

New from VDW!!



RECIPROC[®]
one file endo



Endo Easy Efficient[®]

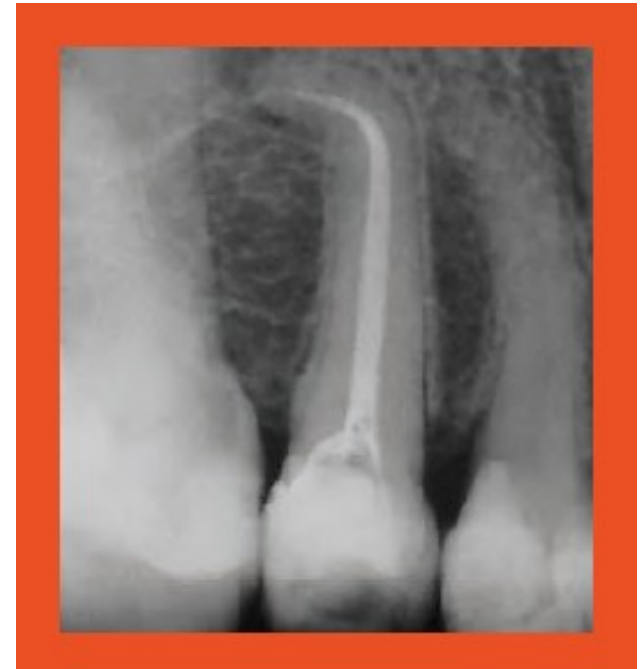
RECIPROC® one file endo

A Brand New Concept of Root Canal Preparation

- With one file only
- In reciprocation
- No hand filing in the majority of cases

RECIPROC® -

An innovation in drive systems and clinical procedures



Tooth 25 without manual instrumentation,
Dr. Ghassan Yared, Canada

Benefits of the RECIPROC® concept

□ Simplicity

- No need to change instruments
- Ready to use, sterile single-use instruments
- No hand filing in the majority of cases

□ Safety:

- Reduced risk of instrument fracture
- Minimised risk of contamination

Benefits of the RECIPROC® concept

- Time-saving
 - Less work steps
 - Faster preparation
 - No cleaning or sterilisation

Basis of the treatment concept

- Article by Dr. Ghassan Yared, JOE 2008
- Article by Dr. Ghassan Yared for the RECIPROC® launch

doi:10.1111/j.1365-2591.2007.01351.x



CLINICAL ARTICLE

Canal preparation using only one Ni-Ti rotary instrument: preliminary observations

G. Yared

102-63 Dawson Road, Guelph, ON N1H 1 B1, Canada

Abstract

Yared G. Canal preparation using only one Ni-Ti rotary instrument: preliminary observations.

Ein neues Konzept:

Wurzelkanalaufbereitung mit nur einem reziprok arbeitenden Instrument ohne initiale Handaufbereitung.

Ghassan Yared DDS MSc, Endodontologe

Eine effiziente Säuberung und Aufbereitung des Wurzelkanalsystems ist von größter Wichtigkeit, um die biologischen und mechanischen Zielsetzungen der Wurzelkanalaufbereitung zu erfüllen (Sjögren et al. 1997). Ziel einer Wurzelkanalbehandlung ist es, sowohl das gesamte Pulpagewebe, Bakterien und entsprechende Nebenprodukte zu entfernen als auch eine für die Füllung adäquate Kanalform zu schaffen.



Ghassan Yared DDS MSc, Endodontist



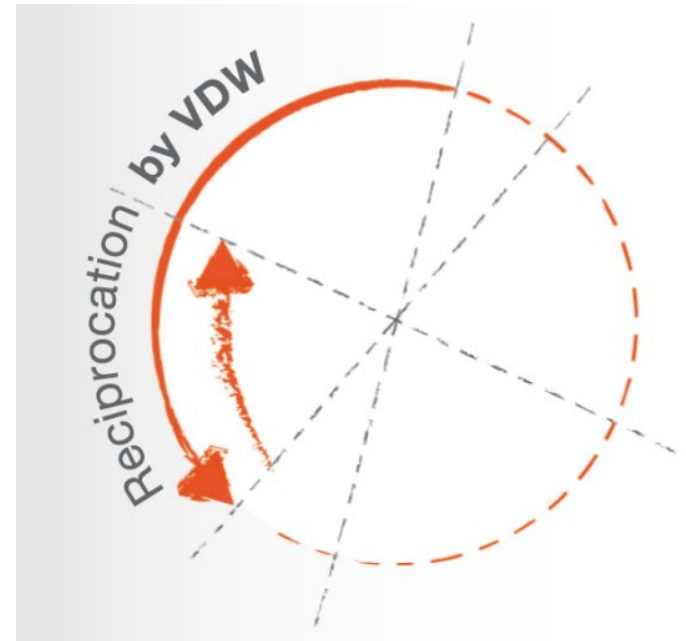
Reciprocation



Reciprocation

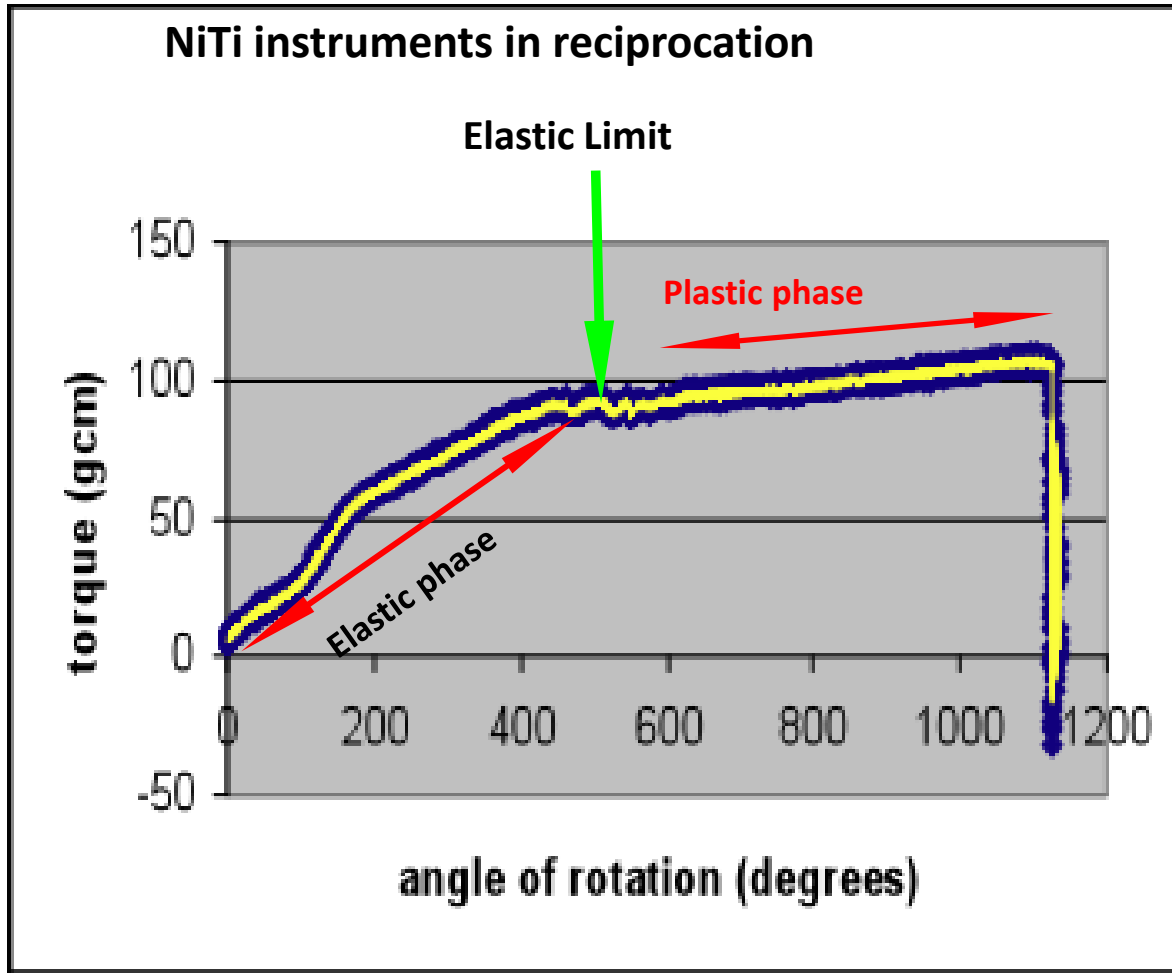
Benefits

- ❑ Root canal preparation with one single instrument
- ❑ Minimisation of instrument fractures



