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The influence of different base materials on marginal adaptation of direct class Ⅰ composite resin restorations

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I. Objectives

This study was intended to evaluate the influence of different base materials on the marginal integrity of posterior direct composite resin restorations.

II. Materials and Methods

Large conventional butt-joint MOD cavity preparations, with margins in enamel and dentin, were prepared in vitro in 24 extracted human mandibular molars and randomly divided into four equal groups. One of three base materials (RMGI, compomer, flowable resin) was placed on the pulpal floors, of the teeth in three of the groups. One group of teeth, which served as the control group, was not given any base material. Then all teeth were restored with direct packable composite resin. The micromorphology of the tooth/restoration interfaces along the entire surfaces of the restorations was quantitatively analyzed using stereoscope at 160 magnifications immediately after finishing and after completion of mechanical and thermal stresses.

III. Results

Analysis of the data demonstrated no significant differences between each base material groups.

IV. Conclusions

With any base material used, it was impossible to get perfectly adapted tooth/restoration margins along the entire surfaces in direct class Ⅱ composite resin restorations. The base material is not the decisive factor influencing the marginal integrity of direct class Ⅱ composite resin restorations.