بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / سامية زكى يوسف

بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

ملاحظات: لا يوجد

SHAPING ABILITY OF TWO DIFFERENT NICKEL-TITANIUM ROTARY INSTRUMENTS OF TWO DIFFERENTALLOYS (INVITRO STUDY)

Thesis submitted to the Faculty of Dentistry,
Ain Shams University

For
Partial Fulfillment of Requirements
of the Master Degree in Endodontics

By

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Ain Shams university, 2022

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Acknowledgment

First, I would like to express my sincerest and gratefulness to “Allah"Who continues to bless and fill me with hope, faith and patience that enable me to carry out all my work.

I would specially like to extend my sincerest gratitude to ***Ass prof. Mohamed Mokhtar Nagy***, Associate professor at Endodontic DepartmentFaculty of dentistry, Ain Shams Universityfor his sincere encouragement, keen supervision, unlimited support and useful remarks. My Master’s degree couldn’t have been concluded without his encouragement.

I would also like to thank ***Dr. Tariq Yehia***, Lecturer at Endodontic Department faculty of dentistry, Ain shams university, for his insightful comments, guidance and advice. He was always available for me, helping me with my research.

I am very thankful for all the effort and time that the Endodontic department staff dedicated to me. Their role was very impactful, thanks to their continuous support and help.

Dedication

Lastly, I would like to dedicate my thesis to my beloved family. I would like to extend to them my deepest appreciation for their endless support, care and patience with me. I hope that today I made my family proud of me.

Contents

LIST OF ABBREVIATIONS

Abb	Full Term
AT	Apical transportation
BL	Buccolingual
CBCT	Cone beam computed tomography
CD	Compact Disk
CM	Controlled memory
CR	Centering ratio
CsI	Cesium Iodide
DSR	Digital subtraction radiography
EDM	Electronic discharging machining
EDTA	Ethylenediaminetetraacetic acid
FOV	Field of view
GPP	glide path preparation
HCM	Hyflex CM
HEDM	HyFlex EDM
MD	Mesiodistal
micro-CT	micro–computed tomographic
NGP/RS	NGP/RS no glide path, only reciprocating system
NiTi	nickel-titanium
NP	no preparation
OC	One Curve
OG	One G
OS	one shape
OSA	one shape alpical
PDL	ProDesign Logic
PDS	ProDesignS
PG	ProGlider
PG/PTN	ProGlider/ProTaper Next
PTG	ProTaper Gold
PTN	ProTaper Next
PTU	ProTaper Universal
RS	Reciproc System
REC	Reciproc
ROI	region of interest

SAF	**Self-adjusting File**
SD	**standard deviation**
SMI	**structure model index**
SR/BR	**ScoutRace/BioRace SR/BR**
TF	**Twisted file**
TS	**TRUShape**
VI	**volume increase**
WL	**working length**
WO	**WaveOne**
XPS	**XP-endo Shaper**

List of Figures

List of Tables

Introduction

Root canal shaping is a crucial procedure in endodontic treatment that influences the subsequent steps of root canal disinfection and obturation. Each clinical situation is different and unique, but the final goal remains identical, which is to preserve the natural tooth functional, asymptomatic and achieve proper canal disinfection.

The preferred shape of the canal after mechanical shaping is a tapering funnel following the original shape and curvature of the canal, while keeping the original position of the foramen, and keeping it as small as practically possible. It is influenced not only by the clinician's experience, but also by the complexity of the root canal anatomy, as well as the clinician's armamentarium.

Nickel-titanium (NiTi) rotary endodontic instruments were introduced to facilitate instrumentation of curved canals. Ni-Ti instruments are superelastic and could flex far more than stainless steel instruments before exceeding their elastic limits. Technological advances led to dramatic improvements in the ability to shape root canals with fewer complications.

One curve is made of C wire which is a proprietary process, exclusively developed and implemented by Micro-Mega for One Curve.Itenables shaping of the full length of the canal with a single instrument, directly to the apex.

Combined with the patented design, C.Wire defines One Curve's personality traits as its own DNA: One Curve is a smart, efficient and conservative instrument.

The HyFlex EDM owes its unique properties to a breakthrough technology called "Electrical Discharge Machining". This innovative manufacturing process uses spark erosion to harden the surface of the NiTi file, resulting in superior fracture resistance and improved cutting efficiency.

Review of literature

Root canal shaping is one of the most important steps in canal treatment. It is essential in determining the efficacy of all subsequent procedures, including chemical disinfection and root canal obturation. However, even if this stage is adversely influenced by the highly variable root canal anatomy, it aims to achieve complete removal of the vital or necrotic tissue to create sufficient space for irrigation. Furthermore, shaping tends to preserve the integrity and location of the canal and apical anatomy in preparation for an adequate filling. The avoidance of both iatrogenic damage to the root canal structure and further irritation of the periradicular tissue is demanding for all the newest instrumentation techniques. Maintaining the original canal shape using a less invasive approach is associated with better endodontic outcomes [(1)].

Ounsi et al (2011) [(2)] compared photographic and micro–computed tomographic (micro-CT) measurements to assess if the repeated use of NiTi instruments affected the shape of canal preparation.Ten new sets of ProTaper Universal (PTU) instruments were used in 60 resin blocks simulating curved root canals. Groups 1 to 6 each (n = 10) represented the first to sixth use of the instrument, respectively. Digitized images of the prepared blocks were taken in both mesiodistal (MD) and