

بسم الله الرحمن الرحيم

قالوا سبحانك لا علم لنا إلا ما علمتنا إنك أنت العليم
الحكيم

صدق الله العظيم
سورة البقرة (آية ٣٢)

***Effect of veneering technique and core marginal
configuration on the fracture resistance of
zirconia based all ceramic crowns***

Thesis

submitted for the partial fulfillment
of the Master Degree requirements in Fixed prosthodontics,
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Dedication

To my father, the source of strength and support from the early start...

To my mother, the greatest gift I had ever got from God, her name is another name for giving and love...

To my sister, the angle with the precious heart...

To my brother, my soulmate...

To my best friend, for always being there for me...

To my lovely understanding husband, who by all means gave me all of the above combined.

And finally to my beloved daughter,

"I'm filled with love and appreciation to all of you, wish I could make you proud of me".

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Introduction

Obtaining metal free esthetic restorations, that overcome gingival discoloration and some allergic reactions caused by metal alloys without losing the mechanical strength, has been a dream for most dentists . Dental ceramics represent a hope for excellent restorative material regarding biocompatibility and life like appearance.^{(1), (2)} Unfortunately, presence of flaws inside the material is the major defect that encounters for the material's brittleness, low tensile strength and crack propagation that limited its use as a core material.⁽¹⁾ Recently, many strengthening mechanisms have been tried to obtain all-ceramic systems.⁽³⁾

High-strength ceramics have been introduced; Zirconia-based ceramics have been recently introduced as a promising substitute for metal substructure in fixed prosthodontics.^{(2), (4), (5)} Superior physical and mechanical properties^{(6), (7)} approaching stainless steel,⁽⁸⁾ color resembling dentin, chemical stability, and excellent biocompatibility have made zirconia-based materials the framework of choice for fixed dental prosthesis.^{(2), (4), (5)}

Current processing technologies unfortunately cannot make zirconia frameworks as translucent as natural teeth, so in order to achieve better esthetics, the zirconia framework is veneered with a ceramic material giving the final restoration individual optical characteristics that can barely be distinguished from the surrounding dentition.^{(4), (9-11)}

Nevertheless, the most reported major clinical complication resulting in failure of all-ceramic zirconia-based restorations is the fracture of the veneering porcelain and/or the coping.^{(2), (10-13)}

Understanding the nature of these bilayered restorations requires multiple researches to be held in an attempt to sort the factors concerning clinical performance of such restorations. One of the factors that appeared to