



R-Endo[®] Re-treatment : the solution



*We invent,
you succeed!*

We invent R-Endo®.
You succeed your retreatments.

Summary

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Introduction

Endodontic Re-Treatment (ERT) is needed following the failure of an initial endodontic treatment due to an incomplete or inappropriate filling with or without apical periodontite, untreated canal, broken instrument, clinical and X-ray associated signs● The goal is the "*ad integrum*" healing of the existing pathology●

This difficult procedure is done after clinical and radiographical analysis and from the moment that it can be implemented without any iatrogenic risk to the tooth● Any over treatment must be avoided●

The ERT comprises two steps: coronal conditioning precedes re-preparation of the canal● The latter can be achieved with a specific sequence using NiTi rotary instruments called R-Endo®, this is the first total concept dedicated to ERT●

In the same way as for HERO 642® and HERO Shaper®, the R-Endo® sequence has been developed by the R&D Laboratory of MICRO-MEGA®. It is adapted to the materials generally encountered during ERT such as gutta percha and filling pastes●

Efficiency, flexibility, parietal cleaning of the canal, respect of the canal anatomy, safety and short procedural time are the major advantages● R-Endo® files allow apical irrigation to aid the disinfection of the apical zone and ideal preparation of the canal for three-dimensional filling●

R-Endo[®] / InGeT[®] the first total


R-Endo[®]: first method for the endodontic retreatment

- A simple protocol with 5 instruments.
- Files especially dedicated to ERT: tapers, pitches and lengths are adapted to each zone of the canal space.
- Efficient removal of the previous filling material.
- Parietal cleaning of the root canal.
- Clear and easy identification of the file: the colour of the handle gives its taper.
- Respect of the initial canal path.
- Reproducible results.
- Canal preparation after R-Endo[®] allows obturation with your usual filling method.

concept for ERT



Innovative instr



Simplicity
Efficiency
Comfort
Rapidity
Safety
Serenity

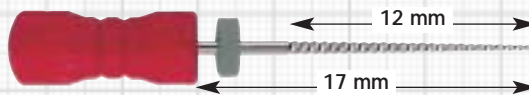
TECHNOLOGICAL ADVANCE:
InGeT® (Integrated Gear Technology)
= The driving gear is part
of the rotary file.

Miniaturised head
Ergonomics
Extremely simple head mechanism
Improved asepsis

uments

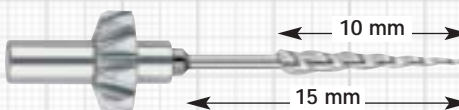
Rm File

Hand file - Stainless steel
.04 taper - n°25
Red manual handle
Grey rubber stop



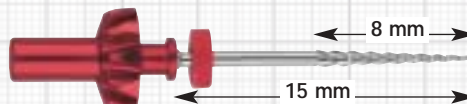
Re

NiTi
.12 taper - n°25



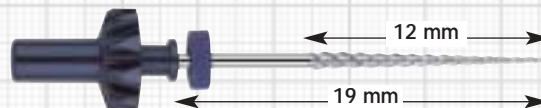
R1

NiTi
.08 taper - n°25
Red handle
Red rubber stop



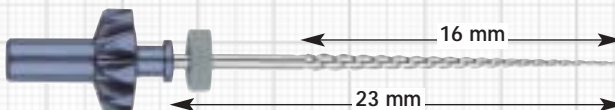
R2

NiTi
.06 taper - n°25
Black handle
Black stop



R3

NiTi
.04 taper - n°25
Grey handle
Grey rubber stop



RS Optional finishing file

NiTi .04 taper - n°30
Grey handle, blue ring
Grey rubber stop



Pre-operative analysis

The procedure for canals filled with gutta percha, paste and cement.



Advice & recommendations

- 1. Pre-operative X-ray.
- 2. Placing of rubber dam.
- 3. Removal of coronal restorations and radicular posts.
- 4. Access re-opening.
- 5. Visual and tactile analysis of filling material(s).
- 6. Solvent choice.

- Medical examination / rubber dam / eye protection.
- Pre-operative analysis to decide the use of Rm and Re.
- NiTi rotary instrument technique must be mastered.
- Frequent solvent renewal.
- Use alternately solvent and NaOCl. The nearer you get to the apex use less solvent and more NaOCl.

Operative sequence

A protocol in 5 main steps.

Place selected solvent in the pulp chamber.

