Surface Reproduction Of Elastomeric Materials: Viscosity And Groove Shape Effects

Abstract

Objective: To evaluate the effect of viscosity and type of grooves on surface detail reproduction of elastomeric impression materials. Methods: Express putty/light-, Impregum medium- and heavy/light-bodied and Aquasil medium- and putty/light-bodied elastomeric impression materials were chosen for this study. Five impressions were made using a cylindrical aluminum reference block with U- and V- shaped grooves and to produce 35 master dies. Each master die was immersed in distilled water at 370 C for 5 minutes prior to the impression making on moist surfaces. Surface topography of the dies and impressions were captured using Alicona Imaging System. The mean difference in depth between the master dies and its corresponding impressions were analysed using two-way ANOVA, p=.01. Results: The lowest mean difference in depth for U- and V-shaped grooves was obtained from the Express putty/light group. The highest mean difference in depth for U- and V-shaped grooves was obtained from Impregum medium, Aquasil medium, Impregum,,· heavy/light and Impregum heavy/light groups respectively. Two-way ANOVA indicated that there was a significant difference in the effect of materials ($p < .01$) and grooves ($p < .01$). Conclusion: Express putty/light-bodied elastomeric material produced the best surface detail, and U-shaped groove showed better surface detail reproduction than V-shaped groove.

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