

Microleakage Of Enamel And Dentin Margins Of Cervical Restorations After Dynamic Aging

The aim of the present study was to compare microleakage of enamel and dentin margins of cervical restorations after restoring different types of composite-resin restorative materials.

Cervical cavities were prepared in both buccal and lingual surfaces of fifteen extracted sound human molar teeth using with cylindrical-shaped diamond burs under a continuous water flow. Cavity margins of enamel and dentin were located in 2mm above and below the cementum-enamel junction (CEJ), respectively. After cavity preparation two-step universal adhesive (G2-BOND Universal, GC) were applied to enamel by selective enamel etch mode and to dentin by self etch mode. Adhesive agent polymerized for 10-seconds by using high-power light emitting diode light curing unit (LED-LCU) (D-Light Pro, GC). Depending on the restoration of cavities (n=10/group) Group1: restored with short-fibre reinforced flowable composite indicated for dentin replacement in direct restorations (everX Flow, GC); Group2: restored with flowable composite (G-aenial Universal Flo, GC); Group3: 2/3 of cavity and 1/3 cavity restored with short-fibre reinforced and flowable composite. Polymerization of restorative materials were achieved using high-power LED-LCU for 40-seconds light irradiation time. After finishing and polishing procedures restored test specimens were stored for 24-hour in water at 37°C and then thermocycled by 5°C-55°C for 10000 cycle (Thermocycler, The-1100, SD-Mechatronik, Germany). Microleakage measurements were achieved conventional dye penetration method for assessing microleakage in enamel and dentin margins surrounding the restorations.

One-way ANOVA showed that the mean microleakage of all tested groups showed significant differences ($p < 0.05$) within both enamel and dentin margins. Group3, restoration with short-fibre reinforced and flowable composite revealed no and least leakage at enamel and dentin margin, respectively.

Within the limitations of this *in vitro* study, it can be concluded that, in clinical situation, if the cavity margin is placed below CEJ, it is advisable to use short-fibre reinforced flowable composite as a base material.

Keywords: dye penetration, dynamic-aging, flowable composite resin, microleakage, short-fibre reinforced composite