Comparison of the Cyclic Fatigue Resistance of Rotary Nickel Titanium Endodontic Instruments Manufactured From Two Different Alloys

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By

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مقارنة مقاومة الاجهاد الدورى لآلات علاج الجذور (النيكل – تيتانيوم) الدوارة و المصنعة من سبيكتين مختلفتين

مشروع بحثى مقدم لكلية طب الفم و الأسنان
جامعة عين شمس
لاتمام متطلبات درجة الماجستير

مقدم من
مروة محمد على طه ابو سعدة
بكالوريوس طب و جراحة الفم و الأسنان
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The aim of this study was to evaluate the cyclic fatigue resistance of ProFile GT Series X rotary endodontic files fabricated from M-Wire and compare it to ProFile GT rotary files fabricated from traditional super-elastic Nickel-Titanium alloy.

A total of one hundred and twenty rotary endodontic files, sixty file of each type of file systems were used in this study. Samples were divided into six groups, three for each system according the taper. Each system had three tapers tested 0.04, 0.06, 0.08 all of ISO tip size 30. Furthermore, each group was subdivided into subgroup according to the angle of curvature tested.

A specially designed cyclic fatigue testing device was fabricated for this study. Cyclic fatigue testing was performed by rotating instruments in an artificially constructed stainless steel canals with a 5 mm radius and 45 ° and 60 ° angle of curvature .The time to failure was recorded, and the total number of cycles to failure was calculated and compared for a total of 120 samples. Statistical analysis was performed with one-way analysis of variance and the Tukey test for individual comparisons (confidence level of $P \leq 0.05$).

Dedication

To My Dearest Father

To My Lovely Mother

To My Sweet Sisters

To My Faithful Fiancé

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