



Comparison of strain energy density (SED) around short implants in the atrophic mandible

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Abstract

Short implants have become an alternative treatment in this posterior region with anatomic limitations. The aim of this study was to compare the biomechanical performance of splinted and non-splinted four short dental implants, in the posterior region of the mandible, by using finite element analysis.

Materials and Methods: By using Rhinoceros software V15, we created four different Three-dimensional models of short implants that had been divided into two different dimensional groups were placed at the site of the mandibular first and second premolar as well as first and second molars. ScanIP was used to simulate the model of an edentulous lower jaw by the CBCT slices. A 75 Pascal compress forces axial load was applied to the occlusal surface of each crown. Stress and strain values were analyzed in specific nodes in cortical and cancellous surrounded bone using Abaqus software.

Results: The maximum stress values under axial load were found in the splinted first molar model. Under an axial load, the first splinted premolar model showed maximum strain values.

Conclusion: Splinting adjacent short implants may provide less bone strain and stress, which can be useful for the parafunctional patients. There is no statistically significant difference between the two different diameter implants in this study.

Biography

Amir Fahimipour is a young dentist practitioner, graduated from a prestigious university (SBMU); He performed vast research in the field of 3D bioprinting during my research associate experience, and submitted them as journal papers. Currently, he is a HDR, a higher degree by research, at Westmead Hospital, The University of Sydney, in the field of 3D modeling and tissue generation. Moreover, he have been invited to present his research outcomes at over 40 international scientific congresses/conferences, and among of them, 3 times pinpointed as “the best presentations” and 3 times awarded for “valuable contribution”.



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