"Safe Zone" for Risk-Free Implantation of Skeletal Anchor Plates in Skeletal Class II Malocclusion Patients: An Anatomical Study Using Cone Beam Computed Tomography

Osama H. AlAli, Ph.D. in Orthodontics, Assistant Professor, Department of Orthodontics, School of Dentistry, University of Aleppo, Syria. E-mail: **osama-alali@hotmail.com**

INTRODUCTION

To avoid protrusion of mandibular incisors, successful clinical attempts have been carried out to support Fixed Functional Appliances by using Skeletal Anchor Plates placed in the symphysis.[1]

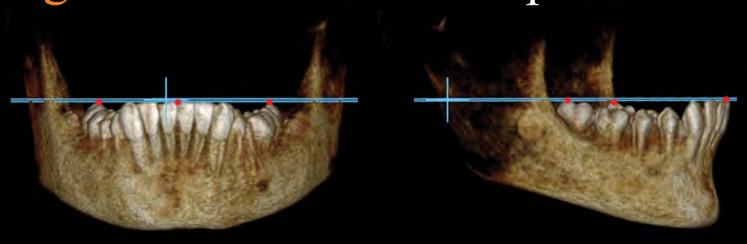
AIM

The purpose of this study, that used cone beam CT, was to clarify the anatomical features of the mandibular anterior region to help in identify safe zone to apply skeletal anchor plates.

METHODS

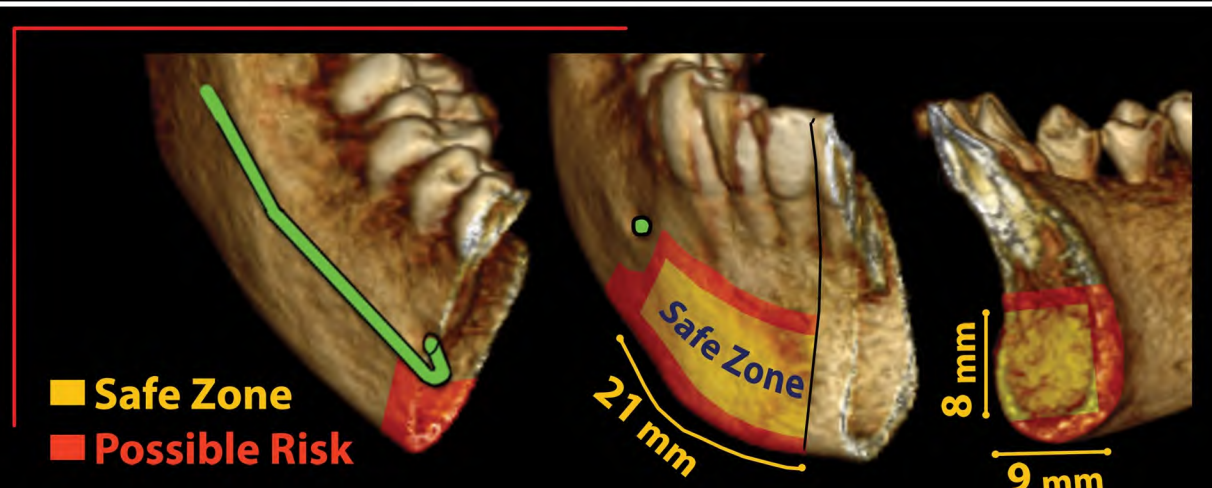
Study sample consisted of **9** patients (**13.5 years**) with skeletal Cl II. Cone beam CT unit (Scanora, Soredex) was used to acquire 3D radiographs.

OnDemand3D software was used for measurements. A standardized protocol was followed in viewing and reorienting the images according to the lower occlusal plane.



Independent t-test analysis was carried out to compare of means between the right and left variables.

