A LOW TORQUE, HIGH SPEED ROTARY INSTRUMENTATION TECHNIQUE WITH THERMALLY TREATED NI-TI FILES.

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AIM

The aim of the present poster is to present and clinically evaluate a new operative technique for Nickel Titanium Rotary instruments.

INTRODUCTION

Low torque instrumentation has been proposed in the past to increase safety of root canal treatment (RCT). However in most of cases low torque limit did not allow instrument to progress easily and reach working length. The recent improvement in design, cutting efficiency and manufacturing (Heat treatment with softer alloys) could partially eliminate those previous limitations and allow instrumentation with torque values lower than 1 Ncm. Such a low operative torque, however, requires an increase of the operative speed up to 800 to ensure adequate progression of the files.

This poster aims at presenting and clinically evaluating using new endodontic rotary instruments Edge-File X7 25.06 which proved to need lower operative torque compared to other Ni-Ti instruments in a recent study by the author. Instruments were used in 10 molar cases with an endodontic motor (Eighteeth, Changzhou City, China) and the following setting: 800 Rpm and 1 Ncm.

METHODOLOGY

1) Scouting and patency check with a k-10/8
2) EdgeFile X7 25.06 until the torque allowed inward motion of the instrument inside the root canal
3) EdgeFile X7 25.06 with outward motion
4) Repeating steps 4 and 5 until the working length was successfully reached

DISCUSSION

The proposed technique allowed instruments to reach working length with no deformation or fracture in all cases. According to the manufacture the innovative alloy (EdgeWire) significantly increased the resistant to flexural stress. The propose speed and torque setting helped reducing torsional stress.

Such a combination of instrument design and manufacturing and operative technique allowed a safer and efficient instrumentation of complex root canals.

Low torque values could reduce the risk of intracranal separations due to torsional stress; the increase of speed may slightly increase the risk of separation due to fatigue but the new alloy are much more resistant than traditional Ni-Ti and could easily compensate this risk.

The combination of inward and outward motion with the same instrument when progression is not easy helps to reduce coronal blade engagement and facilitated progression according to the crown down principles.

CLINICAL RELEVANCE

The proposed technique seems very promising, for the tested instruments, and it could be the same for other similar instruments, even if more test are needed to prove its efficacy and safety.

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