

**Ministry of Higher Education
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University of Baghdad
College of Dentistry**



**Determination of the anatomical
variations in greater palatine canal and
foramen by using Cone Beam
Computed Tomography in Baghdad city**

A thesis

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Abstract

Back ground:

Greater palatine canal is an anatomical structure which connects the pterygopalatine fossa with the oral cavity via the greater palatine foramen. Using the Cone Beam Computed Tomography for analysing the greater palatine canal and foramen is important in dental implant placement, administration of local anaesthesia, orthognathic Lefort osteotomies, and sinonasal surgeries.

Aim of the study:

To measure the length, anatomical pathway of greater palatine canal and determination the greater palatine foramen position in relation to various anatomical landmarks using Cone Beam Computed Tomography.

Materials and Methods:

A prospective study of greater palatine canal surveyed by Cone Beam Computed Tomography scan for (60) Iraqi adult patients (32 female and 28 male) with age between (21-60) years. The sample was divided into four age groups, 15 patients in each group, the measurements done by coronal, sagittal and axial views as follow:

1. Measurement the of greater palatine canal length and investigate its anatomical pathway in both coronal and sagittal views.
2. Measurement the distance from greater palatine foramen to the pterygoid hamulas of sphenoid bone in sagittal view.
3. Measurement the distance from greater palatine foramen to the alveolar ridge in the axial view.

The measurement unit was in millimetre for all variables.

Result:

The average length of the greater palatine canal was 29.0 ± 2.42 mm (29.03 ± 2.58 mm on the right side and 28.97 ± 2.55 mm on the left side). The average length of the greater palatine canal in female was 27.95 ± 2.03 mm while in male was 30.19 ± 2.30 mm. There was no significant difference of greater palatine canal length according to side and age, while there was significant difference in the length according to gender.

The anatomical pathways for the greater palatine canal which investigated from pterygopalatine fossa to the greater palatine foramen were six pathways in the coronal view and four pathways in the sagittal view, the most anatomical pathway was the inferior lateral direction then an inferior medial direction in the coronal view, and the anterior inferior direction in the sagittal view.

The average distance of the greater palatine foramen to the pterygoid hamulas of sphenoid bone was 9.16 ± 1.14 mm, there was no significant difference of distance according to side and gender but there significant difference according age group.

The average distance of the greater palatine foramen to the alveolar ridge was 5.16 ± 0.84 mm, there was no significant difference of distance according to side and gender but there significant difference according to age group .

Conclusion:

Cone Beam Computed Tomography imaging scan can be used to analyse greater palatine canal length and its anatomical pathways with determination of greater palatine foramen position in relation to alveolar ridge and pterygoid hamulas of sphenoid bone. The average length of greater palatine canal was significantly different according to gender but not significantly different according to side and age, the average distances from the greater palatine foramen position to alveolar ridge and to pterygoid hamulas of sphenoid bone

were statistically not significantly differ according to side and gender, but significantly different according to age group, so it's possible for using greater palatine canal length in gender prediction.