

# Spatial Analysis of Maxillary Central Incisors in Relation to the Nasopalatine Canal and Surrounding Alveolar Bone

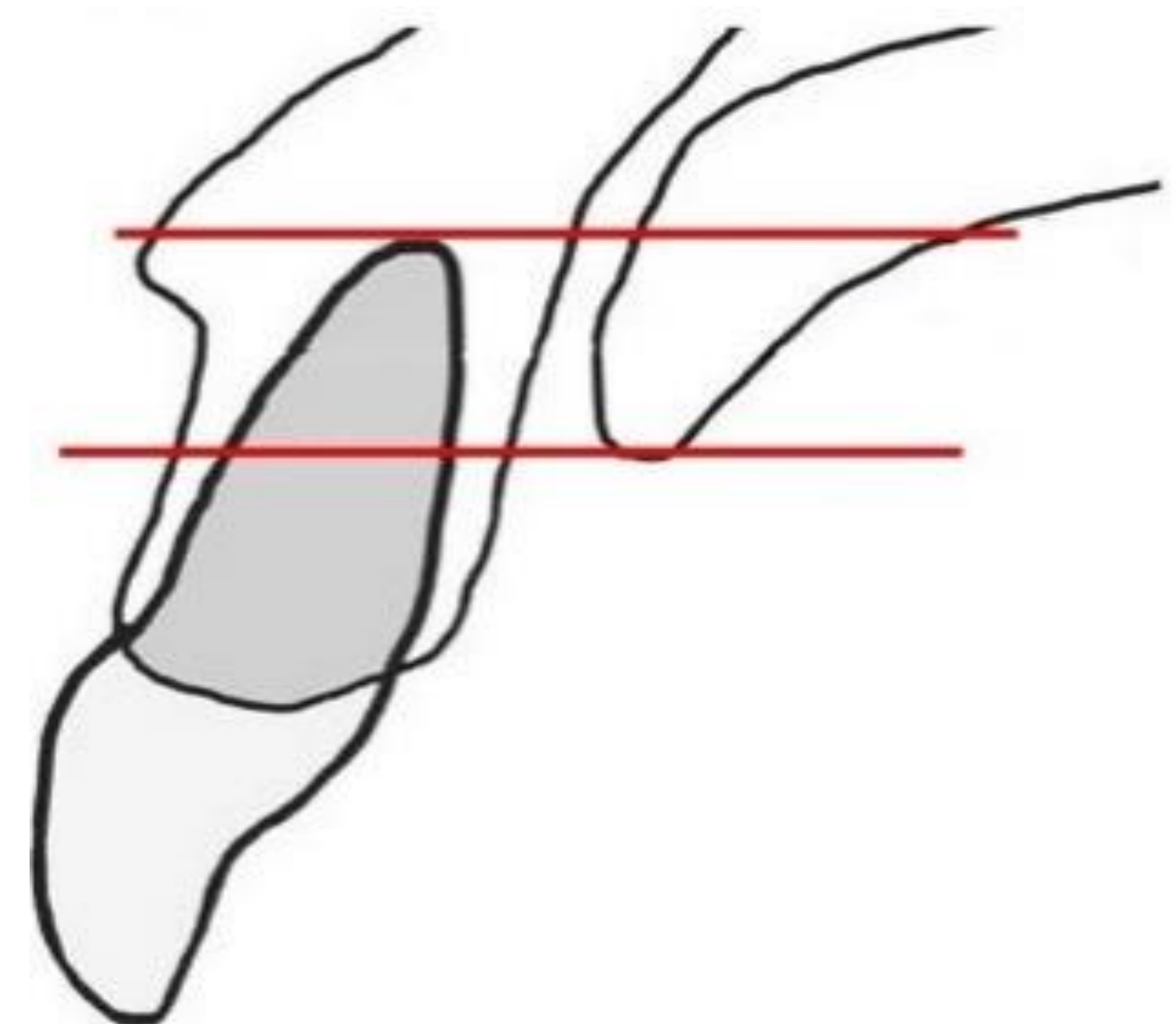
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## Introduction

