

EFFECT OF RESIN FORMULATION, CAVITY LINING AND LIGHT POLYMERIZATION MODALITY ON SEALABILITY OF CLASS V COMPOSITE RESIN RESTORATIONS

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Abstract:

The present investigation was aimed to study the effect of resin formulation in terms of the type and the number of resins present within the composite, the use of resin modified glass ionomer liner and the modifications of light polymerization techniques on microleakage of resin composite restorations. A total of forty sound, recently extracted human molar teeth were used in this study. Standardized box-shaped class V cavities void from undercuts were prepared on the buccal surfaces of all teeth with the occlusal and cervical margins of the preparation were located in enamel. The teeth were then randomly assigned into two main groups, having 20 teeth in each, relative to the restorative technique utilized i.e., non-based or based direct composite resin restorations. Each main group was subdivided into two subgroups relative to the resin formulation of the composite resin investigated i.e. two monomers or three monomers containing resins. Each subgroup was further subdivided into two classes according to the polymerization technique encountered i.e., soft start and conventional snap shot polymerization techniques. In the based restorations a layer of 0.5 mm. thickness of resin modified glass ionomer was placed so that, it covered the axial wall and not extended to the cavo-surface margins. The microleakage scores were recorded for both occlusal and gingival walls as follow: 0=no dye penetration, 1=dye penetration into enamel only, 2=dye penetration into enamel and dentin but not the axial wall, 3=dye penetration up to the axial wall. Under the conditions of the present investigation the following conclusions were evident: 1.The desired sealing ability of resin composite restorations is the matter of the bonding substrate rather than the resin formulation or the polymerization techniques utilized. 2.The use of resin modified glass ionomer liner underneath resin composite restorations has a significant role in decreasing the polymerization shrinkage and hence the microleakage of the restorations. 3.The increase in number of resin monomers and the cross linking vectors within the different monomers are essential for increasing sealing ability of resin composite restorations. 4. Soft start polymerization technique is a reliable modification in the curing unites to decrease the polymerization shrinkage and to increase the overall intimate relation at the restoration/tooth interface.

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