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### Effect of implant Inclination and Cantilever lengths in All-On-4 Configuration– A Three Dimensional Finite Element Analysis

Dr. Ajit S. Jankar<sup>1</sup>, Dr. Suresh S. Kamble<sup>2</sup>, Dr. Shruti D. Botwe<sup>3</sup>,  
Dr. Shashi S. Patil<sup>4</sup>, Dr. Suraj S. Sonawane<sup>5</sup>

<sup>1</sup>Head of the department, Department of Prosthodontics, Maharashtra institute of dental science and research, Latur, Maharashtra, India

<sup>2</sup> Principal and Professor, Department of Prosthodontics, Maharashtra institute of dental science and research, Latur, Maharashtra, India

<sup>3</sup>Post graduate student, Department of Prosthodontics, Maharashtra institute of dental science and research, Latur, Maharashtra, India

<sup>4</sup>Reader, Department of Prosthodontics, Maharashtra institute of dental science and research, Latur, Maharashtra, India

<sup>5</sup>Post graduate student, Department of Prosthodontics, Maharashtra institute of dental science and research, Latur, Maharashtra, India

Email Id: [service.heb@gmail.com](mailto:service.heb@gmail.com)

#### Abstract:

**Aim:** The aim of this finite element analysis was to evaluate the effect of different implant inclinations and cantilever lengths in All-On-4 configuration on stress distribution in edentulous mandibular bone.

**Methodology:** A 3D finite element models of edentulous mandible restored with a fixed prosthesis supported by 4 implants were constructed to carry out the analysis. Two distinct configurations corresponding to 2 different tilts of distal implants (30° & 45°) were subjected to 250 N of axial and oblique loads. The Von Mises stresses were measured at implants and surrounding cortical bone.

**Results:** For the distal implants placed at 30° and 45° inclinations with differing cantilever lengths, Von Mises stress values observed on implants and at implant-cortical bone interface in 30° configuration with greater cantilever length were higher than 45° configuration.

**Conclusion:** Within the limitations of this study, increase in the inclination of the distal implants upto 45° resulting in reduced cantilever arm, can alleviate the stress levels in peri-implant bone.

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