Simulation of installing transitional implant dentures under a support of dental bridge prototypes for the two-stage dental implant osteointegration period

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The article is devoted to virtual simulation of transitional implant installation in a jaw. The main purpose of the study is to improve the quality of medical service and planning the implantation surgery on the initial stage of treatment. The study tested biomechanical fundamentals of the dental bridge prototype behavior and took into account specific features of strength characteristics of jaw bone tissues. In this paper we discuss two approaches to simulation and optimization of transitional implants arrangement: optimization is considered on a simpler model with the previously set geometry, total calculation is carried out on the full-scale model constructed according to the tomogram. We describe options in considering the density of the bone tissue according to Misch classification. We used the program complexes Mimics, SolidWorks, Nastran, Patran, ANSYS when doing the calculations. For a model with three constant and three transitional implants we made a physical prototype by means of the 3D-printer ZPrinter®650 made by 3DSYSTEMS company.

Keywords: *transitional implants, prosthodontics, finite-element method, strength, dentistry*

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