

# Computed Tomography Evaluation of The Relationship Between The Need for Corticotomy and Bone and Suture Density in Cases of Rapid Maxillary Expansion

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**Objective:** To determine if density measurements of several maxillary regions in Hounsfield Units (HU) and outcomes of rapid maxillary expansion (RME) are correlated. Is correlation powerful enough to give us direct information about maxillary resistance to RME?

**Methods:** Twenty-two computed tomographic (CT) scans (14 years) are used in this archive study. Two CT records were collected, one before RME (T1) and one after 3 months of retention period (T2). Maxillary measurements were made using dental and skeletal landmarks in first molar and first premolar slides to measure the effects of RME. Density of midpalatal suture (MPSD) and segments of maxillary bone is measured in HU at T1. Correlation analysis was conducted between density measurements and maxillary variables. Regression analysis was then performed for variables that showed positive correlation.

**Results:** There was no correlation between density and skeletal measurements. Intermolar angle (ImA) in molar slice showed statistically significant correlation with density measurements. The ImA variable showed the highest correlation with MPSD in frontal section ( $r = 0.669$ ,  $p = 0.001$ ).

**Conclusion:** There is correlation of 32.1–43.3% between density measurements and ImA increase. Our density measurements explain a certain percentage of ImA increase, but density is not the only and definitive indicator of changes after RME.

**Key words:** Computed tomography, density, Hounsfield units, rapid maxillary expansion, midpalatal suture