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Minimal invasiveness *Myth or reality*

Venerdì 27 febbraio **17.30-19.00**

WORKSHOP

Nano-trattamento in endodonzia: il futuro della strumentazione canalare

Gianluca Fumei

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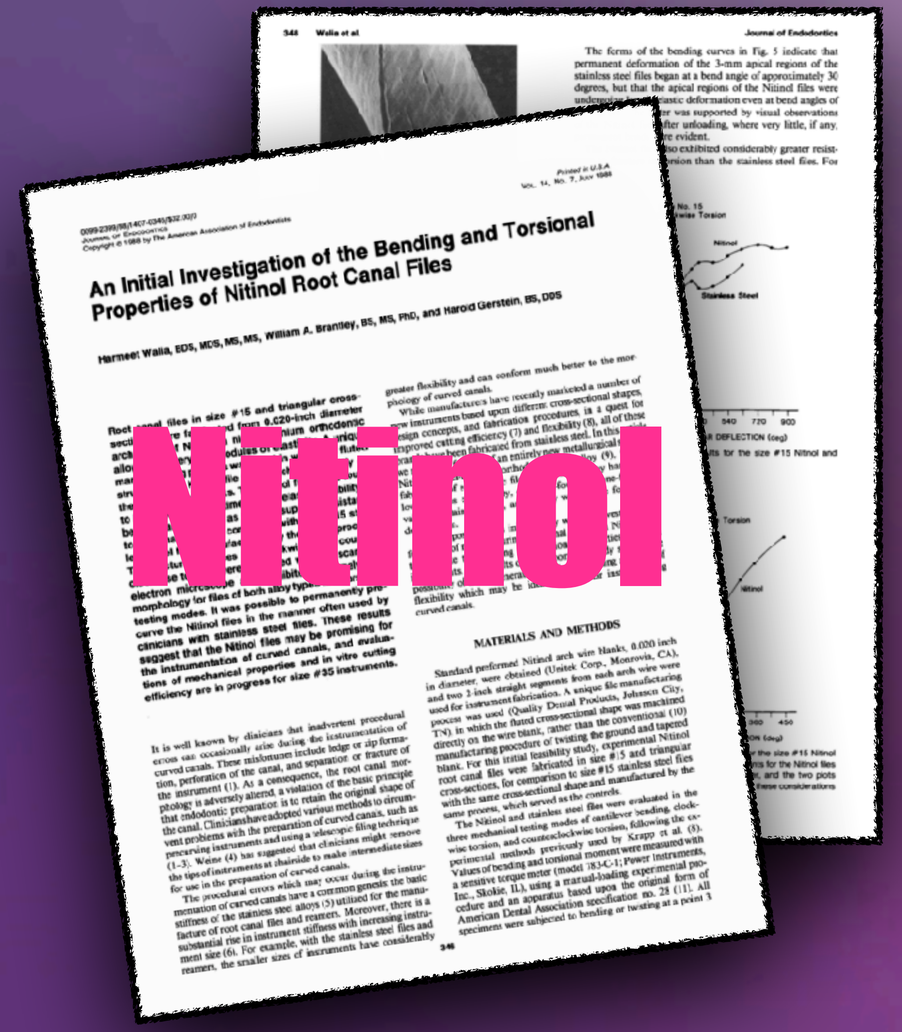
PICCOTTI BALOCCO FUMEI SUARDI BUCCI

Sharing is the key to success

Strumentazione Endodontica

STAINLESS STEELE



An Initial Investigation of the Bending and Torsional Properties of Nitinol Root Canal Files

Harmeet Walia, EDS, MDS, MS, MS, William A. Brantley, BS, MS, PhD, and Harold Gerstein, BS, DDS

Nitinol

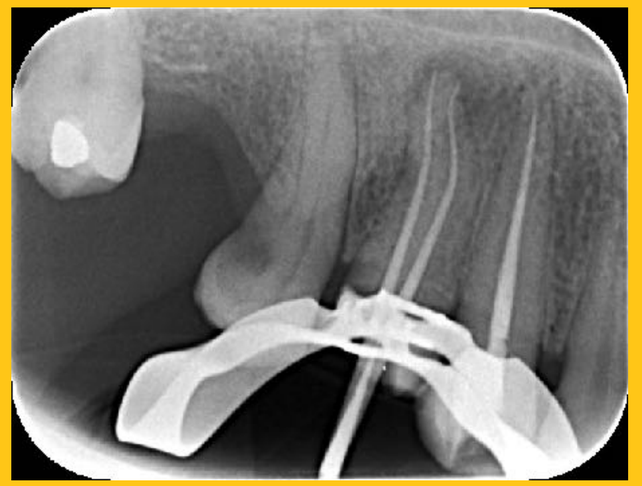
1988

WALIA ET AL JOE

Ni-Ti in endodontics

+35 years

Le caratteristiche geometriche e il trattamento termico potrebbero influenzare le proprietà meccaniche e le prestazioni cliniche degli strumenti NiTi, come l'incidenza della separazione del file e la distribuzione dello stress attraverso la parete dentinale durante la sagomatura del canale radicolare.



Shen 2012-2013; Gambarini 2011

LA MAGGIOR PARTE DEI NUOVI STRUMENTI NEL MERCATO SONO TRATTATI TERMICAMENTE

THE FUTURE

DENTAL WORLD
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SISTEMATICHE NI-TI ROTANTI NANO-COATED

Bioactive Materials 22 (2023) 91–111

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journal homepage: www.keaipublishing.com/en/journals/bioactive-materials

Advancing Nitinol: From heat treatment to surface functionalization for nickel–titanium (NiTi) instruments in endodontics

Wai-Sze Chan, Karan Gulati *, Ove A. Peters *

The University of Queensland, School of Dentistry, Herston, QLD, 4006, Australia

BMEF
A SCIENCE PARTNER JOURNAL

REVIEW ARTICLE

Application of Nanomaterials in Endodontics

Farzaneh Afkhami[1†], Yuan Chen[2,3†], Laurence J. Walsh[1], Ove A. Peters[1], and Chun Xu[1,2,4*]

[1]School of Dentistry, The University of Queensland, Brisbane,QLD4006, Australia. [2]Sydney Dental School, Faculty of Medicine and Health, The University of Sydney, Camperdown, NSW 2006, Australia. [3]School & Hospital of Stomatology, Wenzhou Medical University, Wenzhou, Zhejiang 325027, China. [4]Charles Perkins Centre, The University of Sydney, Camperdown, NSW 2006, Australia.

L'introduzione dei nanomateriali mira a superare i limiti della strumentazione migliorando l'efficacia clinica rispettando la mini-invasività del trattamento.

I rivestimenti nano-coated applicati agli strumenti Ni-Ti consentono:

- Riduzione dell'attrito con le pareti canalari
- Miglioramento della resistenza alla fatica ciclica
- Maggiore uniformità superficiale
- Aumento della sicurezza clinica

I nanomateriali sono definiti come materiali con almeno una dimensione compresa tra 1 e 100 nm.

Il nanorivestimento è uno strato superficiale ultrasottile applicato alla lega Ni-Ti.

Il rivestimento non altera la metallurgia del nucleo, ma migliora significativamente le caratteristiche superficiali del File.

Journal of Baghdad College of Dentistry, Vol. 37 No. 4 (2025), ISSN (P): 1817-1869, ISSN (E): 2311-5270

Nanoparticle coatings of Ni-Ti alloy and possibilities in Endodontics: A narrative review

Ali Imad Abdulkareem [1], Ahmed Hamid Ali [1*], Francesco

PDF of Nanoparticle coatings of Ni-Ti alloy and possibilities in Endodontics: A narrative review

Table 2: Classification types of Nanoparticles.

Origin	Size	Structure	Composition	Shape
Natural	-Zero-dimensional	- Carbon-based	- Inorganic	- Particles
Artificial	-One-dimensional nanorods	- Metal	- Metals	- Spheres
	-Two-dimensional thin films	- Dendrimers	- Polymeric	- Rods
	-Three-dimensional nanocones	- Composites	- Quantum dots	- Plates
			- Modified	

I RIVESTIMENTI DI NANOPARTICELLE OFFRONO NOTEVOLI OPPORTUNITÀ PER IL MIGLIORAMENTO DELLE QUALITÀ MECCANICHE

Caratteristiche del nano-rivestimento

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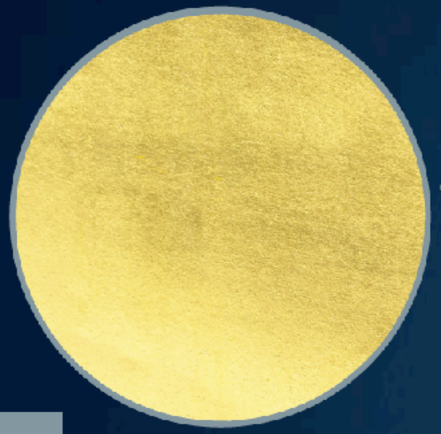
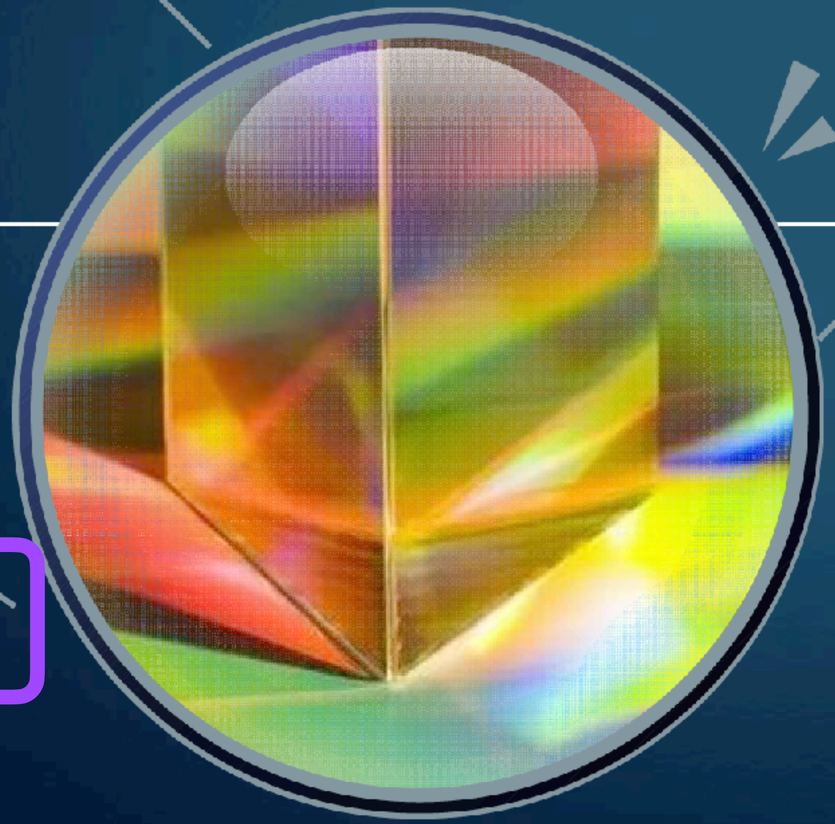
Materiale metallico



