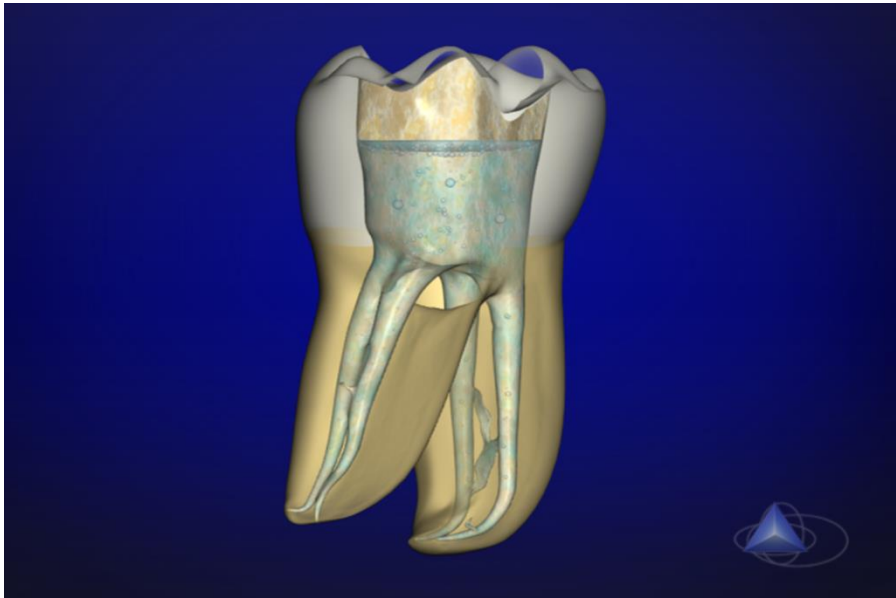


Root canal filling  
Warm techniques

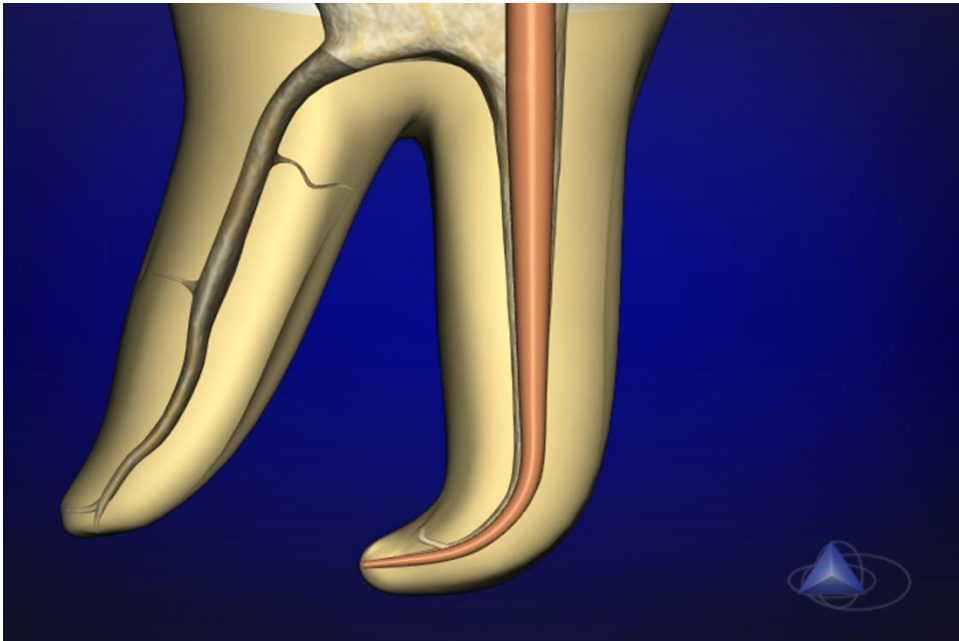
**ALWAYS A SEALER IS USED – IN ALL  
TECHNIQUES!!!**

# **Vertical compaction various possibilities**

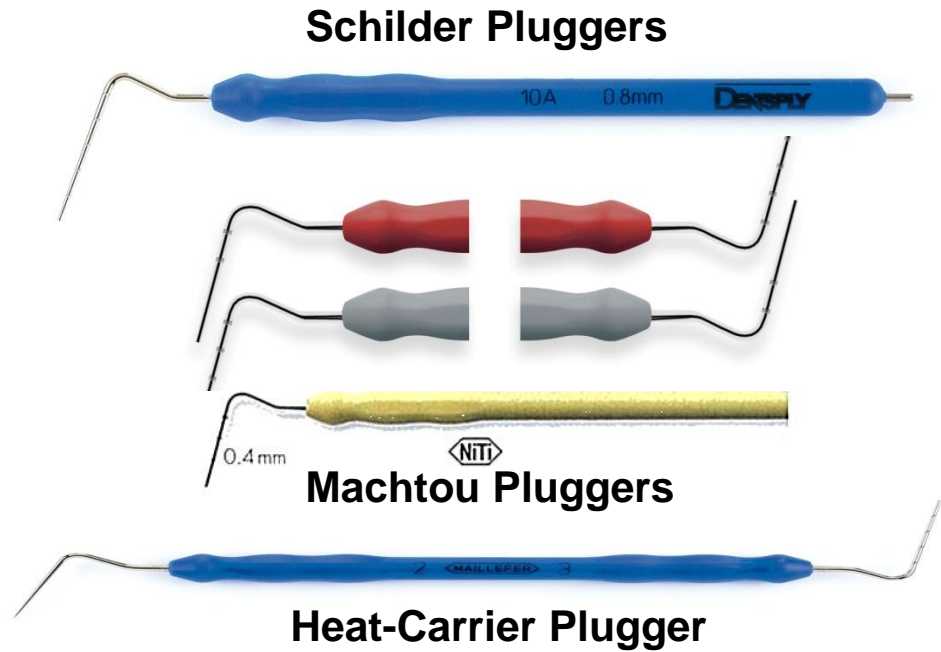
## **Cone Fit & Plugger Selection**



**Irrigation and desinfection  
of root canal system**



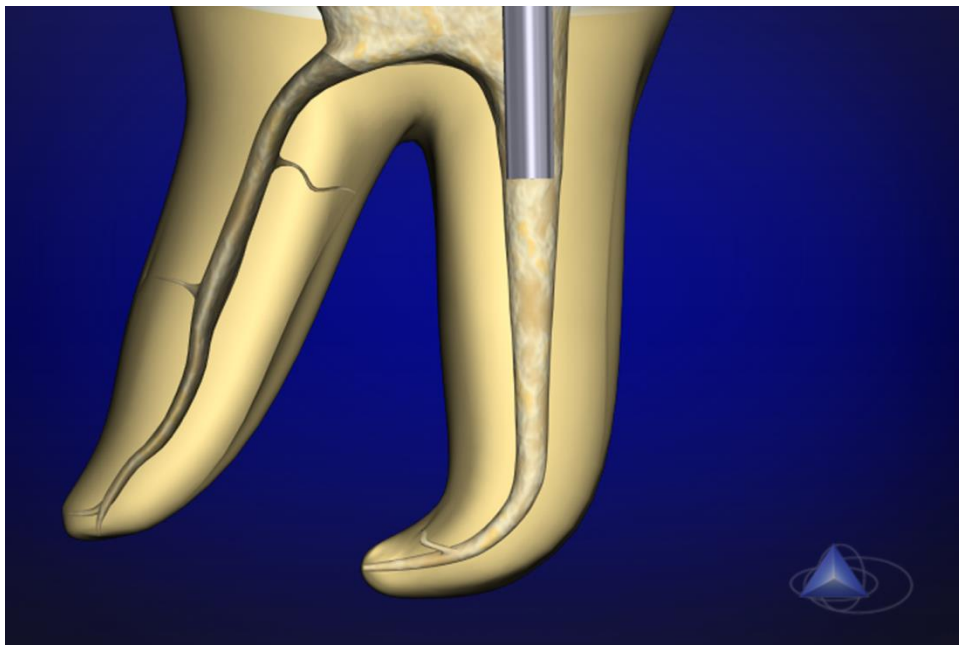
**Manual Pluggers  
for compaction**



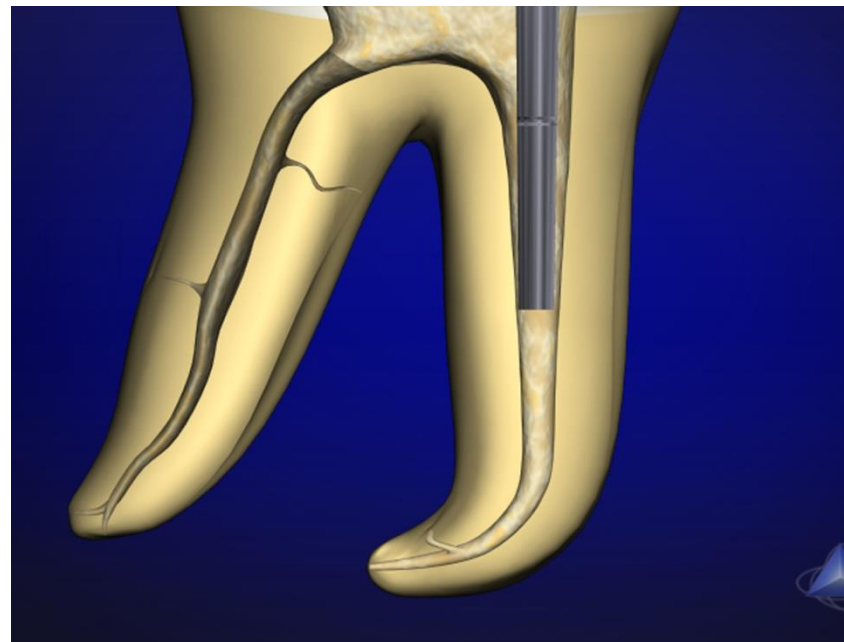
**Schilder Pluggers**

**Machtou Pluggers**

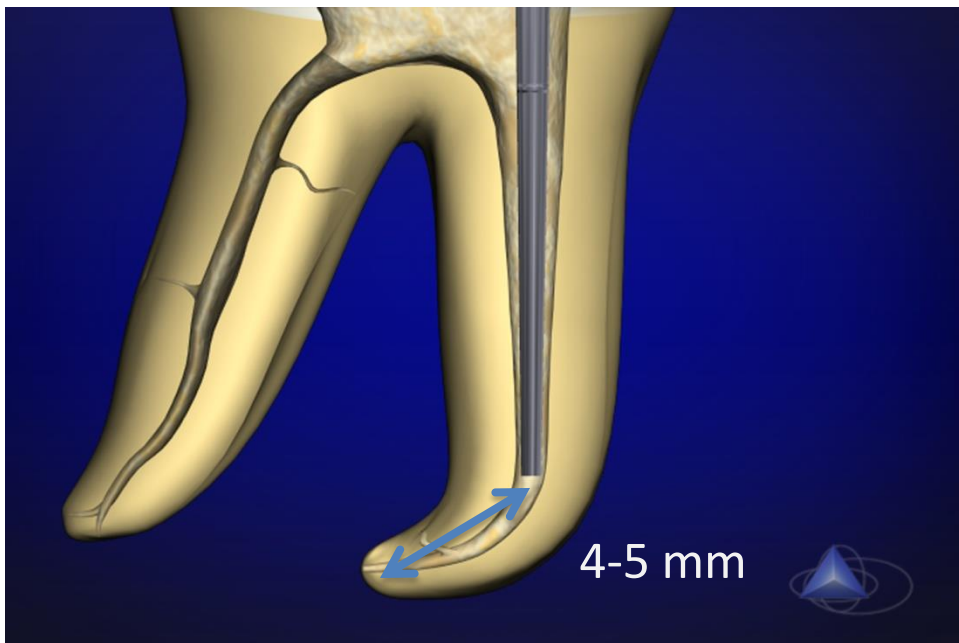
**Heat-Carrier Plugger**



**Selection large size manual plugger**

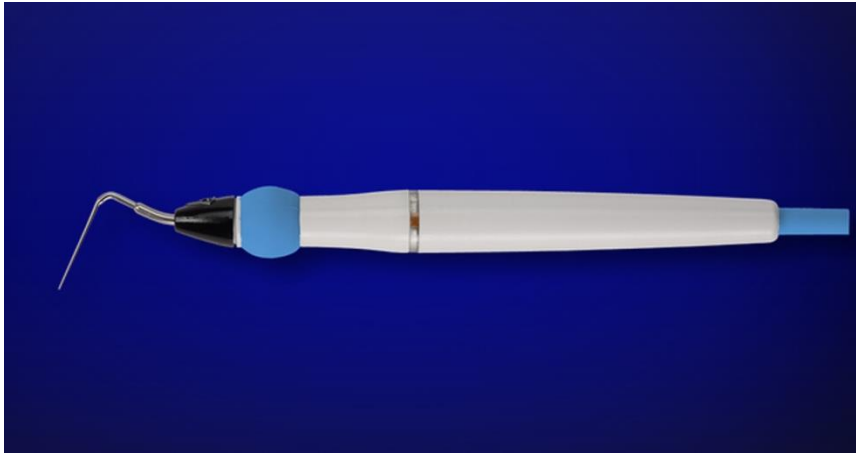


