



**“CONVENTIONAL RADIOGRAPHY VERSUS DIGITAL VOLUMETRIC
TOMOGRAPHY IN THE ASSESSMENT OF RELATIONSHIP BETWEEN
IMPACTED MANDIBULAR THIRD MOLARS AND INFERIOR ALVEOLAR
CANAL - A COMPARATIVE STUDY”**

BY

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ABSTRACT

Objective: Surgical extraction of impacted mandibular third molar (MTM) is one of the commonest dentoalveolar surgeries. However, the removal of such third molars requires information about the relative position of the root tips and the inferior alveolar canal (IAC). The objective of this study was to assess the relationship of impacted MTM with IAC, in both vertical and horizontal planes, with the help of conventional radiography (CR) procedures and Digital Volumetric Tomography (DVT). CR included Orthopantomograph (OPG) and open mouth PA cephalometric radiograph (OPA) in combination with two periapical radiographs (0^0 PR and -25^0 PR). Patients were divided into two homologous groups; CR was done in group A while DVT was performed in group B.

Methods: Four experienced and calibrated observers evaluated 33 Conventional and 33 DVT images for the position of root tips of impacted MTM relative to IAC. OPG was mandatory for all the patients and served as the screening radiograph to diagnose impacted MTM. The images were scored on a 5-point scale (1-poor, 2-fair, 3-sufficient, 4-good and 5-excellent). The inter observer variability was assessed with Kappa statistics. For the evaluation of significant differences in the ordinal data, chi-squared tests were applied. The diagnostic information for root-tip and nerve position, obtained by both the imaging modalities, was subjected to statistical analysis using Mann Whitney U Test.

Results: There was significant agreement between the observers indicating no interobserver variation in any of the parameters assessed in relation to both the imaging modalities (CR and DVT). The scores, however, were significantly lower in CR as compared to DVT. The variation of results showed no significant difference between groups A and B in assessing the vertical relationship of both mesial and distal roots of MTM to IAC. On the other hand, the results showed significant difference between the groups for the horizontal relationship of distal root-tip of MTM to IAC ($p= 0.0202$ for DH). CR (group A) showed higher rate of unassessable information than DVT (group B) in the horizontal plane: in 9.09% of cases for the mesial root

and 18.18% of cases for the distal root. With respect to Diagnostic Information for the vertical dimension, there was no significant difference between the 2 methods. But the diagnostic information for the horizontal dimension was highly significant for both the mesial and distal roots, with an advantage for DVT ($p=0.0071$ for the mesial root and $p=0.0019$ for the distal root).

Conclusion: The DVT images were better with high predictability scores compared to CR images. Thus DVT is highly accurate in predicting neurovascular bundle exposure and is an indispensable tool for the preoperative evaluation of impacted MTM.

KEY WORDS: Impacted MTM, IAC, CR, DVT.