Nitruro di titanio

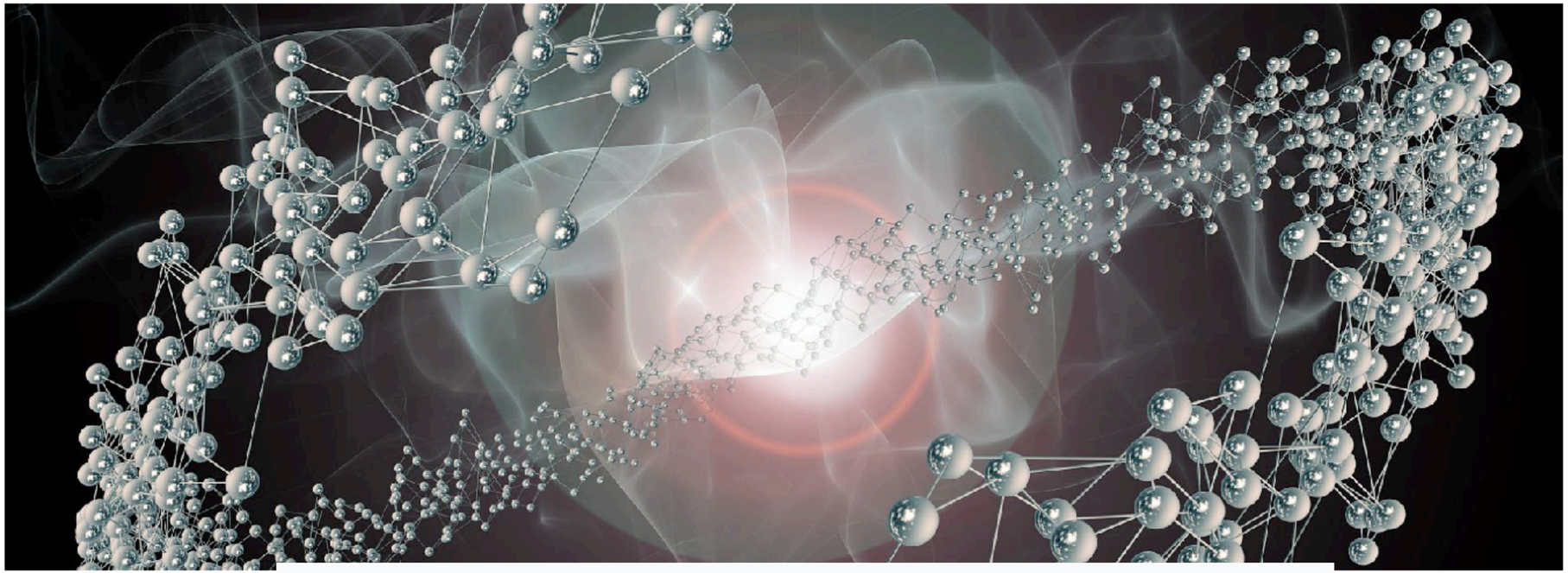


Materiale ceramico

Il nitruro di titanio (TiN) (talvolta noto come "Tinitc" o "TiNitc" o "TiN") è un materiale ceramico estremamente duro, spesso utilizzato come rivestimento su leghe di titanio, acciaio, carburo e componenti in alluminio per migliorare le proprietà superficiali del substrato.

Applicato come rivestimento sottile, il TiN viene utilizzato per indurire e proteggere le superfici di taglio e di scorrimento, per scopi decorativi (grazie al suo aspetto dorato) e come rivestimento non tossico per gli impianti medici. Nella maggior parte delle applicazioni, viene applicato un rivestimento inferiore a 5 micrometri (0,00020 in).

Cos'è il nano-rivestimento

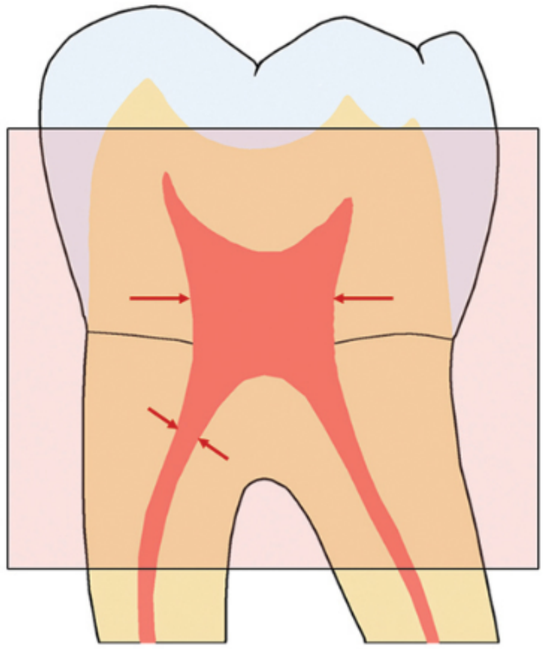


Il rivestimento superficiale è progettato per:
ridurre l'attrito, migliorare lo scorrimento, limitare l'adesione dei detriti.

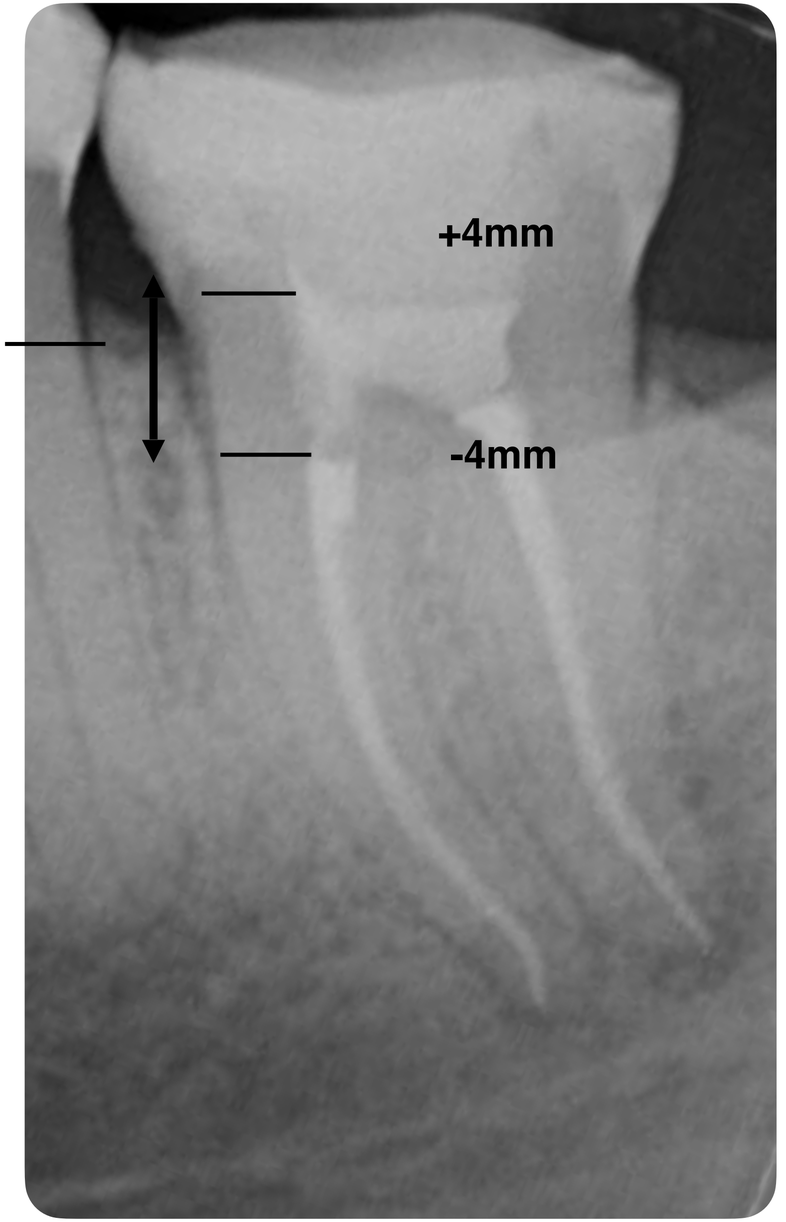
La sagomatura è più controllata, in particolare nelle anatomie canalari curve e complesse, con una riduzione dello stress torsionale e un minor rischio di separazione imprevista.

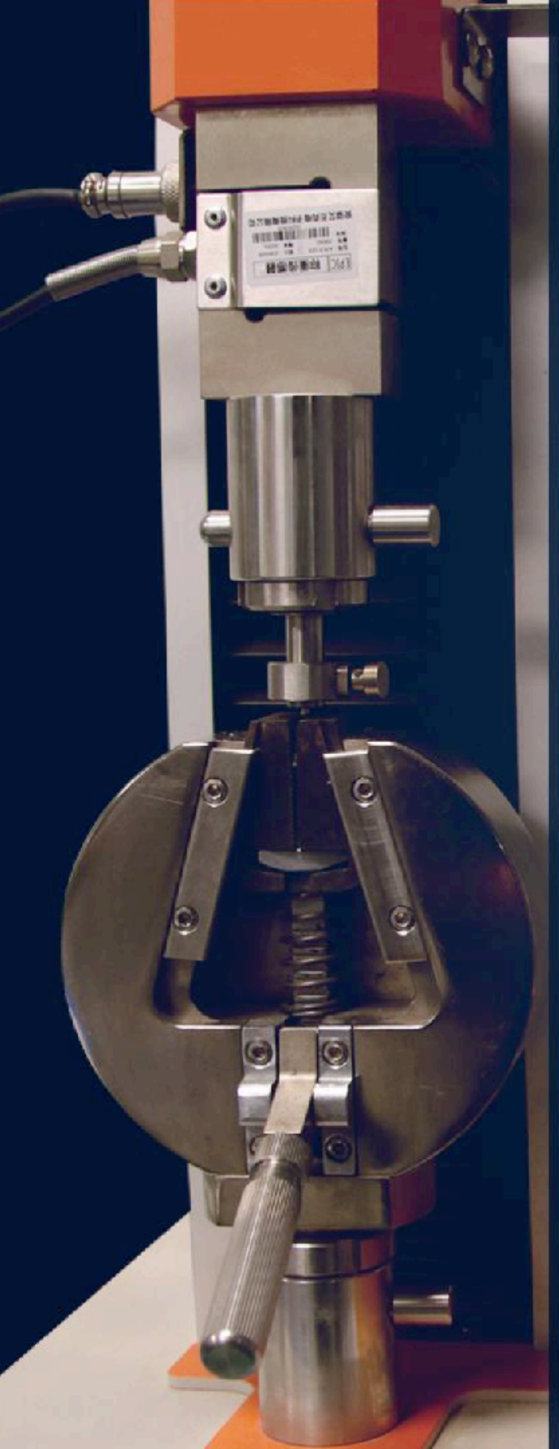
Questi concetti risultano perfettamente coerenti con i principi di sagomatura mini-invasiva, in cui la preservazione della dentina è un obiettivo prioritario.

CONSERVAZIONE DELLA DENTINA PERICERVICALE



1. LA DENTINA PERICERVICALE È LOCALIZZATA GENERALMENTE A 4MM CORONALMENTE E APICALMENTE ALLA CRESTA ALVEOLARE
2. LA DENTINA PERICERVICALE È INSOSTITUIBILE





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Tinite

DUREZZA

Caratteristiche della ceramica

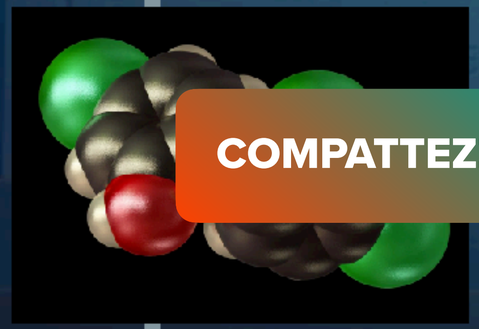
La durezza del rivestimento è estremamente elevata - più di tre volte la durezza dell'acciaio per utensili e stampi - e può addirittura raggiungere valori superiori a 4000 HV. Il rivestimento è sottile e liscio, con un basso coefficiente di attrito.

Lo strato di rivestimento non aderisce facilmente al metallo, evitando l'accumulo di detriti e migliorando la qualità della superficie dei pezzi lavorati. Il rivestimento presenta una buona stabilità termica; alcuni rivestimenti possono persino resistere a temperature di lavoro superiori a 1000°C.