1 Rm hand file

Operating procedure

- 1/4 turn with pressure directed towards apex.
- Removal.



Function

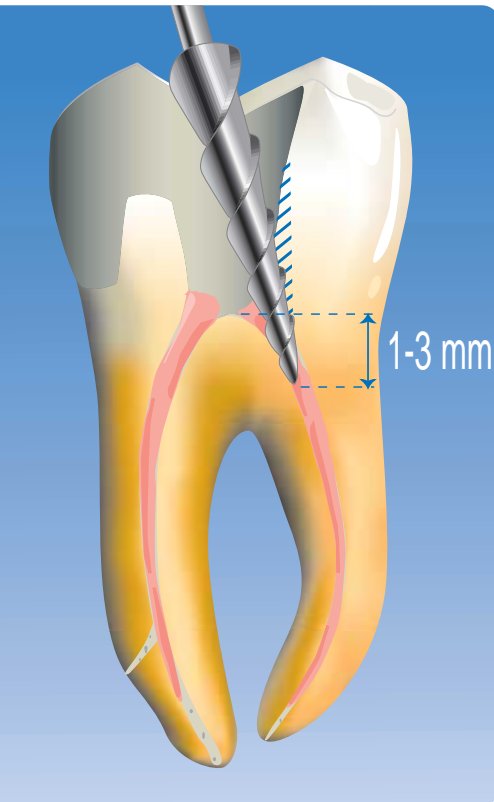
- Used to dig or break the hard layer of filling material.
- Allows the centring and alignment of the next instrument.

- As soon as possible check the working length.
- If possible check the apical patency.
- At the end of the preparation, ensure the complete removal of the debris from the previous filling using an X-ray.

- In curved canals:
 - Same precaution as for any kind of NiTi instrument must be observed to avoid false canal creation.
 - Introduction of a pre-curved hand file MMC n°10 is necessary prior to penetration with R-Endo® files.

Operative sequence

Rotation speed: 300 to 400 rpm.



2 Re

Operating procedure

- Canal penetration: 1 to 3 mm under pulp chamber floor without having to force the instrument.
- Apical pressure control, stop as soon as instrument requires force to penetrate.
- Circumferential filing.



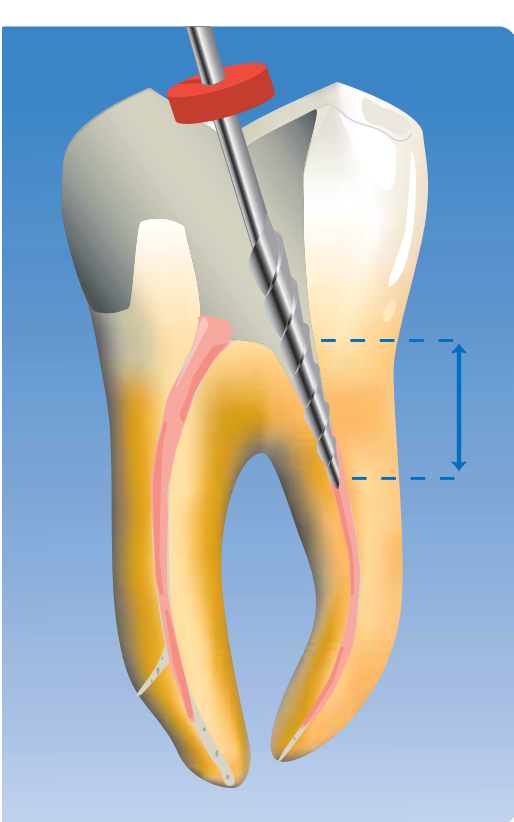
Function

- Straightening the wall of the access cavity.
- Eliminating the possible interference or dentine overhang.
- Flaring the access space in order to increase the solvent quantity.
- Eliminating the initial constraints.

Solvent renewal.

Use the Rm file for the same reasons as previously.

Operative sequence



3 R1

Operating procedure

- Canal penetration through repeated limited pushing actions in apical direction (push and retain).
- Preparation from the coronal third to the beginning of the middle third.



Function

- Eliminating the filling material in the coronal third.
- Clearing the canal in the coronal third.
- Canal shaping ready for the next instrument.

Rinsing of the solvent with hypochlorite.

