoh K and Ariji E (2011) Demonstration of the accessory mental foramen 3. using rotational panoramic radiography compared with cone-beam computed tomography. Clinical oral implants research 22(12):1415-1419.

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- 4. Tyndall D A, Price J B, Tetradis S, Ganz S D, Hildebolt C and Scarfe W C (2012) Position Paper of the American Academy of Oral and Maxillofacial Radiology on selection criteria for the use of radiology in dental implantology with emphasis on cone beam computed tomography. Oral surgery, oral medicine, oral pathology and oral radiology 113(6):817-26.
- Gerlach N L, Meijer G J, Maal T J, Mulder J, et al. (2010) Reproducibility of 3 different tracing methods based on cone beam computed tomography in determining the anatomical position of the mandibular canal. Journal of Oral and Maxillofacial Surgery 68(4):811-817.

Biography

Maryam Tofangchiha is an Oral Radiologist, Associate Professor of Oral and Maxillofacial Radiology, Dental Faculty, Qazvin University of Medical sciences, Qazvin Iran. (2013 – present). She is the Assistant Professor of Oral Radiology Department, Dental Faculty, Qazvin University of medical Sciences, Qazvin Iran. (2004-2013). She is the Member of Department of Caries Research Qazvin University of medical sciences, Qazvin Iran. (2013 – present). She published more than 15 papers in indexed Scopus.

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