

The Correlation between Three-Dimensional Implant Positions and Esthetic Outcomes of Single-Tooth Implant Restoration

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Abstract : Statement of Problem: The important parameter of esthetic assessment in anterior maxillary implant include pink esthetic of gingiva and white esthetic of restoration. While the 3 dimensional (3D) implant position are recently concerned as a key for succeeding in implant treatment. However, to our knowledge, the authors did not come across any publication that demonstrated the relations of esthetic outcome and 3D implant position. Objectives: To investigate the correlation between positional accuracy of single-tooth implant restoration (STIR) in all 3 dimensions and their esthetic outcomes. Materials and Methods: 17 patients' data who had a STIR at central incisor with pristine contralateral tooth were included in this study. Intraoral photographs, dental models, and cone beam computed tomography (CBCT) images were retrieved. The esthetic outcome was assessed in accordance with pink esthetic score and white esthetic score (PES/WES). While the number of correct position in each dimension (mesiodistal, labiolingual, apicocoronal) of the implant were evaluated and defined as 'right' or 'wrong' according to ITI consensus conference by one investigator using CBCT data. The different mean score between right and wrong position in all dimensions was analyzed by Mann-Whitney U test with 0.05 was the significant level of the study. Results: The average score of PES/WES was 15.88 ± 1.65 which was considered as clinically acceptable. The average PES/WES score in 1, 2 and 3 right dimension of the implant position were 16.71, 15.75 and 15.17 respectively. None of the implants placed wrongly in all three dimensions. Statistically significant difference of the PES/WES score was found between the implants that placed right in 3 dimensions and 1 dimension ($p = 0.041$). Conclusion: This study supported the principle of 3D position of implant. The more properly implant was placed, the higher esthetic outcome was found.

Keywords : accuracy, dental implant, esthetic, 3D implant position

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