Republic of Iraq
Ministry of Higher Education
and Scientific Research
University of Baghdad
College of Dentistry

Evaluation of two different retrograde filling materials with root apices resected at two different angles – (In vitro comparative study)

A Thesis

Submitted to the council of the College of Dentistry at the University of Baghdad in partial fulfillment of the requirements for the degree of Master of Science in Oral and Maxillofacial surgery.

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Abstract

Introduction: There are various factors affecting the success rate of endodontic treatment such as over or under obturation which lead to continual contamination of the periapical area. This considered to be an indication for endodontic surgery. Retrograde filling material must seal the apex of the root against penetration of bacteria and its products from the root canal to periradicular tissues. Endodontic surgery is an option to evade extractions when endodontic treatment or endodontic retreatment is unsuccessful or is not achievable.

Objectives: The purpose of this study was to compare the sealing ability of two different retrograde filling materials (MTA BIOREP® Bioceramic reparative cement, Well-Root PT® Calcium Aluminosilicate Paste) in single rooted teeth with root apices resected at two different angles.

Materials and methods: Eighty extracted single rooted teeth were chosen and decoronated. Root canals of selected teeth were cleaned, shaped using hand Protaper files and obturated with corresponding gutta purcha and root canal sealer. The teeth stored for 1 week in saline. The apical 3mm of 40 roots were resected perpendicular to long axis of the teeth (0º bevel angle) and the other 40 roots were resected at 30 degree angle to long axis of the teeth (30º bevel angle) . A 3mm deep root end cavity was prepared by using ultrasonic tips for the teeth with (0º bevel angle) and the other group of (30º bevel angle) was prepared by using straight fissure diamond bur. They divided randomly into two experimental groups of 40 teeth (20 of 0º bevel angle and 20 of 30º bevel angle). The retrograde cavities in group 1 teeth were filled with Bioceramic reparative cement while the other group were filled with Calcium Aluminosilicate paste, According to manufacturer's instructions. After that the roots wrapped in wet gauze and incubated at 37°C for 1 week to allow complete set of the root end filling materials. Apical leakage was assessed by using dye

penetration technique and the microleakage was evaluated by using Kinovea software. Data were analyzed by using Two way analysis of variance (ANOVA) test.

Results: MTA BIOREP ® showed less microleakage with a highly significant differences than Well-Root PT® filling material. Furthermore 0º bevel angle showed significantly less microleakage in comparing with 30º bevel angle.

Conclusion: Using MTA BIOREP ® filling material and 0º bevel angle of resection with a retrograde cavity that is prepared by ultrasonic endodontic tips resulting in a significant decrease in microleakge of root end.

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جامعة بغداد- كلية طب الأسنان

تقييم مادتين مختلفتين من مواد الحشوة الرجعية مع قطع قمة الجذور بزاويتين مختلفتين

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