Abstract

Objective: In restorative procedures, one of the fundamental purposes is to obtain restorations with smooth surfaces, resulting in better esthetics and minimizing the accumulation of dental plaque. A surface character, such as roughness, can determine the quality and clinical behavior of a material. The purpose of this study is to evaluate the surface roughness of four different restorative materials containing glass ionomer.

Material-Method: Four different restorative materials containing glass ionomer; resin modified glass ionomer cement (RMGIC) (Fuji II LC), amalgomer (Amalgomer CR), giomer (Beautiful II) and glass carbomer (GCP Glass Fill) were used in this study. For each restorative material, 6 mm in diameter and 2 mm in thickness 16 disc shaped specimens were prepared with cylindrical teflon mold and total of sixty four specimens were obtained (n=16). Restorative materials were cured according to the manufacturer recommendations and then were stored in distilled water at 37°C for 24 h. The surface roughness was measured using a contact designed mechanical profilometer (Mitutoyo SJ-210). Three measurements were performed from the center of each specimen and surface roughness data (Ra) were calculated by taking the arithmetic mean of the measured values. The results were statistically evaluated with one-way ANOVA with Bonferroni multiple adjustment tests. Statistical significance level was accepted as p <0.05.

Results: The surface roughness values (Ra) of RMGIC, giomer, amalgomer and glass carbomer were; 0.30; 0.31; 0.48 and 0.49 respectively. There was no statistically significant difference between amalgomer and glass carbomer and between RMGIC and giomer (p>0.05). Surface roughness values of the amalgomer and glass carbomer were significantly higher than the surface roughness values of RMGIC and giomer (p <0.05).

Conclusions: It has been observed that the resin content of the restorative materials containing glass ionomer affects the surface roughness positively. However, surface properties of restorative materials are not sufficient criteria to assess their clinical performance.