

Purpose: This study was designed to compare an alternative indirect treatment to repair fractured or chipped veneering metal ceramic using recently developed ultra-low-fusing ceramics. **Materials and Methods:** One conventional feldspathic ceramic, Vita Omega, and three ultra-low-fusing ceramics (ULFC), Finesse, Duceram LFC, and Vision-low, were used. Forty ceramic specimens were prepared and divided into two groups. Group I (n = 20) was designed for bond strength testing. It comprised four subgroups (A, B, C, D): one Ceramic-resin (A) and three Ceramic-ULFC disc specimens of different diameters (B, C, D). Group II was composed of repaired ceramic discs using direct and indirect repair methods for biaxial testing. It was comprised of five subgroups: the fractured discs from subgroup A; Omega discs (n = 20) formed the repaired specimens of the four remaining subgroups: B, C, D, E. Data were presented as means and standard deviation (SD) values. One-way analysis of variance (ANOVA) was used for comparison between means. Tukey's post hoc test was used for pairwise comparison between the means when ANOVA test was significant. The significance level was set at $p \leq 0.05$. **Results:** Within group I, Omega-Ducera LFC showed the statistically highest mean bond strength (25.8 MPa) values, followed by Omega-Finesse (15.8 MPa). No statistically significant difference was apparent between Omega-Vision (9.3 MPa) and the control Omega-Composite group (7.5 MPa). Regarding group II, the Control Omega subgroup showed statistically the highest mean biaxial strength values (168.8 MPa). No statistically significant difference was evident between the values of Omega-Finesse (78.7 MPa), Omega-Vision (78.4 MPa), and Omega-Composite (82.5 MPa). Omega-Ducera LFC subgroup, showed statistically the lowest mean values (53 MPa). **Conclusions:** Omega-Ducera LFC yielded the statistically highest mean bond strength values, and the lowest biaxial strength values. All values were within the reported bond strength values for resin repair. All the tested groups showed significantly lower values compared to the initial biaxial strength mean values of the Omega ceramic; however, two of the tested ULFC (Vision, Finesse), recorded means that were statistically equal to the resin-ceramic direct subgroup. Duceram LFC showed the lowest values, probably due to its totally glass composition, which showed low strength values of the repaired specimens. The recorded bond and biaxial values suggest that indirect repair of fractured LFC using some ULFC ceramics may offer an alternative solution to the traditional direct resin repair method; however, the choice of the used ceramic should be one containing some leucite crystals. Further studies are needed to investigate the long-term performance of the proposed repair treatment.

Assessment of an Indirect Metal Ceramic Repair System / Request PDF. Available from:

https://www.researchgate.net/publication/227744378_Assessment_of_an_Indirect_Metal_Ceramic_Repair_System [accessed Oct 23 2018].