

**PREOPERATIVE EVALUATION OF INTERRADICULAR SPACES
AND CORTICAL BONE THICKNESS FOR PLACEMENT
OF MINI-IMPLANTS BY CONE BEAM COMPUTED
TOMOGRAPHY**

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ABSTRACT

Objectives. This study was performed to measure the available mesiodistal interradicular distance, cortical bone thickness and alveolar bone width between second premolar and first molar as the suggested site for mini-implant placement by using cone beam computed tomography (CBCT).

Study design. Three dimensional CBCT images of twenty two patients (10 males, 12 females; age range, 18-37 years; average age, 22 years) were examined. Maxillary and mandibular interradicular distances, cortical bone thickness and alveolar bone width between second premolar and first molar were measured at 4 vertical levels from the cementoamel junction (CEJ).

Results. Maxillary interradicular distances ranged from 2.93 to 3.33 mm and tended to increase from the CEJ to the apex. Mandibular interradicular distances ranged from 2.93 to 3.42mm and tended to be greater than maxillary interradicular spaces. Maxillary buccal cortical bone thickness was 0.8 to 1.32 mm and mandibular buccal cortical bone thicknesses was 1.2 to 1.86 mm. In both jaws, buccal cortical bone thickness tended to increase from the CEJ to the apex. Alveolar process width of the maxilla and mandible were 10.16 to 11.94 mm and 8.88 to 10.92 respectively.

Conclusion: Evaluation of cortical bone thickness is important because it is the major determinant of initial stability of a microimplant. According to our results we expect 1.2 mm or more of cortical bone thickness between the second premolar and first molar at 4, 6 and 8 mm from the CEJ. Interradicular space availability is related to safety of mini-implant insertion. The recommended safe locations for mini-implant placement are at 6 or 8 mm apical to CEJ between the second premolar and the first molar in the maxilla or the mandible.

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