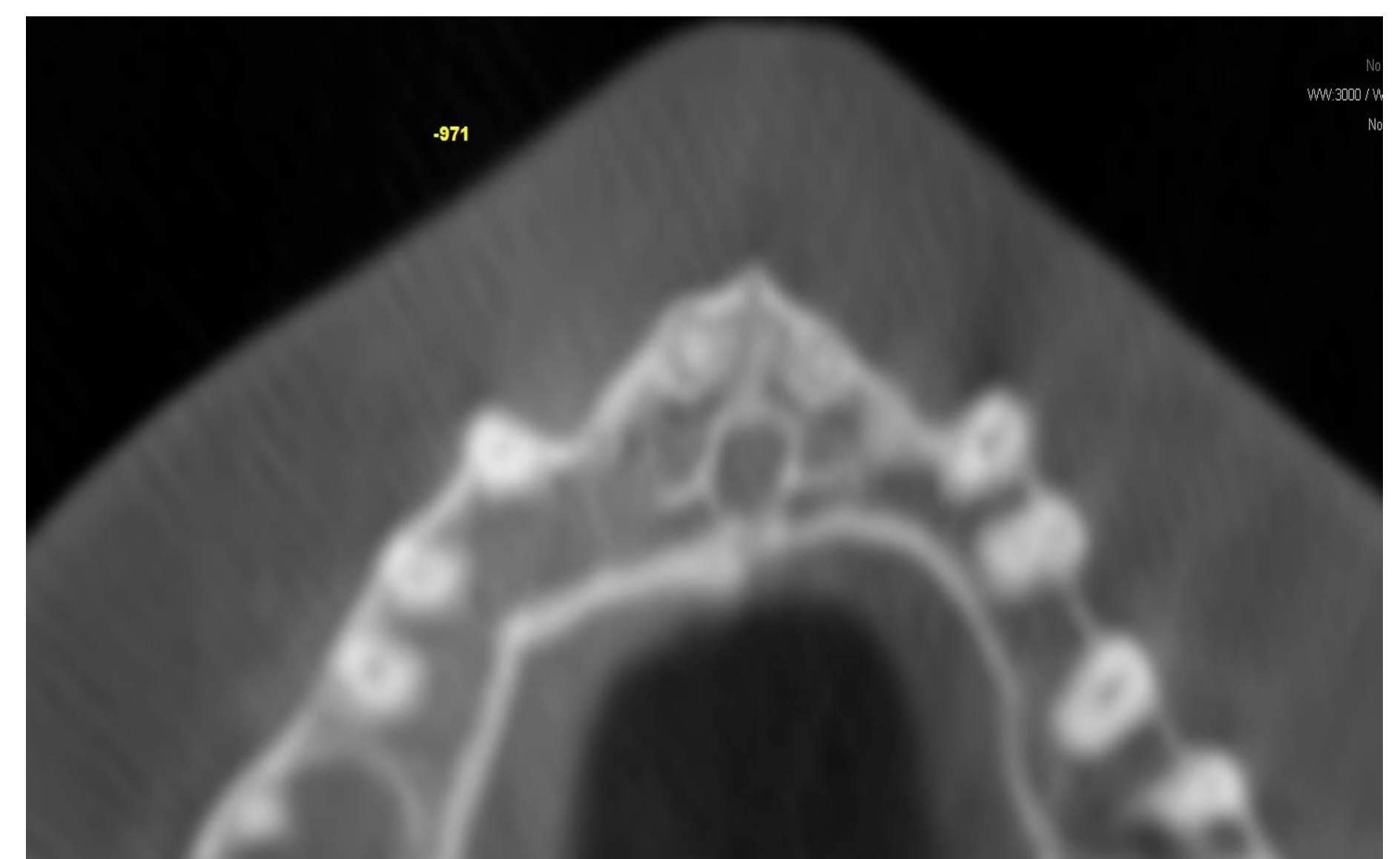
The use of **mini-implants** in orthodontics **enables greater retraction** of incisors than previously achievable. The impact on incisors' positioning relative to the alveolar bone and nasopalatine canal is poorly understood. The **labiolingual inclination** of incisors can **influence** these **anatomical relationships**. Our study assessed the **spatial relationship** between **maxillary central incisors** and the surrounding alveolar bone and **nasopalatine canal**.

