Comparing the effect of three self-etching bondings on human dentin shear bond strength and micro leakage

Nematianaraki S[1], Banava S1, .Valaee N[2], Karkeabadi H [3]

1Assistant Professor, Department of operative Dentistry, Islamic Azad university,Dental Branch,Tehran,Iran
2Faculty member of Islamic Azad university,Dental Branch,Tehran,Iran
3Dentist

Abstract

Back ground and Aim:

Micro leakage and shear bond strength in composite restorations are the most problematic challenges to days. There is disagreement about bond strength in the literature. On that basis this invitro study was designed to evaluate micro leakage and shear bond strength of three bonding, Adhese, Prompt L-pop, Clearfield SE bond, in composite cavities.

Materials and methods:

This experimental study was performed on 60 freshly extracted non carious human premolars. 30 samples were used to test micro leakage and 30 for shear bond strength. Class V cavities were prepared in buccal surface of 30teeth with dimensions of 2×2×3 mm so that the gingival margins located 1 mm below the CEJ and occlusal enamel margins beveled to 0.5 mm. Samples were randomly divided in to 3 groups of 10 teeth each; group A: Clear fill SE bond, Group B: Prompt L pop, Group C: Adhese. Cavities were then filled with Z100 (3M, ESPE, USA). 30 other samples were grounded up to 1mm below the central groove to expose fresh dentin, and then composite tubes were bonded to dentin according to bonding strategy of the group. Shear bond strength was evaluated with Zwick (Roel, Germany) testing machine and micro leakage with stereomicroscope. Micro leakage was recorded and Kruskal-Wallis analysis was performed followed by Mann-U-Whitney tests. Statistical differences in shear bond strength of tested bonding were determined by ANOVA followed by Tukey test.

Results:

There was a significant difference in regard to micro leakage between the studied groups ($p<0.005$) with the minimum leakage in SE bond group (۱±۰/۷۵) and the maximum in Prompt-L-pop group (۲/۱۵±۱/۱۵).

Shear bond strength analysis revealed statistical significant differences between Group A and the 2 others with the superiority of Group A ($p<0.001$).

Conclusion:

With the limitation of this in vitro study we concluded that :Among 3 self etching dentin bonding agents used in this study Clear fill SE bond showed the highest level of shear bond strength and Among 3 self etching dentin bonding agents used in this study Clear fill SE bond showed the least micro leakage.

Key words: Shear Bond Strength, Micro leakages, Dentin Bonding.

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Corresponding Author**:* S. Nemati anaraki .Assistant Prof of Operative Dentistry, Islamic Azad University Dental Branch, ***Tel: 22564571
Email: ssnemati@gmail.com

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