RESISTENZA

Caratteristiche del metallo

Tenacia, resistenza agli urti, resistenza agli shock, conduttività e proprietà magnetiche superiori.



COMPATTEZZA

Altre caratteristiche

I grani del rivestimento sono estremamente piccoli e la struttura è eccezionalmente compatta, garantendo una buona resistenza alla corrosione di acidi e alcali.
Il rivestimento è atossico, non pericoloso e non dannoso per l'ambiente, ed è quindi adatto a dispositivi medici, coltelli utilizzati nella lavorazione degli alimenti (ad esempio, macchine per la produzione di succhi di frutta) e applicazioni simili.

UNIVERSITÀ DEGLI STUDI DI CATANIA

DIPARTIMENTO DI CHIRURGIA GENERALE E SPECIALITÀ MEDICO-CHIRURGICHE

CORSO DI LAUREA MAGISTRALE IN ODONTOIATRIA E PROTESI DENTARIA

RANDISI SALVATORE

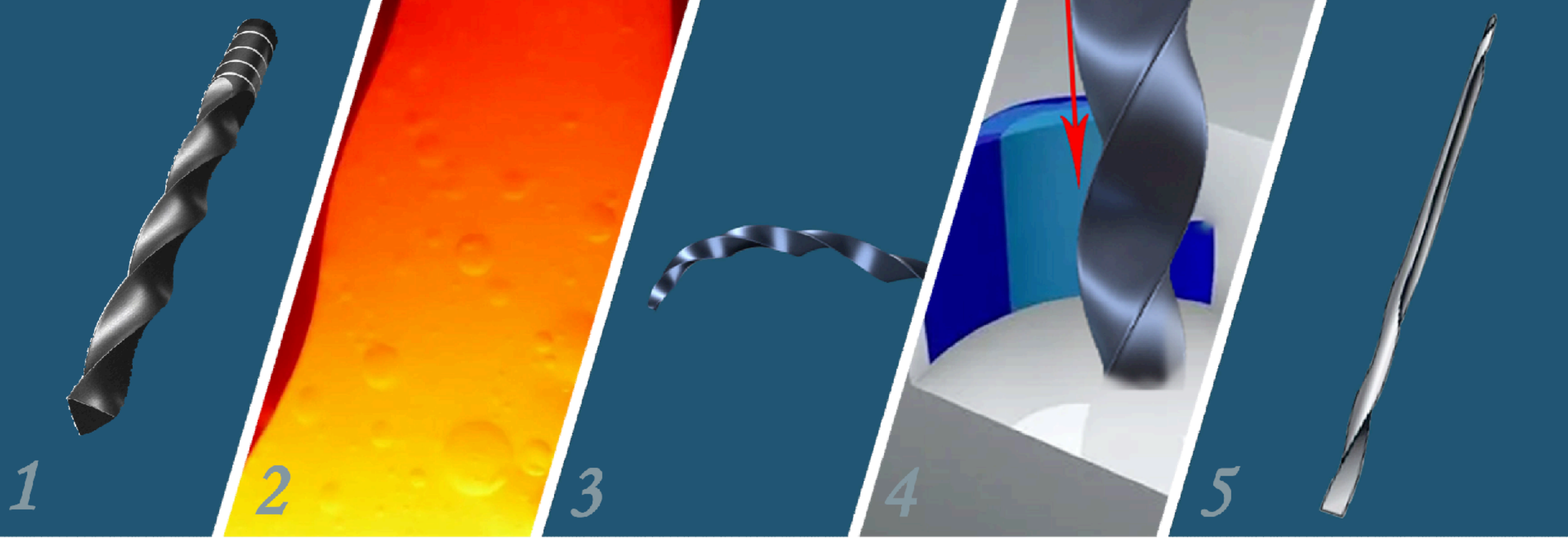
EFFICIENZA DI TAGLIO DOPO USO MULTIPLO DI STRUMENTI ENDODONTICI REALIZZATI CON DIVERSI TRATTAMENTI

TESI DI LAUREA

RELATORE

Prof. Eugenio Pedullà

Proflex N.H.A. sembra offrire un chiaro vantaggio in termini di durata e prestazioni di taglio costanti, in particolare quando gli strumenti vengono riutilizzati più volte



Strumenti in NiTi | Attivazione termica | Flessibilità | Riduzione dell'efficienza di taglio | Sfilameto

Tecnologia di attivazione termica convenzionale:

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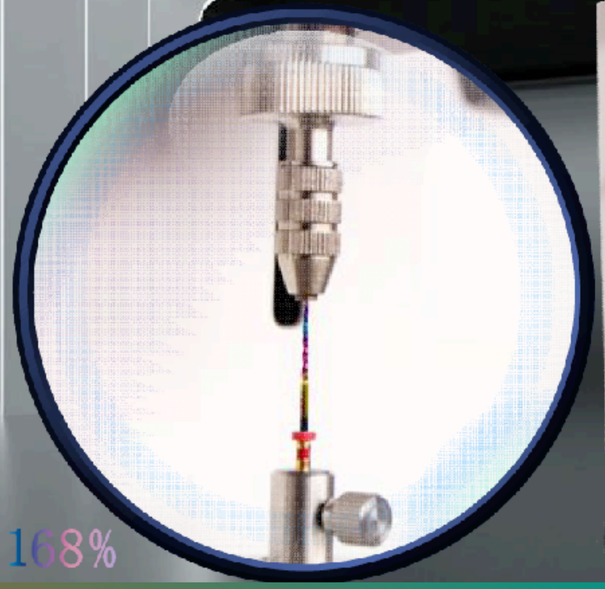
Oggi gli strumenti canalari in nichel-titanio sono prodotti con una tecnologia di trattamento termico che rende la lama più flessibile e risolve in gran parte il problema della rottura dello strumento nei canali radicolari curvi. Tuttavia, poiché la lama diventa più flessibile, la sua forza di taglio si riduce e tende a sfilarsi quando incontra canali radicolari calcificati.

Caratteristiche del nano-rivestimento

Sulla base del trattamento termico del materiale in nichel-titanio, la tecnologia di tempra laser viene utilizzata per aumentare la durezza superficiale degli strumenti canalari del 168%. Il nano-rivestimento riempie gli interstizi della struttura reticolare sulla superficie, formando una nuova tecnologia di strumenti canalari in nichel-titanio che combina attivazione termica, tempra laser e nano-rivestimento.

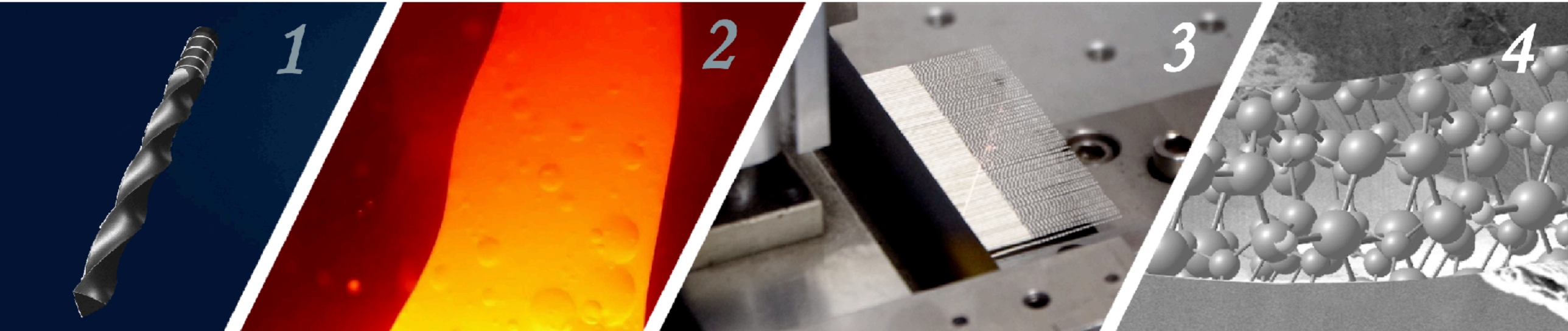


- Aumento della resistenza all'abrasione di 3-10 volte.
- Miglioramento della qualità della superficie e riduzione dei difetti.
- Rivestimento sottile e uniforme con un basso coefficiente di attrito.
- Nano-rivestimento sottile, circa 3 μm; pertanto, non influisce sull'accuratezza dimensionale del taglio.

