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"A COMPARATIVE EVALUATION OF DESENSITIZERS ON THE SHEAR BOND STRENGTH OF DENTIN ADHESIVE AND SCANNING ELECTRON MICROSCOPIC ANALYSIS - AN IN VITRO STUDY."

by

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ABSTRACT

Background and Objectives: Dentin hypersensitivity is a symptom complex which results from stimulus transmission across exposed dentin, producing pain mediated by a hydrodynamic mechanism.[1] Numerous agents and regimens have been suggested for professional pain relief, but there is no equivocal agreement as to their efficacy.[2]It can be assumed that interdentinal closure or seal can improve the long term success[1];at the same time the effect of desensitizing agent on shear bond strength of the restorative material is controversial.[3] This in-vitro study was therefore conducted to evaluate the effect of desensitizers on the shear bond strength of dentin adhesives and, the extent of dentinal tubule occlusion caused by these desensitizers.

Methodology: 64 premolars were randomly divided into four groups of 16 samples each. The buccal surfaces of these teeth were ground to expose middle depth dentin. Etching procedure was carried out using 37% phosphoric acid for 15 sec and the treated surface was thoroughly rinsed with water for the same time with water spray.

The teeth were then assigned to the following groups:

Group 1 (Control group), Group 2 (Gluma Comfort Bond and Desensitizer), Group 3 (Gluma desensitizer), Group 4 (Vivasense desensitizer)

Group 1 (Control group) the bonding agent was applied on the dentin surface and light cured. In Group 2, Gluma Comfort Bond and Desensitizer was applied on the dentin surface and light cured. In Group 3, Gluma desensitizer was applied on the dentin surface, dried by blowing air gently for 10 sec, following which bonding agent (Adper Single Bond 2) was applied and light cured. In Group 4, Vivasens desensitizer was applied on the dentin surface, dried by blowing air gently for 10 sec, following which bonding agent (Adper Single Bond 2) was applied and light cured. Composite resin post

of 2mm was built on the treated surfaces of all the specimens and light cured. The specimens were mounted in acrylic resin and shear bond strength was tested in Universal testing machine. The data were analyzed using one-way analysis of variance and post-hoc Tukey's test.

One sample from each group was observed under SEM to evaluate the closure of the dentinal tubules.

Results: It was seen that mean values of shear bond strength for the experimental groups were: Group 1: 23.12 ± 1.02 MPa, Group 2: 22.64±1.61 MPa, Group 3: 18.61± 1.03 MPa and Group 4: 17.53± 1.36 MPa. Group 1 (Control group) had significantly higher mean bond strength when compared with the other three groups ($F = 77.7432$, $p = 0.0000$). Mean bond strength was found to be the lowest when dentine was treated with Group 4 (Vivasense desensitizer).

Interpretation and Conclusion: Within the limitations of the study, Gluma comfort bond +desensitizer showed improved shear bond strength values than the other desensitizers but less than control group. SEM showed total closure of dentinal tubules in the group treated with Vivasense desensitizer.

Keywords: Gluma comfort bond+ desensitizer, Vivasense desensitizer, Gluma desensitizer, shear bond strength