

# **Influence of inclination angle of attractive surface on the attractive force of magnetic attachment with optimal structural design.**

H Kumano.<sup>1</sup>, H Nagai.<sup>1</sup>, R Kanbara.<sup>1</sup>, T Masuda.<sup>1</sup>, Y Nakamura.<sup>1</sup>, K Shoji.<sup>1</sup>, Y Takada.<sup>2</sup>, Y Tanaka<sup>3</sup> and J Takebe.<sup>1</sup>

<sup>1</sup>Department of Removable Prosthodontics, School of Dentistry, Aichi Gakuin University

<sup>2</sup>Division of Dental Biomaterials, Tohoku University Graduate School of Dentistry

<sup>3</sup> Aichi Gakuin University

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## **Abstract**

We analyzed and investigated the influence of the inclination angle of attractive surfaces on the attractive force in the magnetic attachment with the optimal structure design by using the three-dimensional finite element method. Two types of analysis models were constructed: basic model and optimal model with optimal structure design. In the analysis items, the attractive force when the magnetic assembly and the keeper were in contact with each other, and the inclination and the detachment with the one end of the keeper as a fulcrum were considered. There were 21 different inclination angles of the attractive surface ranging from 0 to 20 in 1 degree increments. The keeper was observed with regards to an increase in the inclination angle of the attractive surface and the related decrease in the magnetic flux density inside the magnet assembly using both the basic model and the optimal models were. The attractive force in both the basic model and the optimal model decreased in inverse proportion to the inclination angle of attractive surface. The results of this analysis suggest that the magnetic attachment with the optimal structural design is strongly influenced by the inclination angle of attractive surface.

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