

# Correlation between tooth size-arch length discrepancy and interradicular distances measured on CBCT and panoramic radiograph: an evaluation for miniscrew insertion

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**Introduction:** The selection of appropriate sites for miniscrew insertion is critical for clinical success.

**Objectives:** The aim of the present study was to evaluate how interradicular spaces measured on panoramic radiograph compare with Cone-Beam Computed Tomography (CBCT), and how crowding can influence the presence of available space for miniscrew insertion, in order to define a new “safe zones” map.

**Methods:** A total of 80 pre-treatment panoramic radiographs and 80 CBCT scans with corresponding digital models were selected from the archives of the department of Orthodontics, Aarhus University. Crowding was measured on digital models, while interradicular spaces mesial to the second molars were measured on panoramic radiographs and CBCTs. For panoramic radiographs, a magnification factor was calculated using tooth widths measured on digital models. Statistical analyses were performed to investigate the correlation between the amount of crowding and the available interradicular space. Visual maps showing the amount of interradicular spaces measured were drawn.

**Results:** The most convenient interradicular spaces are those between the second molar and the first premolar in the mandible, and between the central incisors in the maxilla. However, some spaces were revealed to be influenced by crowding.

**Conclusions:** Calibration of panoramic radiographs is of utmost importance. Generally, panoramic radiographs underestimate the available space. Preliminary assessment of miniscrew insertion feasibility and the related selection of required radiographs can be facilitated using the new “safe zone” maps presented in this article.

**Keywords:** Orthodontics. Orthodontic anchorage procedures. Orthodontic miniscrew. CBCT. Safe zones.

\* Access [www.scielo.br/dpjo](http://www.scielo.br/dpjo) to read the full article.

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