

The Effect of Span Length on Clinical Performance of Y-TZP Fixed Partial Dentures

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Objectives: The aim of this study was to evaluate the effect of span length on clinical performance and adaptation of Y-TZP fixed partial dentures.

Methods: Thirty four zirconia FPDs using a CAD/CAM system (LAVA, 3M Espe) were placed to 25 patients. FPDs were divided into two groups; (1) 3 units and (2) 4 units. Frameworks were layered with e-max Ceram (Ivoclar). A self adhesive luting cement, G-Cem Automix (GC) was used. Restorations were clinically assessed at baseline, 6, 12, 18, 24, 30 months after cementation by using 'California Dental Association Criteria', plaque and gingival indexes and patients satisfaction criteria. The marginal and internal adaptation was measured under an optical microscope using silicone replica technique. "Kruskal Wallis" and "Wilcoxon Signed Ranks" tests were used for statistical analysis ($p < 0.05$).

Results: No framework fracture was observed. One restoration showed veneer porcelain chipping after 6 months; 2 restorations were debonded at 3rd and 6th months, respectively. The mean marginal gaps were $70.92(\pm 40.02)$ μm for extended span length Y-TZP FPDs and $88.01(\pm 54.34)$ μm for short span length Y-TZP FPDs. The highest gap value was observed at the occlusal area and lowest one at the marginal area ($p < 0.05$). There was no significant difference in relation to span length.

Conclusion: Regarding all of the clinical evaluation criteria all 34 zirconia FPDs exhibited clinically acceptable scores within an average evaluation time of 18 months. Relying on these early results, zirconia fixed partial dentures even with long span lengths seems to be promising in the posterior area.

Key words: All-ceramic, fixed dental prostheses, long span, marginal fit, zirconia