**Selection medium size manual plugger**



**Selection small size manual plugger**

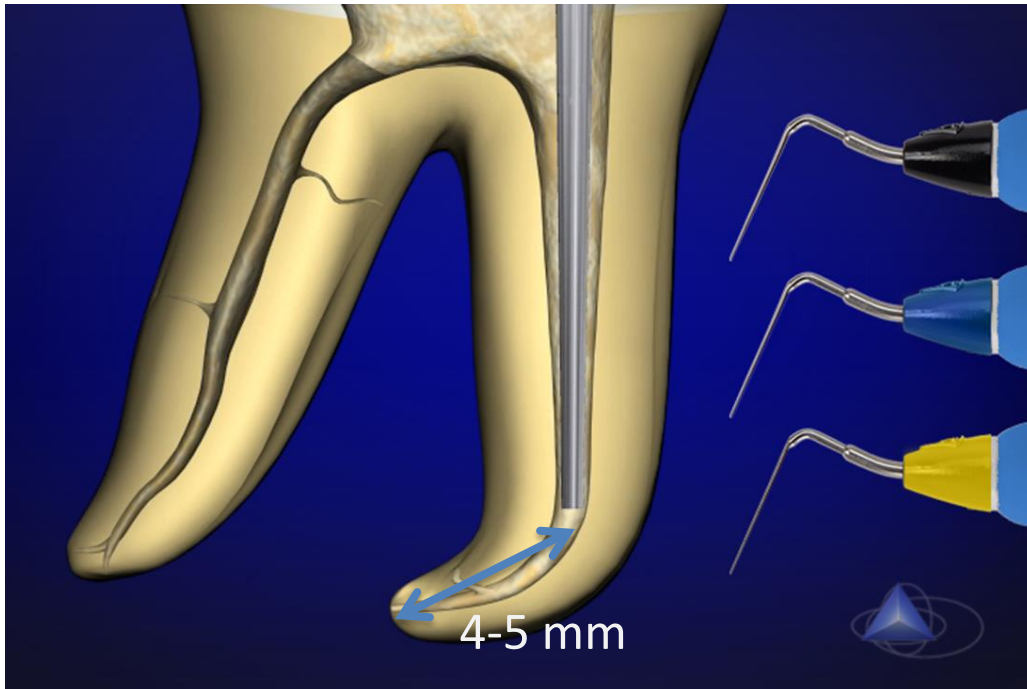
## *Down-Pack handpiece*



**1 warm pulp-tester**

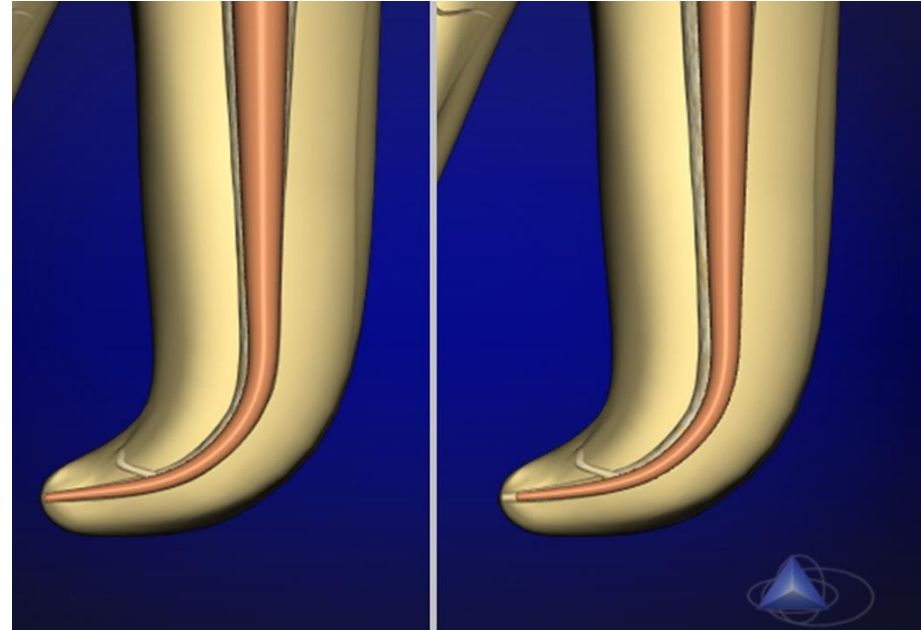
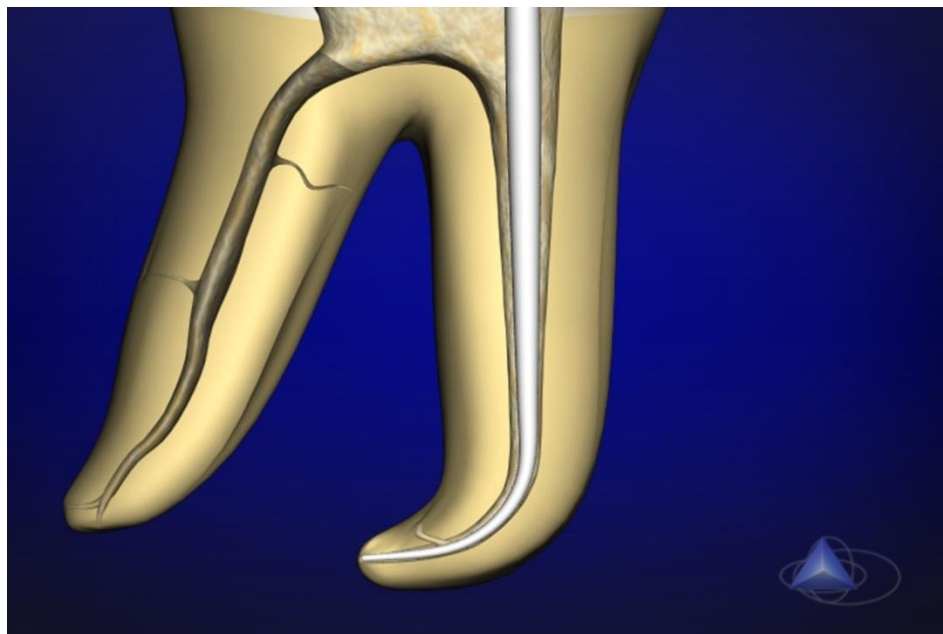


## **Selection of the Heat Plugger**

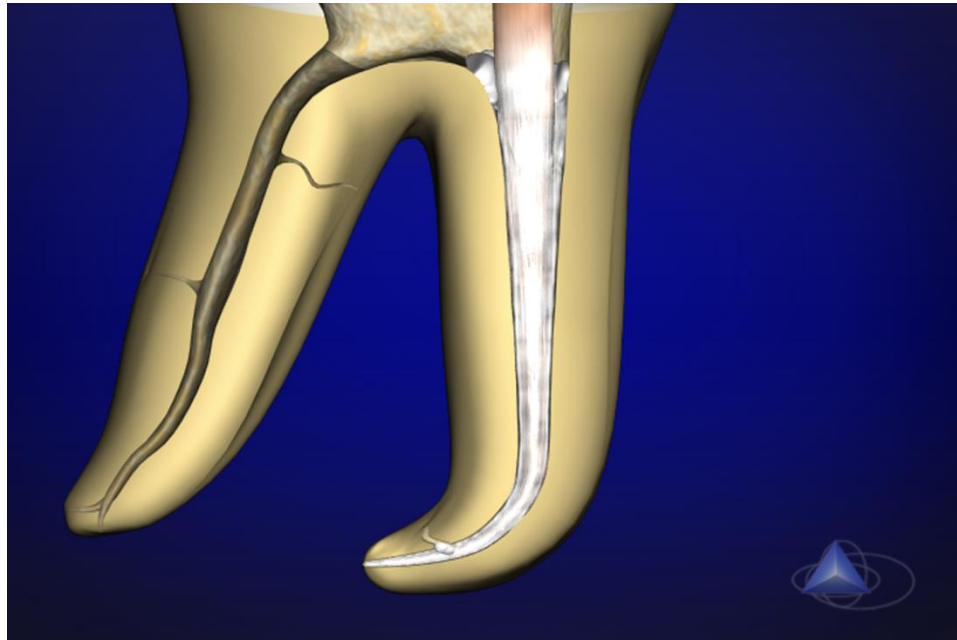


**Plugger 3 sizes**

**Mesured paper point to  
Working Length**

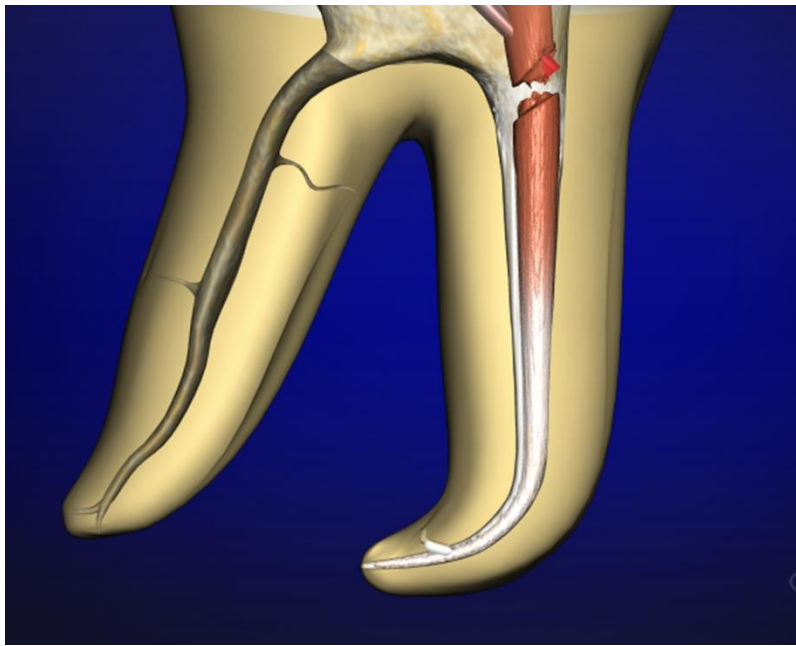


**Trim the master cone**



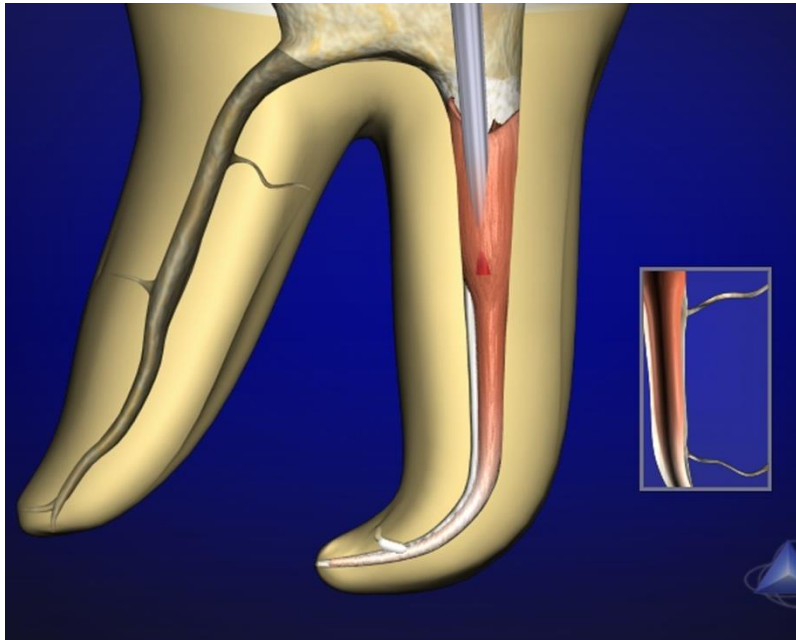
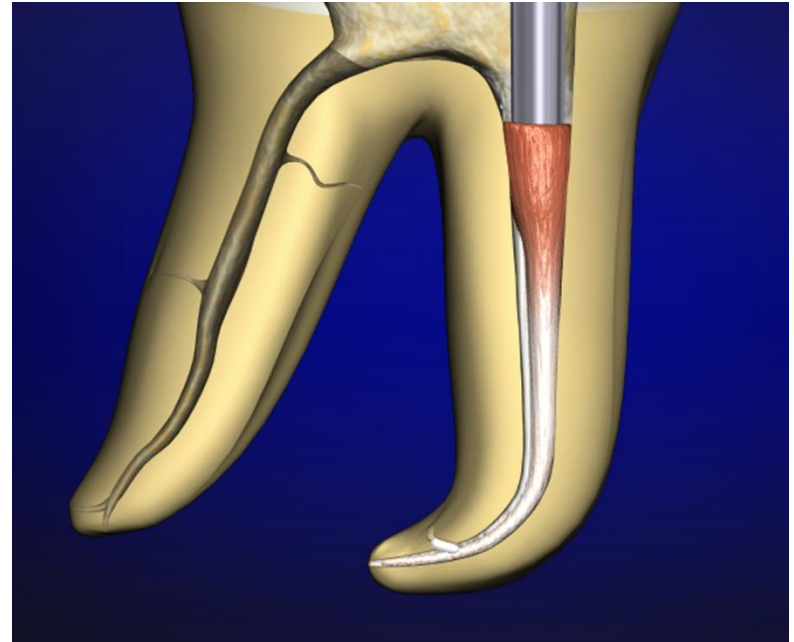
**Insert lubricate (sealer) master cone**

