Abstract

Microleakage evaluation of nanofilled and microhybrid composite resin restorations after nonvital bleaching in endodontically treated teeth(in vitro study)

Introduction: since there had been no study on the effect of bleaching agents on microleakage of this type of new nanofilled composites and regarding the importance of using these new composite materials to reduce the microleakage in composite fillings using composite following the bleaching, this study is aimed at investigating the microleakage of the new nanofilled composite material compared with the micro-hybrid composite following bleaching of nonvital tooth.

Methods: root canal therapy was done on 50 extracted human maxillary incisors. Walking bleaching technique was done by using the combination of 30-35% hydrogen peroxide and sodium perborate paste for bleaching the nonvital teeth a week before the repair. The teeth were randomly divided into two groups. In group 1, micro-hybrid composite restoration was used according to the manufacturer's instruction and in group 2, nanofilled composite was used after 48-hour thermocycling operation; the teeth were placed in 2% methylene blue solution. The teeth were cut along the longitude of the teeth, and the occlusal and gingival surfaces were observed under the microscope.

Results: the results of independent t-test showed that the average leakage of composite restoration in the nanofilled group at the gingival surface is less than the microhybrid group and this difference is statistically significant ($P<0.05$), and also, the average leakage of composite restoration in the nanofilled group at the occlusal surface is less than microhybrid group and this difference is also statistically significant ($P<0.05$).

Conclusion: the overall conclusion is that the average microleakage of composite restoration in the nanofilled group at both occlusal and gingival surfaces is less than composite restoration in microhybrid group, and in general, the average microleakage at gingival surface in both types of composite is more than the occlusal surface.

Key words: Microleakage- Non-vital Bleaching- Composite Resin Nanofilled- Composite Resin microhybrid.