1. Nanda R, Uribe FA. Temporary anchorage devices in orthodontics. 2009, Mosby, P 365-72.

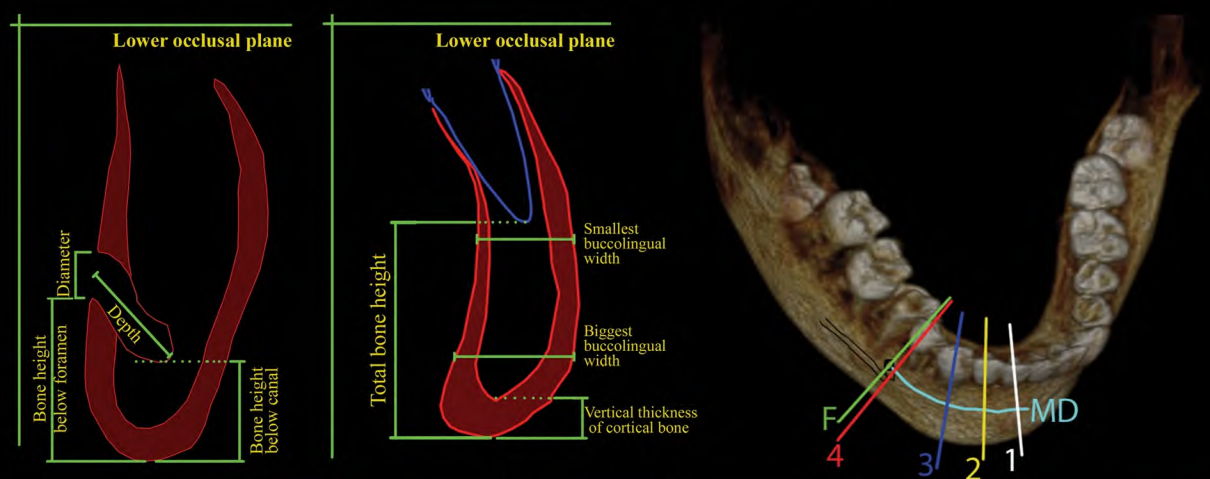


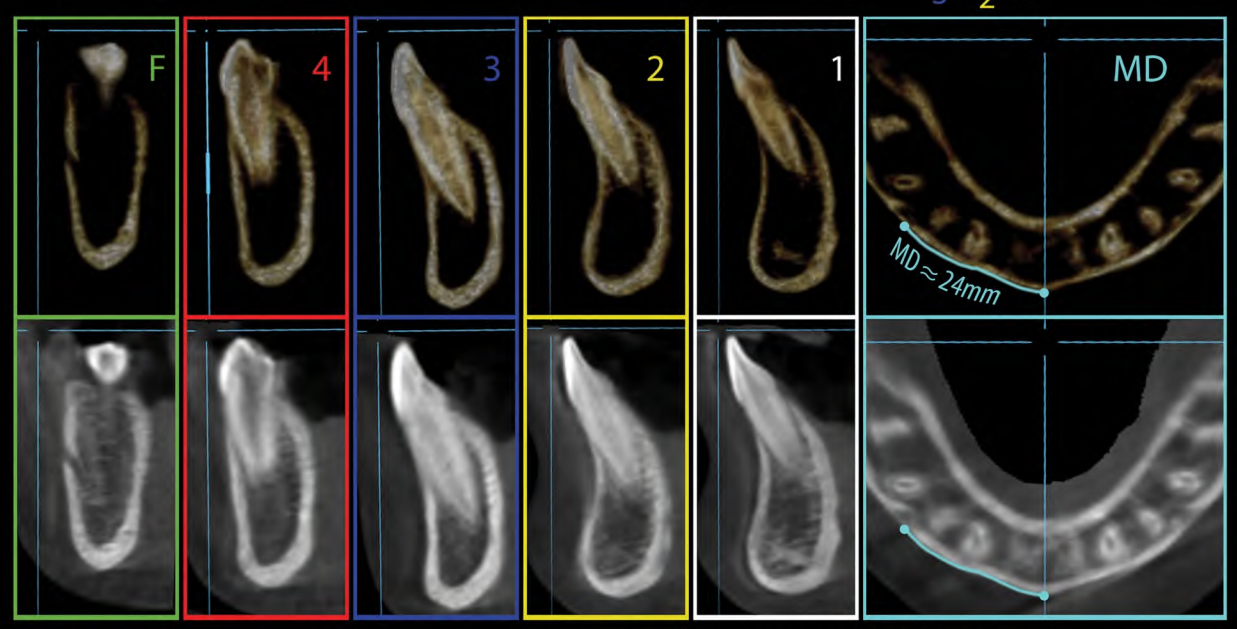
CONCLUSION

Safe zone distally extends on average 21-mm horizontally starting from the midline, and 8-mm vertically over the lower margin region of symphysis. The area below the foramen was risky because of the presence of the mandibular dental canal.

RESULTS

The right and left measurements were not significantly different (P >.05). Bone height was 11 mm below the mental foramen, and 8.2 mm below the mandibular canal. Bone height was the biggest below the central incisor root, and the smallest below the root of canine. The bone below the root of the central incisor was characterized by the smallest buccolingual width, and in the same time the biggest width.





foramen close to 2nd premolar and directed inward and downward Depth: 5.1 mm Diameter: 2.9 mm	14.8 ± (1.0)	12.6 ± (2.1)	16.2 ± (1.6)	17.4 ± (0.8)	Total bone height
	11.2 ± (1.4)	11.2 ± (1.7)	11.4 ± (1.4)	13.2 ± (0.7)	Biggest buccolingual width
	10.4 ± (1.5)	10.0 ± (1.2)	8.9 ± (1.2)	8.9 ± (1.0)	smallest buccolingual width
	3.6 ± (0.5)	3.4 ± (0.7)	3.5 ± (0.7)	2.9 ± (0.9)	Vertical thickness of cortical bone