بسم الله الرحمن الرحيم

قالوا

سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم الحكيم

صدق الله العظيم

سورة البقرة الآية: ٣٢

Effect of Intraradicular Post Techniques on the Strain and Fracture Resistance of Over Flared Root Canals

Thesis

Submitted to Crown and Bridge Department
Faculty of Dentistry, Ain Shams University
In Partial Fulfillment of the Requirements of the Master Degree
in Fixed Prosthodontics

BY
Sarah Mahmoud Ahmed Mohamed
October 6 University
(B.D.S 2007)

Faculty of dentistry
Ain Shams University
2014

Supervisors

DR. JIHAN FAROUK YOUNIS

Professor Crown and Bridge Department
Faculty of Dentistry
Ain Shams University

DR. MARWA MOHAMED WAHSH

Lecturer Crown and Bridge Department
Faculty of Dentistry
Ain Shams University

تأثيرتقنيات الترميم من داخل الجذور بالأوتاد على شد ومقاومة الكسر لقنوات الجذور المنفرجة

رسالة مقدمة الى كلية طب الأسنان- جامعة عين شمس
توطئة للحصول على درجة الماجستير فى التيجان والجسور

مقدمة من

الطبيبة/ سارة محمود احمد محمد

بكالوريوس طب الفم والاسنان

جامعة ٦اكتوبر(٢٠٠٧)

كلية طب الأسنان
جامعة عين شمس
٢٠١٤

المشرفون

ا.د/جيهان فاروق يونس

أستاذ بقسم التيجان والجسور

كلية طب الأسنان - جامعة عين شمس

د/مروة محمد وحش

مدرس التيجان والجسور

كلية طب الأسنان - جامعة عين شمس

DEDICATION

THIS WORK IS DEDICATED TO MY

MOTHER

BROTHERS
&
SISTER

SPECIAL DEDICATION TO
THE SOUL OF
MY FATHER
WHOM I MISS SO MUCH

ACKNOWLEDGEMENT

First and foremost thanks are due to

Allah The Beneficent And Merciful

I would like to express my deepest gratitude to ***Dr. Jihan FaroukYounis,*** Professor of fixed prosthodontics, Ain Shams University, for encouragement, insight and advice. She gave from her scientific knowledge, experience, effort and most of all her valuable time. It was a honor to work under her supervision.

I would like to express my deep thanks and gratitude to ***Dr. Marwa Mohamed Wahsh,*** lecturer of fixed prosthodontics, Ain Shams University, for her valuable unlimited guidance, constructive criticism, friendly assistance and great skills in writing scientific text. I was honored to have her as my supervisor throughout this research work.

Personal appreciation and thanks to ***Dr. Tarek Salah Morsi,*** Assistant Professor of fixed prosthodontics, Head of crown and bridge department, Ain Shams University, for his cooperation and valuable advice whenever asked.

All my respect and my deep thanks to ***Dr. Amina Mohamad Hamdy,*** Professor of fixed prosthodontics, Ain Shams University, for her great guidance, help and advice.

My greatest sincere gratitude and deep appreciation to ***Dr. Amr El Etreby,***lecturer of fixed prosthodontics, Ain Shams University, for his extreme help and valuable advice whenever asked. For him I will remain eternally indebted.

Special thanks to ***Dr. Maged Zohdy,*** Lecturer of fixed prosthodontics, Ain Shams University, for his kindness, encouragement and support.

I would like to thank all the staff members of ***Fixed Prosthodontics Department,*** Faculty of Dentistry, Ain Shams University, for making this work possible and for accepting me in their department.

LIST OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Introduction

Introduction

Despite technological advances in dentistry in recent years, major challenges still exist for restoring endodontically treated teeth in special cases where the root is weakened. The placement of posts creates an unnatural restored structure since it fills the root canal space with a material that, unlike the pulp, has a defined stiffness. Thus, the characteristics of the interface between restorative materials and dental structure and the rigidity of the restorative materials are parameters that strongly influence the mechanical behavior of endodontically treated teeth [(1)].

For many years, cast posts and core were regarded to be the treatment of choice for endodontically treated teeth without considering the quantity and quality of the remaining tooth tissue. These posts offer a good fit to the root canal because they are obtained from an impression taken directly from the root canal. However, these posts present only frictional retention in the canal, and their mechanical properties in particular the modulus of elasticity, are far higher than those of dentin and fiber post which may lead to fracture[(2)].

Prefabricated glass fiber posts have gained popularity and have been used as a substitute for custom metallic posts. Glass fiber posts are easily bonded to the dental structure with the use of adhesive systems and resin cements [(3)], and they have a modulus of elasticity closer to that of dentin. When bonded with dentin, glass fiber posts may provide adequate stress distribution on the tooth and may decrease the incidence of catastrophic root fractures.

The quantity of coronal and root dentin that remains after root canal treatment and post space preparation plays an important role in the longevity of the tooth and restoration. Roots can become weakened if flared as a result of recurrent caries into the root dentin around the post, over-preparation and instrumentation of the root

canal, or the fact that the pulp has become necrotic prior to completion of root formation in a young patient [(4)].

The resulting flared root canals have thin dentin walls, leaving them too weak to withstand normal masticatory forces and hence susceptible to fractures, which makes the restorative procedure more difficult. The morphology of flared canals also results in very wide, tapered and non-retentive posts. In these situations, if a prefabricated post is used, the excess space within the root canal would be filled up with a bulk of luting cement. This results in a potentially weak area in the restoration, which may serve to compromise the long-term prognosis. In order to avoid the extraction of flared roots, filling of the radicular space with restorative materials, such as a glass-ionomer cement, composite resins, and accessory glass fiber posts have been suggested.

Review of Literature