# **Downpack : Vertical Condensation**



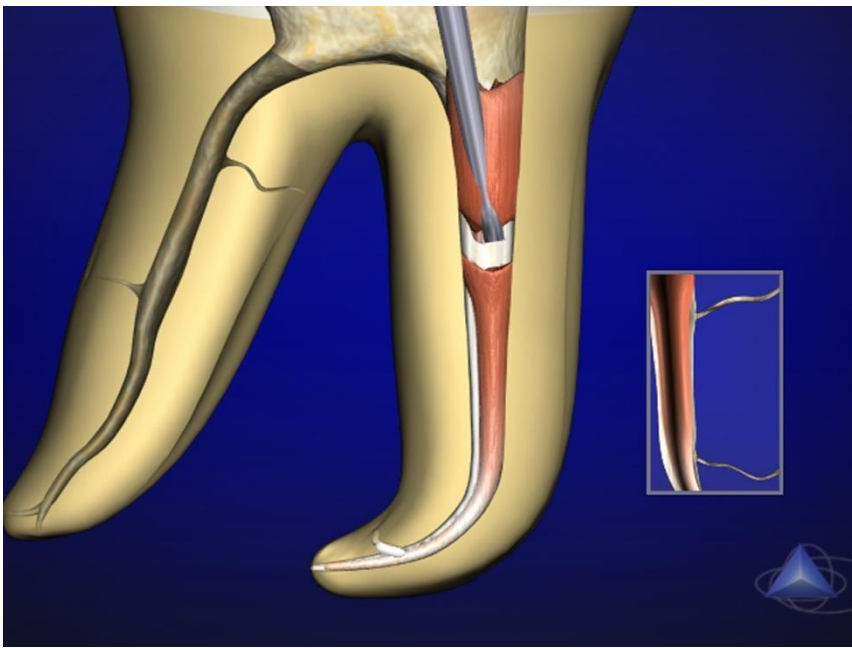
**Activate heating and sear off the master cone**

**Select the larger prefitted, manual plugger and move Gutta Percha apically**



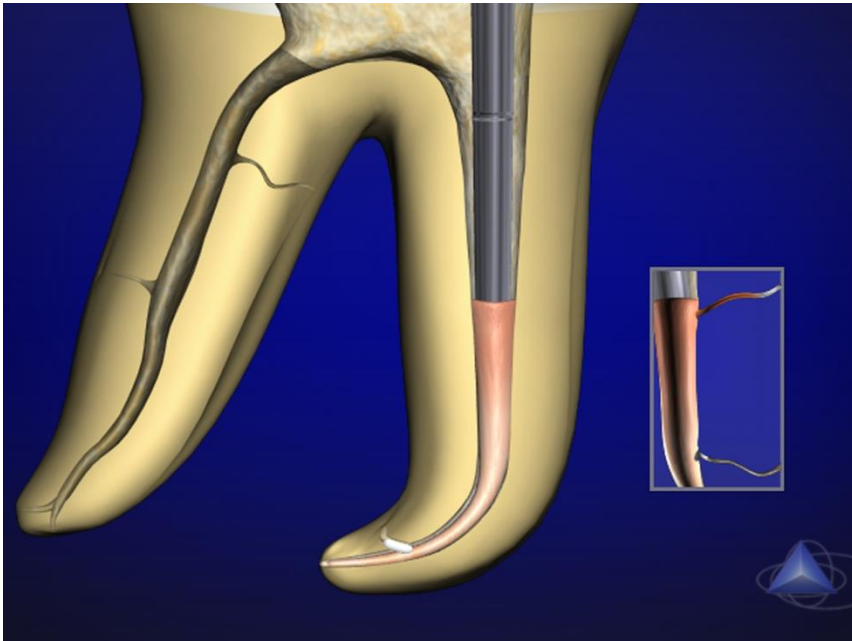
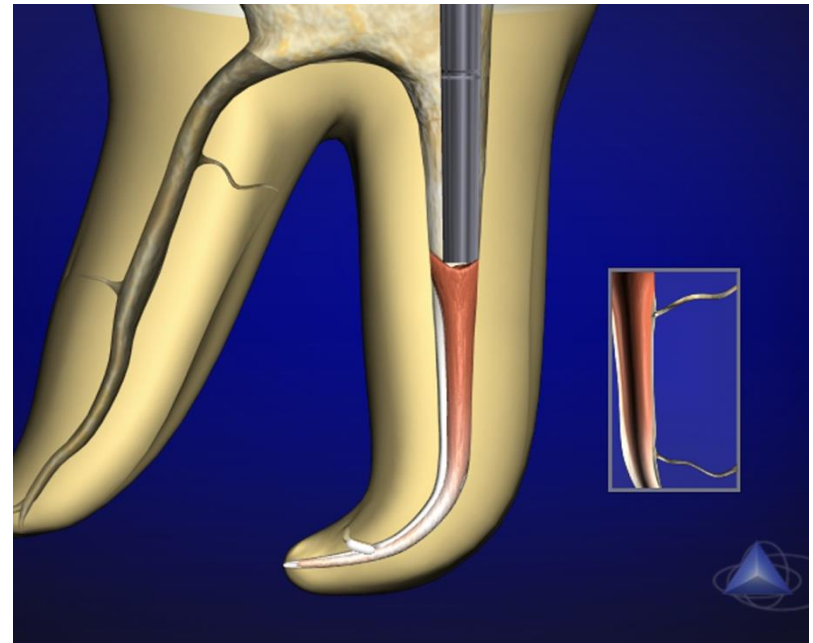
**Activate heating and plunge 3-4 mm into the gutta-percha**



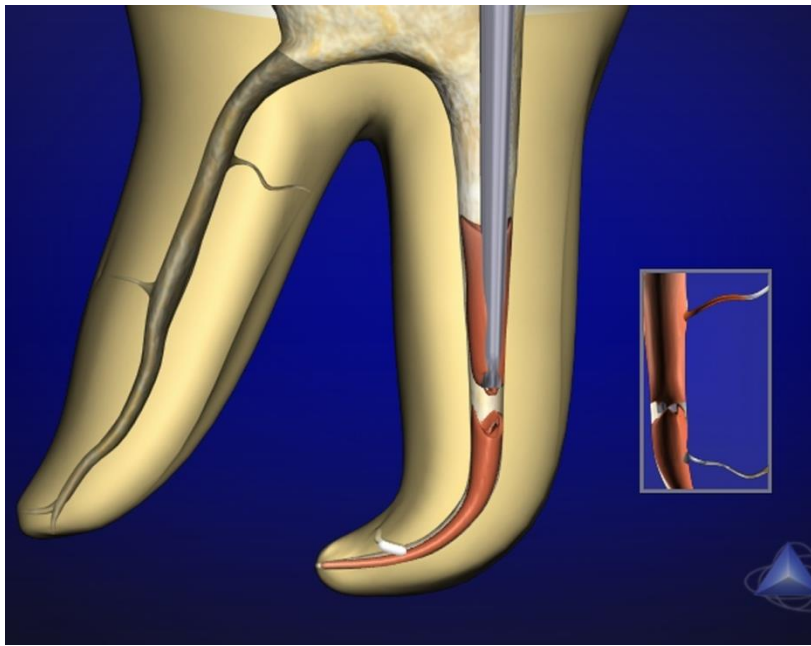


**Desactivate *heating* 1-2 seconds, then remove “bite” of Gutta Percha**

**Select the medium size, manual plugger and move Gutta Percha apically**

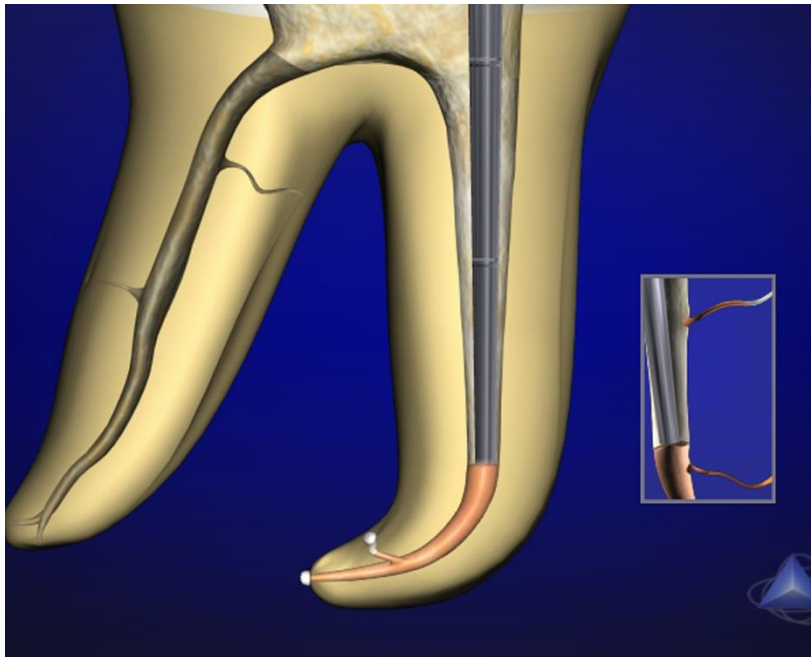
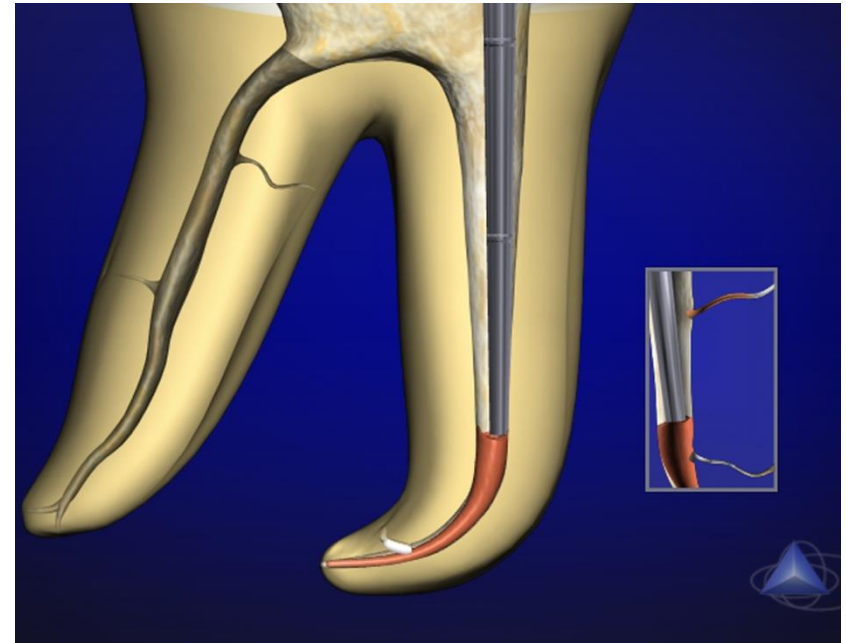


**Press apically for 5 seconds**



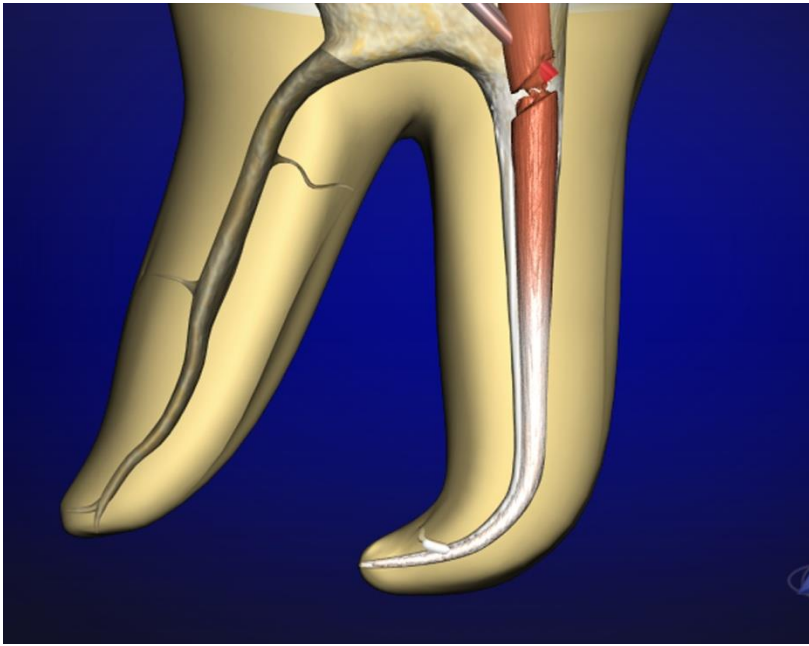
**Activate heating, plunge deeper 3-4mm and wait 1-2 seconds after desactivate it**

