Influence of Pre-Etching of Tooth Substrates Prior to Application of Self-Etching Adhesive on Shear Bond Strength of Nano-Filled Resin Composite Restoration

Thesis

Submitted to the Faculty of Oral and Dental Medicine,
Cairo University
in partial fulfillment of the requirements for the
Master Degree in Operative Dentistry

By

Nermein Ahmed Ibrahim El-Sherif
B.D.S (Cairo University)
1999

2009

بسم الله الرحمن الرحيم

قَالُوا۟ سُبْحَـٰنَكَ لَا عِلْمَ لَنَآ إِلَّا مَا عَلَّمْتَنَآ ۖ
إِنَّكَ أَنتَ ٱلْعَلِيمُ ٱلْحَكِيمُ ﴿٣٢﴾

صدق الله العظيم
آية (٣٢) سورة البقرة

Supervisors

Dr. Mohsen H. Abi - Elhassan

Professor of Operative Dentistry, Faculty of Oral and Dental Medicine, Cairo University

Dr. Dalia M. Abu - El Magd

Assistant Professor of Operative Dentistry, Faculty of Oral and Dental Medicine, Cairo University

Dedication

I am most thankful to ***Allah*** *for all his mercy, kindness, grace and blessings that granted me the ability to perform and accomplish this study.*

I humbly dedicate this piece of work to my precious ***mother*** *and my family for their unique love, care, help, support and encouragement.*

Acknowledgements

I owe my supervisor ***Dr. Mohsen H. Abi-Elhassan*****,** Professor of Operative Dentistry, Faculty of Oral and Dental Medicine, Cairo University, a special debt of gratitude, appreciation and admiration for all his guidance, tutorship, scientific thinking, valuable directions and continuous encouragement that enabled me to accomplish this work. It has been an honor and a privilege to conduct this work under his supervision.

I would like to express my sincere appreciation and acknowledgment for ***Dr. Dalia M. Abu - El Magd*****,** Assistant Professor of Operative Dentistry, Faculty of Oral and Dental Medicine, Cairo University, for her continuous help, motivation, encouragement through the stages of this study. Her scientific expertise, constructive criticism and overwhelming guidance helped me to perform this study.

List of Contents

List of Contents

Abstract

This research was designed to assess the influence of pre-etching of enamel and dentin tooth substrates using the 37% phosphoric acid gel (Ivoclar Vivadent Total Etch) prior to the application of the self-etching adhesive system (Adper Prompt L-Pop) on the shear bond strength of the nano-composite resin (Filtek Supreme XT Universal Restorative); and to assess the influence of aging on the durability of the formed bonds. A total of 186 freshly extracted, sound, noncarious, human permanent molars were selected and used for shear bond strength testing and S.E.M. examination. The enamel and the dentin specimens pre-etched for 10 sec. recorded statistically significantly higher mean shear bond strength values.

Key words:

- Phosphoric acid pre-etching.
- Shear bond strength.
- Self-etching adhesive.
- Aging.
- Enamel and Dentin.

List of Tables

List of Tables

List of Figures

List of Figures