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شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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MONA MAGHRABY

Faculty of Dentistry

Endodontic Department

The Effect of Combined Passive Ultrasonic Irrigation and XP–ENDO Finisher on Bacterial Biofilm: a comparative study

Thesis

Submitted for Partial Fulfillment of Requirements of

Master degree in

Endodontics

Ain Shams University

By

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(Misr International University - 2013)

2021

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بسم الله الرحمن الرحيم


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


صدق الله العظيم

32 سورة البقرة

Acknowledgement

I would like to express my sincere gratitude to Prof. ***Ahmed Abdel Rahman Hashem,*** Chairman of Endodontic Department, Faculty of Dentistry, Ain Shams University for his guidance, motivation and unlimited knowledge throughout my research work.

I would like to show my greatest appreciation to Dr. ***Tarek Mostafa Abdel Aziz***, Lecturer of Endodontics, Faculty of Dentistry, Ain Shams University for his patience, advice and support during my clinical and academic work.

I would like to thank all staff members of Endodontic Department, Faculty of Dentistry, Ain Shams University for their help and cooperation.

Dedication

- ❖**To my Dearest Parents.**
- ❖**To my Supportive Husband.**
- ❖**To my Daughters.**
- ❖**To my Great Family.**
- ❖**To my Dear Professors.**

I am grateful for the continuous support and motivation.

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CLSM	Confocal Laser Scanning Microscope
ANP	Apical Negative Pressure
NaOCl	Sodium hypochlorite
PUI	Passive Ultrasonic Irrigation
SEM	Scanning Electron Microscope
NiTi	Nickle Titanium
CSI	Conventional Syringe Irrigation
XPF	XP-ENDO Finisher

Introduction

Failure of the root canal treatment remains a challenge in endodontics due to the variation in root canal system that allows shelter for tissue remnants, bacteria and bacterial byproducts that act as a persistent source of infection. The aim during root canal treatment is to meticulously clean root canal complexities and eradicate bacterial biofilm.

As studies proved that due to the complex nature of the pulp morphology about 30% - 50% of canal walls remain untouched using standard NiTi endodontic files (either hand or rotary), thus those areas remain a harbor for the microbiota leading to future reinfection, pathosis and failure of treatment. Mechanical instrumentation using recent NiTi rotary files must be complemented by proper chemical disinfection to optimize disinfection as that the configuration of files never corresponds to the canal geometry.

Studies proved that during conventional syringe irrigation the solution reaches only 1-2mm beyond needle tip leaving a source of reinfection apically. Another drawback is the vapor lock effect which results from the inability of a liquid to properly penetrate

narrow microchannels, which results in air entrapment within the root canal. This micro-gas bubble will impinge the disinfectant from reaching the full working length, thus compromises proper disinfection. Thus, it is not satisfactory to disinfect the root canal system without mechanical agitation either manually or dynamically.

Recently, agitation techniques as ultrasonic activation (initiates acoustic streaming and cavitation within the fluid) are used to improve penetration of irrigant into lateral canals and up to the working length to ensure proper disinfection of full canal system which will improve the success rates of endodontic treatment.

Recently, XP-ENDO Finisher (flexible, size #25, non-tapered, non-cutting, single NiTi file used as a final irrigation step) has a unique design and helical movement that allows it to reach untouched areas and disrupt biofilm while preserving dentine. Many studies proved that XPF showed favorable results in removing smear layer, debris, organic tissue, biofilm and bacteria from the main root canal ; while its effect on isthmus remains debatable.