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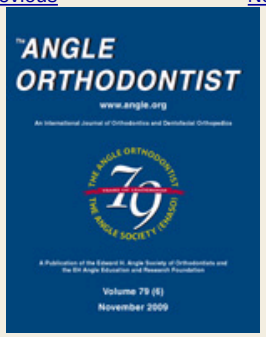

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Original Articles

The Relationship between Digital Model Accuracy and Time-Dependent Deformation of Alginate Impressions

Toros Alcan[a], Cenk Ceylanoğlu[b], and Bekir Baysal[b]

Abstract

Objectives: To investigate the effects of different storage periods of alginate impressions on digital model accuracy.

Materials and Methods: A total of 105 impressions were taken from a master model with three different brands of alginates and were poured into stone models in five different storage periods. In all, 21 stone models were poured and immediately were scanned, and 21 digital models were prepared. The remaining 84 impressions were poured after 1, 2, 3, and 4 days, respectively. Five linear measurements were made by three researchers on the master model, the stone models, and the digital models. Time-dependent deformation of alginate impressions at different storage periods and the accuracy of traditional stone models and digital models were evaluated separately.

Results: Both the stone models and the digital models were highly correlated with the master model. Significant deformities in the alginate impressions were noted at different storage periods of 1 to 4 days. Alginate impressions of different brands also showed significant differences between each other on the first, third, and fourth days.

Conclusions: Digital orthodontic models are as reliable as traditional stone models and probably will become the standard for orthodontic clinical use. Storing alginate impressions in sealed plastic bags for up to 4 days caused statistically significant deformation of alginate impressions, but the magnitude of these deformations did not appear to be clinically relevant and had no adverse effect on digital modeling.

Keywords: Digital model, Alginate impression, 3Shape

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