

**Ministry of Higher Education
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College of Dentistry**



**Radiological evaluation of the anatomic
characteristics of lingual foramina and their
vascular canals in the anterior region of the
mandible using cone beam computed tomography**

A thesis

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Abstract

Presence of lingual foramina and canals in the interforaminal region may increase the risk of complications during surgery. Presurgical radiological investigation with cone beam computed tomography can assist the surgeon to avoid massive bleeding on the mouth floor which can happen during surgical operation in this region.

Radiological evaluation of the number and position of the lingual foramina and the course of their canals in the anterior of the mandible using cone beam computed tomography.

Prospective study including 72 Iraqi adult subjects (31male and 41female) the age range from 20 to 59 years, all subjects attended to AL-Sharaa dental clinic in AL-Najaf AL-Ashraf city, scanned with cone beam computed tomography for different maxillofacial diagnostic purposes from September 2016 to February 2017. Using 3dimensional images and sagittal cross section, the following measurements were done:

1. Presence of lingual foramina.
2. Number of the lingual canals observed on sagittal slice.
3. Diameter of the lingual canal opening was measured at the level of the lingual cortical bone.
4. The distance from the lower cortex border of the foramina to the lower border of the mandible (main foramina) upper one and the distance from the upper cortex border of the foramina to the alveolar crest.
5. Position of the foramen was described in relation to the genial tubercles.
6. Orientation of the lingual canals.
7. Extent of penetration of the lingual canals throughout the mandible width

Lingual foramina in the anterior of the mandible were viewed in all study subjects. The number of canals varied from one to five, the average diameter of the canals opening was (0.81 mm). The average distance from the foramina to the lower border of the mandible and to the alveolar crest was (13.78 mm) and (16.05mm) respectively. (25.0%) of the canals penetrated only the lingual third of the width of the mandible, (55.6%) reached the middle third and (19.4%) spread to the buccal third. The results appeared that there was no effect of age and gender on all selected measurements. There was significant association of the diameter of the lingual canal opening with the count, position, orientation and extent of the lingual canal through the mandible width. The correlation between the position of lingual foramen with the number, diameter and spread of lingual canal showed statistically significant.

Cone beam computed tomography is a valuable system in diagnosis and treatment planning of surgical procedures. It can reveal multiple anatomic features of the mandible like presence of the lingual foramina and their vascular canals in the anterior of mandible while significant reducing radiation risk for the patient. Clinicians must have a knowledge the presence of these anatomical structure and should be aware of their possible implications.