

**Thickness of buccal bone at various sites of the
mandible and its clinical significance in
monocortical screws placement using Multislice
Computed Tomography**

A thesis

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Submitted by

Hawraa Noori Atallah

B.D.S.

Supervised by

Assistant prof. Dr. Lamia H. Al-Nakib

B.D.S, M.Sc. in Oral Radiology

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Abstract

Background:

Open reduction and internal fixation (ORIF) using miniplates and screws is the treatment of choice for mandibular fractures. Using miniplates and screws along the ideal line of osteosynthesis provides sufficient support and stability to the bone fragments to allow immediate function. It is important to know both: the region where the bone provides a firm anchorage for the screw, and the topography of the dental apices and inferior alveolar nerve to avoid damaging them when inserting the screw

The aim of study:

The purpose of this study is to determine the thickness of buccal cortical plate and that of buccal bone using computed tomography, at the parasymphysis and mandibular body, thereby determining the area that provide a firm anchorage and the maximum length of mono-cortical screws that can be safely placed in these regions without injuring the tooth roots or inferior alveolar nerve .

Materials and Methods:

The sample of the present study was a total of 110 Iraqi patients (77 males & 33 females) aged (18-35) years old who admitted to Computed Tomography scan unit in AL-Sadr Teaching Hospital in Al-Najaf city to get Computed Tomographic examination of facial bones from November 2013 to May 2014. The conventional section of CT (axial) was used to do the measurements and dental planning analysis which is a specific investigation protocol was also used. The thickness of buccal cortical plate and the thickness of buccal bone were measured at the level of root apex of (canine, first premolar, second premolar) and at the level of: root apex and inferior alveolar canal in (mesial and distal root of first and second molar).

Results:

The mean buccal bone thickness at canine area was (3.7-4.3 mm), in premolars area (3.6-4 mm), in molar area (at the level of apex) (5.6-6 mm), in molar area (at the level of inferior alveolar canal) (5.2-5.6 mm) for females and males respectively. The

mean buccal cortical plate thickness at canine area was (1.4-1.6 mm), in premolars area (1.5-1.7 mm), in molar area (at the level of apex) (2.4-2.6 mm), in molar area (at the level of inferior alveolar canal) (2.4-2.3 mm) for females and males respectively. There was no statistically significant age and gender difference in buccal cortical plate thickness and buccal bone thickness.

Conclusion:

Buccal cortical plate thickness and buccal bone thickness in various sites of the mandible could be measured precisely using Multislice Computed Tomography which can guide surgeons in selecting the proper screw length without causing injury to root apex or inferior alveolar nerve.