FRACTURE STRENGTH AND GAP DISTANCE OF FOUR-UNIT ALL-CERAMIC BRIDGES USING CEREC-INLAB SYSTEM

Thesis

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Dedication

*This work is gratefully dedicated to the **memory of my mother** who I always wished she could share this occasion with me.*

*To my partner in life my dear **husband** for his patience and understanding*

*To my everlasting support my **father** for his encouragement and motivation*

*To my beloved mother, **mama Fatma** who provided me care and support and was always there whenever I need her*

*To my only **sister** who gave me a lot of her time, unlimited effort and great help throughout this work*

*And to the smile in my life my **children** for missing me sometimes during the course of my study*

ABSTRACT

Forty four-unit anterior and posterior all-ceramic bridges constructed from In-Ceram YZ blocks using Cerec-inLab systems were fabricated. Twenty anterior and posterior metal-ceramic bridges were constructed as a control group. The anterior and posterior bridges, were constructed with two different connector cross-sections (9 mm^2 and 12 mm^2). After construction of all-ceramic and metal-ceramic bridges according to manufacture's instructions, they were cemented on epoxy resin dies using adhesive resin cement. Vertical marginal gap distance was measured using stereomicroscope. Following the vertical marginal gap distance testing, the bridges were subjected to fracture load testing using universal testing machine to evaluate the fracture strength. A set of samples were fabricated for horizontal gap distance testing using strereomicroscope.

It was concluded that:

- The vertical as well as horizontal gap distance of anterior and posterior zirconia all-ceramic fixed partial dentures were within the clinically acceptable range.
- The variation in connector dimensions has a significant effect on fracture load of posterior FPDs, meanwhile it has no effect on anterior FPDs.

Key words: *Fracture strength, GAP distance, All-ceramic, Machinable ceramics, Cerec-Inlab, Ceramic blocks*

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