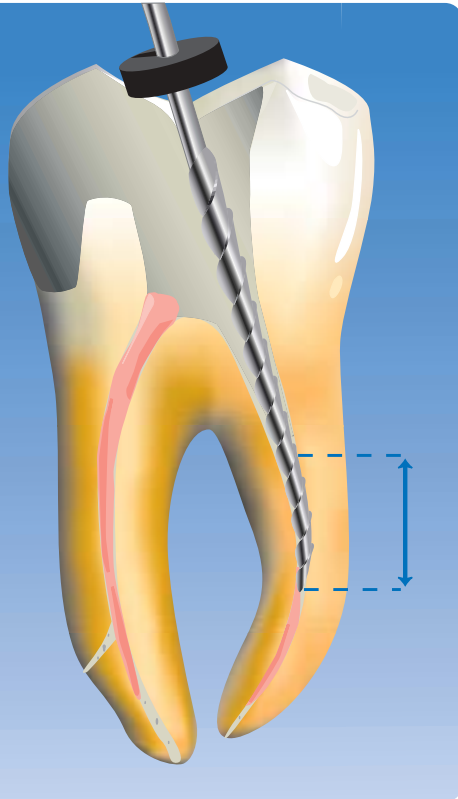
Passage of a pre-curved MMC file n°10 21 mm. If apical limit is reached without forcing, measure the working length WL (X-ray and/or apex locator). To be made with hypochlorite. If necessary after evaluation use alternately solvent and hypochlorite.

Operative sequence

4 R2

Operating procedure

- Canal penetration through repeated limited pushing actions in apical direction (push and retain).
- Preparation from the middle third to the beginning of the apical third. Never pass the length reached with the MMC.



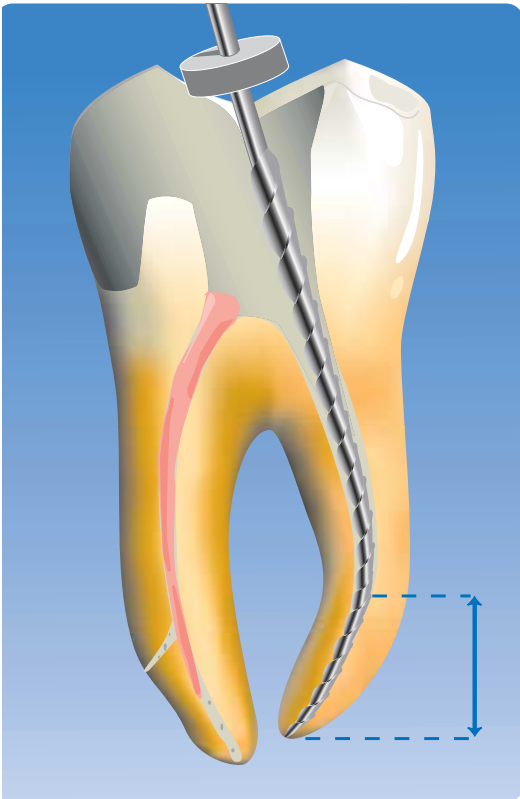
Function

- Eliminating filling material and constraints in the middle third.
- Canal shaping ready for the next instrument.

Rinsing with hypochlorite.

*Apical limit search with MMC file n°10.
WL determination (if not reached previously).*

Operative sequence



5 R3

Operating procedure

- Canal penetration through repeated limited pushing actions in apical direction (push and retain).
- Insert R3 to WL or near WL according to the canal anatomy.



Function

- Eliminating filling material in the apical third.
- Shaping of the apical third.

Rinsing with hypochlorite.

Circumferential filing movement from apical third to coronal third with R2 and/or R3. Finishing with Rs if required by the apical diameter.

Benefits

A miniaturised head

- Very compact head: 6.5 mm diameter and 7.5 mm high.
- Increased visibility of the operative field.
- Better visibility of the instrument when it is inserted in the canal and a better vision of the instrument working. This is particularly interesting when treatment is made under magnification (magnifying loupe or microscope).
- Exceptional working comfort.