**Select small size manuel Plugger, move gutta-percha apically**



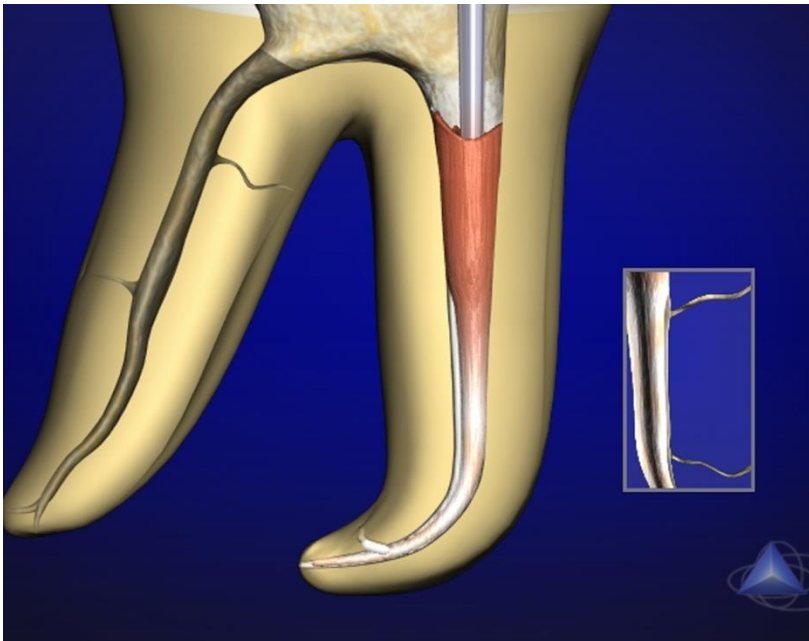
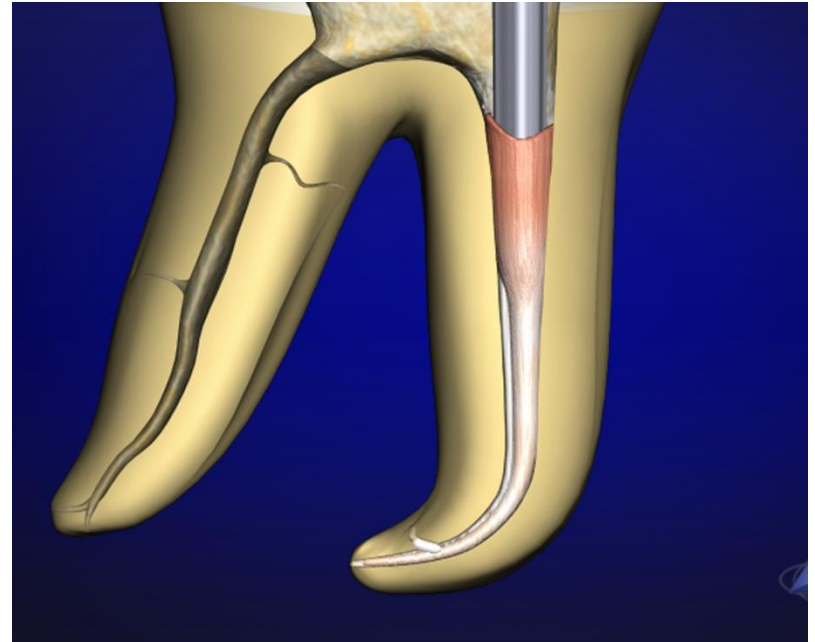
**Press small Plugger 5 seconds into the apical third**

# **Downpack : Continuous Wave Technique**

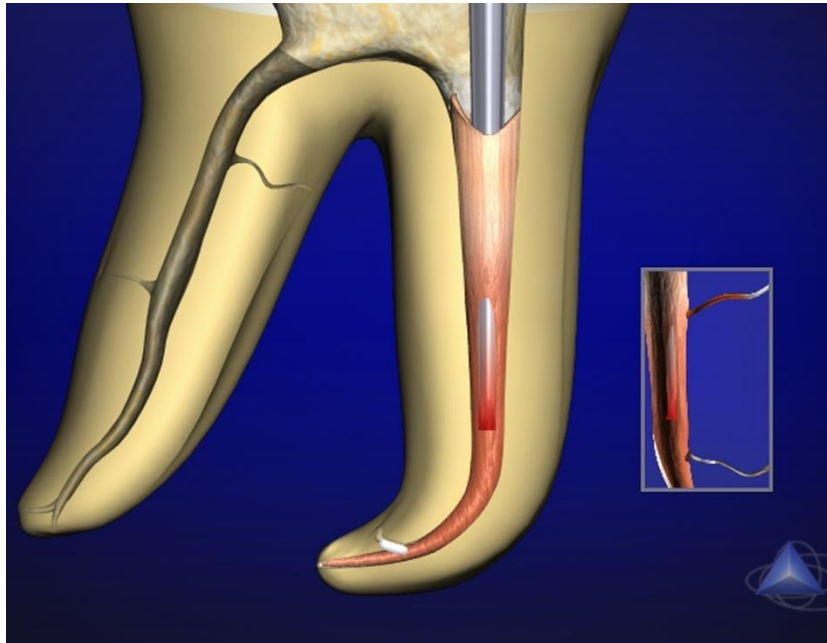


***Activate heating and sear off the master cone***

***Select the larger prefitt, manual plugger and move Gutta Percha apically***

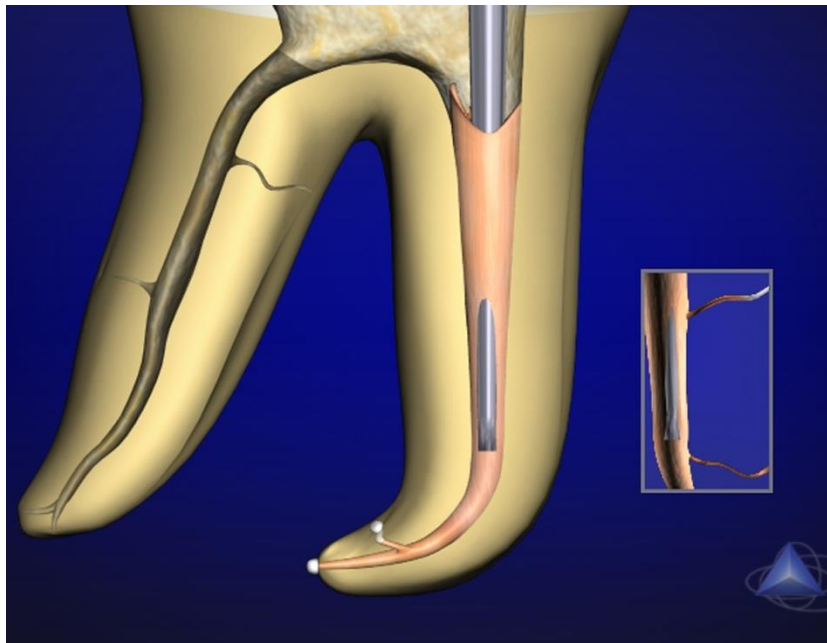
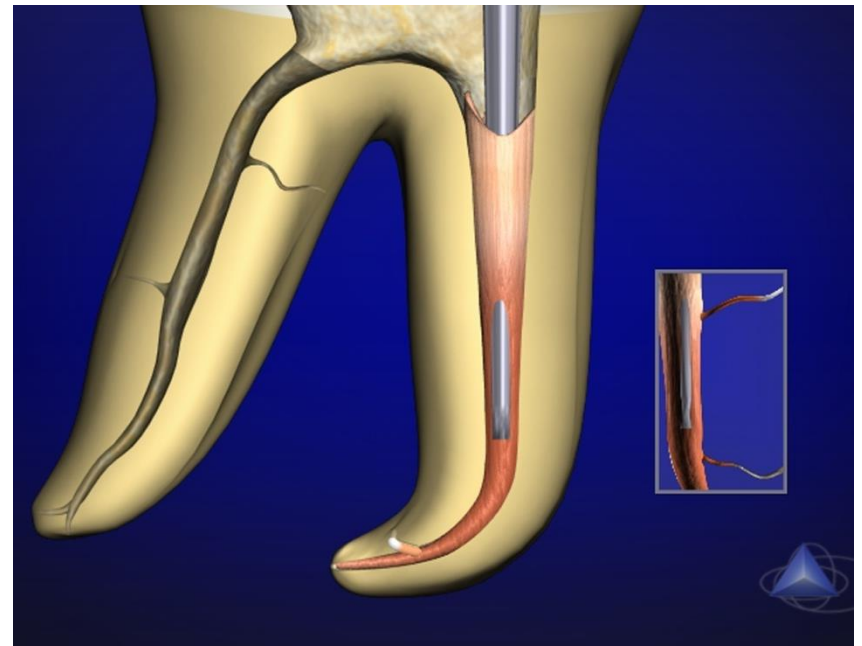


***Activate heating***

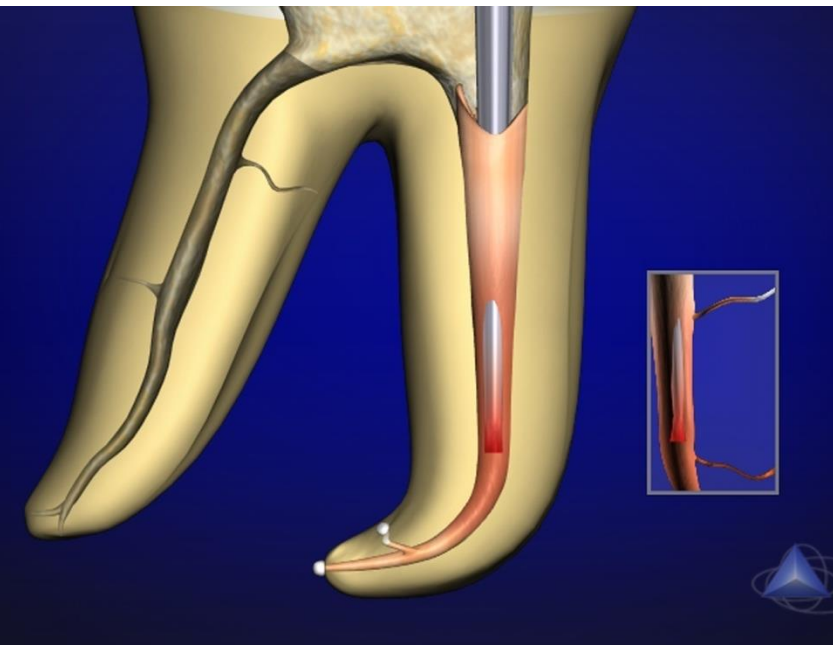


***In one continuous motion press until the “stop” is at 2 mm of the reference point***

***Desactivate heating maintain firm apical pressure till the reference point is reached***

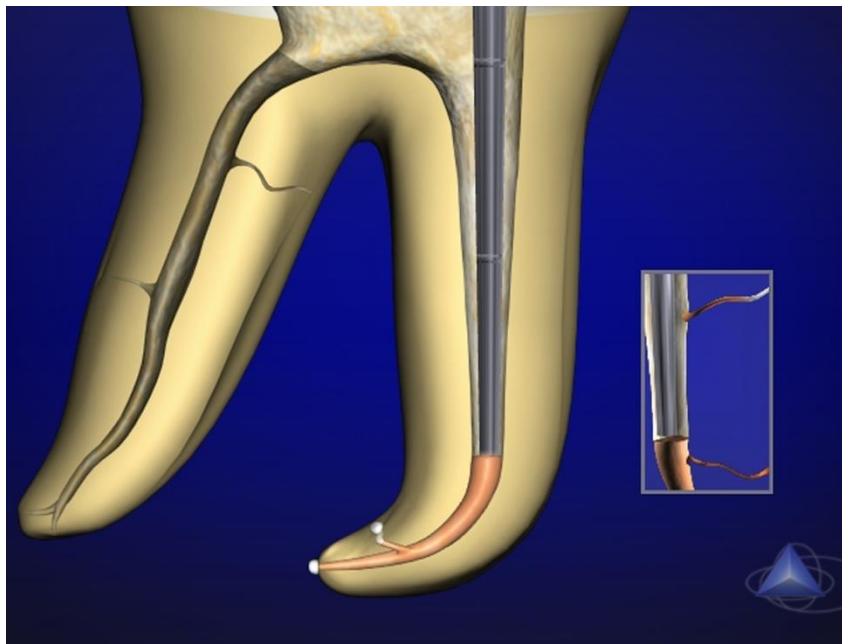
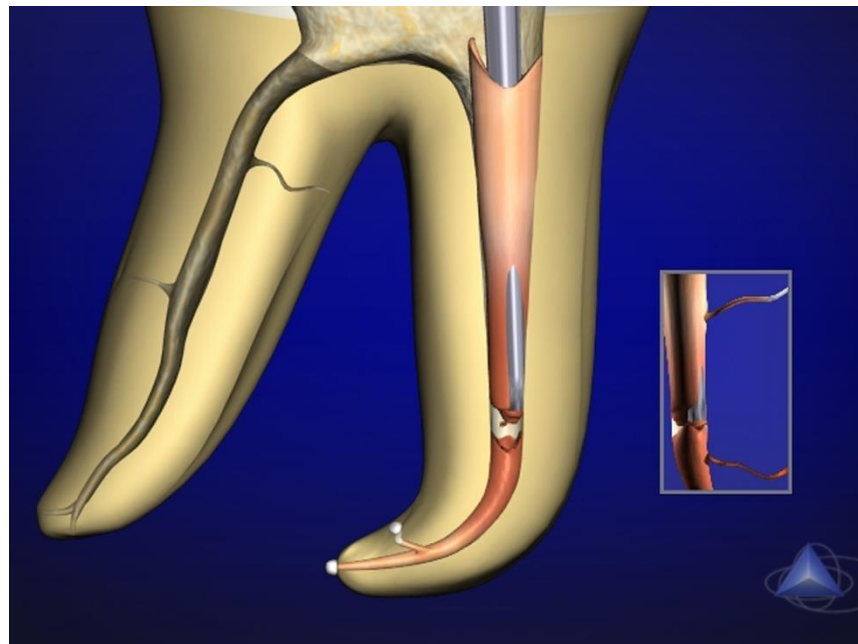


