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ABSTRACT

Marginal and Internal Crown Fit Evaluation of CAD/CAM versus Press-Laboratory Lithium Disilicate Crown.

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This study aims to evaluate the marginal gap and internal adaptation of lithium disilicate crowns fabricated by conventional press-dental laboratory and CAD/CAM systems. The size of the marginal and internal gaps of crowns is fabricated with the two techniques in the current study; the research will be performed in an effort to improve clinical outcomes. Tooth #14 was prepared per standard specification to receive the lithium disilicate crowns. Sixty Type IV gypsum dies tooth #14 were duplicated and divided into three groups (n=30). The lithium disilicate CAD/CAM system (Group 1) was fabricated with the E4D CAD/CAM system according to manufacturer's instructions. For press-dental laboratory made crowns, impressions were taken on the region area with two-step impression techniques with light and putty consistency VPS. Impressions were sent to two independent dental laboratories (Groups 2 and 3) for fabricating the monolithic press lithium disilicate crown. Tooth #14 was optically scanned and lithium disilicate blocks were used to fabricate crowns using CAD/CAM technique. Polyvinyl siloxane impressions of the prepared teeth were made and monolithic pressed lithium disilicate crowns were fabricated. The marginal gap was measured using optical microscope at 160× magnification (Keyence VHX-5000, Japan) and internal fit of the crowns was assessed by the silicone replica technique. Four sections of each replica were obtained, and each section was evaluated at four points: marginal gap (MG), axial wall (AW), axio-occlusal edge (AO) and Centro-occlusal wall (CO), using an image analyzing software. Statistical analysis was performed using ANOVA and chi-squared test. Study design: Experimental. Setting of study: University of Palestine and Laser Specialized center For Esthetic Dentistry.