Cone beam computed tomographic (CBCT) analyses of alveolar bone anatomy at the maxillary anterior region

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Introdutcion

Sufficient buccal bone is important for optimal esthetic results of implant treatment in the anterior region. Single-tooth implant placement in the esthetic zone is a highly reliable treatment option for replacing a failing tooth. Especially in the esthetic region, buccal bone and its preservation is one of the key factors in esthetic outcome.

Aim

Evaluate of the alveolar bone anatomy for implant planning at the maxillary anterior region using CBCT imaging technique.

Materials and methods

23 CBCT images were selected using specific inclusion and exclusion criteria: six maxillary anterior teeth and the first premolars on both sides without crowding or spacing, caries, restorations, apical diseases, tooth trauma and periodontal diseases.

Results

The dimensions of the labial wall were obtained. The mean thickness of the labial bone at the mid-root level was less than 1 mm. At 3 mm below the CEJ, the thickness was less than 1 mm at the central and lateral incisors. The mean value of labial bone curvature angle below the root apex was 136.71±16.84° at the central incisor, 146.10±11.60° at the lateral incisor and 151.08±9.89° at the canine. The mean distance from the CEJ to the labial alveolar crest was 1.80±0.56 mm at central incisor, 2.01±0.78 mm at lateral incisor and 2.05±0.79 mm at canine. Both the interproximal bone width and height were the greatest between the central incisors, and the widths became wider as the heights became shortened posteriorly.

Conclusion

The labial bone at the maxillary anterior region was thinnest at the mid-root level and thickest at the root apical level. The curvature angle of the labial bone at the central incisor was significantly smaller than that at lateral incisor and canine.