***Maintain firm pressure for 10 seconds***



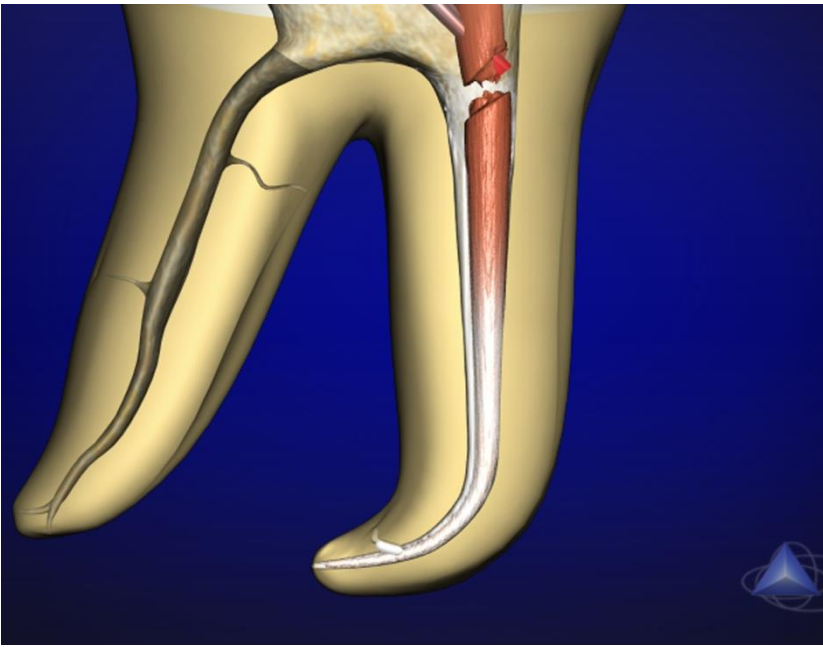
**Activate heating for 1-2 seconds and deactivate, then remove the plugger**

**This will separate and remove Gutta-Percha**



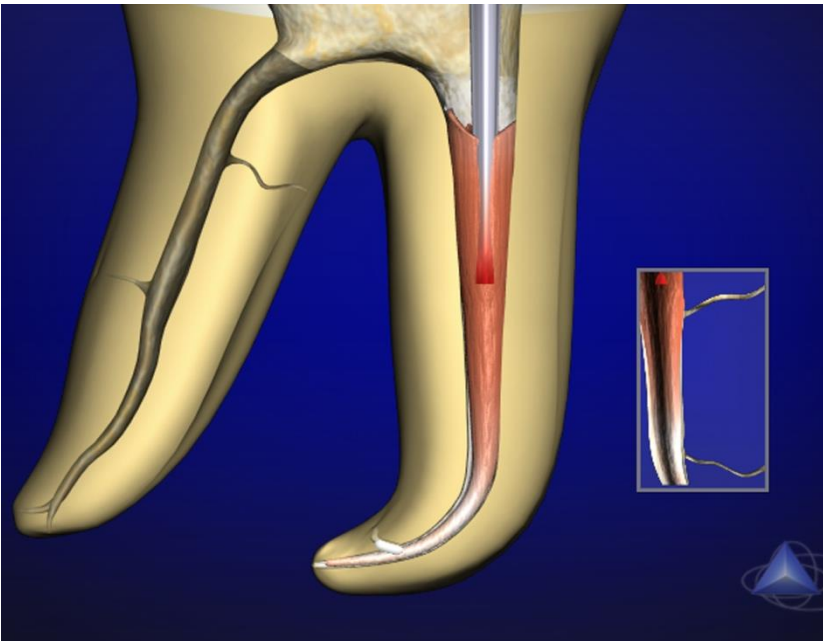
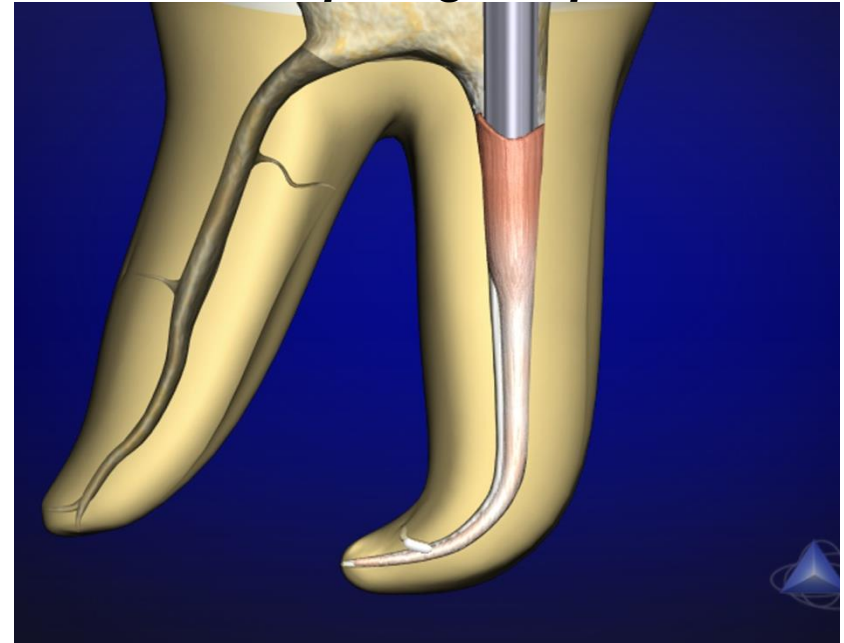
**Select the small size, prefitted manual plugger and condense the Gutta-Percha**

# **Downpack : Hybrid Technique**



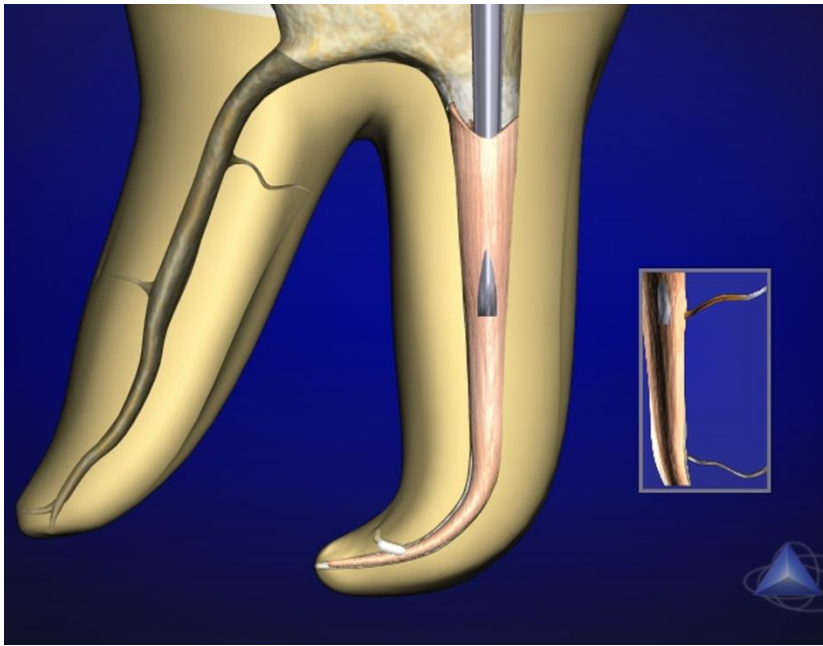
**Activate heating and sear off the master cone**

**Select the larger prefit, manual plugger and move Gutta Percha apically, press 5 seconds to compact gutta-percha**



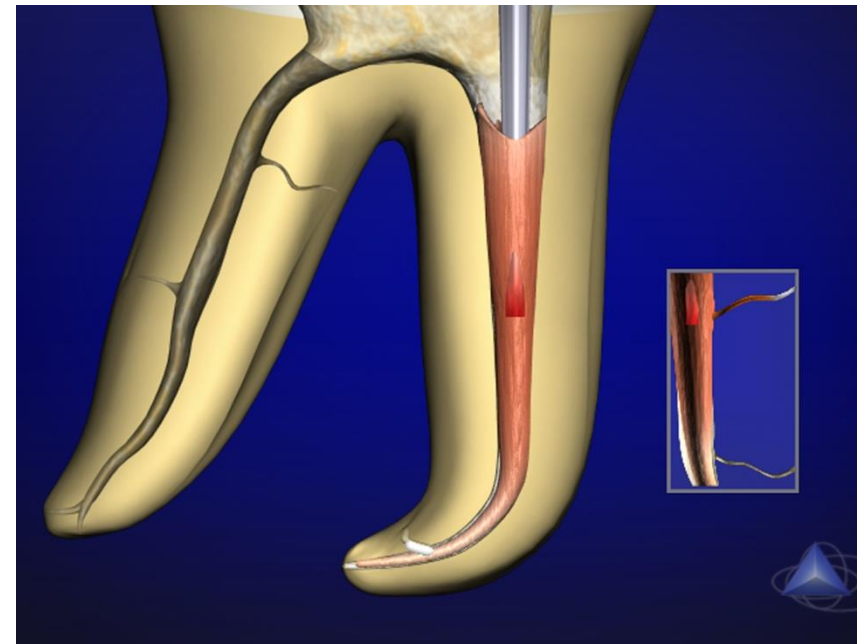
**Activate heating and plunge 3-4 mm into the gutta-percha**



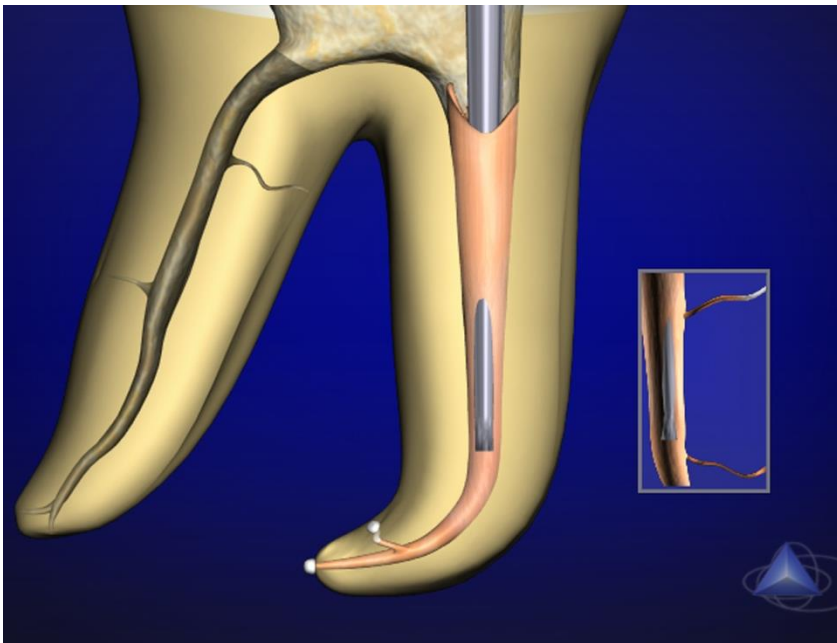


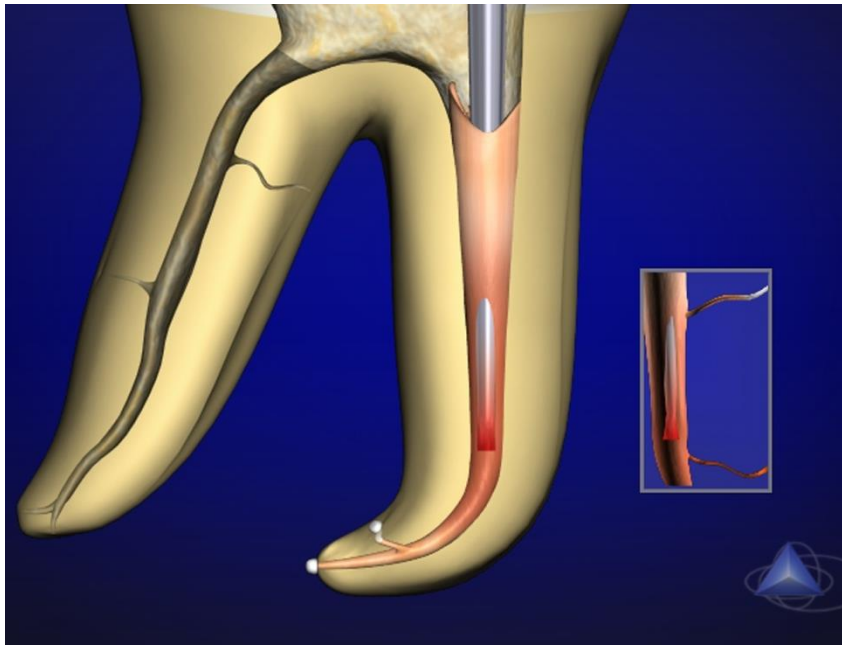
***Desactivate heating maintain 5 seconds pressure to compact gutta.percha***

