A-2. The Effect of the Axial Plane on Measurement of Available Bone Height for Dental Implant in Computed Tomography of the Mandible

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For the success of dental implant, accurate radiographic evaluation is prerequisite for planning the location of the osseointegrated implants and avoiding injury to vital structures. CT/MPR(computed tomography/multiplanar reformation) shows improved visualization of inferior alveolar canal. In order to obtain cross-sectional images parallel to th teeth, the occlusal plane is used to orientate for the axial plan. If the direction of axial plane is not parallel to the occlusal plane, the reformatted cross-sectional scans will be oblique to the planned fixture direction and will not show the actual dimension of the planned fixture's location. If the length which measured in the cross-sectional view is much greater than actual available bone height, penetration of canal may happen. The aim of this study is to assess the effect of axial plane to measurement of available bone height for dental implant in computed tomography of the mandible. 41 patients who were made radiographic stents and were taken CT. The sites that were included in the study were 45 molar regions. In the central panoramic scan, the length from alveolar crest to superior border of inferior alveolar canal(available bone height, ABH) was measured in direction of reformatted cross-sectional plane(uncorrected ABH). Then, length from alveolar crest to superior border of canal was measured in direction of stent(corrected ABH). The angle between uncorrected ABH and corrected ABH was measured. From each ABH, available fixture length was decided by Brånemark system. The results were following :

1. The difference between two ABHs was statistically significant in both first and second molar. The percentage of difference more than 1 mm was 8.7% in first molar and 16% in second molar. The percentage of difference more than 2 mm was 2% in first molar and 6.6% in second molar. The maximum value of difference was 2.5 mm in first molar and 2.15 mm in second molar.
2. The correlation between difference of 2 ABHs and angle was statistically significant and positive correlation in both first and second molar. The correlation coefficient was 0.534 in first molar and 0.728 in second molar. The second molar has a stronger positive correlation.
3. The percentage of disagreement between 2 fixture lengths from two ABHs was 24.4% in first molar and 28.9% in second molar.