ABSTRACT

Purpose of the study: The purpose of this *in vitro* study was to comparatively evaluate the shear bond strength between repair composite resin bonded to bilayered and monolithic ceramic restorations.

Material and Methods: Twenty two wax patterns were fabricated from customized stainless jig (5mm in height for monolithic group and 3mm in height for bilayered group with 10mm diameter and 4 mm diameter central defect with 5mm height). The samples were divided into 2 groups with each group comprising of 11 samples. Group I wax patterns were heat pressed Lithium disilicate ceramic with dimension as 3 mm in height, 2 mm layer of layering ceramic (IPS emax Ceram Powder Dentin, Ivoclar vivadent, Schaan, Liechtenstein) 10 mm diameter and 4 mm diameter with 5 mm height central defect (IPS emax press, Ivoclar vivadent, Schaan, Liechtenstein) and Group II wax patterns were heat press Lithium disilicate ceramic of 5 mm height with 10 mm diameter and with 4 mm diameter with 5 mm height central defect. The samples were etched with 5% HF for 20s, one sample from each group was analysed under SEM for etched surface characteristics. The remaining 20 samples were silanized, bonding agent applied and repair composite resin was filled according to the manufacturer's instructions. The samples were then subjected to thermocycling and shear bond testing using universal testing machine and data was obtained. The data was then subjected to statistical analysis using non-parametric Mann-Whitney U test. Also mode of failure was analysed using scanning electron microscope.

Results: The mean shear bond value for Group I: 5.34 MPa and for Group II: 13.88 MPa. There was high statistical significant difference between the two test groups ($P<0.05$)

Conclusion: Within the limitations of this study, the mean shear bond strength of repair composite resin bonded to monolithic lithium disilicate restorations is higher than that of bilayered lithium disilicate restorations.

Keywords: Lithium disilicate glass ceramic, Shear bond, Repair composite, Hydrofluoric acid, Scanning Electron Microscopy. (SEM), Image J