Reciprocation

Benefits



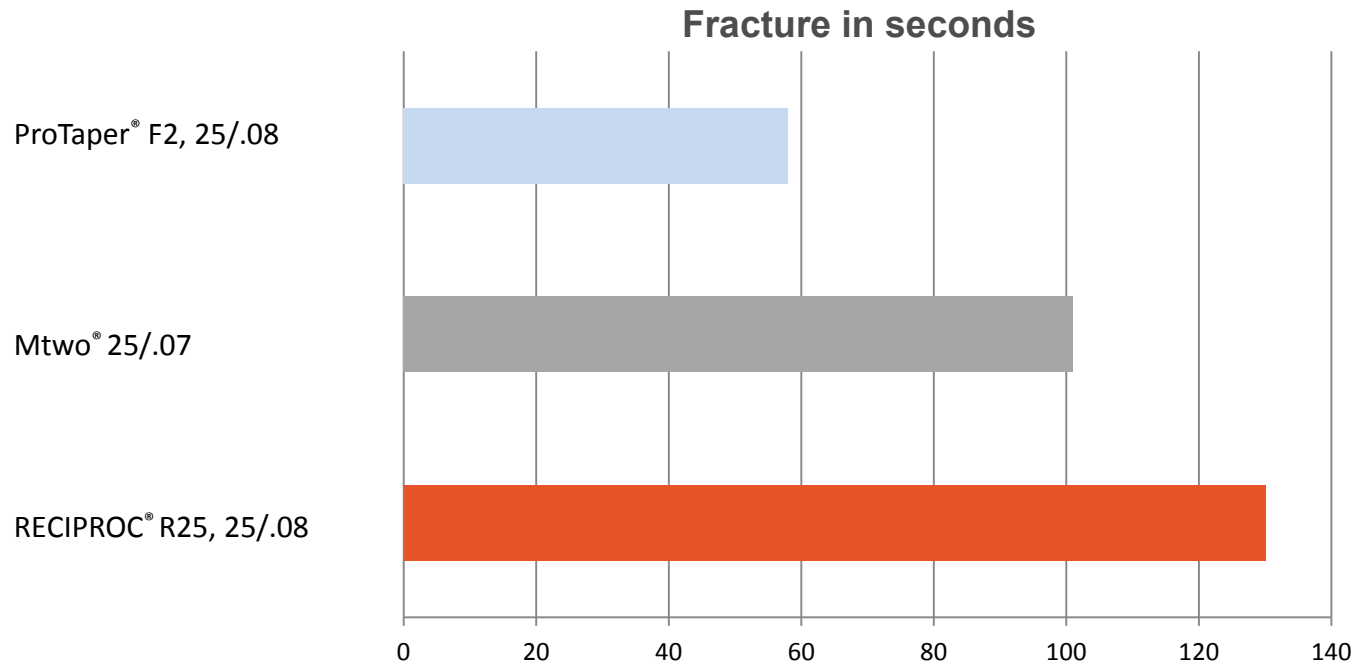
Dr. Ghassan Yared, Canada



Endo Easy Efficient®

Cyclic fatigue

- RECIPROC[®] shows high resistance to cyclic fatigue
60° angle of curvature, 5 mm radius

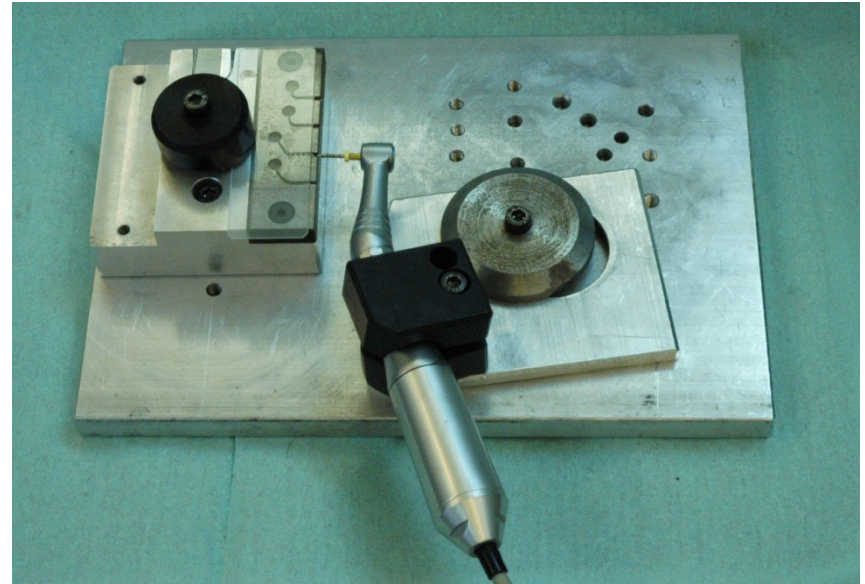


Dr. Nicola Grande, University of Rome La Sapienza, Rome, Italy

Test equipment to determine cyclic fatigue, Dr. Nicola Grande, Rome

Illustration above

Test device to determine cyclic fatigue



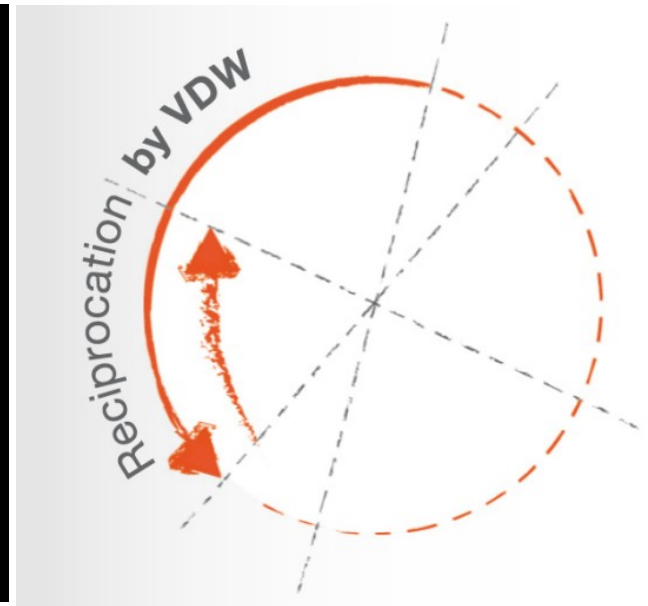
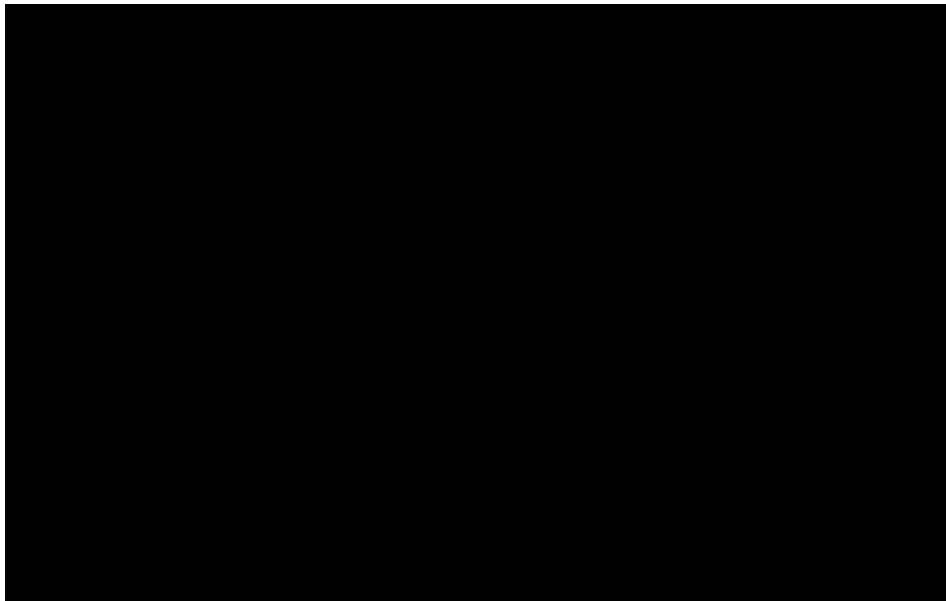
Illustrations below:

Steel plate with artificial root canals with diameter and taper corresponding to the instrument to be tested



Reciprocation

in vitro with RECIPROC® R25



Dr. Ghassan Yared, Canada

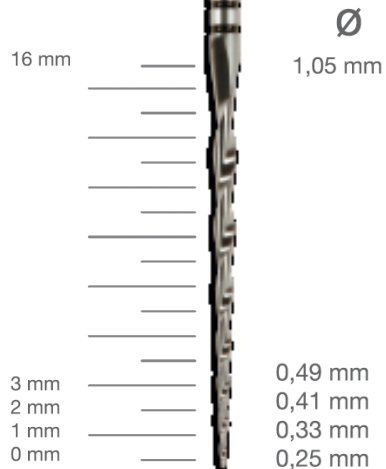


Endo Easy Efficient®

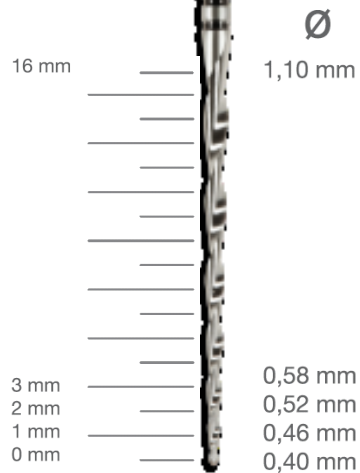
The RECIPROC® system

Sizes and dimensions of instruments

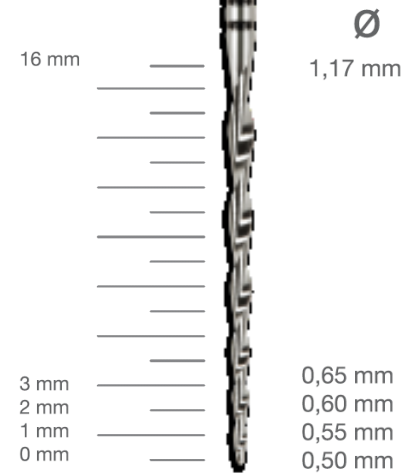
Narrow canals



Medium canals



Large canals



The RECIPROC® system

Sizes and dimensions of instruments

- Regressive taper for a preparation without unnecessary loss of tooth substance
 - RECIPROC® instruments have a smaller instrument diameter at the end of the working part than most other conical NiTi instruments of equal size at the tip e.g.:

	Mtwo®	RECIPROC®
after 16 mm	25/.06 Ø 1.21 mm	R25 Ø 1.05 mm
after 16 mm	40/.06 Ø 1.36 mm	R40 Ø 1.10 mm

The RECIPROC® system Instruments



- Benefits:
 - Higher flexibility
 - Reduced cyclic fatigue



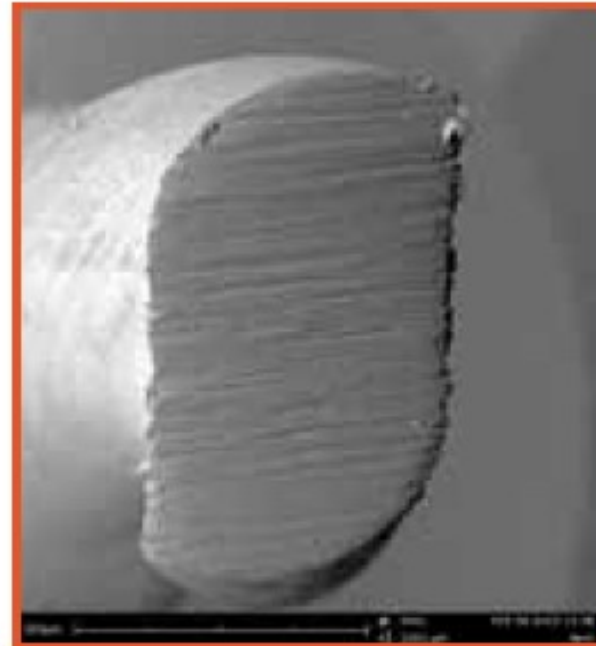
The RECIPROC[®] system

Design

Non-cutting tip



S-shaped cross-section

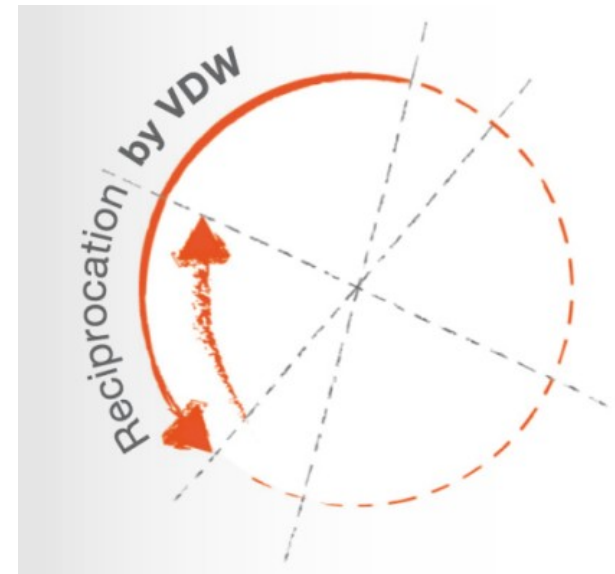


Dr. David Sonntag, University of Düsseldorf

The RECIPROC® system

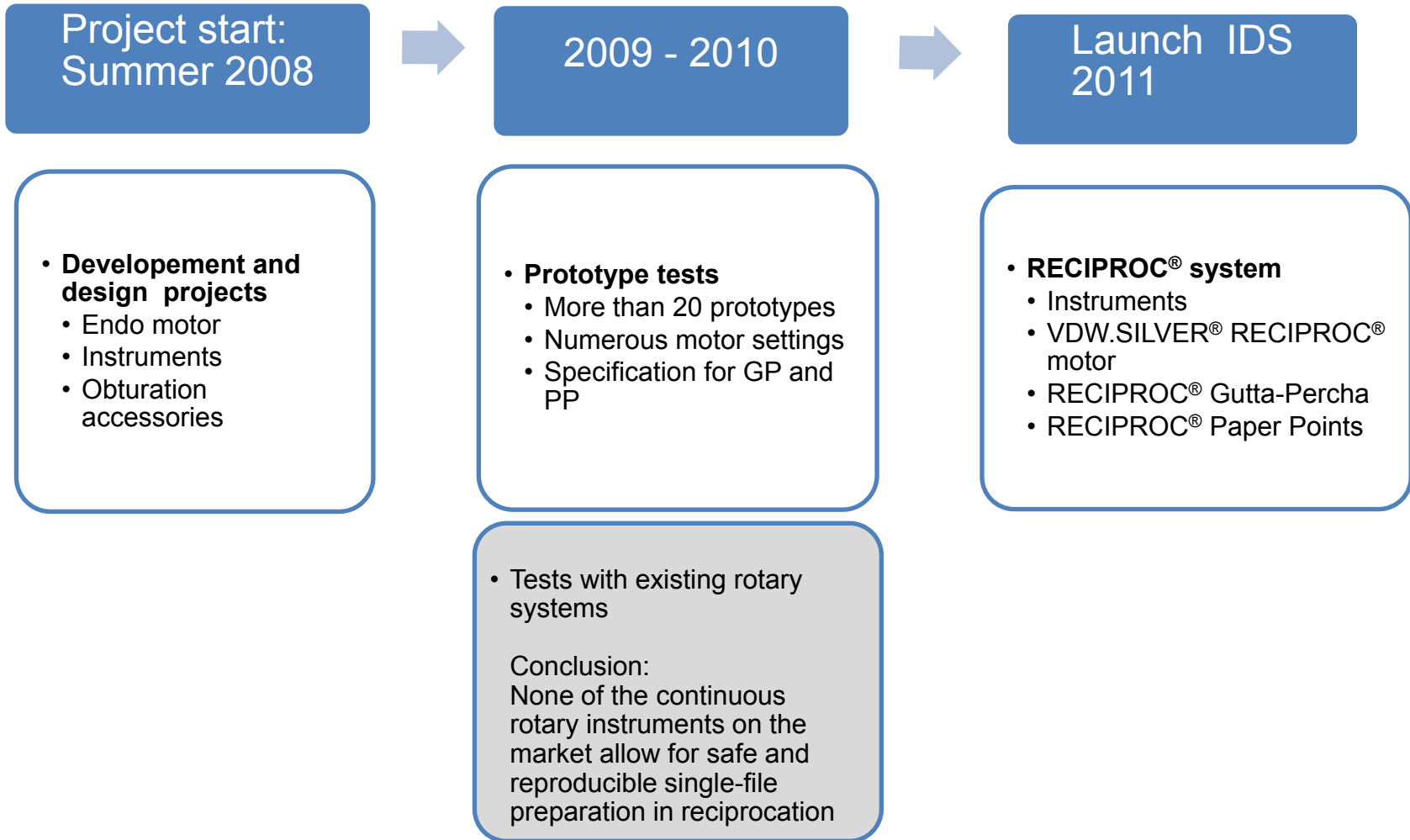
Why a "mirrored" design?

