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,

Faculty of Dentistry, Ain Shams University**.**

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2011

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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".

Acknowledgement

I am greatly honored to express my gratitude to Dr. Amina Mohamed Hamdy, Assistant Professor of fixed prosthodontics and dean of crown and bridge department, Faculty of Dentistry, Ain Shams University for her continuous encouragement and guidance.

I would like to express my deepest gratitude to Dr. Gihan Farouk Younis, Assistant Professor of fixed prosthodontics, Ain Shams University, for her support, meticulous advice, valuable comments and unlimited guidance throughout this work. She was generous with time and effort.

I would like to express my heartful thanks and deep gratitude to Dr.Tarek Salah Morsi, Assistant Professor of fixed prosthodontics, Ain Shams University, for his valuable unlimited guidance, and fatherly attitude. I benefited greatly from his experience and knowledge throughout the research work.

Special thanks to Professor Dr. Nahed Abd-Elsalam, Professor of mechanichal engineer, Production department, Faculty of Engineering, Ain Shams University, who through her great and highly appreciated effort the fracture test was accomplished.

I also wish to thank Dr. Aya Abd Elkader, assistant lecturer of oral pathology, Faculty of dentistry, Ain Shams University, for providing me the time for stereomicroscopic assessment.

Personal appreciation and thanks to Dr. Amr Eletreby, lecturer of fixed prosthodontics, Ain Shams University, for his effort and cooperation whenever asked.

My heartful thanks and appreciation to Dr. Ayman Galal Eldimeery, assistant lecturer of fixed prosthodontics, Ain Shams University, for being a worthy role model and teacher to always follow and consult.

Finally, I would like to thank all the staff members, colleagues and laboratory technicians for their help and encouragement during the course of this work.

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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