Evaluation of diagnostic value of mandibular third molar root relationship with the inferior alveolar nerve canal

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Abstract

Background and Aim: Due to abundant cases of impacted third molar surgery and the prevalence of close relationship between mandibular third molar root and inferior alveolar canal, and the importance of prevention of nerve injury during surgery, this study was performed to compare panoramic radiography with CBCT Scan in diagnosis of relationship between mandibular third molar root and inferior alveolar canal, based on observed nerve during surgery.

Materials and Methods:the diagnostic study was conducted on extraction of third molar teeth while at least one sign indicating the proximity between, the canal and the tooth in panoramic radiography. Radiographic signs of each sample were assessed in both panoramic radiography and CBTC Scan. Third molar teeth were extracted surgically by two maxillofacial surgeons. Presence or absence of exposure during surgery as the standard criterion was recorded. Diagnostic ability of panoramic radiography in comparison with CBTC Scan was analyzed using proportion test.

Result: The study was performed on 120 samples. In panoramic radiographies the positive predictive value was equal to 67.7 % & negative predictive value was 32.3%, while In CBTC Scan the positive and negative predictive values, were 93.3% and 6.7%, respectively.($p<0.05$) Between agnostic ability of CBTC scan and panoramic radiography there was a statistical significant difference ($p<0.005$). Two signs of panoramic radiography including: cutting opaque border & canal narrowing were seen in 72 percent of positive cases, and had more diagnostic ability. There was no significant association between tooth angle, depth and type of impaction and location of nerve with the possibility of exposure.

Conclusion: Panoramic radiography cannot be the same as CBCT scan in diagnosis of relationship between mandibular third molar root and inferior alveolar canal.

Keywords: CBCT, Panoramic Radiography, Inferior Alveolar Nerve, Third Molar

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