- ❑ RECIPROC® cuts in a counter-clockwise direction
 - Safety aspect
 - Certification of instrument for use in reciprocation with VDW motors e.g. VDW.SILVER® RECIPROC®



The RECIPROC® system

Development

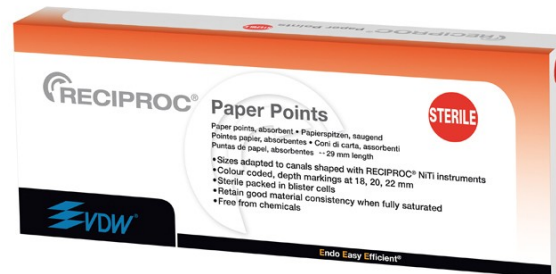


The RECIPROC® system

Obturation products

m-wire®
nickel titanium

- ❑ RECIPROC® Paper Points, sterile
- ❑ RECIPROC® Gutta-Percha
 - Alpha-phase - suitable for:
 - Single cone technique
 - Vertical compaction



Endo Easy Efficient®

The RECIPROC® system

VDW.SILVER® RECIPROC® motorC

- ❑ New endo motor for reciprocating and continuous rotary NiTi systems

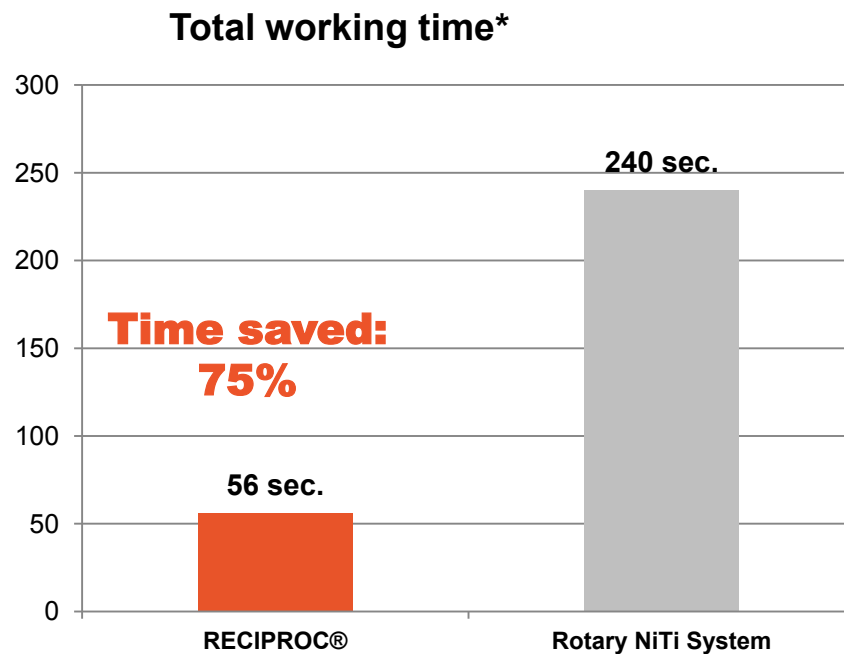
- ❑ File library:
 - Reciprocating systems
 - RECIPROC®, WaveOne™
 - Rotary systems
 - Mtwo®, FlexMaster®, ProTaper®, K3™, Gates, Dr.`s Choice



The RECIPROC® system

Benefits

- ❑ Root canal can be prepared with **only one instrument**
- ❑ **Time-saving** due to less work steps



*Checking patency, rinsing canal, changing instrument and preparing root canal

Internal studies VDW Munich, 2010



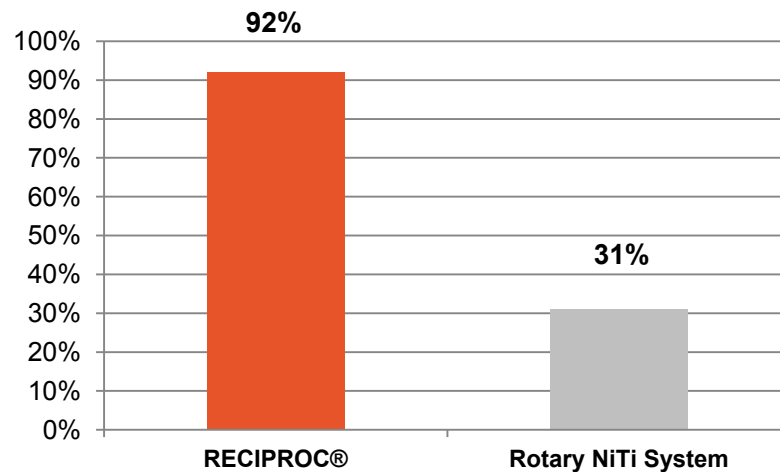
Endo Easy Efficient®

The RECIPROC® system

Benefits

- ❑ Easy to learn
- ❑ Less procedural errors for less experienced practitioners

Percentage of users who, after a short training period, managed to prepare three consecutive canals under standard conditions without procedural errors



Internal studies , VDW Munich, 2010



The RECIPROC® system

Benefits

- ❑ **Safe preparation** thanks to:
 - **Minimised risk of instrument fracture** due to precise angles of reciprocation specific to the instrument design
 - Cyclic fatigue resistance thanks to single-use

- ❑ **No hand filing** in the majority of cases
 - "The reciprocation technique's centring ability together with the design of the RECIPROC® instrument and its increased cutting ability render establishing a glide path unnecessary." Dr. Ghassan Yared, Ontario



The RECIPROC® system

Benefits


- ❑ Preparation of narrow and severely curved canals due to the centring ability of the instrument
- ❑ The shape obtained by RECIPROC® enables **cold and warm obturation techniques**




Dr. Ghassan Yared, Kanada,
Teeth 25 (left), Teeth 37 (right)

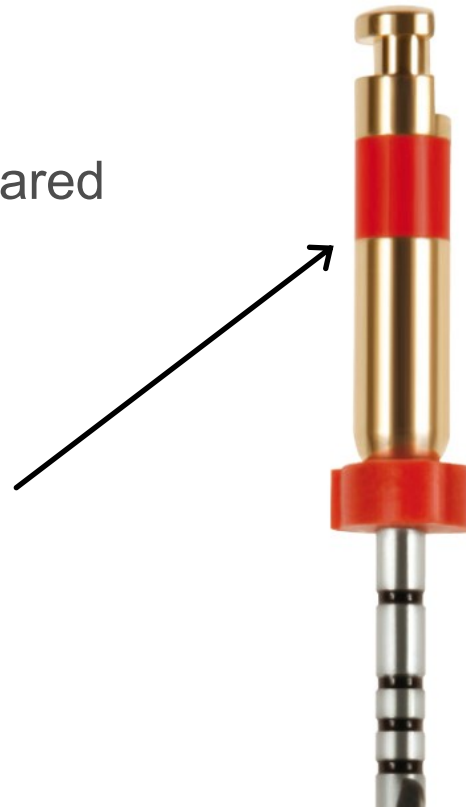
The RECIPROC® system

Specifics

- ❑ Sterile instruments 

- ❑ Single use: 
 - Subject to higher stress compared to rotary systems
 - 1 instrument instead of 4-5 instruments
 - Max. one treatment
 - Max. one molar

- ❑ Cannot be autoclaved!



Trend towards single-use

- ❑ Requirements regarding root canal preparation with rotary instruments (class B critical) are increasing.
- ❑ Studies have shown that current cleaning and decontamination procedures could not completely remove remnants of tissue adhering to instruments (Dr. David Sonntag, 2009).