Standard head

InGeT® Micro head

Superimposed heads
Standard head and
InGeT® Micro head



Standard head



InGeT® Micro head

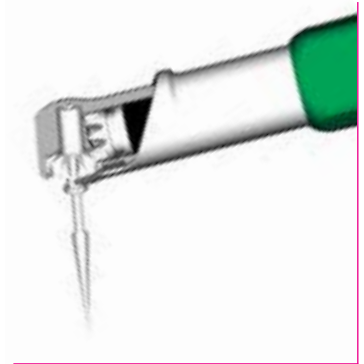
Superimposed heads
Standard head and
InGeT® Micro head

Benefits



Extremely simple head mechanism:

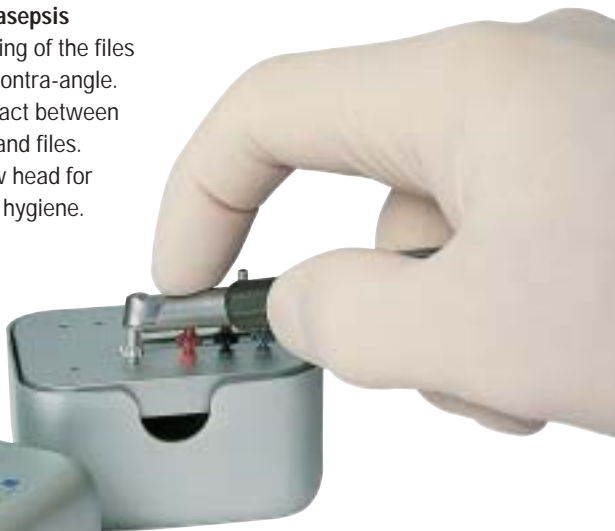
- Less interfaces more reliability.
- Reduced maintenance.
- Less vibrations.



- Greater ease of cleaning.
- More safety.

Improved asepsis

- Easy fitting of the files on the contra-angle.
- No contact between fingers and files.
- A hollow head for a better hygiene.



Ergonomics

Excellent stability in the hand.

Straight handle as an extension of the hand:

- Better tactile sensibility.
- Easy access to the operating field.
- Better access to posterior teeth.
- Increased working accuracy.

A head angle especially designed for an excellent visibility and easier work in the most difficult access zones.

Economy of movement due to the contra-angle / tray / files concept.

Frequently asked questions

■ Is the solvent essential?

The solvent is essential when the filling paste is too hard to be easily broken with Rm file or eliminated with files R1 and R2. Solvent used must be limited in quantity in order to limit the creation of difficult to remove sludge. However the solvent must be renewed frequently. Solvent is placed in the pulp chamber with a pipette or with tweezers. To avoid irritation of the peri-apical zone solvent must be used only in the coronal 2/3.

■ How do I choose the solvent?

Initial examination of the X-ray prior to ERT and visual examination of the canal access further to the coronal re-preparation enable identification of the filling material to be removed (paste, gutta percha points, condensed gutta percha). Initial probing with the manual file Rm can help identify the type of paste, then the type of solvent which must be used.

■ Why is the Rm file not made of Nickel-Titanium?

To break the filling material at the canal entrance, Rm was designed to work like a dagger. Only stainless steel can satisfy this requirement due to its rigidity. Moreover the .04 taper and the 0.25 mm tip diameter give enough rigidity to avoid easy bending of the file when the canal entrance is searched.

■ Do I have to use Re each time when beginning the ERT?

Re is useful only when a dentinal overhang at the coronal entrance has to be removed. Re (.12 taper) prepares the passageway for the R1 file and allows it to work safely and efficiently.

■ What must I do if R3 does not progress in canal after R2?

In that case it is necessary to again use a pre-curved n°10 MMC file beyond the R3 preparation to re-find the canal opening. If the latter is difficult, Rm can be used.

■ When do I have to validate the WL?

WL is measured as soon as possible according to the speed and ease with which the R-Endo® files progress toward the apex.

■ How to measure WL?

WL is measured with an apex locator as Apex Pointer™ or with an X-ray.

■ Is it necessary to pass a MMC file between each R-Endo® file?

Passing a manual file allows it to lance the residual dentinal sludge so that sludge is easier to eliminate with NaOCl irrigation. It can check the canal is empty.

Frequently asked questions

■ Do I have to obtain and/or check the apical patency? And how to do it?

If possible it is useful to obtain and check the apical patency at the end of the preparation. A MMC file n°10 lightly pre-curved is sufficient and non-aggressive to do so.

■ Can I fill the canal after R3 if it has reached the WL?

R3 prepares the canal at a .04 taper and a diameter of 0.25 mm, so it is possible to obturate in most cases. According to the clinical situation, if the filling needs a larger diameter or taper Rs can be used.

■ What is the goal of Rs?

As already said, Rs is an HERO Shaper® n°30 .04 taper. This is an optional finishing file which can be used when preparation larger than 0.25 mm is needed.