ATTIVAZIONE TERMICA **TEMPRA LASER**

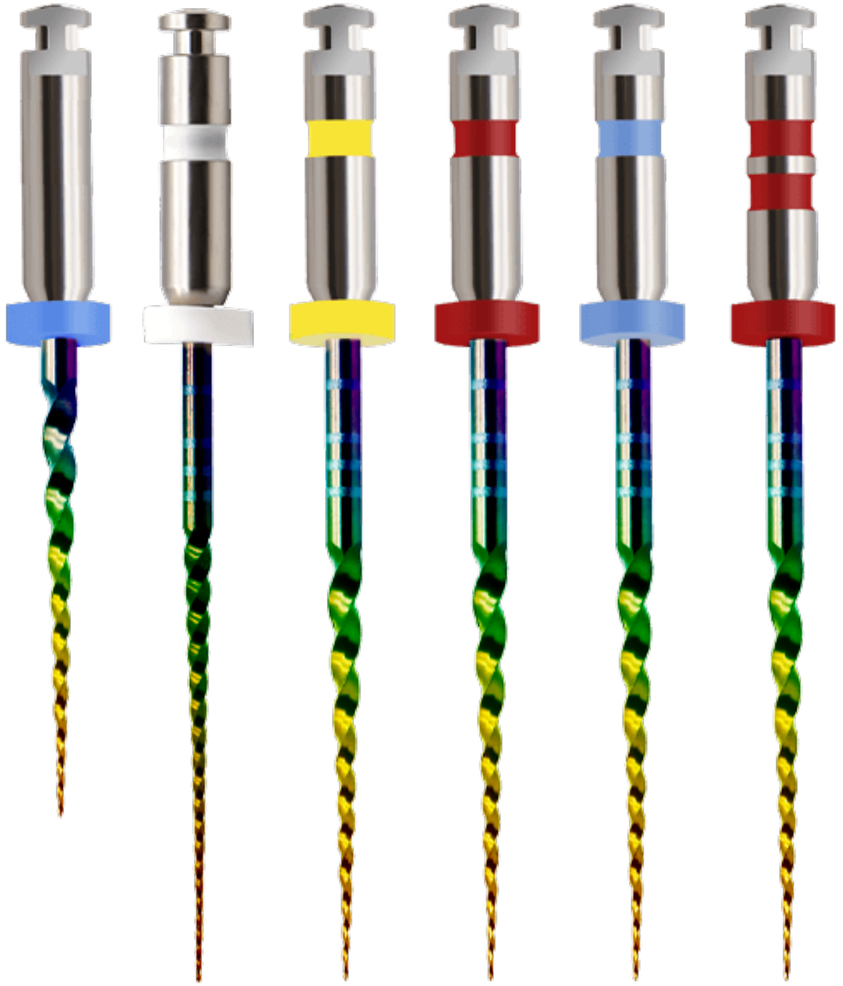
NANO-RIVESTIMENTO

Strumenti in NiTi | Attivazione termica | Tempra laser | Nano-rivestimento



PRO FLEX NHA

NANO RIVESTITO ATTIVAZIONE TERMICA



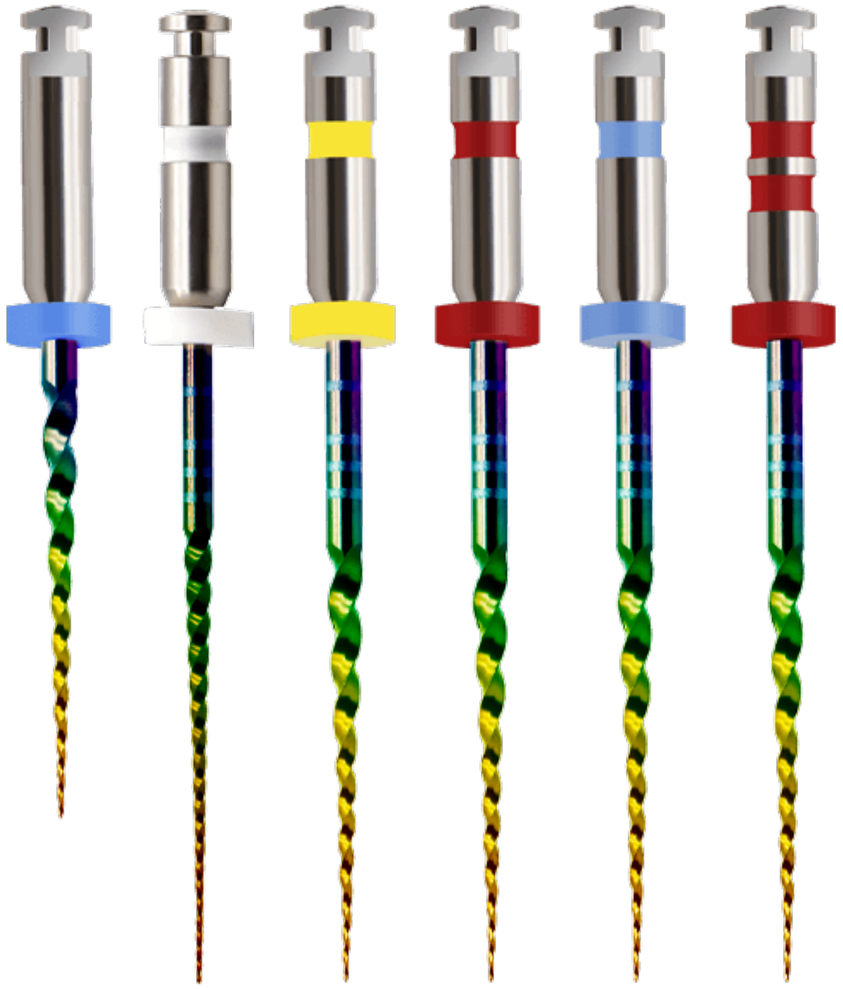
CONTROL MEMORY

NiTi Heat Brown

Continuous

PRO FLEX NHA

NANO RIVESTITO ATTIVAZIONE TERMICA



CONTROL MEMORY

NiLi Rainbow

Continuous

CONTROL MEMORY

La tecnologia ***Control Memory*** degli strumenti canalari garantisce stabilità e precisione durante la pulizia del canale radicolare anche quando non viene applicata forza sullo strumento.

NI-TI RAINBOW

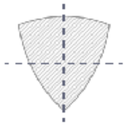
Il nuovo materiale ***Ni-Ti Rainbow*** garantisce resistenza e flessibilità durante il trattamento endodontico, offrendo una maggiore durata e resistenza nella pulizia dei canali radicolari grazie alle sue proprietà avanzate.

ROTAZIONE CONTINUA

Gli strumentini canalari ***Pro Flex NHA*** sono ***compatibili con i motori endodontici a rotazione continua***, garantendo una maggiore velocità di lavoro, una maggiore capacità di rimuovere i detriti durante la sagomatura e una maggior linearità del taglio.

PRO FLEX *NHA*

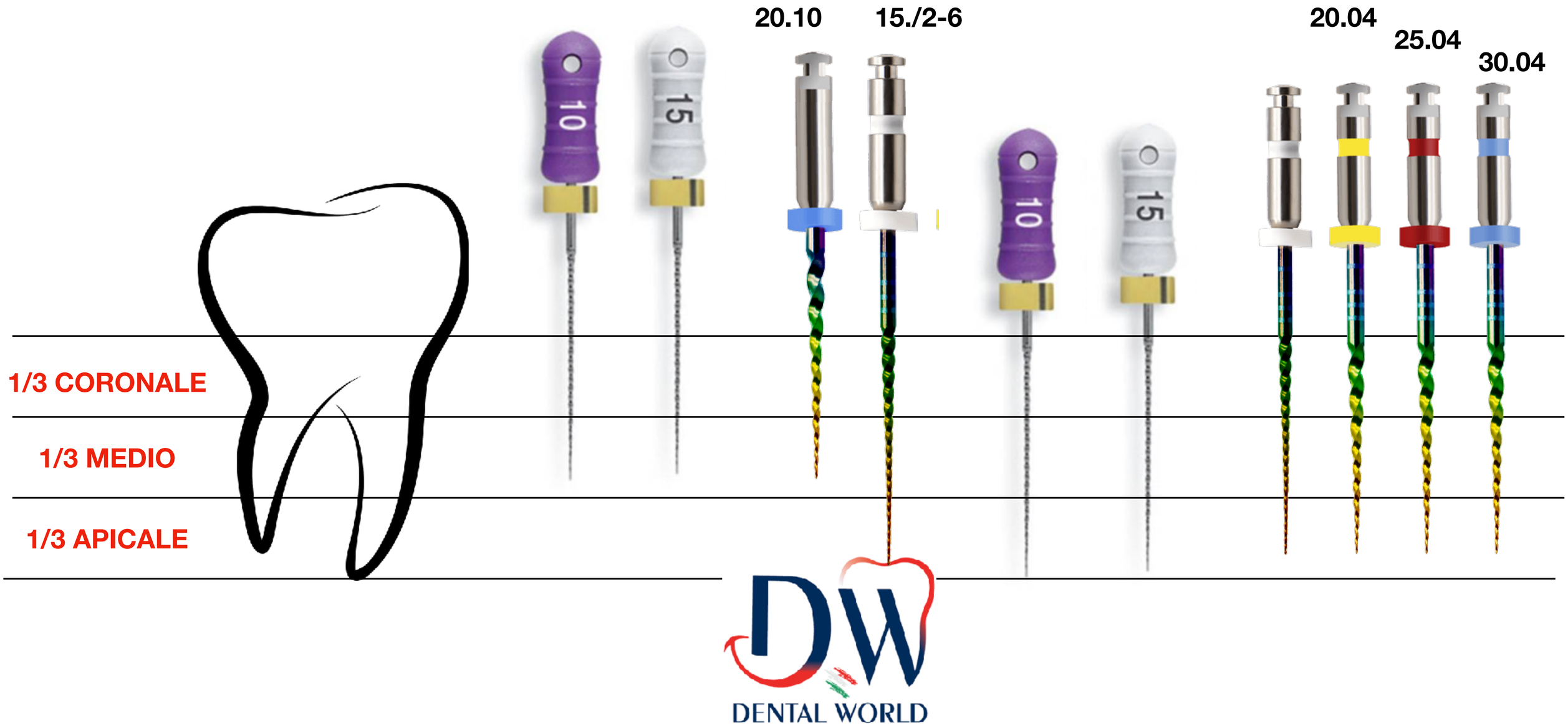
	Ø	%	N/cm	RPM	21 mm	25 mm	31 mm	Cross-section	Match gutta point
R	20	10	2,5	350	17 mm	REF: 144900550			-
○ 016	15	2-6	2,5	300	144900551	144900561	144900571		-
● D1	20	4	2,5	250-300	144900552	144900562	144900572		20/04
● D2	25	4	2,5	250-300	144900553	144900563	144900573		25/04
● D3	30	4	2,5	250-300	144900554	144900564	144900574		30/04
●● D4	25	6	2,5	250-300	144900555	144900565	144900575		25/06
016-D4	--	--	2,5	--	144900556	144900566	144900576		-



Legenda / *Legend*
- Ø Diametro / *Diameter*
- % Conicità / *Taper*
- N/cm Torque
- RPM Velocità / *Speed*

* La velocità e il torque sono indicativi e possono variare a seconda del dispositivo utilizzato e delle preferenze dell'operatore
Speed and torque are approximated and can change in relation to the device and to the operator choices

SEQUENZA PRO FLEX H.A.



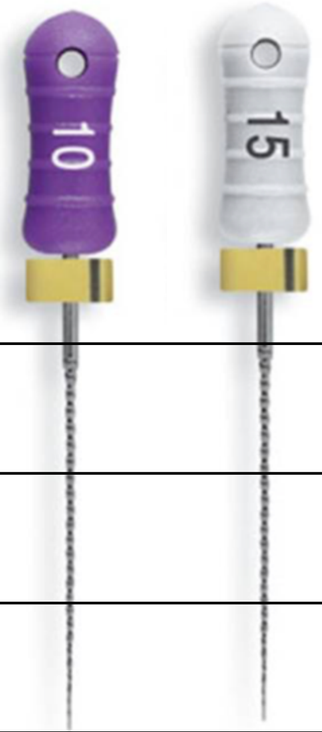
DENTAL WORLD

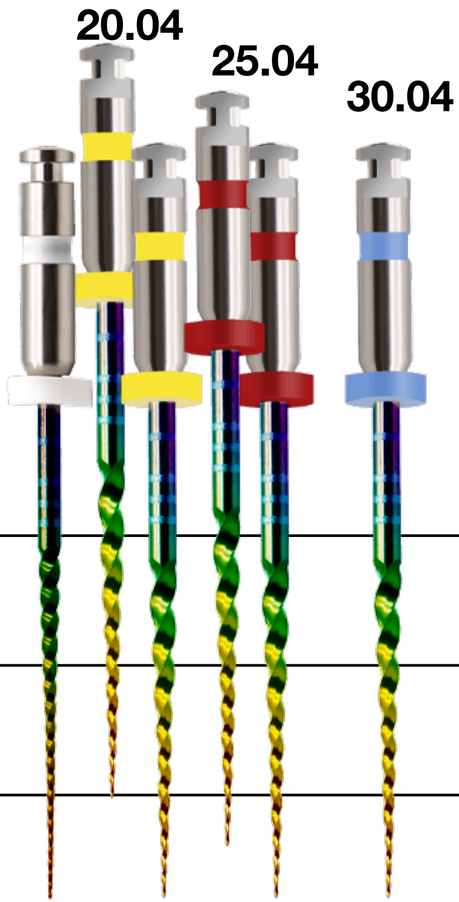
SEQUENZA PRO FLEX H.A.

1/3 CORONALE

1/3 MEDIO

1/3 APICALE





DENTAL WORLD

PRO FLEX NHA

PRO FLEX NHA

NANO RIVESTITO ATTIVAZIONE TERMICA

20.10

PreFlaring e Diametro Apicale

Il PreAllargamento del terzo cervicale e medio del canale radicolare migliora la determinazione del diametro anatomico

Influence of cervical preflaring on apical file size determination

J. D. Pecora[1], A. Capelli[1], D. M. Z. Guerisoli[1], J. C. E. Spanó[1] & C. Estrela[2]
[1]Ribeirão Preto Dental School, University of São Paulo, Ribeirão Preto, SP, Brazil; and [2]Department of Endodontics, Federal University of Goias, Goiânia, GO, Brazil

Abstract

Pecora JD, Capelli A, Guerisoli DMZ, Spanó JCE, Estrela C. Influence of cervical preflaring on apical file size determination. *International Endodontic Journal*, **38**, 430–435, 2005.

Aim To investigate the influence of cervical preflaring with different instruments (Gates-Glidden drills, Quantec Flare series instruments and LA Axxess burs) on the first file that binds at working length (WL) in maxillary central incisors.

