A STUDY TO EVALUATE THE EFFECT OF DIFFERENT ETCHANTS ON REMOVAL OF SMEAR LAYER ON PREPARED HUMAN DENTIN – AN IN VITRO STUDY

by

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Background & Objectives: The persistence of smear layer and smear plugs hinders the micromechanical adaptation of resin cements. The proper removal of this along with widening of dentinal tubule orifices is important to achieve retention and prevention of microleakage. This in vitro study was carried out to investigate and compare the efficacy of 5 laboratory prepared acids on the removal of smear layer and smear plugs from the surface of prepared dentin and to analyze which of the acids used would work efficiently as an etching agent and which one as just a mere dentin conditioning agent.

Methods and material: 5 acid etching agents were prepared under laboratory conditions and tested on the prepared surfaces of molars prepared with a diamond rotary instrument. SEM analysis was carried out.

Results: 32% Phosphoric acid showed the best scoring in the Rome's scale analysis and 25% Polyacrylic acid showed the worst of the 5 acids tested.

Interpretation & Conclusion: 32% Phosphoric acid was by far the most effective acid in smear layer and plug removal, amongst the acids tested. 25% Polyacrylic acid proved to be useful only as a dentin conditioning agent rather than an acid etching agent as dentinal tubules were blocked with smear plug. When comparing two concentrations of Phosphoric acid, higher concentrations showed more efficiency than lower concentrations of the acid

Keywords: Etchant, acid etch, phosphoric acid, lactic acid, polyacrylic acid, citric acid, SEM, smear layer.