Basic Research—Technology

Effect of Prion Decontamination Protocols on Nickel-Titanium Rotary Surfaces

David Sonntag, DMD, and Ove A. Peters, PD, DMD, MS, FICD**

Abstract

Decontamination of instruments is a prerequisite for their potential reuse but may affect surface integrity. Hence, the effect of prion removal protocols on 7 brands of nickel-titanium files was investigated. Baseline debris scores were determined under magnification

Prions are proteins that have been linked to fatal neurodegenerative diseases commonly called transmissible spongiform encephalopathies. The term *prion* (PrP) was coined by Prusiner (1) in 1982, when he described a protein with a nonpathogenic isoform PrP^C and the infectious agent PrP^{Sc} as a cause of scrapie, a veterinary disease. Similar agents may infect humans with Creutzfeldt Jacob Disease (CJD), which in fact



Remnants of tissue after cleaning and sterilisation



Abb. 4 ▲ Nickel-Titan-Instrument mit Rückständen nach klinischer Anwendung trotz Durchführung eines Reinigungsprotokolls zur Prionendekontamination

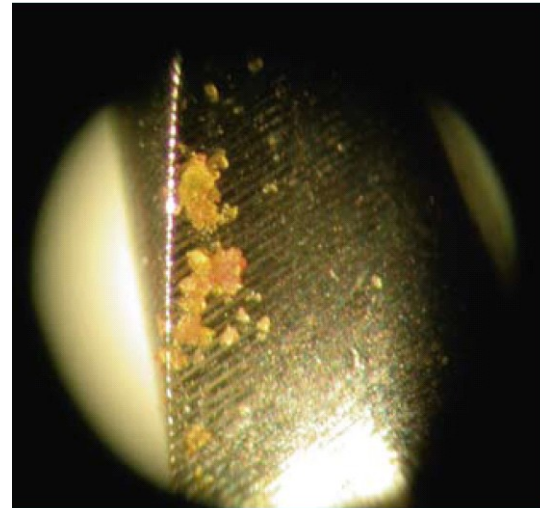


Abb. 5 ▲ Organische Rückstände auf einem Edelstahl-Handinstrument nach Sterilisationsprozess

Dr. David Sonntag, University of Düsseldorf

Industrially cleaned and gamma-sterilised endodontic instruments by VDW



Validated processes and TÜV certified quality management at VDW

- ❑ VDW is a certified manufacturer of medical devices in accordance with **ISO 13485** medical devices - quality management systems

- ❑ VDW strictly adheres to the regulations of DIN EN ISO:
 - **[EN ISO 11607-1]** Packaging of medical devices for sterilisation, requirements for materials, sterile barrier systems and packaging systems

 - **[EN ISO 11137-1]** Sterilisation of health care products - radiation - requirements for development, validation and routine control of a sterilisation process for medical devices



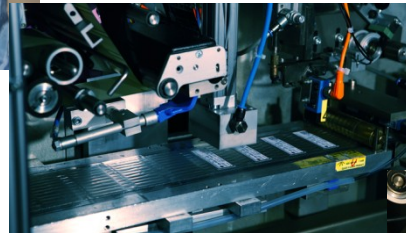
Validated processes and TÜV certified quality management at VDW



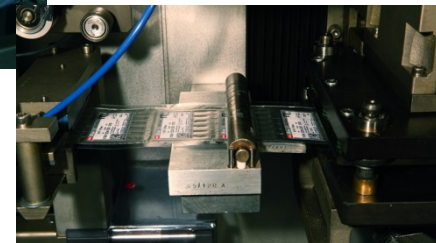
Washing machine for endodontic instruments



Cleaned endodontic instruments are transported through a double door system into the clean room



Instruments are inserted mechanically into blister packaging and sealed



Blister packaged instruments



Cleaned, blister packed and gamma-sterilised end product, e.g. RECIPROC®



Enhanced safety for patients, practitioners and practice personnel

- No sterilisation prior to first use
- Ready to use instruments, individually packed
- Sterile assortment: stainless steel instruments, rotary and reciprocating NiTi instruments, obturation accessories



Enhanced safety for patients, practitioners and practice personnel

☑ Sterile endodontic instruments will support compliance with infection control regulations in your dental practice.

☑ The sterilisation procedure applied to VDW endodontic instruments has been developed and validated for sterilisation in accordance with [EN ISO 11137-1]. Sterile endodontic instruments are furthermore labelled with the symbol **STERILE R** to indicate their sterilisation with gamma radiation.

☑ The red dot **STERILE** on each instrument package further helps differentiation between sterile and non-sterile instruments.





Look for the red dot.
VDW. Over 30 years' experience
in sterile endo products.



Endo Easy Efficient®

Single-use convenience

- Easy and safe
- No change of instrument characteristics due to material wear
- Elimination of cross-contamination
- Avoidance of fatigue fractures
- Time- and cost-efficiency due to the fact that root canal instruments do not need to be cleaned and sterilised
- No need to document frequency of use
- No need for endo boxes

Costs of single-use

- ❑ Single-use of rotary NiTi instruments is expensive:
generally min. 5 instruments à € 6.50 (Ø value) equals € 32,50
- ❑ In comparison, root canal preparation with a RECIPROC® instrument costs only € 13.00
- ❑ Saving per tooth € 19.50

Affordable single-use



	Rotary NiTi System	RECIPROC®
Instruments/treatment Ø	5	1
Use Ø	4 x	1 x
Costs/instrument Ø	6,50 €	13,00 €
Costs for instrument/treatment Ø	8,13 €	13,00 €
+ Costs for:		
Cleaning	3 x	not applicable!
Disinfection	3 x	
Sterilisation	3 x	
Documentation	3 x	
Working time	3 x	

Sample calculation

RECIPROC® clinical procedure

- Procedure remains unchanged in comparison with traditional rotary systems:
 - Pre-operative radiograph
 - Straight canal access
 - During root canal preparation, make sure the canal is free with a hand instrument
 - Irrigation protocol

Clinical procedure

Selecting the correct RECIPROC® instrument

Pre-Operative Radiograph DECISION

canal is partially or completely invisible

narrow canal

R25



Clinical procedure

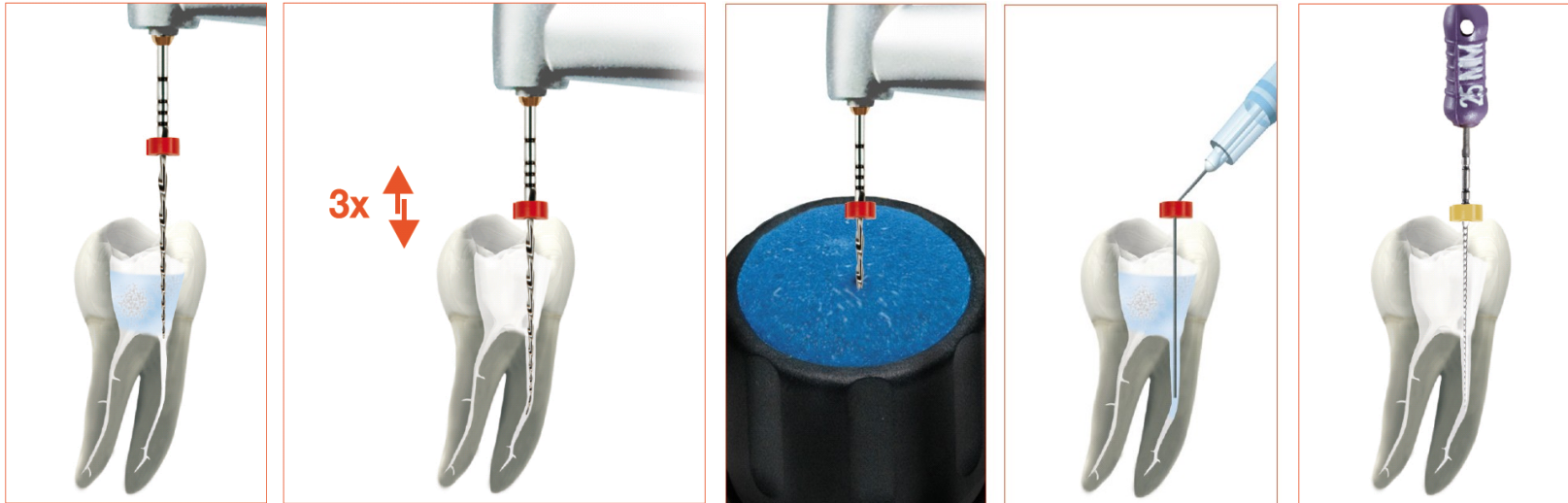


- ❑ Estimation of working length based on a pre-operative radiograph
- ❑ Set stopper at approx. 2/3 of estimated working length



Clinical procedure

- ▶ Ensure you have achieved a straight line access to the root canal entrance.