■ With which R-Endo® file, and when can I do the circumferential filing?

Re and R3 (and to some extent R2) were designed for circumferential filing in stepping back. Circumferential filing will be done with Re as with ENDOFLARE®. With R2 and R3 it will be practiced respectively in the middle third and in the apical third.

■ Do I have to push on the R-Endo® files to search the canal?

The R-Endo® files have a non active tip. Excessive pressure does not allow the canal catheterism if the canal aperture is not opened. The risk of going the wrong way and of “screwing” effect are increased by excessive pressure on the wrong axis.

■ What can I do if the R-Endo® files are too short?

Generally the access is sufficient due to the re-preparation of the coronal chamber and the removal of the previous restorations and dentinal curettage of recurring caries. The R-Endo® files are designed to give working length adapted to the ERT with a maximum of efficiency for each taper. Re, R1 and R2 are shorter because they are used in the coronal and middle part. If the canal input is not accessible a coronal reduction will be made for better access.

■ Is the recommended sequence of the R-Endo® files rigid?

Each file is designed to work in each part of the canal to be re-treated. Each file allows the passage of the next instrument and preparation in safe conditions. Nevertheless the clinical situation (eg very large and tapered canal) can justify a shortening of the R-Endo® sequence.

Frequently asked questions

■ Can I use R-Endo® for retreatment in canals filled with resin paste?

ERT of resin paste filled canal is due to inappropriate initial treatment. Often the resin paste is present only in the first third or half of the canal. It is in this area that the most tapered files Re and R1 will work with high efficiency. Those files can be used at a higher speed, because in this zone the canal is larger and more tapered. Below this zone, the resin paste is generally less dense and less hard, so it is easier to remove. Rm can facilitate the preparation with the *"ad hoc"* solvent.

■ Can I remove silver points with R-Endo® files?

Re can remove silver points when circumferential filing with drawing back movement is done. Nevertheless, it is necessary a n°10 MMC file has been passed beyond the point in order to totally eliminate it.

■ Is it necessary to clean the files between 2 passages?

The grooves of the R-Endo® files filled with residues of filling material will be less efficient. Moreover, risks of "unspiralisation" are high as the file can not make the parietal work efficiently. The R-Endo® files can be cleaned with a NaOCl impregnated swab.

■ How many canals can I re-treat with the R-Endo® files?

5 to 8 canals can be re-treated with the R-Endo® files. Nevertheless, as for HERO 642® and HERO Shaper®, in case of high stress, used files must be discarded. Scrupulous checking of the files after treatment is necessary. Discard any file showing a deformation ("unspiralisation"). Thus the number of canals you can treat depends on the stress applied to the instruments.

■ Do I still need Gates Glidden?

Gates Glidden are too rigid, they are not recommended for ERT. As the risk of creating a false canal, stripping and canal wall abrasion are increased due to their lack of flexibility. And their 0.70 mm diameter does not allow them to keep adequately dentine structures.

■ Can I use R-Endo® for an initial endodontic treatment?

Using the R-Endo® files for the initial endodontic treatment is extremely inadvisable. Each file (R1 R2 R3) has an adapted length coupled with a specific pitch and an innovative profile which allow them to work in semi solid filling materials such as gutta percha and pastes in order to better remove them.

The initial endodontic treatment is best achieved using the HERO Shaper® files which are less rigid and more adapted to the work on dentinal walls. They are designed to reach the apical zone using in most cases 2 instruments.

Clinical cases



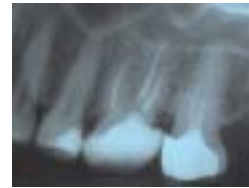
ERT on 44 (LR4)
Pre-operative X-ray.



ERT on 44 (LR4)
Post-operative X-ray.
Initial endodontic
treatment on 45 (LR5).
Reproducibility ERT/Initial
endodontic treatment is
shown on these 2 premolars.



ERT on 26 (UL6)
and 27 (UL7)
Pre-operative X-ray.



ERT on 26 (UL6)
Post-operative X-ray.



ERT on 26 (UL6)
and 27 (UL7)
Post-operative X-ray
after 1 month.



ERT on 46 (LR6)
Pre-operative X-ray.



ERT on 46 (LR6)
Control of the initial
filling elimination.



ERT on 46 (LR6)
Filling after ERT.



ERT on 46 (LR6)
Post-operative control
after 1 month.



ERT on 46 (LR6)
Post-operative control
after 6 months.

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