Methodology Forty human maxillary central incisors with complete root formation were used. After standard access cavities, a size 06 K-file was inserted into each canal until the apical foramen was reached. The WL was set 1 mm short of the apical foramen. Group 1 received the initial apical instrument without previous preflaring of the cervical and middle thirds of the root canal. Group 2 had the cervical and middle portion of the root canals enlarged with Gates-Glidden drills sizes 90, 110 and 130. Group 3 had the cervical and middle thirds of the root canals enlarged with nickel-titanium Quantec Flare series instruments. Titanium-nitrite treated, stainless steel LA Axxess burs were used for preflaring the cervical and middle portions of root canals from group 4. Each canal was sized using manual K-files, starting with size 08 files with passive movements until the WL was reached. File sizes were increased until a binding sensation was felt at the WL, and the instrument size was recorded for each tooth. The apical region was then observed under a stereoscopic magnifier. Images were recorded digitally and the differences between root canal and maximum file diameters were evaluated for each sample.

Results Significant differences were found between experimental groups regarding anatomical diameter at the WL and the first file to bind in the canal ($P < 0.01$, 95% confidence interval). The major discrepancy was found when no preflaring was performed (0.151 mm average). The LA Axxess burs produced the smallest differences between anatomical diameter and first file to bind (0.016 mm average). Gates-Glidden drills and Flare instruments were ranked in an intermediary position, with no statistically significant differences between them (0.093 mm average).

Conclusions The instrument binding technique for determining anatomical diameter at WL is not precise. Preflaring of the cervical and middle thirds of the root canal improved anatomical diameter determination; the instrument used for preflaring played a major role in determining the anatomical diameter at the WL. Canals preflared with LA Axxess burs created a more accurate relationship between file size and anatomical diameter.

Keywords: apical file size determination, coronal flaring, instrument type.

Received 21 May 2003; accepted 10 January 2005

Introduction

Current standards in root canal treatment are based on cleaning and shaping the root canal prior to filling (West & Roane 1998). Some authors suggest that the amount of apical enlargement to be achieved during shaping of the canal should be based on the estimation of initial apical diameter and by three file sizes greater

Correspondence: Prof. Dr Jesus D. Pécora, Departamento de Odontologia Restauradora, Faculdade de Odontologia de Ribeirão Preto, Universidade de São Paulo, 14040-904, Ribeirão Preto, SP, Brazil (Tel.: +55 16 602 3982; fax: +55 16 633 0999; e-mail: pecora@forp.usp.br).

BASIC RESEARCH – TECHNOLOGY

Cyclic Fatigue Resistance of Nickel-titanium Rotary Instruments according to the Angle of File Access and Radius of Root Canal

Eugenio Pedullà, DDS, MS, PhD, Giusy Rita Maria La Rosa, DDS,* Chiara Virgilito, DDS,* Ernesto Rapisarda, DDS,* Hyeon-Cheol Kim, DDS, MS, PhD,† and Luigi Generali, DDS‡*

ABSTRACT

Introduction: The aim of this study was to compare the influences from different access angles and curvature radii on cyclic fatigue resistance of nickel-titanium rotary files. **Methods:** Two file systems (2Shape [TS; MicroMega, Besançon, France] and HyFlex CM [HCM; Coltène/Whaledent, Altstätten, Switzerland]) were used. A total of 192 instruments of TS #25/.04 (TS1), TS #25/.06 (TS2), HCM #25/.04, and HCM #25/.06 were evaluated at 3 insertion angles (0°, 10°, and 20°) and 2 radii (5 mm and 3 mm) in 16-mm stainless steel artificial canals with a 60° curvature. Cyclic fatigue resistance was determined by the number of cycles to failure (NCF) using a customized testing device. Data were analyzed statistically with the significance level established at 95%. **Results:** In the 3-mm radius canal, the instruments showed lower cyclic fatigue resistance than in the 5-mm radius canal ($P < .05$). HCM #25/.06 and all .04 taper instruments had a significant NCF reduction at 20° and 10° in the 3-mm radius canal ($P < .05$), whereas TS2 showed no significant differences. In the 5-mm radius of curvature, although .06 taper instruments had no significant NCF reduction for each angle tested, .04 taper files exhibited significant NCF reduction when tested at 20° ($P < .05$). Comparing the same size instruments, HCM had higher NCF than TS ($P < .05$). Instruments with a .04 taper exhibited higher NCF than the .06 ones with the same heat treatment ($P < .05$). **Conclusions:** An inclined insertion into the canals decreased cyclic fatigue resistance of thermal-treated instruments with a .04 taper at all radii of curvature tested. The synergistic effect of a small radius of curvature and access angulation of heat-treated instruments decreases their fatigue resistance. *(J Endod 2020;46:431–436.)*

SIGNIFICANCE

The angulated file access and/or severe curved canal curvature with a small radius could influence (reduce) cyclic fatigue resistance of heat-treated nickel-titanium instruments.

KEY WORDS

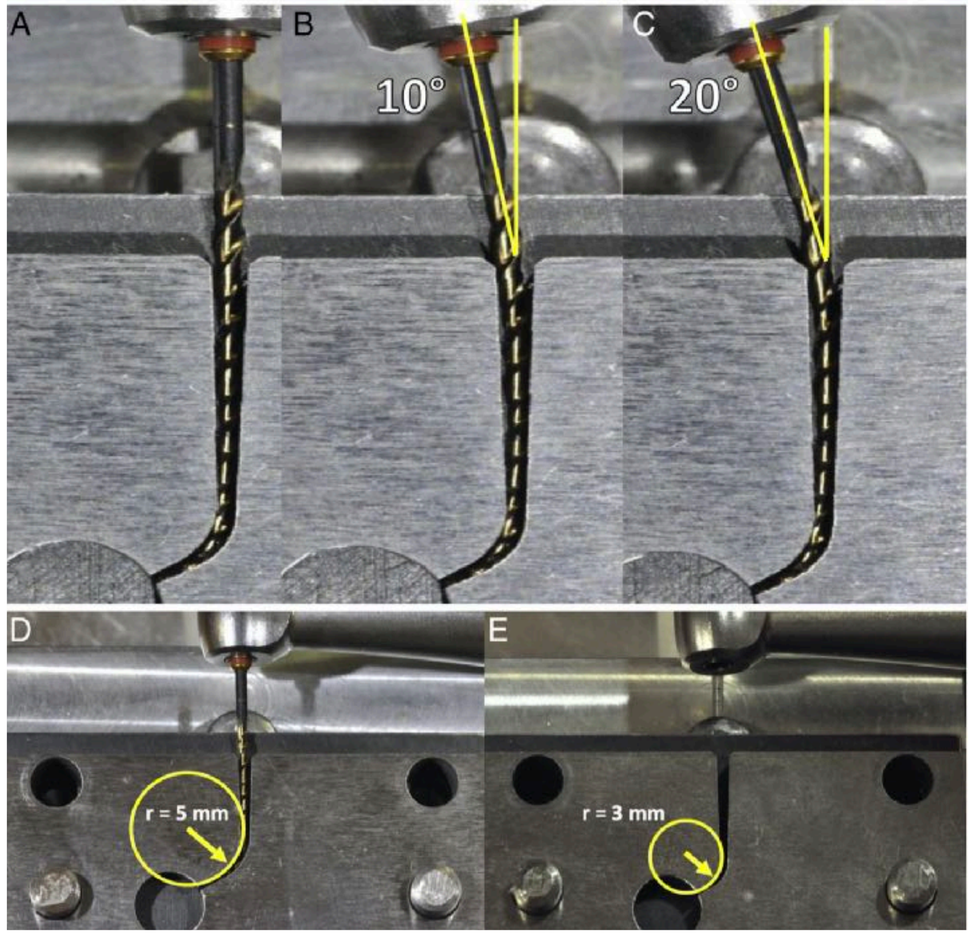
2Shape; angle of file access; canal curvature; canal radius; cyclic fatigue resistance; HyFlex CM

From the *Department of General Surgery and Surgical-Medical Specialties, University of Catania, Catania, Italy; †Department of Conservative Dentistry, School of Dentistry, Dental and Life Science Institute, Dental Research Institute, Pusan National University, Yangsan, Korea; and ‡Department of Surgery, Medicine, Dentistry and Morphological Sciences with Transplant Surgery, Oncology and Regenerative

Nickel-titanium (NiTi) rotary instruments may exhibit a higher risk of intraoperative fracture within the root canal[1]. Fracture may occur due to torsional
more prevalent cause of "unexpected" brea
crack propagation caused by repeated tensil
canal[2,3].

Several factors influence the fracture of
treatment, and metallurgic properties of instr
instrument fracture is the radius of curvature[5]
shaped curvatures[4,11]. Another parameter is
anatomic access configuration and operator
endodontics, the recent contracted endodon
NiTi instruments[1,2].

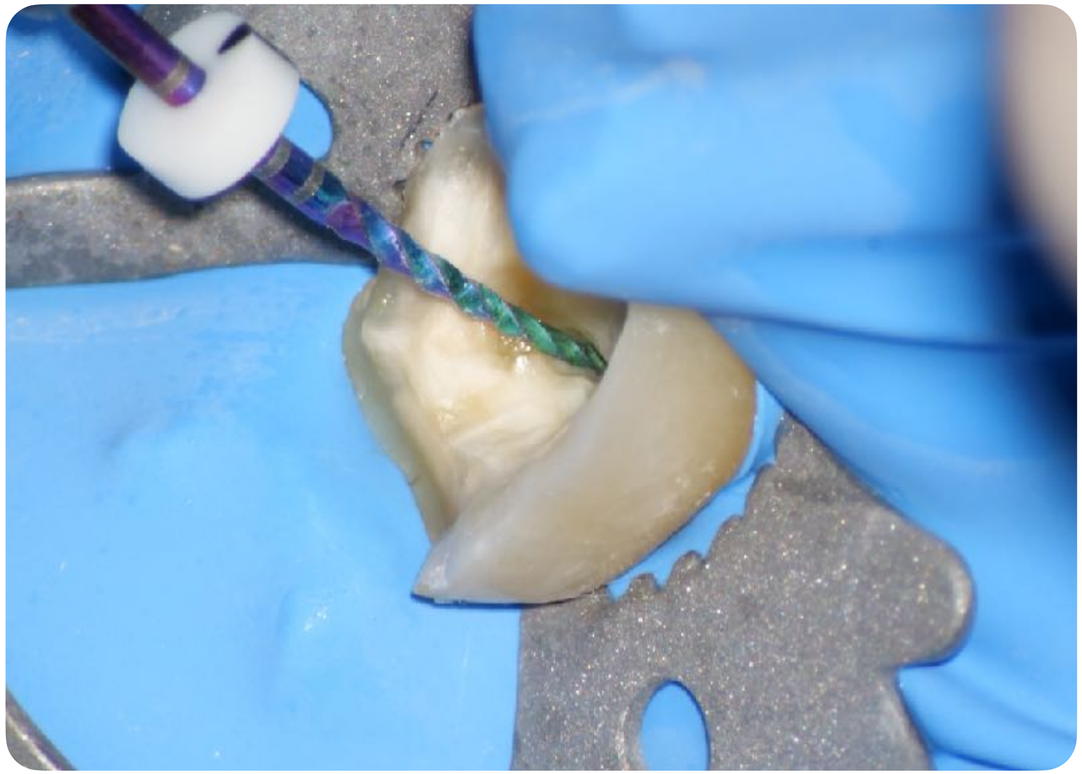
Heat treatments have been attempted
characteristics of traditional NiTi instruments[12]



.05). **Conclusions:** An inclined insertion into the canals decreased cyclic fatigue resistance of thermal-treated instruments with a .04 taper at all radii of curvature tested. The synergistic effect of a small radius of curvature and access angulation of heat-treated instruments decreases their fatigue resistance. *(J Endod 2020;46:431–436.)*

PRO FLEX NHA

NANO RIVESTITO ATTIVAZIONE TERMICA



GLIDEPATH

15./2-6

I BENEFICI DEL GLIDEPATH

Journal of Endodontics
Volume 35, Issue 3, March 2009, Pages 408-412

Basic Research

Use of Nickel-Titanium Rotary PathFile to Create the Glide Path: Comparison With Manual Preflaring in Simulated Root Canals

Elio Berutti MD, DDS *, Giuseppe Cantatore MD, DDS †, A
Chiandussi MSc, PhD §, Francesco Pera DDS *, Giuseppe

.001). No expertise-related difference was found within instrument groups ($P > .05$), whereas the inexpert clinician produced more conservative shaping with Pathfiles than did the expert with manual preflaring ($P < .01$).

