



**“QUANTITATIVE INVESTIGATION OF PALATAL BONE DEPTH  
AND CORTICAL BONE THICKNESS FOR MINI-IMPLANT  
PLACEMENT- A COMPUTED TOMOGRAPHIC STUDY”**

by

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## **ABSTRACT**

**Background and objectives:** Bone thickness and cortical bone thickness are known to affect the stability of mini-implants. The aim of the study was to assess and quantify the total bone thickness and cortical bone thickness in different regions of the palate.

**Methods:** Computed tomographic images of 30 individuals (16 males and 14 females with age range of 19- 32 years) having full complement of teeth and no history of orthodontic treatment were randomly selected. Coronal slices were generated on which overall bone depth and cortical bone thickness were measured at 4 levels and 34 palatal placement sites. Student t-test and One way analysis of variance was used for data analysis. **Results:** In the sagittal dimension, the palatal bone thickness decreased from anterior to posterior measurement levels. In transverse dimension, palatal bone thickness was greatest at the mid-palatal region and decreased gradually farther away from the mid-palate in the anterior region but showed marginal increase in bone thickness close to alveolar bone transition in the molar and premolar region. Cortical bone thickness varied in clinical measurements but there was no difference at various measurement levels.

**Interpretation & Conclusion:** Favourable anatomic relationships for palatal orthodontic mini-implant placement are at the first and second premolar region. This region is clinically accessible, which facilitates temporary anchorage device placement and is relatively free of vital structures. Anatomically, para sagittal sites and sites closer to the alveolar bone are preferred since the palatal bone thickness is greater at all measurement levels. No variability in cortical bone thickness was evidenced. Hence the entire palate offers adequate primary stability of mini-implants. This information may aid clinicians in choosing suitable palatal insertion sites for orthodontic mini-implants. Thus, para-median