Comparison between Two Different Resolutions of CBCT and Digital Radiography CMOS in Detection of Vertical Root Fracture (in vitro)

Sakhdari Sh[#1], Ghobadi M[2], Hafezi L[3], Mikaeeli E[4], Saadati M[4]

[1] Assistant Professor, Oral & Maxillofacial Radiology Dept, and Member of Cranio Maxillofacial Research Center Islamic Azad University, Dental Branch, Tehran- Iran
[2] Assistant Professor, Endodontics Dept, Islamic Azad University, Dental Branch, Tehran- Iran
[3]Assistant Professor, Oral & Maxillofacial Radiology Dept, Islamic Azad University, Dental Branch, Tehran, Iran
[4]Dentist

Abstract

Background and Aim: Clinical and radiographic diagnosis of vertical root fracture is difficult .The aim of this study is to compare two different resolutions of CBCT and CMOS digital sensor for diagnosis of vertical root fracture.

Materials and Methods: In this diagnostic in vitro study, 80 single rooted teeth were selected and after canal preparation were sectioned from 2 mm below the CEJ. The teeth were put in two groups; 40 teeth with induced root fracture and 40 remained intact served as control samples. Teeth were put in dry mandible and 2 layers of wax was used as soft tissue .All samples were imaged by CBCT with two resolutions and CMOS sensor with 0,and ±15 degrees. Positive predictive value(PPV) and negative predictive values(NPV) of the techniques were calculated with Ratio test.

Result: The reliability in diagnosis of fracture in CBCT was 100% and the reliability in researcher in radiography was 75% .No significant difference was found between the two resolutions of CBCT, but there was a significant difference between CBCT and CMOS digital sensor($P<0.07$).

Conclusion:CBCT had higher ability in VRF detection comparing to digital radiography with CMOS sensor, while both resolutions of CBCT have same abilities.

Keywords: *dental digital radiography, Conflict resolution, Cone beam computed tomography, diagnosis, conflict resolution*

* Corresponding Author Email: *sh.sakhdari@dentaiau.ac.ir*