

**PERBEDAAN KEBOCORAN TEPI RESTORASI RESIN KOMPOSIT DENGAN
DAN TANPA DILAPSI SURFACE SEALANT BERBAHAN NANOHYBRID
FLOWABLE COMPOSITE (Penelitian Laboratoris)**

**MICROLEAKAGE DIFFERENCES ON RESIN COMPOSITE RESTORATION WITH
AND WITHOUT NANOHYBRID FLOWABLE COMPOSITE RESIN SURFACE
SEALANT (Laboratories Study)**

ABSTRACT

Background: Composite resin restoration undergo polymerization shrinkage during polymerization process in all time; hence, microgap forms along restoration margin. As a result of microgap, microleakage of bacteria, debris, ion, and molecule will penetrate composite resin restoration margin. Furthermore, this microleakage could lead to several problems such as secondary caries, pulpal sensitivity, restoration crack, and finally pulpal damaged. Application of surface sealant on composite restoration surface could prevent microleakage. Surface sealant will penetrated and sealed microgap using capillarity force, and create thigh marginal adaption to prevent microleakage. Evidently, low viscosity surface sealants and unfilled or nanofilled surface sealant are easier to penetrated microgap; thus, reduce the microleakage score. In addition, surface sealant with nanohybrid filler is better than unfilled surface sealant, due to nanohybrid composite physical properties and better wear resistance. On account of nanohybrid flowable composite physical properties and low viscosity, this type of composite is suitable for surface sealant material. Therefore, this study is concluded. **Purpose:** The aim of this study was to test the influence of nanohybrid flowable composite resin as surface sealant on microleakge score in composite resin restoration compare with restoration using no surface sealant. **Method:** 16 upper premolar teeth with class I cavities (diameter: 2mm, depth: 2mm) divided in to two groups with 8 sample each. Group 1: packable composite restoration using ZT 350 XT (3M) without surface sealant application. Group 2: packable composite restoration using ZT 350 XT (3M) with nanohybrid flowable composite ZT 350 XT (3M) as surface sealant. All groups were immersed in 0.5% methylene blue solution for 24 hours, rinsed in running water, and section bucco-lingually using carbondurum disc. Afterward, section were assessed for dye penetration that represent microleakage using scoring method under digital microscope. Finally, data were collected and statistically analyzed. **Result:** Restoration with nanohybrid flowable composite surface sealant application show significant differences then restoration without any surface sealant application. Restoration with nanohybrid flowable composite surface sealant have lower microleakage then restoration without surface sealant. **Conclusion:** nanohybrid flowable composite surface sealant show significant result to decrease microleakage score in resin composite restoration.

Keywords: polymerization shrinkage; microleakage; viscosity; nanohybrid flowable composite