Move the instrument in a slow in-and-out pecking motion. The amplitude of the in-and-out movements should not exceed 3 mm. Only very light pressure should be applied. The instrument will advance easily in the canal. One in-and-out movement = 1 peck. **Remove the instrument from the canal after 3 pecks.**

In this way, continue root canal preparation with RECIPROC® until approx. 2/3 of the working length has been reached

Clinical procedure

Electronic length determination



- After preparation of approx. 2/3 of the root canal length, the working length is determined.



Clinical procedure

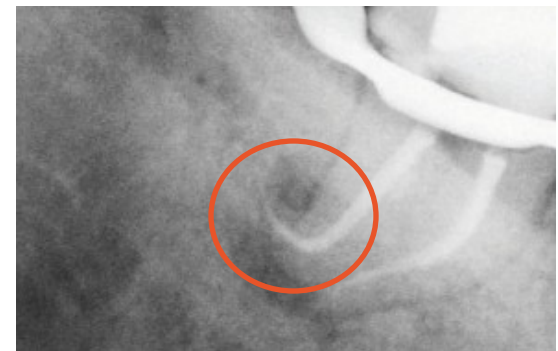
after reaching 2/3 of the working length with R25

- Hand instrument ISO size 10 used for working length determination goes to working length without being pre-curved

Preparation can be finished with R25.



Gradual curvature tooth 25
Dr. Ghassan Yared



Gradual curvature tooth 37
Dr. Ghassan Yared

Clinical procedure

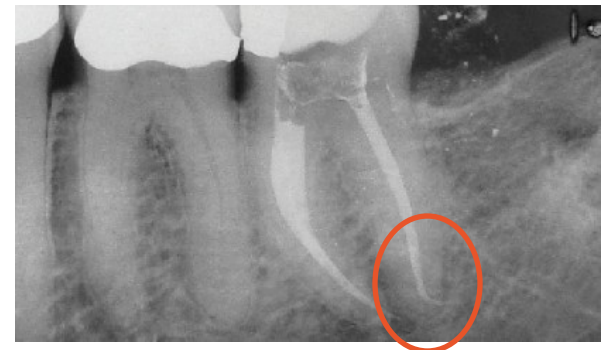
Glide path management

- ❑ Hand instrument ISO size 10 used for working length determination only goes to working length if it is **pre-curved**

→ **Glide path up to ISO 15**

If the ISO size 15 hand instrument goes to working length **without being pre-curved**, finish root canal preparation with R25.

If not, complete preparation with hand instruments



Abrupt curvature tooth 47, root canal preparation was finished manually
Dr. Ghassan Yared

Clinical procedure

Glide path management with complex anatomies

- ❑ Should RECIPROC® stop advancing in the canal or should its advancement become difficult, do not exert any apical pressure!!

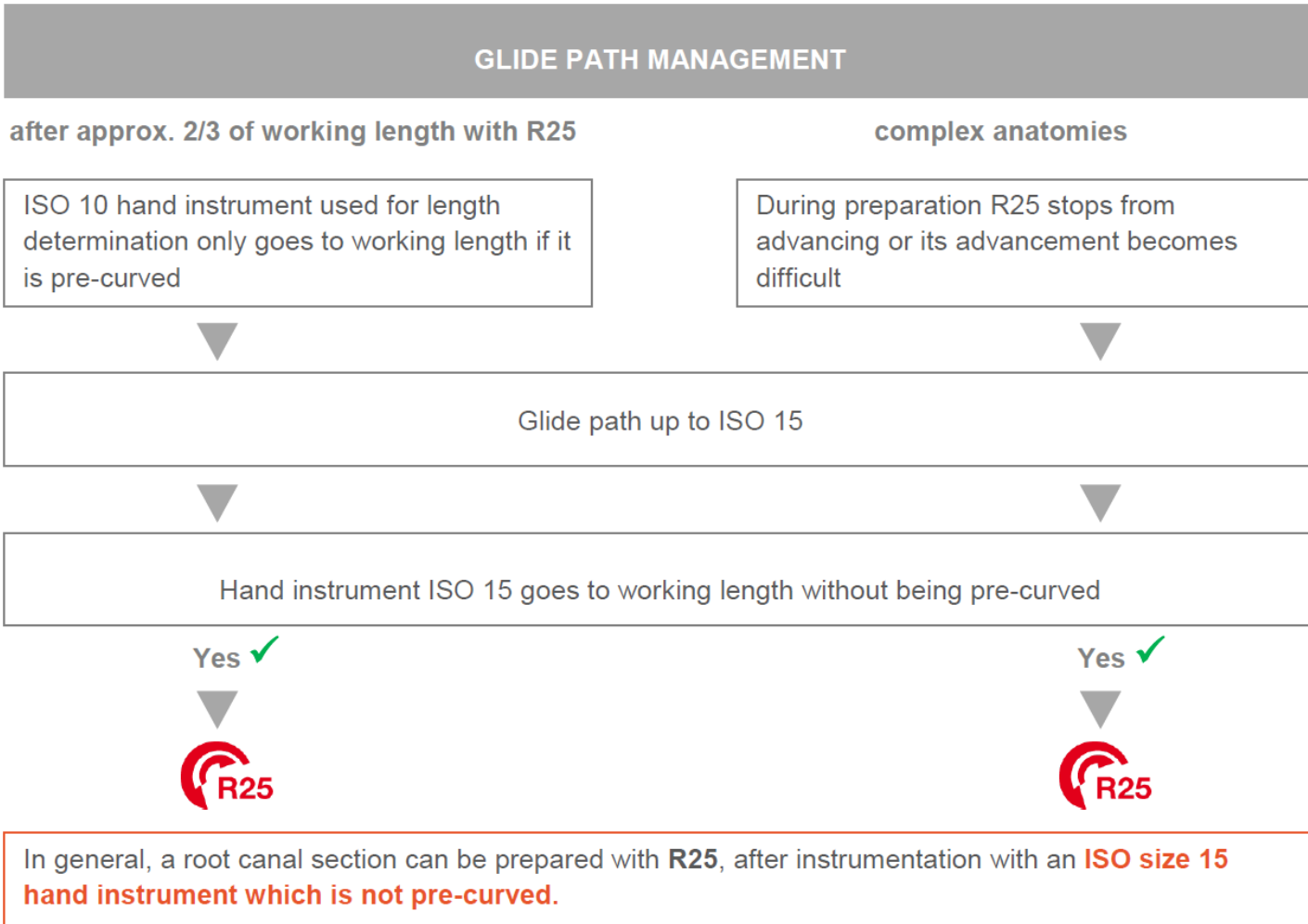
→ Glide path up to ISO 15

If the ISO 15 hand instrument goes to working length **without being pre-curved**, finish root canal preparation with R25.

In case of a complex canal anatomy: the section of a root canal where an ISO 15 hand instrument can be brought without pre-curving can be prepared with R25 to that point.

Clinical procedure

When is it necessary to create a glide path?



Clinical procedure

Selecting the correct RECIPROC® instrument

Pre-Operative Radiograph DECISION

canal is completely visible

wide or medium canal



hand instrument ISO 30 goes passively to working length

No X

hand instrument ISO 20 goes passively to working length

Yes ✓

R50



Yes ✓

R40



No X

R25



Passively means that the instrument goes directly to working length with a gentle watch winding movement (small right left rotations) but **without filing action.**

Clinical procedure

Electronic length determination



- Initial working length determination
- Set the stopper at approx. 2/3 of the estimated working length
- After preparation of 2/3 of the working length, the exact working length is determined.



What to observe when preparing a root canal with RECIPROC® !

- ❑ Do not put pressure on the instrument if it does not advance in the canal!
- ❑ Do not forget to clean the flutes regularly during preparation!
- ❑ Make sure RECIPROC® never rotates in one place should it not be able to advance apically!
- ❑ RECIPROC® instruments are sterile single-use instruments which cannot be re-used!
- ❑ Inspect the instrument visually after each work step for signs of wear!
- ❑ It is not recommended to use RECIPROC® or a continuous rotary system if the root canal has an abrupt curvature in the apical section!