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BASIC RESEARCH · Volume 39, Issue 4, P534-537, April 2013 Download Full Issue

Glide Path Preparation in S-shaped Canals with Rotary Pathfinding Nickel-Titanium Instruments

Natasha C.C. Ajuz, DDS * · Luciana Armada, PhD * · Luc
José F. Siqueira, Jr., PhD *

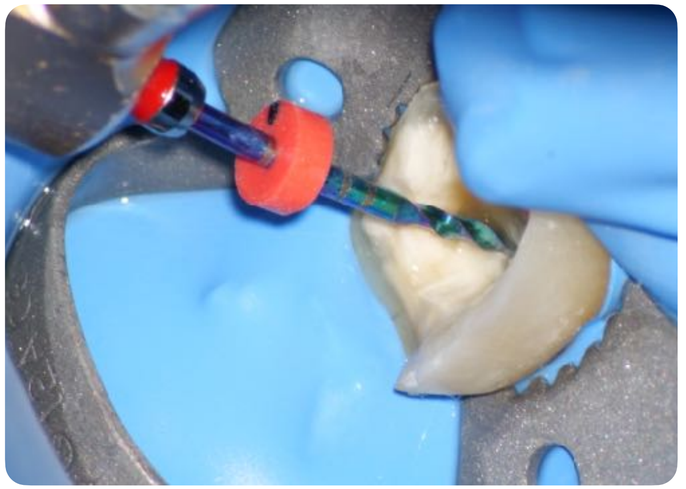
Conclusions

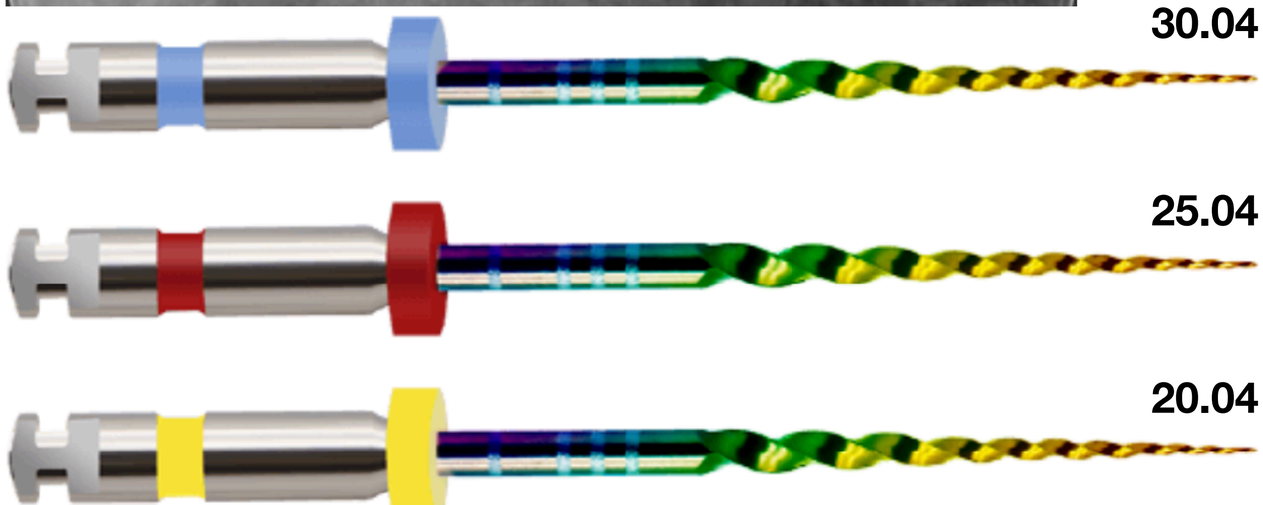
Findings suggest that rotary NiTi instruments are suitable for adequate glide path preparation because they promoted less deviation from the original canal anatomy when compared with hand-operated instruments. Of the 2 rotary pathfinding instruments, Scout RaCe showed an overall significantly better performance.

PRO FLEX NHA

NANO RIVESTITO ATTIVAZIONE TERMICA

SHAPING





DIAMETRO DELLA PREPARAZIONE

INTERNATIONAL ENDODONTIC JOURNAL

REVIEW

Master apical file size – smaller or larger: a systematic review of healing outcomes

A. Aminoshariae[1] & J. C. Kulild[2]

[1]Department of Endodontics, Case School of Dental Medicine, Cleveland, OH, and [2]Dental School, UMKC, Kansas City, MO, USA

Abstract

Aminoshariae A, Kulild JC. Master apical file size – smaller or larger: a systematic review of healing outcomes. *International Endodontic Journal*, 48, 639–647, 2015.

Introduction

The Role of Apical Instrumentation in Root Canal Treatment: A Review of the Literature

Dean Baugh, DDS, and James Wallace DDS, MDS, MSD, MS

Abstract

The Apical Constriction

Better microbial removal and more effective irrigation occurs when canals are instrumented to larger apical sizes