***Activate heating***



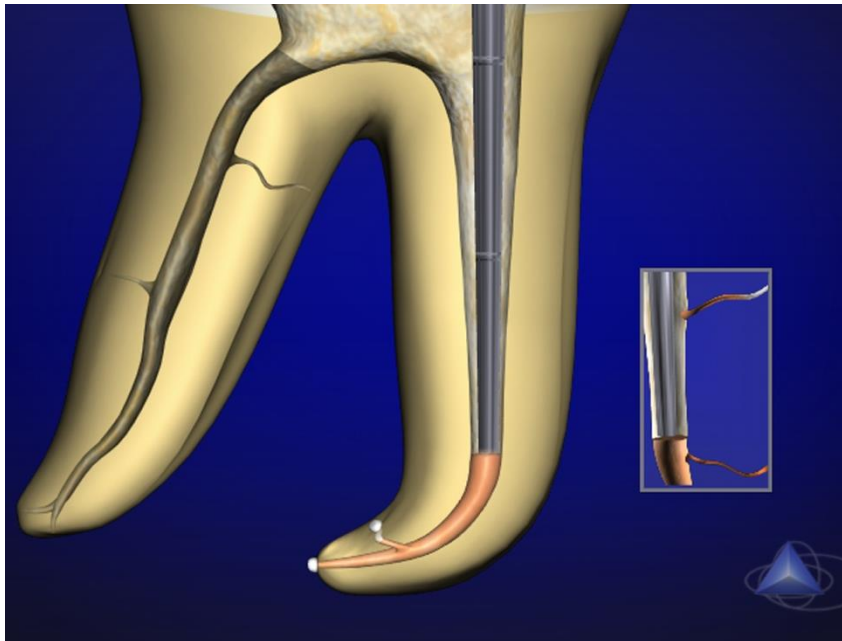
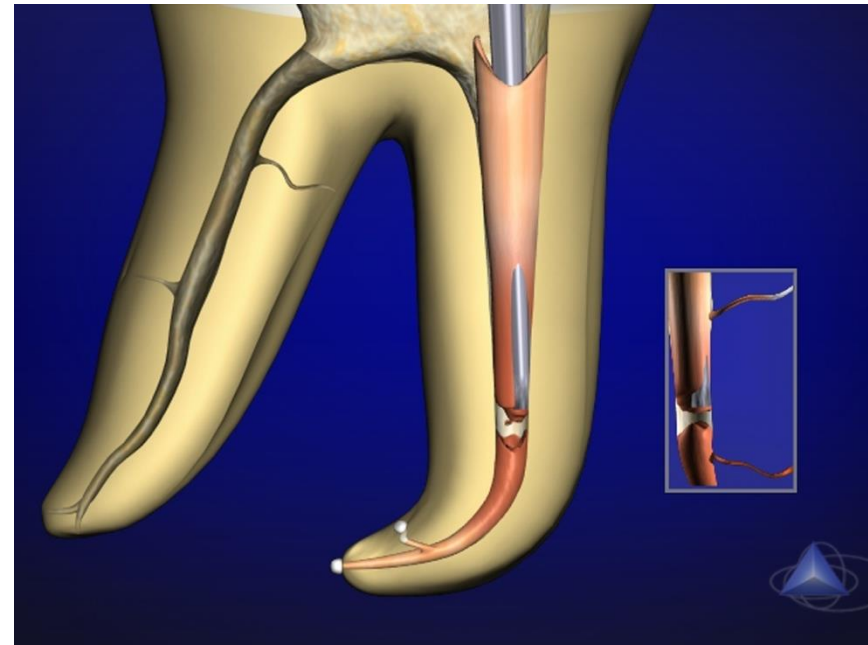
***Desactivate and maintain 5 seconds . Maintain apical pressure till the working depth is reached***





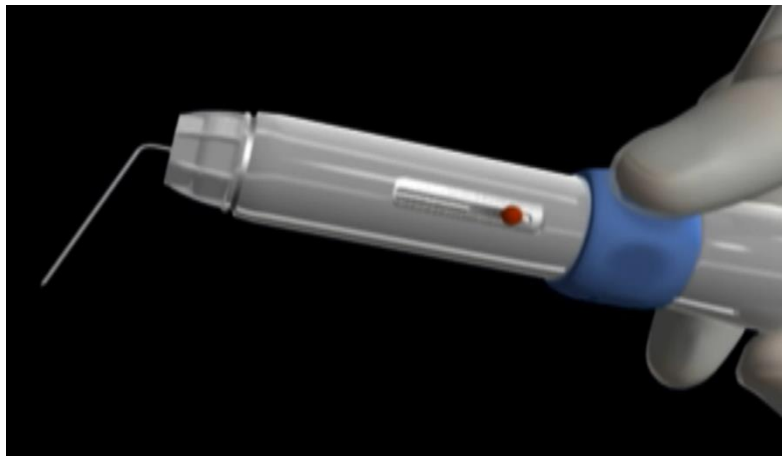
***Activate heating 1-2 seconds***

***Desactivate and remove the plugger.***

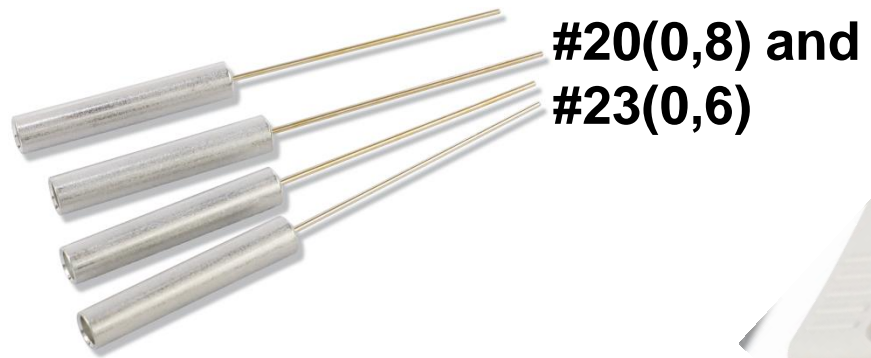


***Select the small size, prefit manual plugger and condense the Gutta-Percha***

# **BACKPACK Technique**



***Guttapercha flow handpiece***

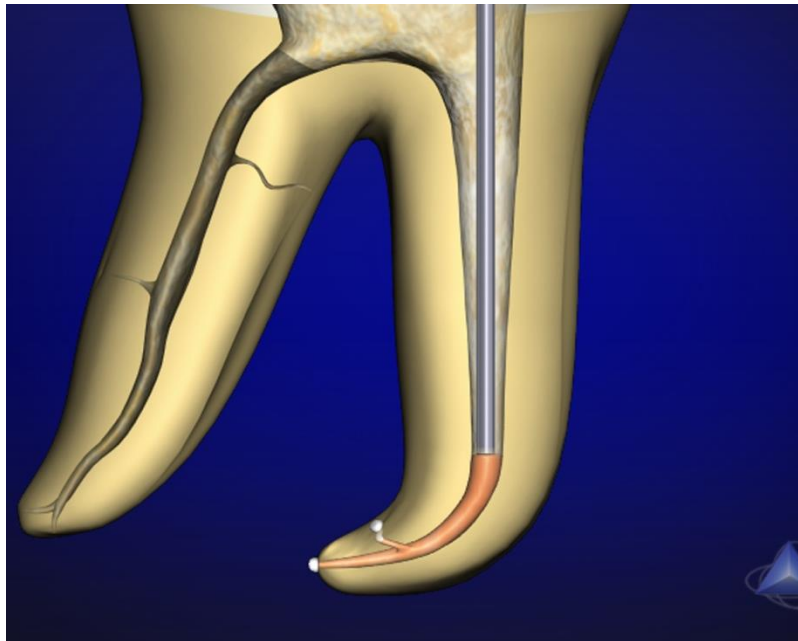


***Cartridge of Gutta-Percha***

**#20(0,8) and  
#23(0,6)**

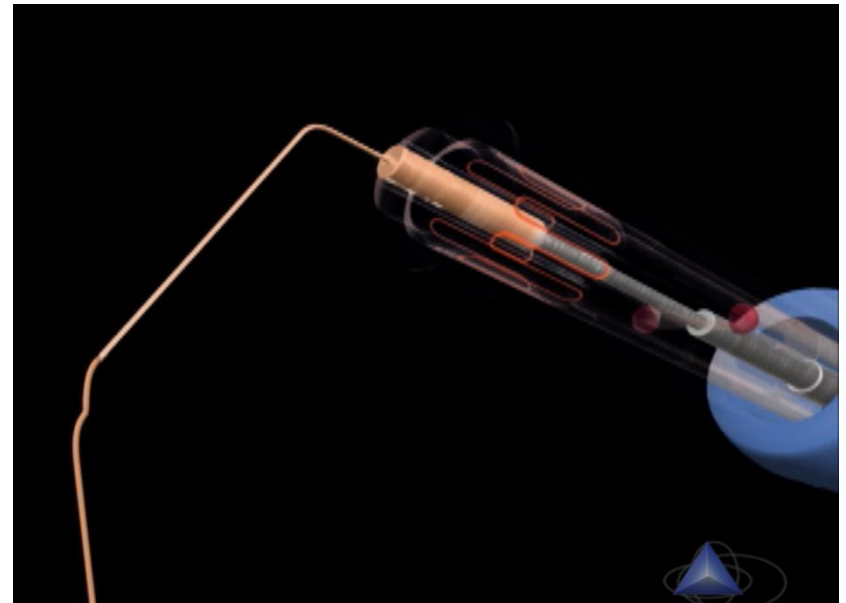


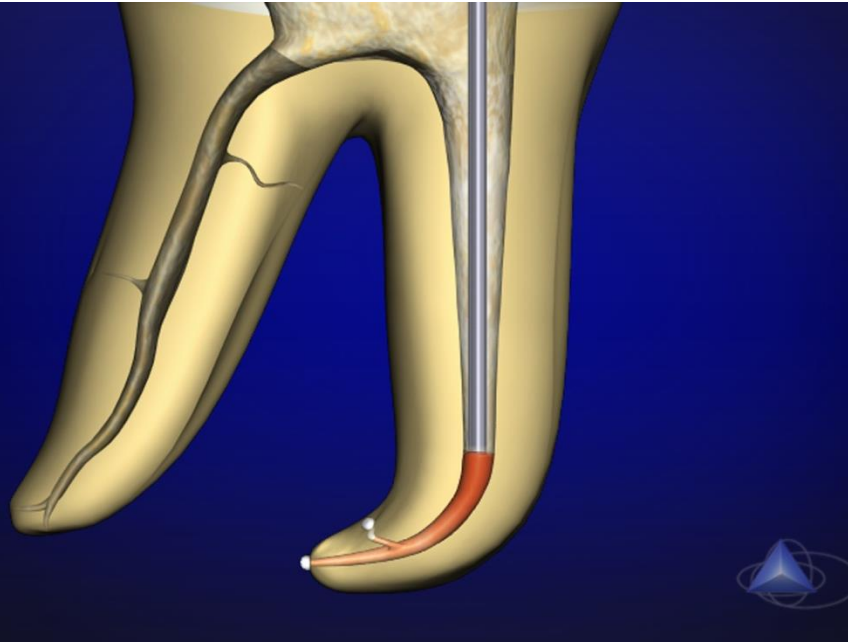
***Cartridge-tip bender***



***Position the tip against the packed filling material***

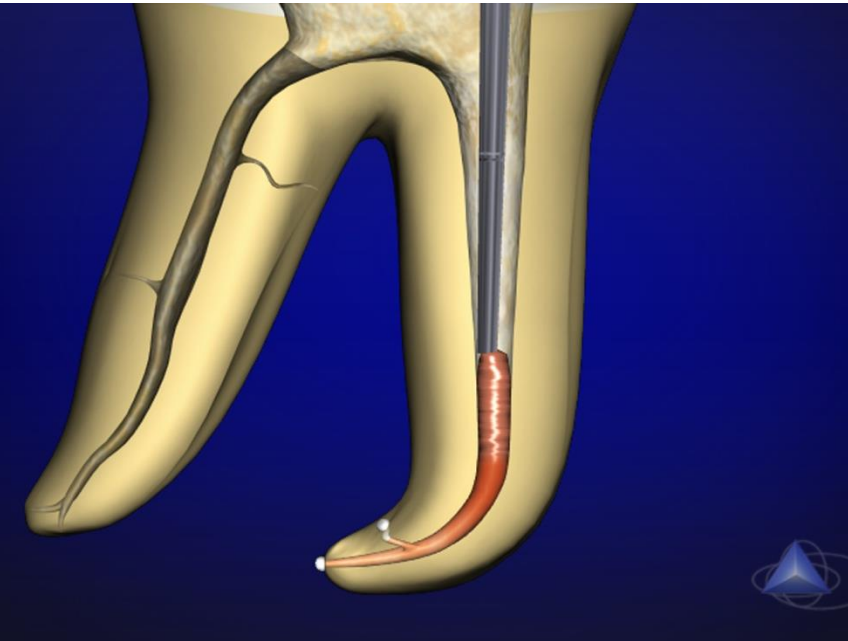
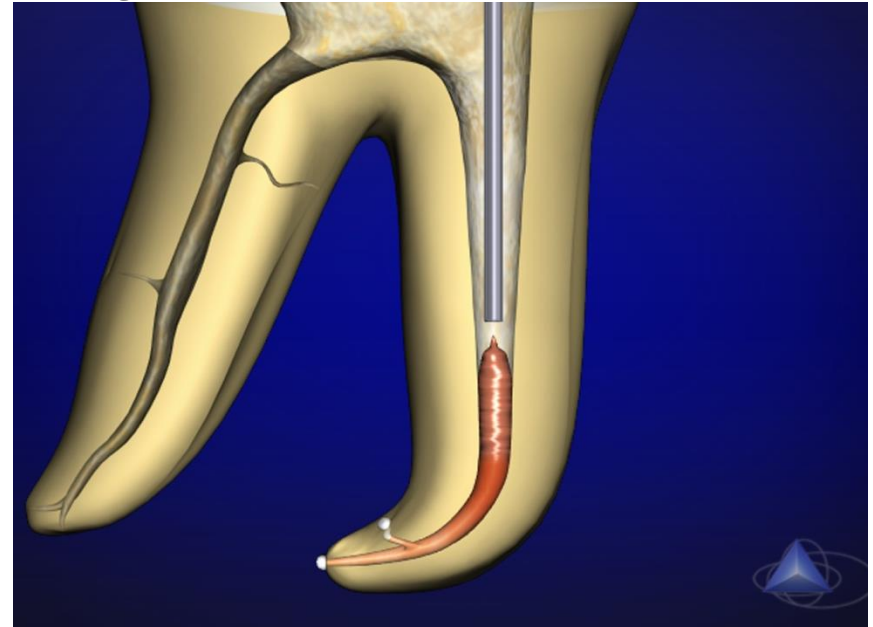
***Internal view of activated flow handpiece***



