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E-BABE – Fracture resisitance ceramic crowns supported with indirect composite cores

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Aims and Objectives: To evaluate the influence of indirect chair-side polymerization of resin composite cores on the fracture resistance of overlaying IPS e.max press crowns.

Materials and Methods: Root canals of 60 extracted premolars were prepared to receive #2 fiber posts after the crowns were sectioned 2 mm above the cervical line. In groups 1–3 (n = 10 each), posts were luted to the prepared dowel spaces using self-adhesive resin cement. Resin composite cores were then bonded and incrementally built-up using Filtek Z250 XT, Filtek P60, and Filtek P90 resin composites. In groups 4–6 (n = 10 each), the fabricated post-core systems were subjected to post-curing heat and pressure treatment before cementation to their respective teeth using self-adhesive resin cement. Another 10 sound premolars served as control. All teeth in the test and control groups were then subjected to standardized preparation to receive IPS e.max press crowns before testing their fracture resistance and the mode of restorations' failure. The collected results were statistically analyzed using ANOVA, Kruskal–Wallis, and Tukey's tests on the past software used at α=0.05 to stand on the significance of the detected differences.

Results: Significant differences were detected between the fracture resistance of teeth in different groups (ANOVA, P = 2.857E-35). Crowns in groups 4–6 provided higher fracture resistance than those in groups 1–3 (Tukey's test, $P < 0.05$). Crowns in groups 4 and 6 provided higher fracture resistance than the control, while those in groups 2 and 3 provided lower fracture resistance than the control (Tukey's test, $P < 0.05$).

Conclusion: Indirect composite cores improved the fracture resistance of IPS e.max press crowns when compared to directly fabricated post and cores. The directly and indirectly polymerized nanohybrid, methacrylate-based composite (Filtek Z250 XT) cores yielded the highest fracture resistance for the utilized all-ceramic crowns.

Biography

Alshadidi has completed his BDS at the age of 25 years from King Khalid University and postgrad studies Saudi Board in Prosthdontic Dentistry in Saudi Commession for Health specialties. He has published more than 2 papers in reputed journals.

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