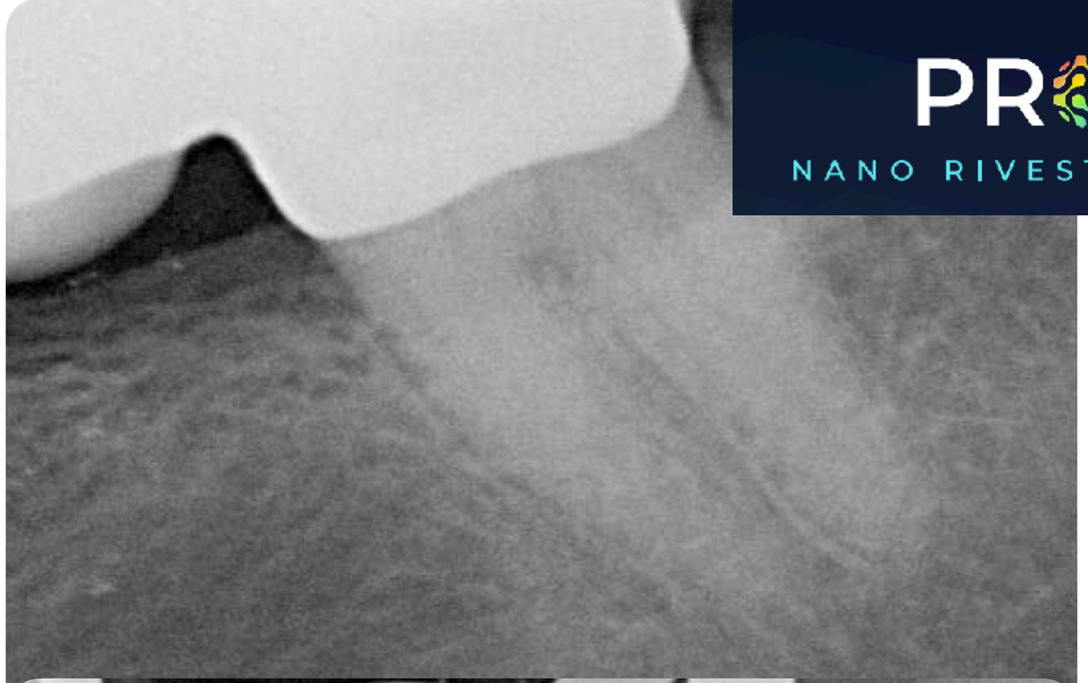
30-35

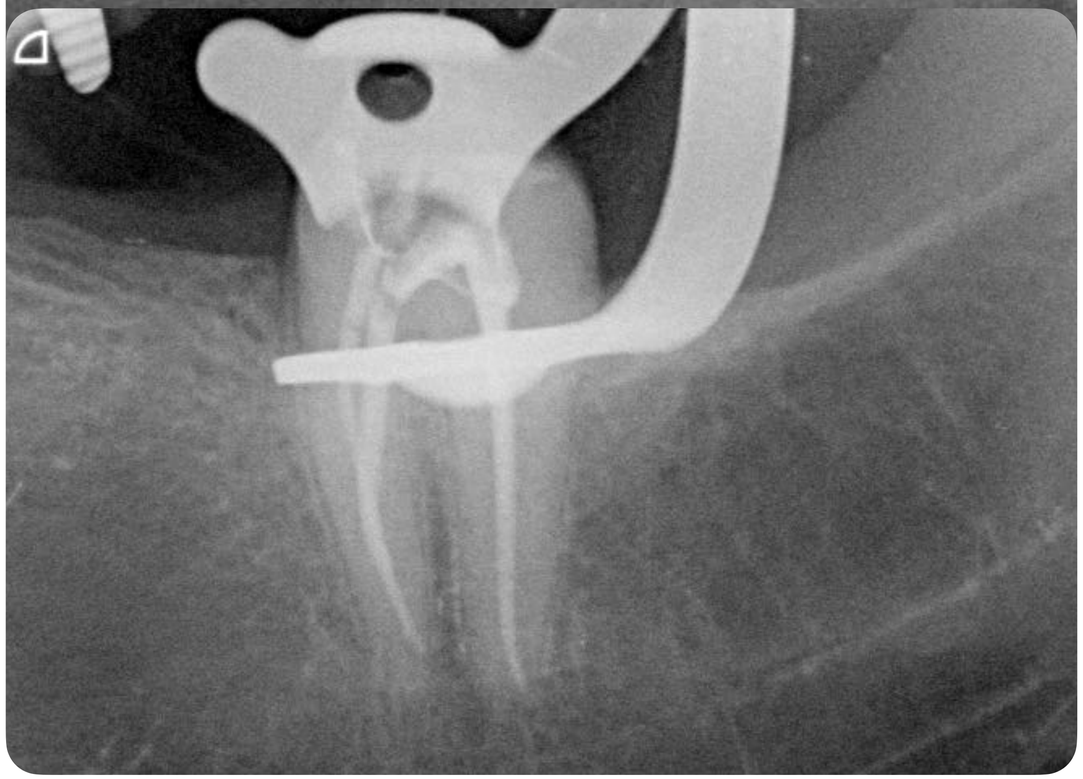
AMINOSHARIE 2015

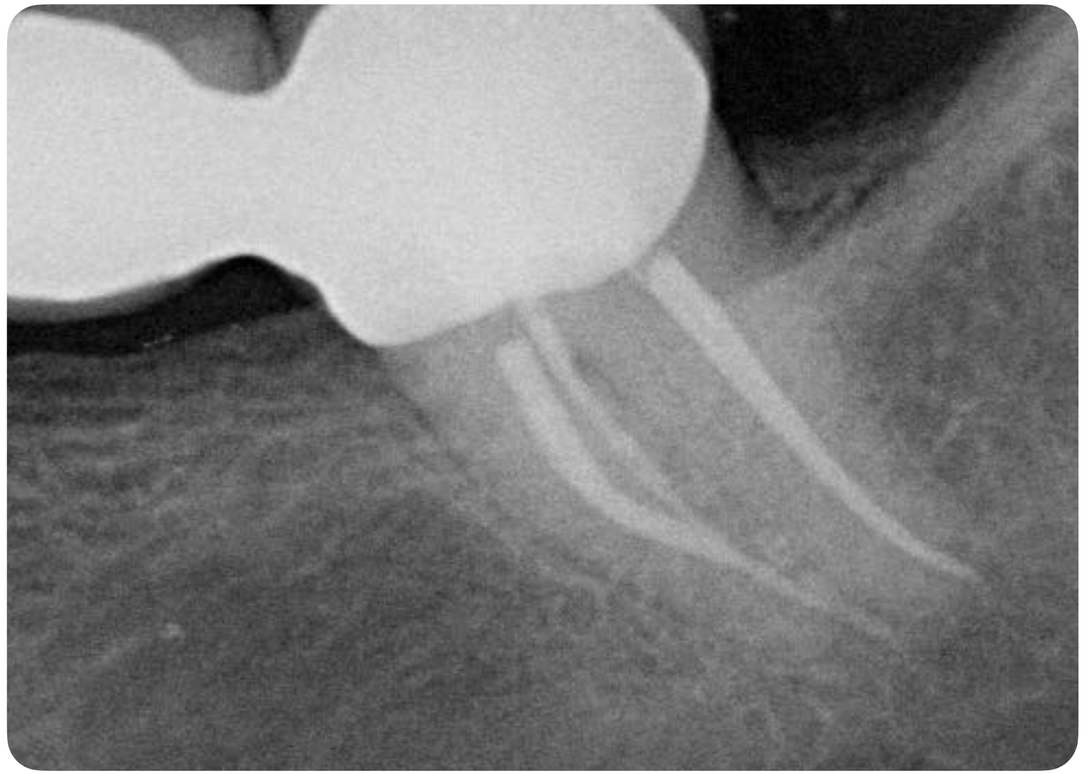
BAUGH 2005

PRO FLEX NHA

NANO RIVESTITO ATTIVAZIONE TERMICA

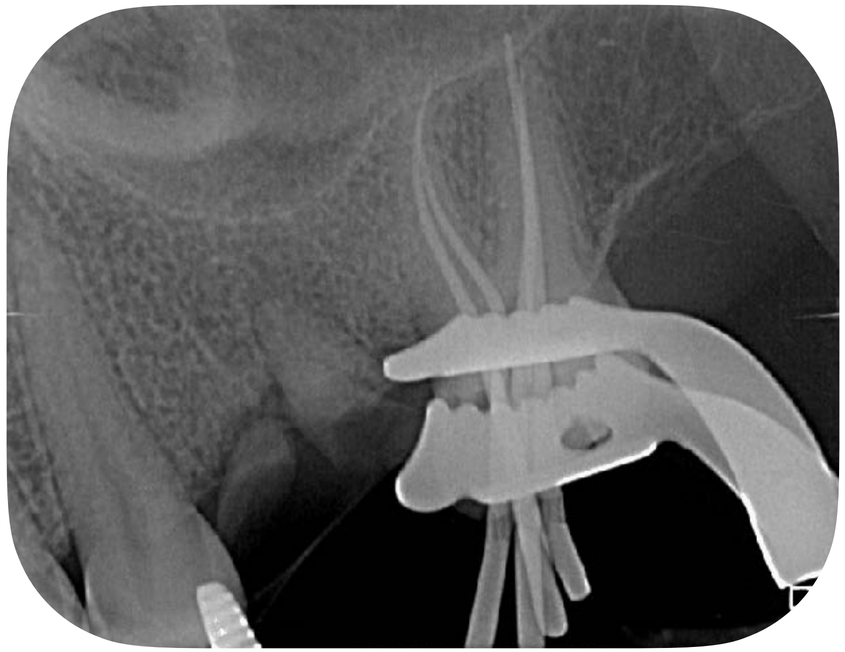






PRO FLEX NHA

NANO RIVESTITO ATTIVAZIONE TERMICA

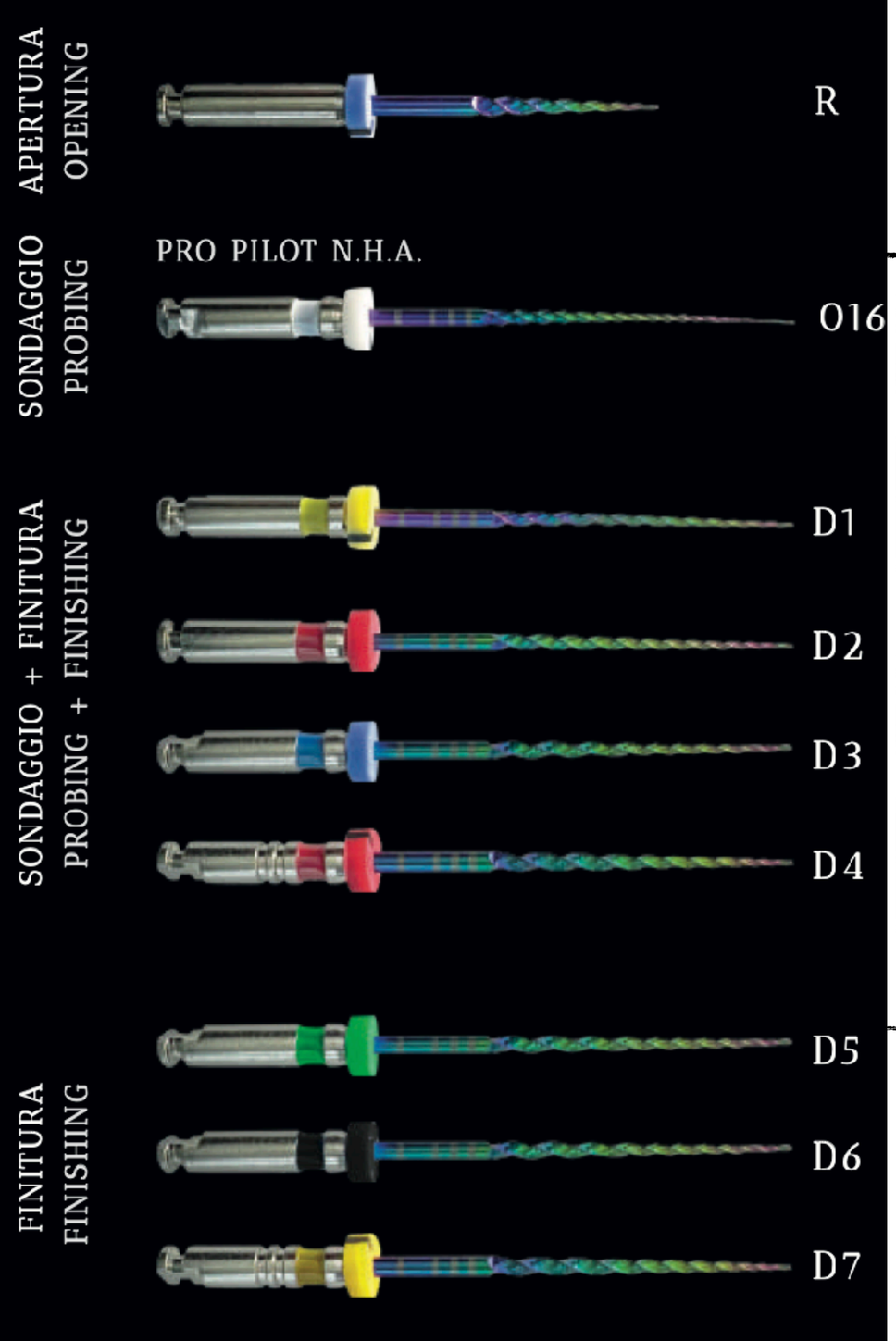


PRO FLEX NHA

NANO RIVESTITO ATTIVAZIONE TERMICA

PRO FLEX NHA

NANO RIVESTITO ATTIVAZIONE TERMICA



VANTAGGI DEL NANO-COATING

- FLESSIBILITÀ (CURVATURE)
- APPROCCIO CONSERVATIVO (SAGOMATURA 0,4)
- RESISTENTE
- EFFICIENZA DI TAGLIO
- SAGOMATURA PROFONDA (30,4…)

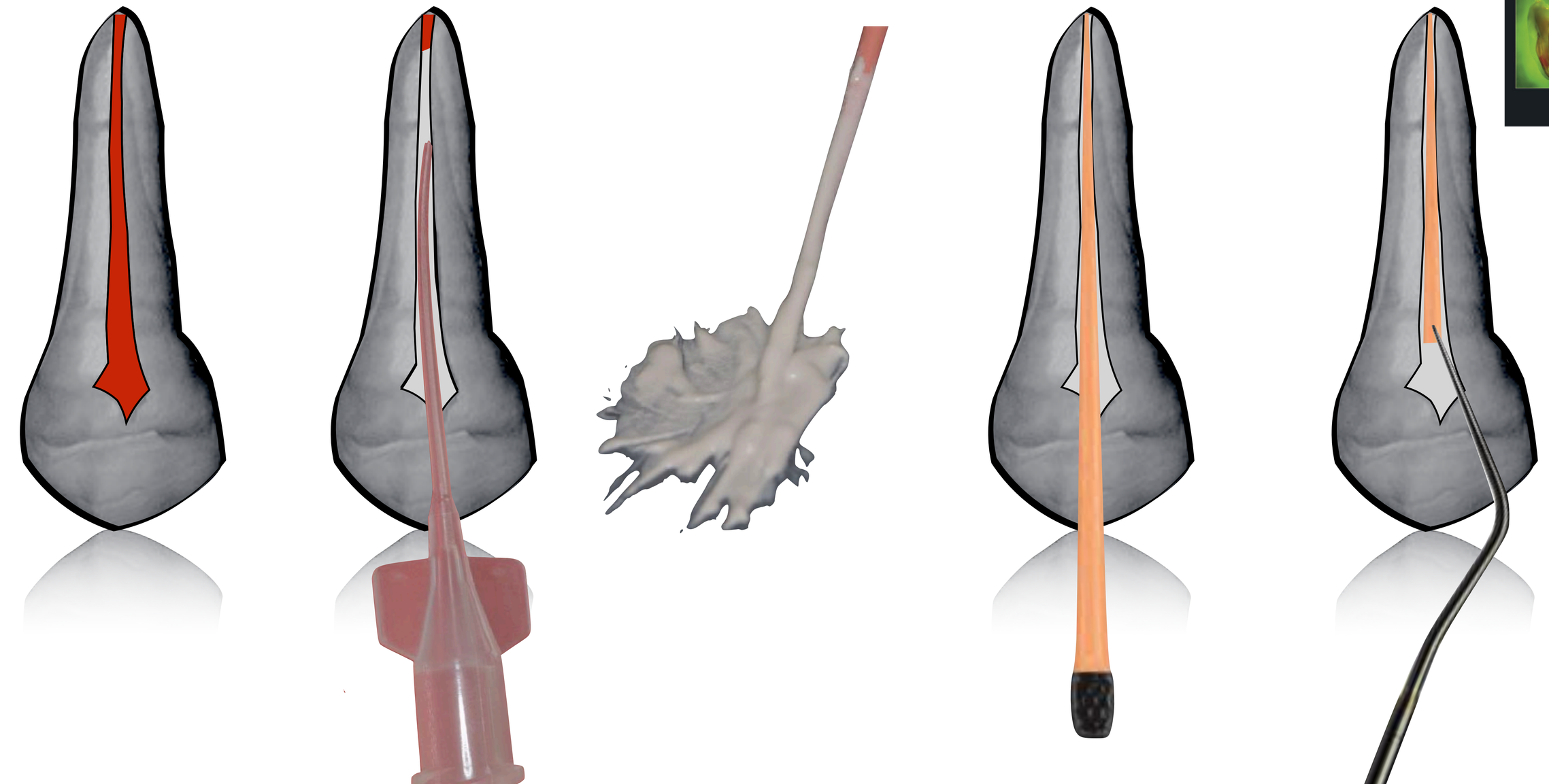
DENTAL WORLD
BIOCERAMIC SEALER

DENTAL WORLD
ITALIAN MANUFACTURER

CONDENSAZIONE IDRAULICA 0.4 TAPER

VANTAGGI

Elevata biocompatibilità
Non tossico
Idrofilo
Radiopacità
Adesione alla dentina
Dimensionalmente stabile
Bioattivo e osteoinduttivo
Bassa risposta infiammatoria
Formazione di idrossiapatite
Antibatterico (pH basico)
Facile da usare e maneggiare




