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Marginal adaptation and fracture resistance of resin nano-ceramic and zirconium dioxide all ceramic restorations

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Purpose: This *In vitro* study investigated the marginal adaptation and fracture resistance of Zirconium Dioxide and Resin Nano Ceramic CAD-CAM restorations (Lava Ultimate Restorative, 3M ESPE) consisting of 80% ceramic and 20% composite resin with nano technology.

Materials and methods: Twenty extracted maxillary first molars were selected and prepared according to previous studies. Cerec 3 crowns were fabricated from optical impression and luted using Scotchbond Universal Adhesive and Rely X Unicem, 3M ESPE. Marginal adaptation was evaluated and measured for all specimens then fracture resistance (N) was measured using a universal testing machine parallel to long axis of tooth till failure. The mean loads of failure of each group were statistically compared using ANOVA $p < 0.001$

Results: Marginal adaptation of group 1: 68.90μ , group 2: 80.60μ ($p = 0.14$). Fracture resistance of group 1: 1483 N and group 2: 1952 N ($p < 0.001$).

Conclusions: Zirconium Dioxide restorations showed significantly higher marginal discrepancy than Resin Nano Ceramic, fracture resistance of Zirconium Dioxide is significantly higher than Resin Nano Ceramic restorations.

Biography

Ahmed is a graduate of Alexandria University and continued his dental internship at the dental college hospital in 1989. He moved to Cairo, where he started his master degree from fixed prosthodontics department in 1992, his thesis was on Microleakage of Certain Laminate Veneer Restorations Luted With Different Types of Cements. He began his private clinic practice since 1994 and since that time has been dedicated to maintaining and improving the dental health of his patients. His main clinical interests was on fixed, removable prosthodontics, dental implants and restorative dentistry. He has attended many courses on implants, esthetic dentistry and CAD-CAM restorations. He also attended many courses in education, exam systems, student discipline, scientific publication, communication skills, employment of technology in teaching and E learning. He began his teaching career since 2001 at October University.

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