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Localization of maxillary impacted canine using cone beam computed tomography

A thesis
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Submitted by
Vian Fouad Rahman
B.D.S, H.D.D oral diagnosis

Supervisor by
Assistant prof. Dr. Ahlam Ahmed Fatah
B.D.S, M.Sc. (Oral Radiology)

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Abstract

Background:

When considering function and esthetic, maxillary canine tooth plays a great deal. Moreover, canine impaction is complicated and time consuming to treat, for being highly diverse in inclination and location; also it may be a companied by root resorption of the neighboring teeth (especially lateral incisor). Cone Beam Computed Tomography has been used after risk-benefit assessment, for its' diagnostic reliability in localization of impacted canine and revealing its' serious local complications.

Aim of the study:

Localization of maxillary impacted canine using cone beam computed tomography**.**

Subjects, Materials and Methods:

The sample consisted of prospective study for 33 Iraqi subjects (17 males and 16 females); age ranged (13-27); with 50 cases of maxillary impacted canines, including: 6 bilateral and 10 unilateral cases for females, and 11 bilateral and 6 unilateral cases for males. All subjects attended Al-Wasitti general hospital in Baghdad city for Cone Beam Computed Tomography scan investigation for different maxillofacial diagnostic purposes from November/2015 to April/2016. Using 3 dimentional images in addition to coronal, axial and sagittal views of Cone Beam Computed Tomography scan, the following measurements were done:

1. Localization of the impacted canine (3 dimentional images).
2. Angulation of the impacted canine: Vertical and horizontal angle calculation (in both axial and coronal view).
3. Cusp tip distance of the impacted tooth from the occlusal plane (coronal view).

4. Root resorption of nearby lateral incisor teeth (sagittal view).
5. Alveolar bone width around the impacted tooth (measured in millimeters), (sagittal view).
6. Anatomical proximity to the lateral incisors: in contact (touching) or not.

Results:

Anatomical proximity (Contact) of impacted canine to the lateral incisors had a strong effect on their root resorption, demonstrated by a higher mean rank in the group of positive contact (in touch). Association between root resorption categories of the lateral incisors and the selected measurements showed a statistical significant difference with vertical angle calculation (axial section). Comparison of the coronal and axial views; in vertical angle measurement was statistically significant for coronal with a higher mean angulation in this section, and regarding horizontal angle calculation was statistically significant for axial with a higher mean angulation in this view .The angulation measurement (vertical and horizontal) in axial view could not be obtained for a number of cases due to unobtainable tooth long axis to do the measurement, in addition the angulation calculation could not be done for two cases in the study, one for vertical angle (coronal section) and the other for horizontal angle (axial section), in spite of obtainable teeth long axis because of parallelism of theses axes with the mid sagittal plane and with occlusal plane respectively. The four categories of impacted canine localization found in the study showed a significant statistical difference with vertical angle measurement (coronal view) and with age. The correlation between gender or age with the selected measurements, showed statistical significant difference only in age correlation with calculation of vertical angle (coronal view) and cusp tip distance.

Conclusion:

The study findings demonstrated that utilizing Cone Beam Computed Tomography provides a worthy data about the impacted maxillary canine localization, for more explanation and treatment of these cases surgically and by orthodontics.