ACCADEMIA ITALIANA DI ENDODONZIA
COLLANA DI MONOGRAFIE
OTTURAZIONE DEL SISTEMA CANALARE
MAURO VENTURI, FEDERICA FONZAR
GIANLUCA FUMEI, CARLO PIANA
Coordinamento scientifico
MAURO VENTURI
PICCIN


CE 0425
FILLROOT st
(IT) Materiale per otturazioni canalari
(EN) Root canal sealing material
(FR) Matériau de scellement du canal radiculaire
DW
FILLROOT


CE 0425
REMAKEROOT ht
(IT) Materiale per otturazioni canalari
(EN) Root Canal Sealing Material
(FR) Matériau de scellement du canal radiculaire
DW
REMAKEROOT
CE 0425

Remake Root HT

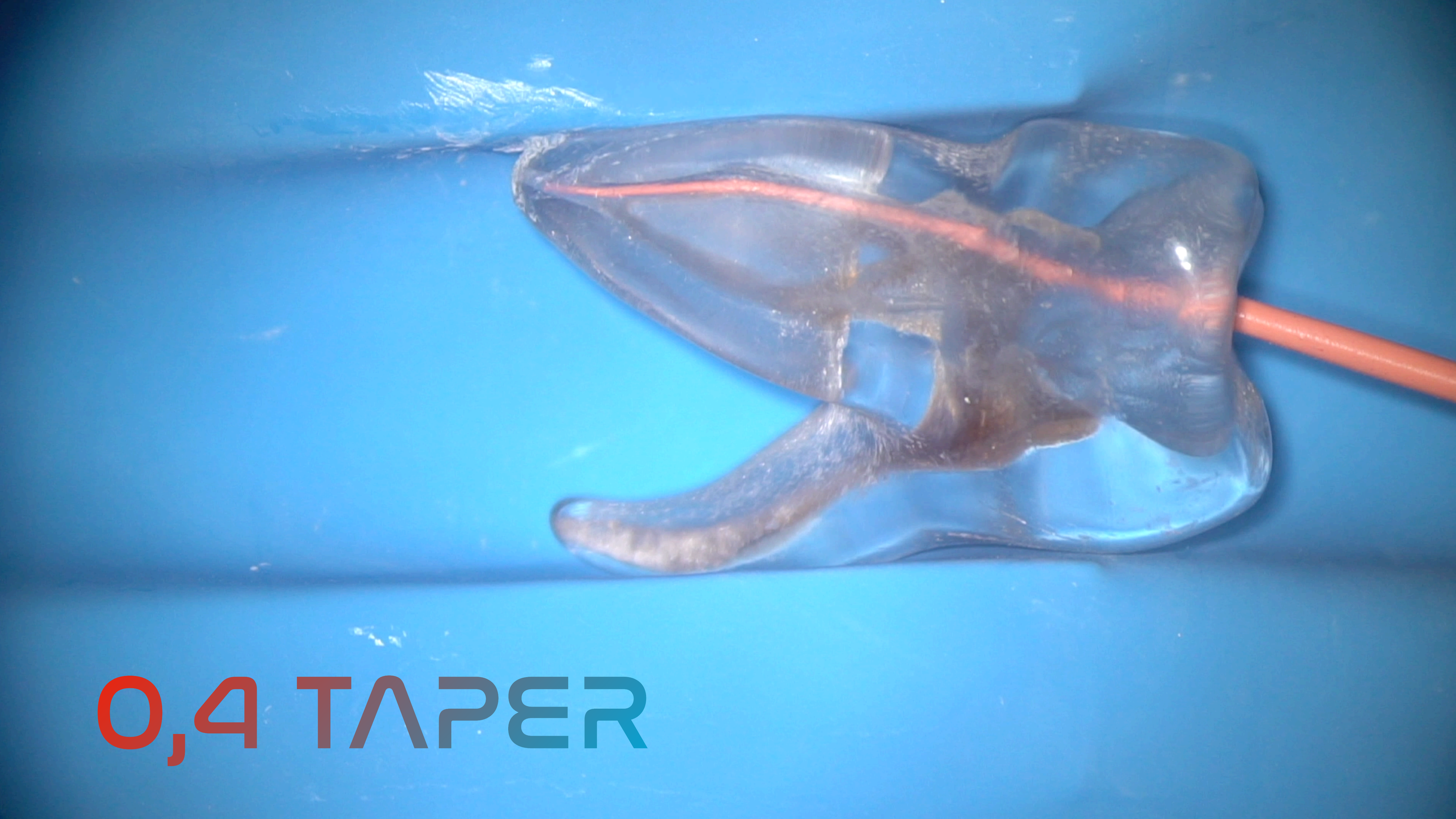
Pre-mixed bioceramic sealant.

FLOW hydraulic cement based on calcium aluminosilicate.

- **Tempo di lavorazione:** Nessuno
- **Tempo di presa (indurimento):** 2.5 ore
- **Fluidità:** 22mm
- **Spessore:** 17mm
- **Resistenza alla compressione:** 60MPa(7giorni)

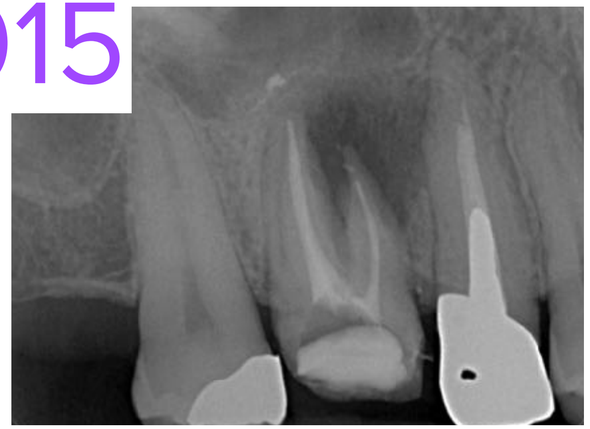
- Generation of calcium hydroxide
- Three-dimensional adherent sealing
- Generation of hydroxyapatite
- Chemical bonding to gutta-percha and dentin
- Setting time: work (25 min.)
- Setting time: total (2.5 hours)
- No contraction
- Wet field activation
- Resistance 100 MPa

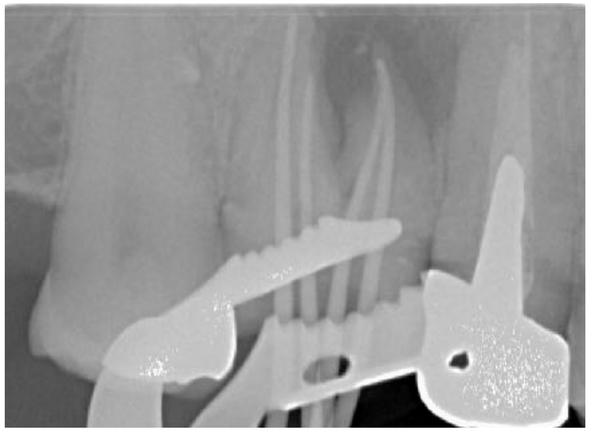
- Calcium aluminosilicate with high degree of purity
- Resin-free
- Eugenol-free
- Ready to use
- Pre-mixed injectable one-component paste
- Compatible with Thermafil

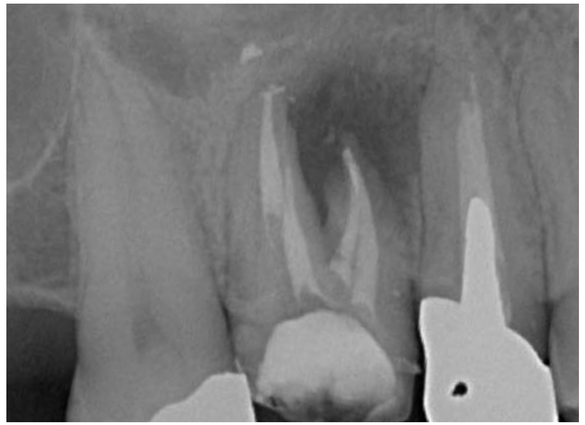

0,4 TAPER

Idraulic condensation

2015







2025


2021
2023

PRO FLEX NHA

NANO RIVESTITO ATTIVAZIONE TERMICA

2023

PRO FLEX NHA

NANO RIVESTITO ATTIVAZIONE TERMICA

2023

2024

KEY POINT

TRATTAMENTO ENDODONTICO MINI-INVASIVO

STRUMENTI NI-TI NANO-COATED

CEMENTI BIOCERAMICI

GFUMEI@TISCALI.IT

DRGFUMEIENDODONTICS

WWW.SHAPE-IT-ENDO.SOCIALACADEMY.COM

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Shape IT endo

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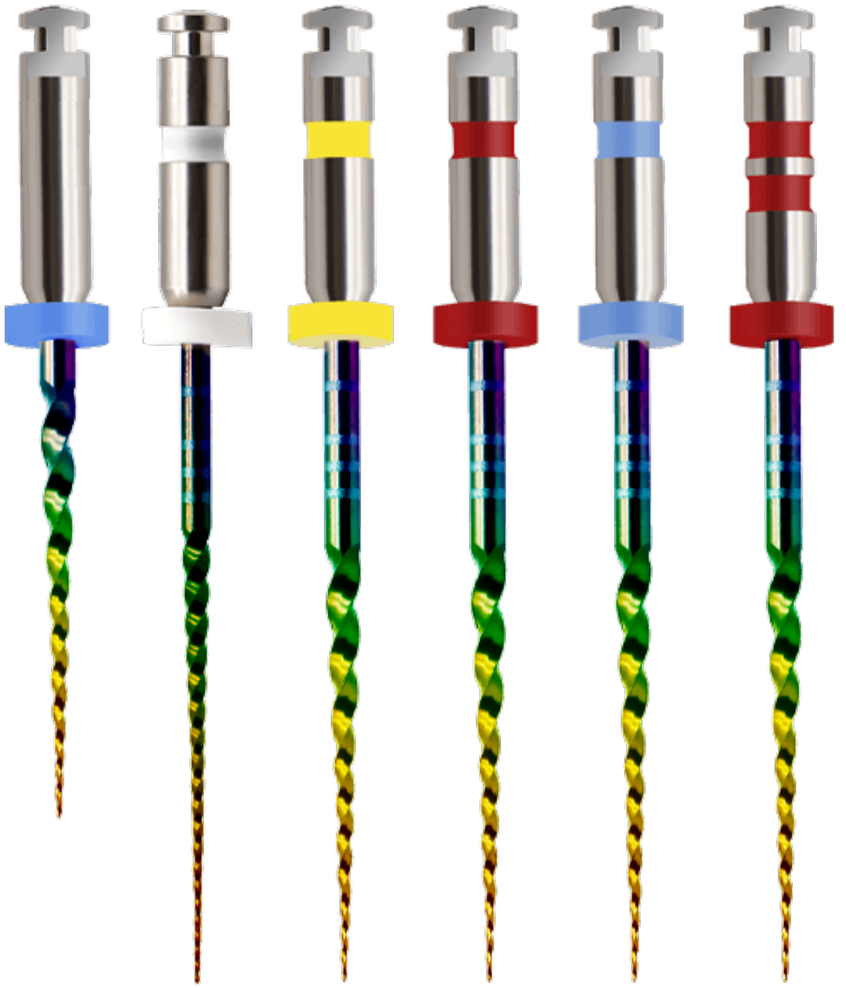
Grazie
Gianluca


HANDS
ON!



I STEP

Working lenght

II STEP

Opener Preflaring 20-10

400 rpm

T 2,5 Ncm

III STEP

GLYDER Glide path 15/2-6

300 rpm

T 1,8 Ncm

IV STEP

Shaping

20.4

25.4

30.4

25.6

400 rpm

T 2,5 Ncm