The Effect of Smear Layer Removal on the Penetrability and Sealing Ability of A New Root Canal Sealer

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By

Rania Sayed Hassan Taha

B.D.S (2005). Ain Shams University

Department of Endodontics

Faculty of Oral and Dental Medicine

Cairo University

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بسم الله الرحمن الرحيم

قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا
إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنتَ
الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم
سورة البقرة الآية (32)

Supervisors

Prof. Dr. Mohamed M. Abdel Azim El-Bayoumi

Professor of Endodontics

Faculty of Oral and Dental Medicine

Cairo University

Ass. Prof. Dr. Suzan Abdul Wanees Amin

Assistant Professor of Endodontics

Faculty of Oral and Dental Medicine

Cairo University

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Introduction

Introduction

It is currently accepted that the major goal of root canal filling is to prevent any interchange between the root canal system and the peri-radicular tissues, providing a barrier to canal infection and reinfection, which is commonly obtained by associating solid or semi-solid hard nucleus, usually gutta-percha, with a root canal sealer. Despite ongoing research and recent developments in endodontic materials, complete sealing of the root-canal system with currently-accepted materials and obturation techniques is not yet fluid tight.

Sealers are used to attain an impervious seal between the core material and root canal walls. They are usually grouped according to their basic component, e.g. zinc oxide and eugenol, calcium hydroxide, resin, glass ionomer, iodoform or silicon. Ideally, these materials should seal the canal laterally and apically, have good adaptation to root canal dentin and penetrate deeply into the dentinal tubules.

Pretreatment of the root dentin is sometimes necessary to obtain better bonding between dentin and different filling materials, which can be done by various chemicals e.g. diluted hydrofluoric acid, EDTA, citric acid etc. Leading to changes in dentin surface characteristics e.g. permeability and removal of smear layer.