



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



EFFICACY OF CONTINUOUS ROTATION VERSUS RECIPROCATION KINEMATIC MOVEMENTS IN REMOVING GUTTA-PERCHA WITH CALCIUM SILICATE-BASED SEALER: SEM STUDY

This thesis submitted to the council of the College of Dentistry/University
of Baghdad in partial fulfillment of the requirement for the degree of
Master Science in Conservative Dentistry

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2021 A.D.

1443 A.H.

ABSTRACT

The maximum removal of root canal filling materials is necessary for successful endodontic retreatment. Several rotary systems have been used for eliminating root filling materials. The purpose of this study was to evaluate the effectiveness of continuous rotation retreatment systems (ProTaper Universal Retreatment and XP-endo Retreatment) versus reciprocating systems (Reciproc Blue and WaveOne Gold) in removing gutta-percha and calcium silicate-based sealer from the root canal during endodontic retreatment.

Forty mandibular second premolars with straight oval canal were used, the roots were standardised to a length 14 mm from the apex. All samples were instrumented with ProTaper Next system up to size X3 file, then obturated with gutta-percha and TotalFill BC sealer using single cone technique, after that stored at 37°C and 100% humidity for two weeks. The samples were divided into four groups according to the retreatment system used (n=10): **group 1:** ProTaper Universal Retreatment system, **group 2:** XP-endo Retreatment system, **group 3:** Reciproc Blue, **group 4:** WaveOne Gold. Retreatment procedure was considered complete when working length was reached and no further debris of gutta-percha and sealer were be seen on the surface of instruments. Total time needed for retreatment procedure was recorded. Scanning electron microscope was used to evaluate the amount of residual materials at two magnifications (500X, 3000X). The data was statistically analysed using One Way ANOVA test for retreatment time, and nonparametric tests for the amount of residual materials, at (P<0.05) significance level.

The results showed that there was no significant differences among groups in retreatment time (P= 0.798), the apical third was associated with

more remaining filling materials in comparison to coronal and middle thirds, and there was no significant difference among all four assessed systems regarding the amount of residual materials at the coronal and middle thirds ($P= 0.539, 0.228$, respectively). But in the apical third, XP-endo Retreatment system was more effective in debris removal than ProTaper Universal Retreatment system and WaveOne Gold ($P= 0.027, 0.031$, respectively) ($P<0.05$), with no significant difference compared to Reciproc Blue ($p= 0.098$)

As a conclusion of this study, no system was able to remove obturated materials completely, XP-endo Retreatment system was the most effective in the removal of gutta-percha and sealer.



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فعالية حركة الدوران المستمر مقابل الحركة الترددية في
إزالة مواد حشوة الجذر المتكونة من الكوتا بيركا والسداد
القائم على سيليكات الكالسيوم: دراسة SEM

رسالة مقدمة الى مجلس كلية طب الاسنان/جامعة بغداد
كجزء من متطلبات نيل شهادة الماجستير
في معالجة الاسنان

من قبل

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بكالوريوس في طب وجراحة الفم والاسنان

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ماجستير في معالجة الاسنان

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