

Finite Element Analysis of the Influence of Esthetic posts on Incisors

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Most posts are metallic, but in response to the need for a post that possesses optical properties compatible with an all-ceramic crown, an esthetic post has been developed. Although there have been many studies about new post materials, three dimensional finite element studies about the stress distribution of them are in rare. The purpose of this study is to investigate comparatively the distribution of stresses and the displacement of the restored, endodontically treated maxillary incisors with new post materials on simulated occlusal loading by using a 3-dimensional finite element analysis model. Three 3-dimensional finite element models were constructed in a view of a maxillary central incisor, a post, a core, and the supporting tissues to investigate stresses in various

new posts and cores (1, Glass fiber post with composite core 2, Zirconia post with composite core 3, Zirconia post with ceramic core). As a control, an endodontically treated tooth with gold cast post and core was modeled. Force was applied to the incisal edge and the centric stop point with the angle of 135-degree to the long axis of the tooth. Compared with control group, when a functional maximum bite force was applied, the distributions of stresses of the new post materials were similar. It seems that restoring extensively damaged incisors with new post materials can be an adequate method of esthetic restoration.