## Materials & Methods

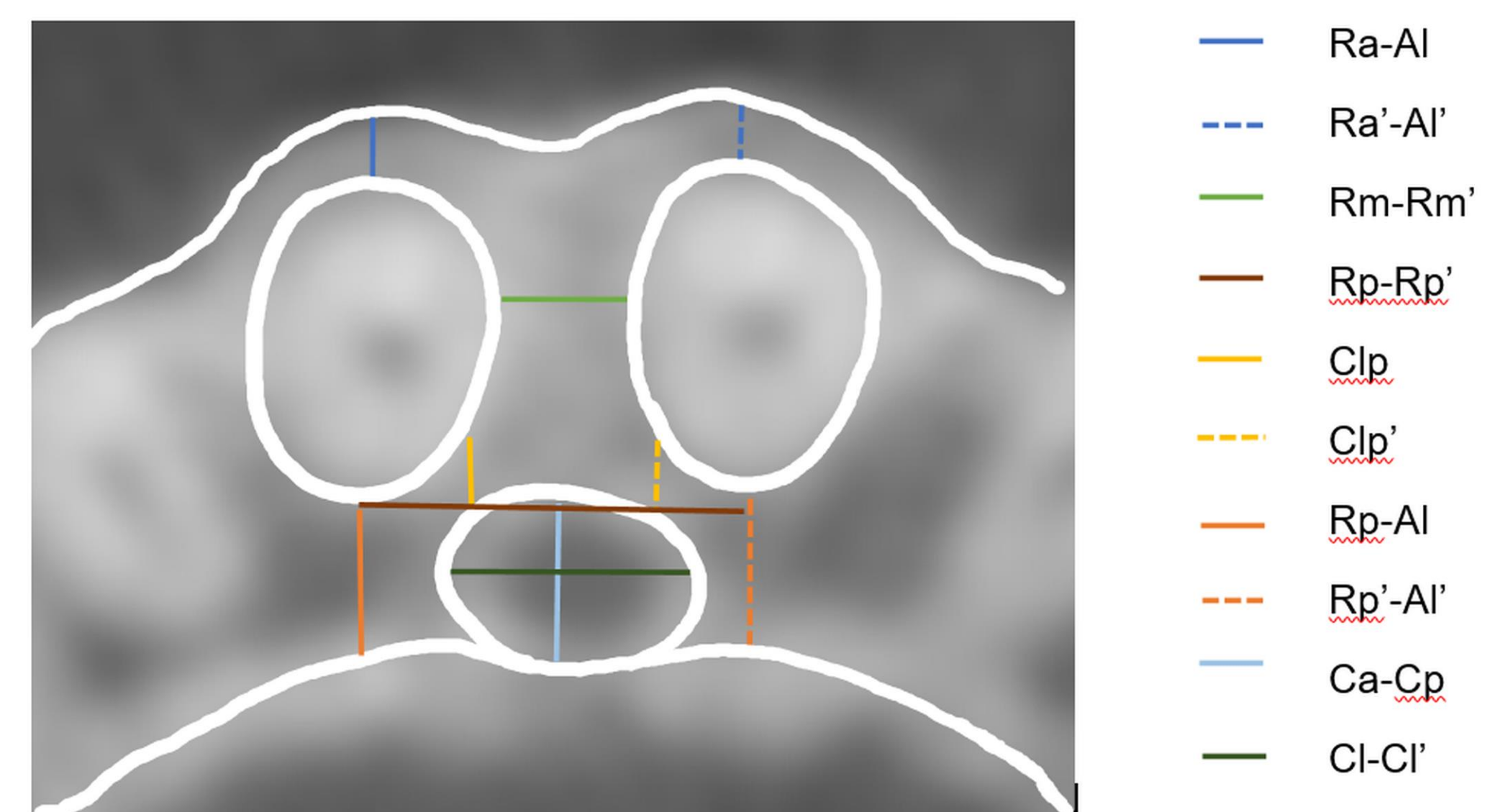
CBCT scans of 40 patients were analyzed. Lateral cephalograms derived from CBCTs were used to determine the inclination of the teeth. This **inclination** was then **correlated with** the alveolar bone's dimensions posterior to the incisor roots and adjacent to the **nasopalatine canal**. Linear measurements at two distinct levels were evaluated (Fig. 1).



**Figure 1.** Two levels of bone evaluation



**Figure 2.** Bone morphology at one section



**Figure 3.** Measurements recorded at each level

## Results

- **Significant difference in canal width and anterior bone width** between the apical and cervical regions on the **left side**, with right side showing no differences.
- **Significant gender difference in canal length** at the cervical level, with **males** showing **higher** values.
- **Significant differences** in the least distance **between incisor roots** and the **incisive canal** at the apical level, with **females** having **higher median** values.

## Conclusion

The **proximity** of the maxillary central **incisors** to the nasopalatine canal and the availability of the alveolar bone posterior to these incisors **can vary with** the teeth's **labiolingual inclination**. Therefore, **comprehensive evaluation** of the alveolar bone is **essential** when planning significant anteroposterior tooth movement.