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In vivo evaluation of the internal and marginal adaptation and clinical success of different full ceramic crowns generated with CAD/CAM technology

Aim: The aim of this clinical study were to compare the marginal and internal adaptation of all-ceramic crowns generated with CAD/CAM before cementation and examine the clinical outcomes at baseline and sixth month after luting.

Materials & Methods: A total of 45 crowns were placed in 38 patients, including 15 lithium disilicate ceramic crowns (LDS, IPS e.max CAD Blocks, Ivoclar, Vivadent, Schaan, Liechtenstein), 30 lithium disilicate strengthened lithium aluminosilicate glass-ceramic crowns. The marginal and internal gaps of crowns were recorded by using a replica technique. The replica specimens were sectioned bucco-lingually and mesio-distally and the thickness of silicone layers was examined by computerized light microscope at $\times 40$ magnification. Twenty reference points per tooth were measured, and mean marginal and internal gaps were recorded. Restorations were clinically assessed at baseline and six months after cementation by using modified USPHS criteria, plaque and gingival indexes and patients satisfaction criteria. Data was analysed by using Mann-Whitney and Wilcoxon Signed Rank tests ($P < 0.05$).

Results: After six month observation period, total survival rates of LDS and LAS groups were 100%. There were no clinically identified cases of crown fracture or surface chipping. The mean marginal gaps were $53.2963 (\pm 11.2691) \mu\text{m}$ for LDS group and $51.6703 (\pm 11.2381) \mu\text{m}$ for LAS group. 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 material difference.

Conclusions: Regarding all of the clinical evaluation criteria all 45 crowns exhibited clinically acceptable scores within an average evaluation time of six months. Early results indicate that LAS crowns may be an effective option for all-ceramic restorations.

Biography

Yasemin Kulak Ozkan has completed her Graduation at Marmara University, in 1987. She became a Research Assistant in the Faculty of Dentistry, Department of Prosthodontics in the same year. She became an Associate Professor in 1996; Professor in 2001 and; Vice Dean in 2004-2007. She was elected as a President of TPID (Turkish Prosthodontics and Implantology Association) in 2016. Since 2014, she has been serving as the Dean of University of Marmara, Faculty of Dentistry and the Head of the Department of Prosthesis. She has published more than 60 papers in reputed journals and has been serving as an Editorial Board Member of reputed journals.

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