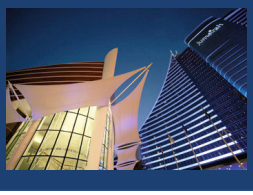

Improving Adhesivity Of Composite Restorations With Er; Cr: Ysgg Laser

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Objectives

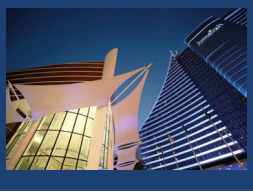
To evaluate *in vitro* the quality marginal sealing or the amount of microleakage of class V cavities prepared by Er;Cr:YSGG laser or conventional method with a self-etching adhesive system by means of dye penetration.

Material and methods

Standardized lingual and buccal Class V preparations were made in 30 human extracted molars. The margin preparations where located at enamel on the occlusal aspect of the cavity and at cement for the base of the class V cavity. The preparations were randomly assigned to three equal groups. Group 1: cavities were prepared with conventional rotatory instrument. Group 2: cavities were irradiated with an Er;Cr:YSGG laser at 4 W with 50 %of water and 50 % of Air. Group 3: cavities were irradiated with the Er;Cr:YSGG laser at 1.5 W with 30% of water and 30% of Air . All groups were restored in the same protocol, using self etching (Clearfil SE) adhesive system was used with Tetric evoceram (3M) as filling material. The specimens were stored in water for 24 h at 37 ºC and thermally cycled (500 X) between 6±60 ºC. After 24 h immersion in 0.5% basic fuchsin, dye penetration was recorded according to an ordinal scale. Data were analysed using non-parametric statistical tests (Kruskal±Wallis).

Results

The dentin margin presented more microleakage than the enamel margin. There was statistical differences $p<0.0001$ for the groups of the dentin/cement. Group prepared with the highest power density laser, displayed the most leakage. For the enamel margin, the cavities prepared with laser at a lower power of density had the least microleakage with no statistical differences, $p=0.052$.



Conclusion

Levels of microleakage were higher in gingival margins in all of our test groups. The use of the Er,Cr:YSGG laser for cavity preparation with different parameters influences the marginal sealing abilities of composite resin restorations.

As laser-treated dentine and enamel may have different properties than those of bur-drilled dentine and enamel, especially designed laser-optimized adhesive systems and restorative materials may the next step in the development of better restorative systems.