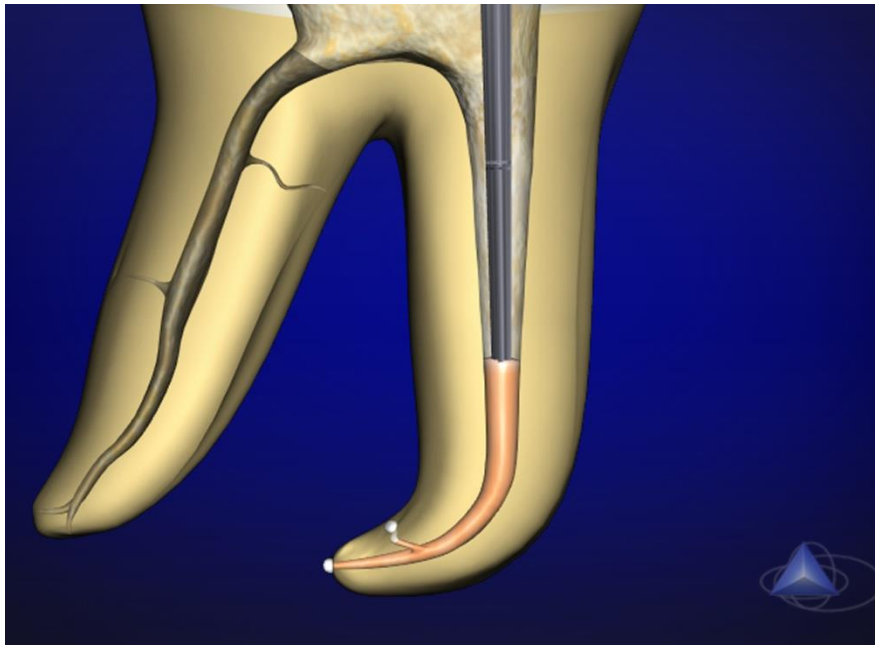


***Placing warm tip against packed-material  
re-thermosoftens gutta-percha***

***Activate gutta flow, dispense 2-3 mm  
warm gutta-percha***

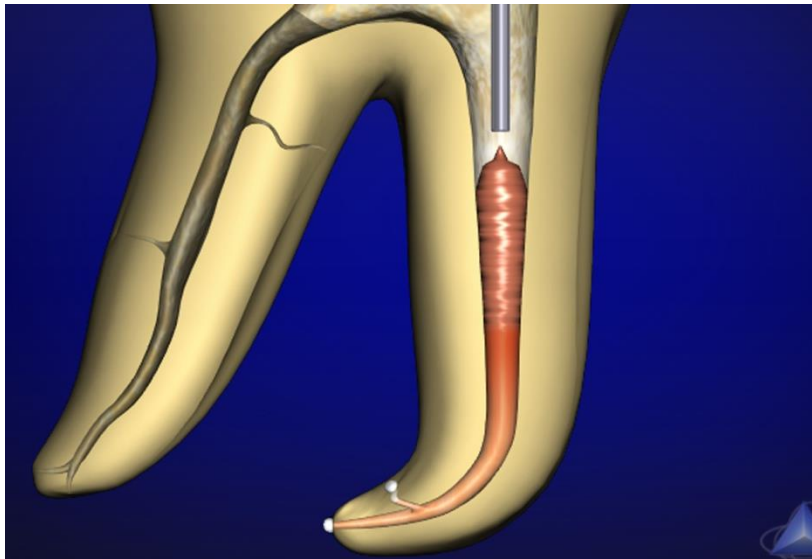
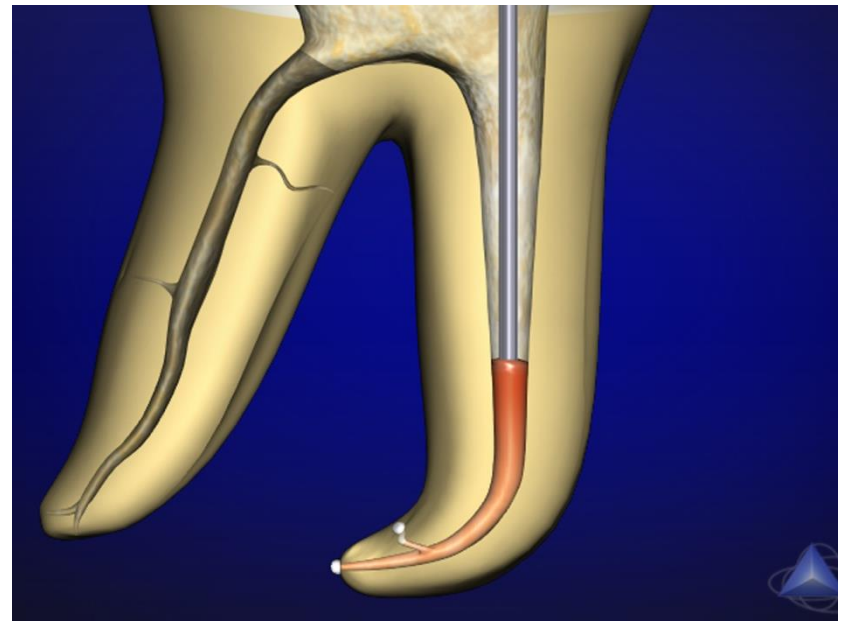


***Select smaller prefit manuel plugger  
and condense material***

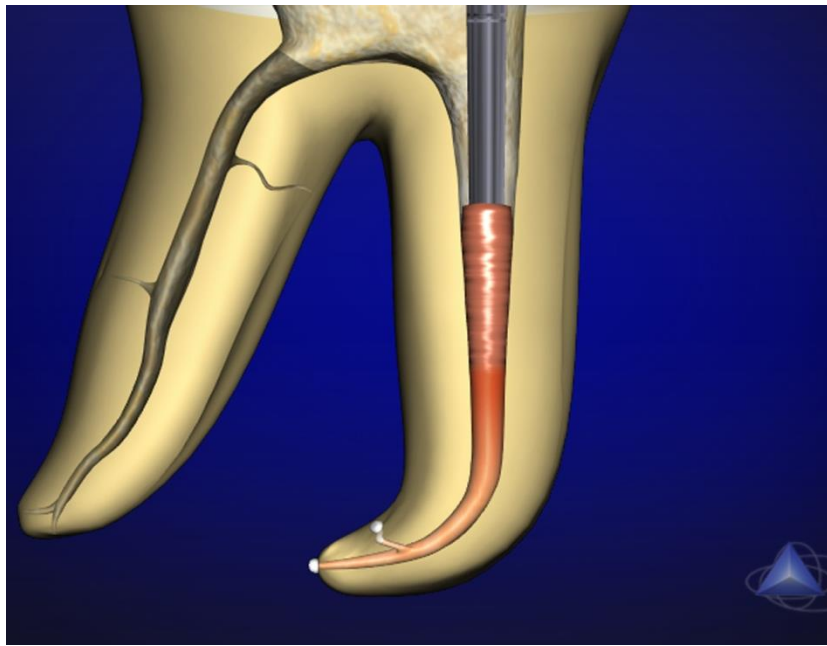


***With the same plugger, press 5 seconds to avoid shrinkage during cooling phase***

***Position tip 5 seconds against packed material***

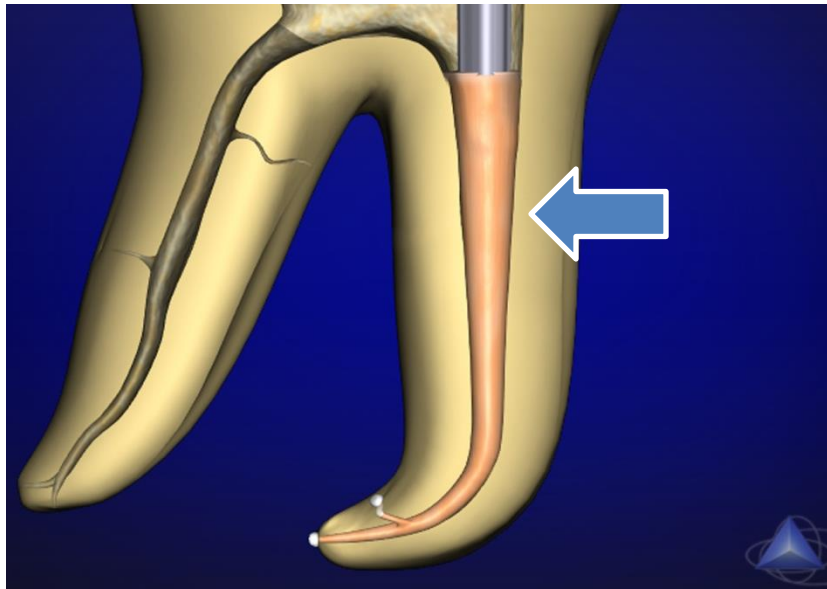
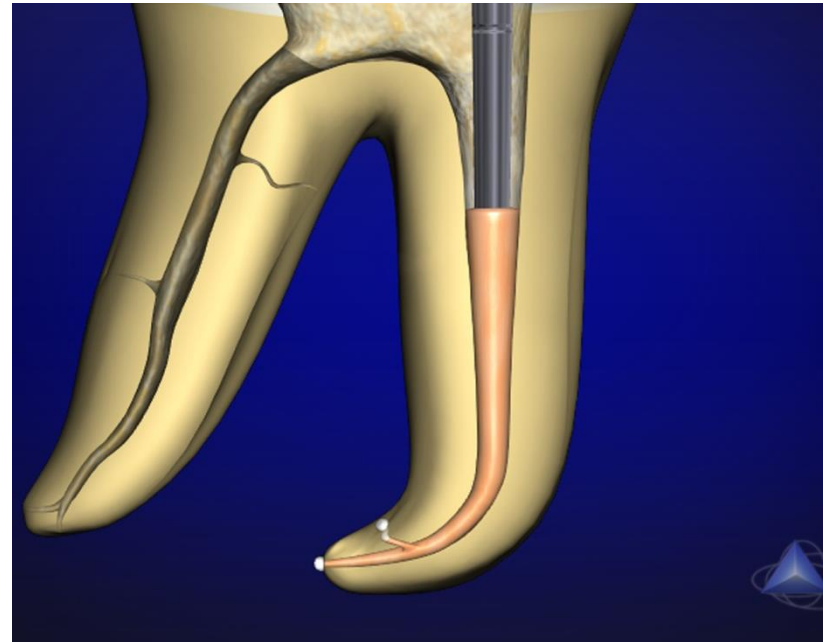


***Activate gutta flow flow and dispense 3-4 mm warm gutta-percha***



***With a prefit, medium size manual plugger condense the material***

***And press the material for 5 seconds  
(avoiding shrinkage)***



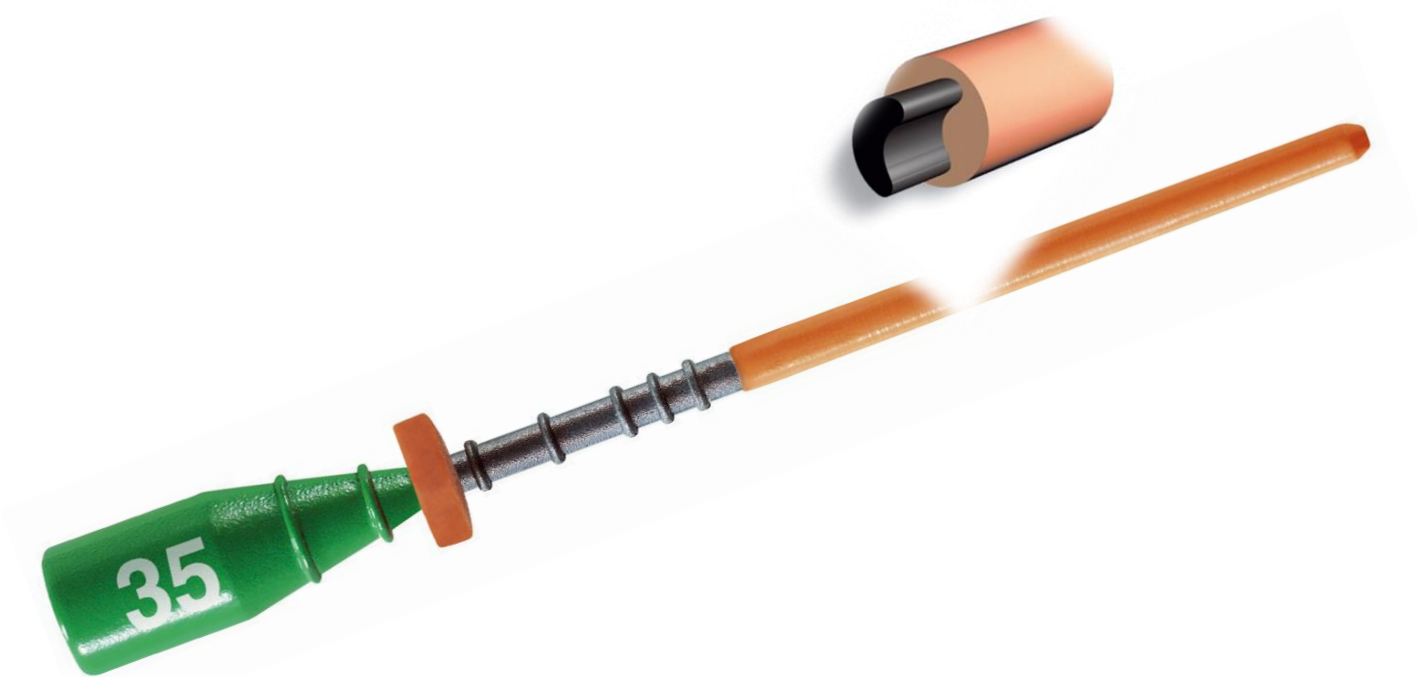
***Continue the backfilling in the same manner until the canal is full **OR stop** to accommodate a post for restorative***

# Injection of heated guttapercha

- Can be used also only without vertical compaction – usually in teeth after apexification or teeth with internal resorption.