Clinical procedure

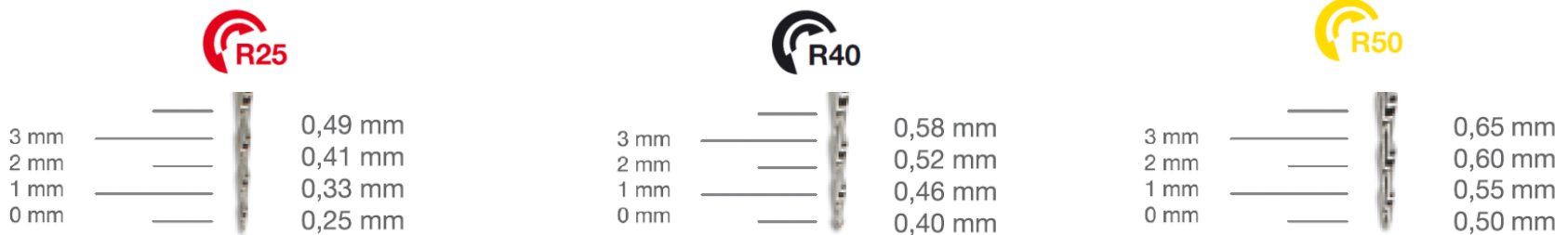
- ❑ Brushing file movement
 - Oval canals
 - Enlargement of the canal orifice
 - In general: to enlarge the root canal as necessary

Clinical procedure

What has been achieved?

□ Conical shape

- Suitable for optimum irrigation up to shortly before the apex
- Suitable for cold and warm obturation techniques









□ What is the benefit?

- Easier and safer preparation using just one instrument instead of 4-5 rotary NiTi instruments + hand instruments

Clinical procedure

Apical enlargement

			
3 mm			
2 mm	0,49 mm	0,58 mm	0,65 mm
1 mm	0,41 mm	0,52 mm	0,60 mm
0 mm	0,33 mm	0,46 mm	0,55 mm
	0,25 mm	0,40 mm	0,50 mm

□ Recommendations for apical enlargement after R25 and R40



Apical gauging with hand file ISO 30 to check the diameter, if required use R40



Apical gauging with hand file ISO 45 to check the diameter, if required use R50

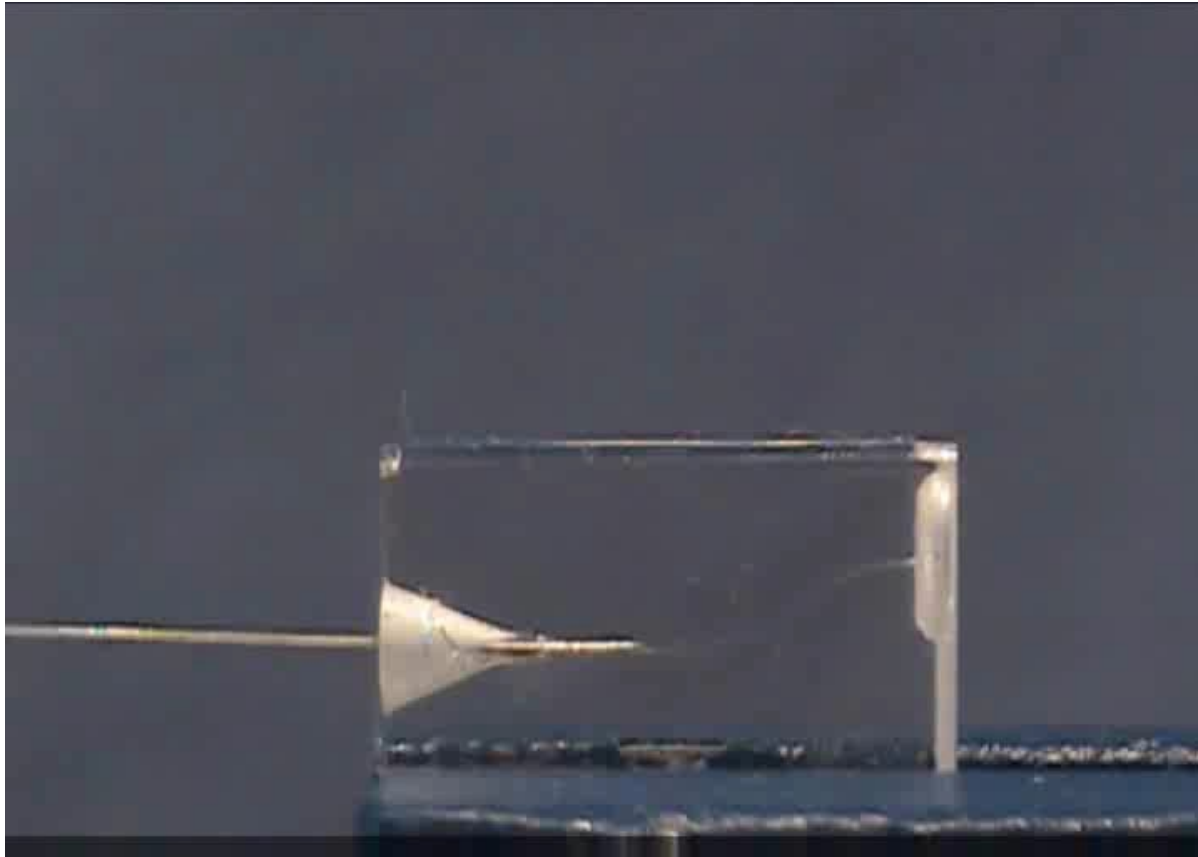
Clinical procedure

Irrigation management

- Time saved for final irrigation
- Ultrasound activated irrigation
- R25 complies with requirements for shaping prior to ultrasonic irrigation

