Title of the study: Evaluation of Buccal Bone Thickness, Ridge Dimensions, And Root Position In Anterior Maxilla For Immediate Implant Placement

NCT ID: not yet assigned

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Study Protocol CBCT (cone-beam computed tomography) images obtained for various diagnostic purposes from at least 200 individuals who met the inclusion criteria and were admitted to the Department of Oral and Maxillofacial Radiology at the Faculty of Dentistry, Erciyes University, between January 2015 and January 2020, will be included in the study. In the CBCT scans, the maxillary right and left central, lateral, and canine regions in the anterior maxilla will be evaluated. A reference line drawn through the midpoints of the teeth, parallel to their long axes, will be used to assess the morphology of the anterior crest. For each of the maxillary central, lateral, and canine teeth, alveolar crest width and height, buccal bone thickness, and root position (defined as the angle between the long axis of the root and the long axis of the alveolar crest) will be measured separately. To determine buccal bone thickness, measurements will be taken from the buccal crest apex, as well as at 1 mm, 2 mm, 4 mm, and 6 mm apical to the crest, and at the level of the tooth apex. Alveolar crest height will be defined as the distance between the nasal floor and the alveolar crest along a line drawn parallel to the long axis of the crest. Alveolar crest width will be calculated by averaging the measurements taken from the midpoints of three equal segments of the crest. The buccal undercut will be defined as the closest point between the buccal bone surface and the root in the sagittal plane, and its distance from the crest apex will be recorded. Additionally, the angle between the tooth root and the alveolar crest will be measured to determine root position in the radial plane. The distribution of these measurements will also be analyzed according to age and gender. For this purpose, CBCT images will be grouped into the following age categories: 20–29, 30–39, 40–49, 50–59, 60–69, and 70–80 years. All measurements will be performed by a single experienced professional. The statistical analysis of the data will be carried out using the SPSS (Statistical Package for the Social Sciences) software. The Kolmogorov-Smirnov test will be used to evaluate the normality of the data distribution. For comparisons between groups, One-Way ANOVA followed by Tukey's post-hoc test will be used for normally distributed variables, while the Kruskal-Wallis test will be used for non-normally distributed variables. Correlations between age, gender, and the measurements of alveolar height and width will be analyzed using Spearman's correlation coefficient.