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[EP-291] Fracture resistance of porcelain veneers with different preparation designs

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AlM or PURPOSET. The purpose of this in vitro study was to investigate the fracture resistance and failure mode of porcelain veneers using three preparation designs.

MATERIALS and METHOD kinety porcelain veneers with different designs were fabricated using the refractory die method and divided into three groups (n=30 each): 61 - Feather preparation, 22. Bevel preparation and 63. Incisal overlag (palatal chamler). Specimens from all three groups were subjected to failure testing using a triaxial testing machine (TRITECH WF 10056, Wykeham Farrance, Milan, Italy). Pressure was applied at a constant speed of 0.5 mm/min at a 45° angle to the long axis of the specimen until failure occurred (debonding or facture). The compressive load (N) required to cause the failure was recorded. The statistical analysis of the obtained results was performed using statistical programs Statistic 7.1, SPSS 17.0, SPSS 17.0, FG 2, and 246.8±50.4 N for G3. Post hoc Tukey (HSD) test revealed significant differences between G1 vs. G2, G1 vs. G3, and G2 vs. G3 (P1.0 D5, P0.0), P0.000141, respectively A statistically significant correlation was observed between failure mode (debonding and fracture) and three preparation designs (Pearson Chi-square: 53.6508, df-2, pp.000000). CONCLUSION(S): Porcelain veneers demonstrate sufficient strength to withstand masticatory forces and ensure restoration durability. However, the preparation design significantly influences the fracture load of porcelain veneers. Notably, the use of an incisal overlag (palatal chamfer) design significantly enhances fracture resistance compared to other designs.

Keywords: Failure mode, fracture resistance, porcelain veneers, preparation design.

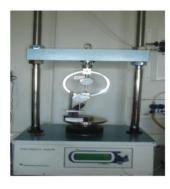
Metal abutments and porcelain veneers with different designs





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Triaxial testing machine (TRITECH WF 10056)





Failure mode





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