Clinical procedure

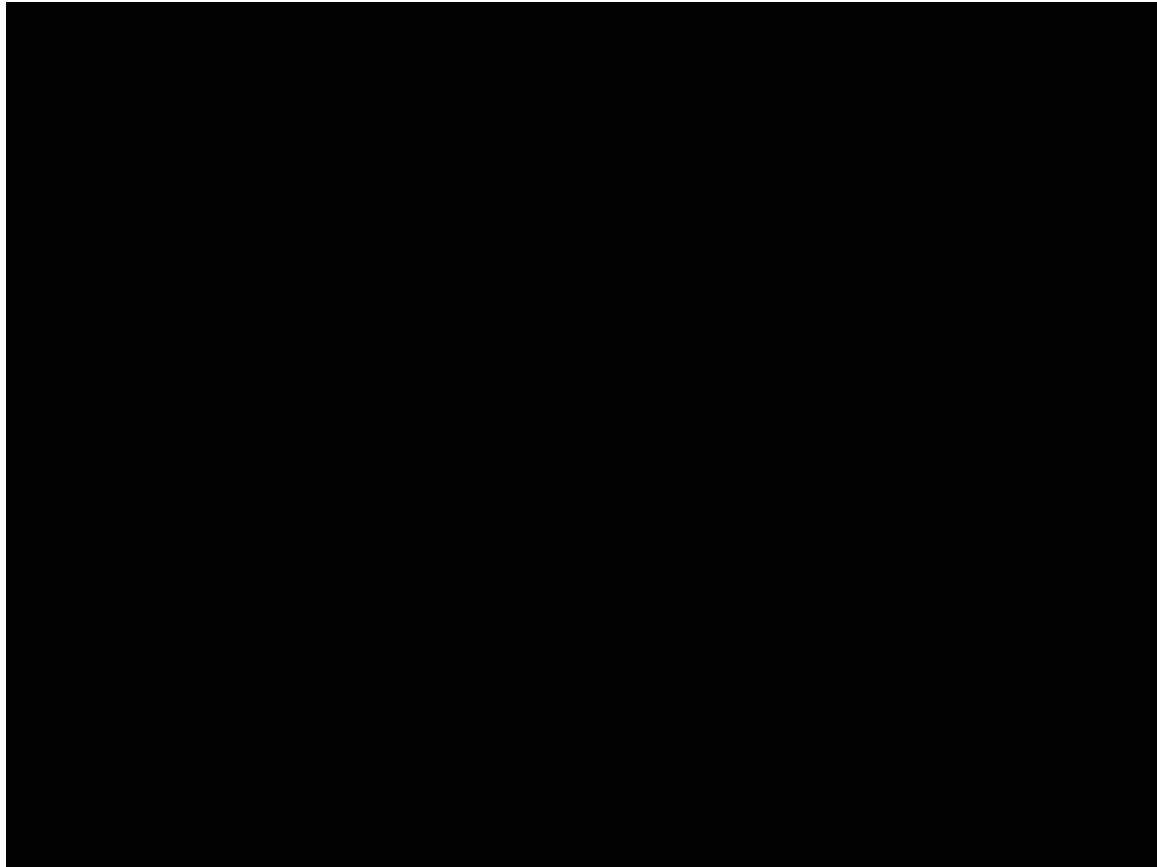
Step by Step - RECIPROC® R25



Dr. Ghassan Yared, Canada

Preparation Result

Preparation with R25, lower molar



Prof. Sergio Kuttler, USA



Endo Easy Efficient®

Preparation Result

Preparation with R25, lower molar

before



after



Prof. Sergio Kuttler, USA

FAQ for the dentist

□ FAQs



FREQUENTLY ASKED QUESTIONS

CONTENTS

- A) RECIPROC®
- B) THE RECIPROCATING TECHNIQUE WITH RECIPROC®
- C) GETTING STARTED
- D) HAND INSTRUMENTS
- E) INSTRUMENT SIZES
- F) LENGTH DETERMINATION AND OBTURATION
- G) WHAT TO KEEP IN MIND WHEN USING RECIPROC®

A) RECIPROC®

1. What is unique about RECIPROC®?

It is possible to mechanically prepare the majority of root canals with only one mechanical instrument. It is possible to eliminate the use of initial hand filing in most cases. The risk of instrument fracture is minimised due to the reciprocation motion and the instrument design. Root canal preparation with RECIPROC® is easy to learn compared to rotary systems.

2. How is it possible to prepare a root canal with RECIPROC® without initial hand filing in the majority of cases?

With continuous rotary NiTi systems it is necessary to create a glide path in order to minimise the risk of fracture due to instrument binding. During the use of a rotary instrument, the tip of the instrument may bind in the canal. For this reason, it is necessary to create an initial glide path, or a minimal canal enlargement, before using continuous rotary instruments.

"In reciprocation, clockwise and counterclockwise angles determine the amplitude of reciprocation, the right and left rotations. These angles, stored in the motor, are significantly lower than the angles at which the RECIPROC® instrument would usually fracture (if bound). [...] Therefore, the creation of a glide path to minimise binding is not required for the RECIPROC® instruments." (Dr. Ghassan Yared Ontario, Canada)

3. What are the advantages of being able to prepare a root canal without initial hand filing?

Initial hand filing is a source of many user errors (ledges etc) which can lead to a root canal treatment failure. It is more convenient, especially when access is limited such as when working in molars, and instrumentarium is reduced.

4. Is RECIPROC® appropriate for new nickel-titanium users or for advanced users?



Studies

- Gustavo De-Deus et al., OOOOE, September 2010

Assessment of apically extruded debris produced by the single-file ProTaper F2 technique under reciprocating movement

Gustavo De-Deus, DDS, MS, PhD,^a Maria Claudia Brandão, DDS, MS,^b
Bianca Barino, DDS, MS,^b Karina Di Giorgi, DDS, MS,^b
Rivail Antonio Sergio Fidel, DDS, MS, PhD,^c and Aderval Severino Luna, PhD,^d Rio de Janeiro, Brazil
VEIGA DE ALMEIDA UNIVERSITY AND RIO DE JANEIRO STATE UNIVERSITY

No significant difference was found in the amount of the debris extruded between conventional sequence of the ProTaper Universal NiTi files and the single-file ProTaper technique. In contrast, the hand instrumentation group extruded significantly more debris than both NiTi groups.



Studies

- Gustavo De-Deus et al., IEJ, November 2010

International Endodontic Journal

doi:10.1111/j.1365-2591.2010.01756.x

Extended cyclic fatigue life of F2 ProTaper instruments used in reciprocating movement

G. De-Deus¹, E. J. L. Moreira², H. P. Lopes³ & C. N. Elias⁴

¹Veiga de Almeida University, Rio de Janeiro; ²UNIGRANRIO School of Dentistry, Rio de Janeiro; ³ABE/RJ and UNESA, Rio de Janeiro; and ⁴Military Institute of Engineering, Biomaterials Laboratory, Rio de Janeiro, RJ, Brazil

Reciprocating movement resulted in a significant longer cyclic fatigue life.



Studies

- Gustavo De-Deus et al., JOE, November 2010

Basic Research—Technology

Suboptimal Debridement Quality Produced by the Single-file F2 Protaper Technique in Oval-shaped Canals

Gustavo De-Deus, DDS, MS, PhD, Bianca Barino, DDS, MS,* Renata Quintella Zamolyi, MD, MS,† Erick Souza, DDS, MS, PhD,‡ Albino Fonseca, Júnior, MD, MS,|| Sandra Fidel, DDS, MS, PhD,§ and Rivail Antonio Sergio Fidel, DDS, MS, PhD¶*

The debridement quality of the single-file F2 ProTaper technique was suboptimal in oval canals. The debridement quality of single-file F2 ProTaper was similar to the full range of ProTaper instruments in round canals.



Studies

- You, et al., JOE, Dezember 2010

Basic Research—Technology

Lifespan of One Nickel-Titanium Rotary File with Reciprocating Motion in Curved Root Canals

Sung-Yeop You, DDS, Kwang-Shik Bae, DDS, PhD, Seung-Ho Baek, DDS, PhD, Kee-Yeon Kum, DDS, PhD, Won-Jun Shon, DDS, PhD, and WooCheol Lee, DDS, PhD

One F2 file can be safely used to working length of curved canals at least six times under reciprocating motion.



Studies

- Valera-Patino et al., JOE, Januar 2010

Basic Research—Technology

Alternating versus Continuous Rotation: A Comparative Study of the Effect on Instrument Life

Purificación Varela-Patiño, DDS, MSc, PhD, Adalce Ibañez-Párraga, MSc,**

Berta Rivas-Mundiña, PhD, Giuseppe Cantatore, DDS, MSc, PhD,†*

*Xosé Luis Otero, DDS, MSc, PhD,‡ and Benjamin Martin-Biedma, DDS, MSc, PhD**

The results indicate that instruments used with alternating rotation have a higher mean number of uses compared with the continuous rotation group.



Products

VDW.SILVER® RECIPROC® + RECIPROC® System Kit

New endo motor for reciprocating and continuous rotary nickel-titanium systems including 12 RECIPROC® instruments, RECIPROC® Paper Points and RECIPROC® Gutta-Percha (see RECIPROC® System Kit)

Working length	REF
21 mm	1163 021 611
25 mm	1163 025 611

RECIPROC® System Kit

Contents:

Blister of 6 instruments R25

Blister of 6 instruments assorted, 3 x R40, R50 each

Training model

RECIPROC® Paper Points assorted, sizes R25, R40, R50

RECIPROC® Gutta-Percha assorted, sizes R25, R40, R50

User card

Brochure, directions for use



Products

RECIPROC® System Kit

Working length	REF
21 mm	1211 021 000
25 mm	1211 025 000



Products

RECIPROC® Instruments

Single sizes



Blister of 6 instruments		21 mm	25 mm	31 mm
R25	●	0212 021 025	0212 025 025	0212 031 025
R40	●	0212 021 040	0212 025 040	0212 031 040
R50	●	0212 021 050	0212 025 050	0212 031 050
Blister of 4 instruments		21 mm	25 mm	31 mm
R25	●	0012 021 025	0012 025 025	0012 031 025

Assortments



Blister of 6 instruments		21 mm	25 mm	31 mm
3 x R40, 3 x R50		0212 021 233	0212 025 233	0212 031 233
Blister of 4 instruments		21 mm	25 mm	31 mm
2 x R25, 1 x R40, 1 x R50		0012 021 200	0012 025 200	0012 031 200



Products

RECIPROC® Gutta-Percha

Box of 60 pieces

Size		28 mm
R25	●	0214 028 025
R40	●	0214 028 040
R50	●	0214 028 050
40 x R25, 10 x R40, 10 x R50		0214 028 237

RECIPROC® Paper Points



Box of 144 pieces

Size		29 mm
R25	●	0216 029 025
R40	●	0216 029 040
R50	●	0216 029 050
96 x R25, 24 x R40, 24 x R50		0216 029 237



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