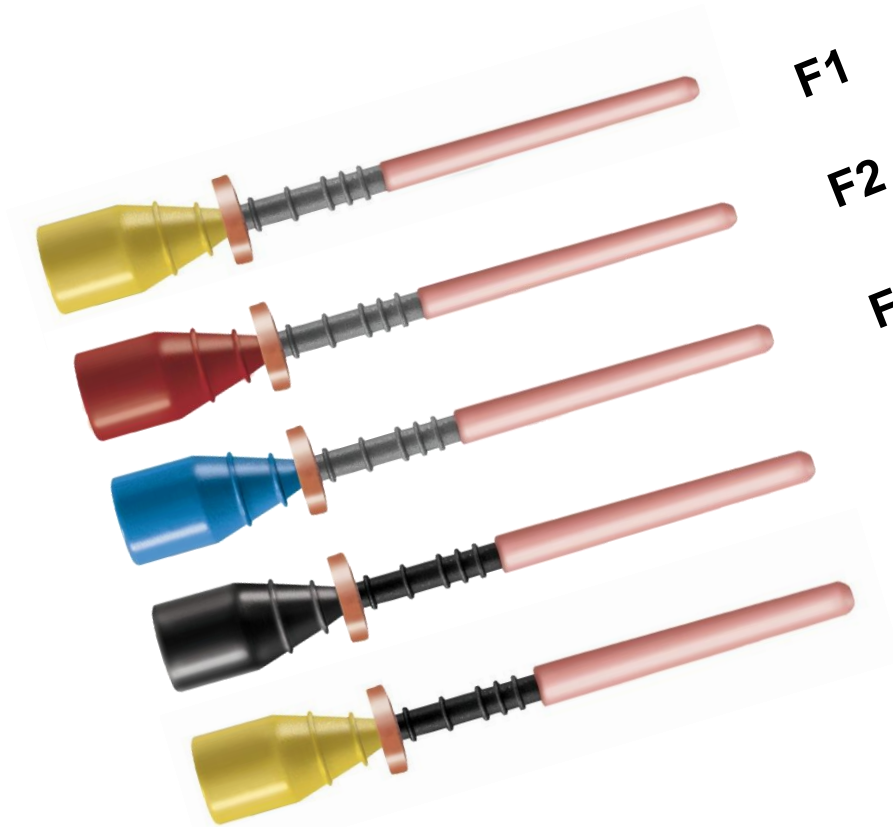


Core-Carrier (PP) - Gutta-Percha  
Filling Technique – an example  
Thermafill or Protaper Obturator and  
others...



# Obturators PROTAPER

## Core-Carrier Gutta-Percha Filling Technique



F1

F2

F3

F4

F5





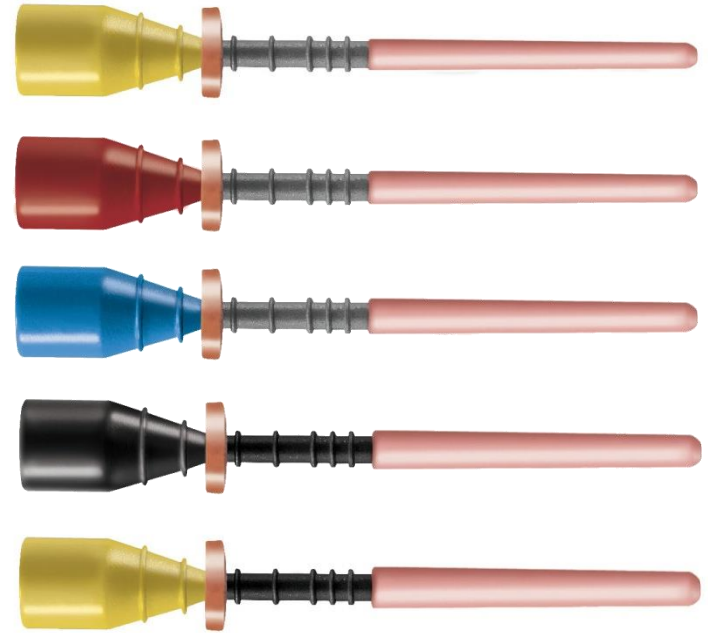
F1

F2

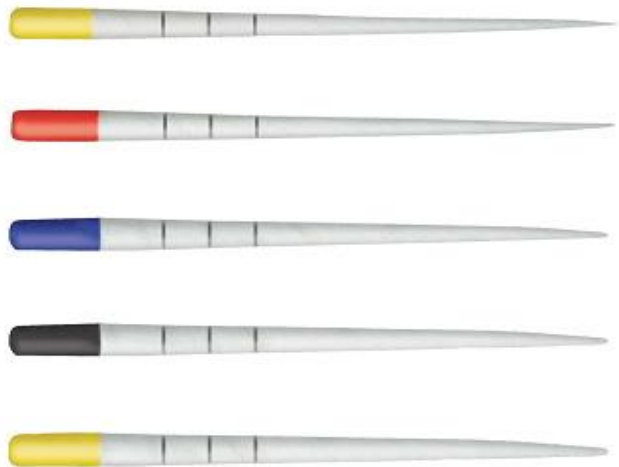
F3

F4

F5



***Obturators - Protaper sizes***



F1

F2

F3

F4

F5

***Paper points - Protaper sizes***

# ProTaper Obturator calibrated to each Finishing File



F1

F2

F3

F4

F5

# 3D Filling of the Root-Canal System with THERMAFIL Or PROTAPER OBTURATOR



**Thermaprep Oven**



**Size verifier to measure the apical size**



**Thermacut bur**



**Post space bur**

# *Core-Carrier Obturator Technique*

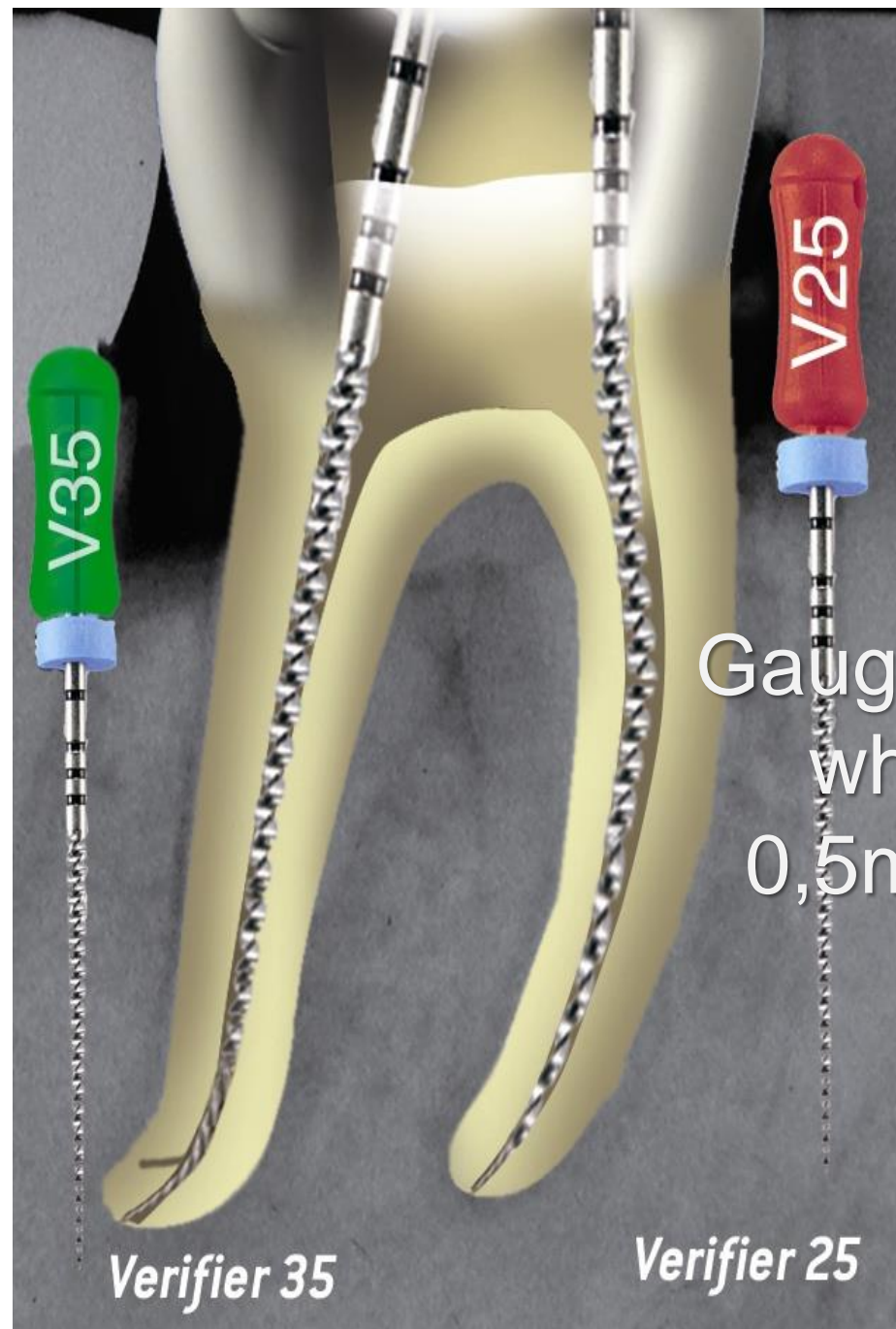


1<sup>st</sup> step :

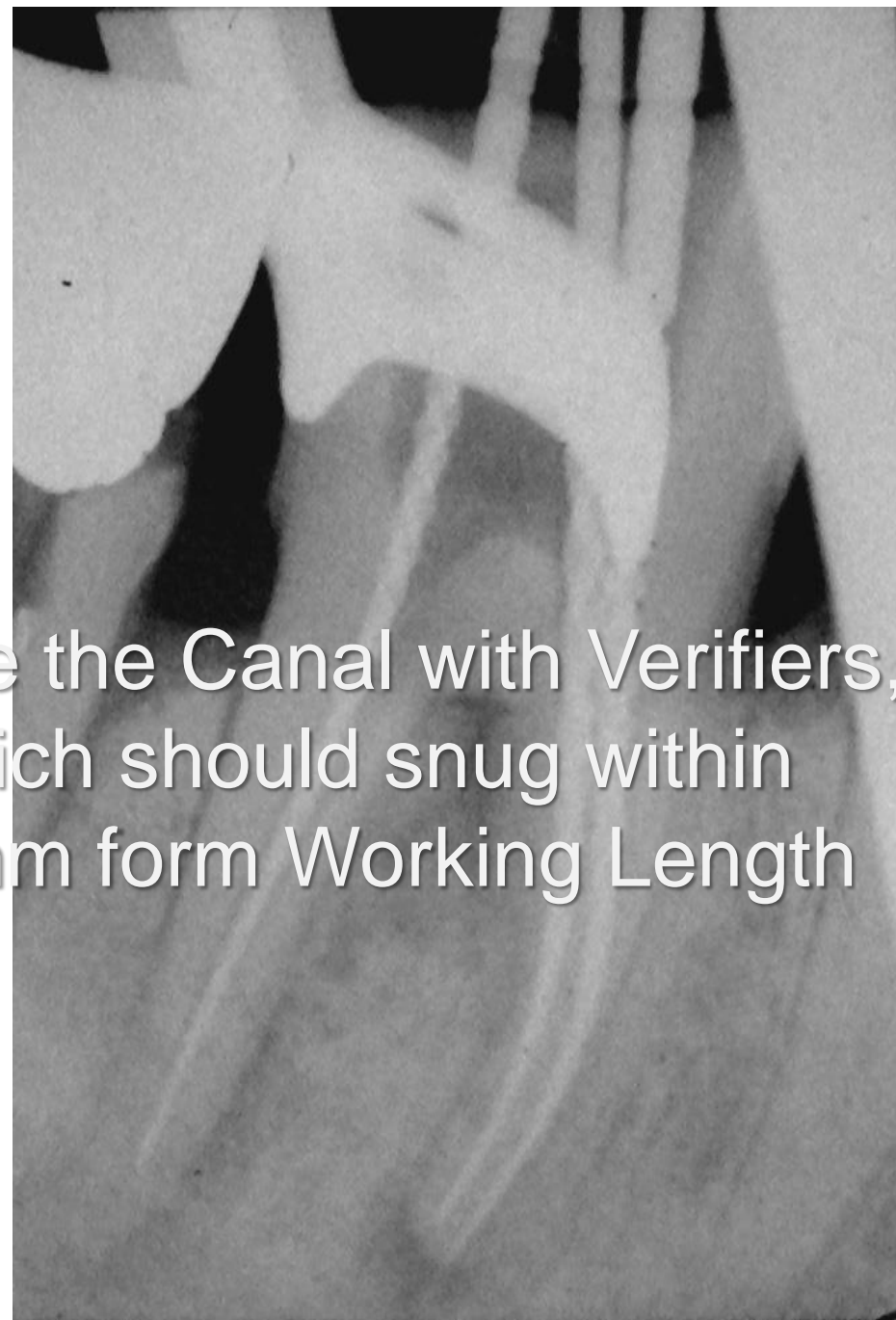
Opening

cleaning

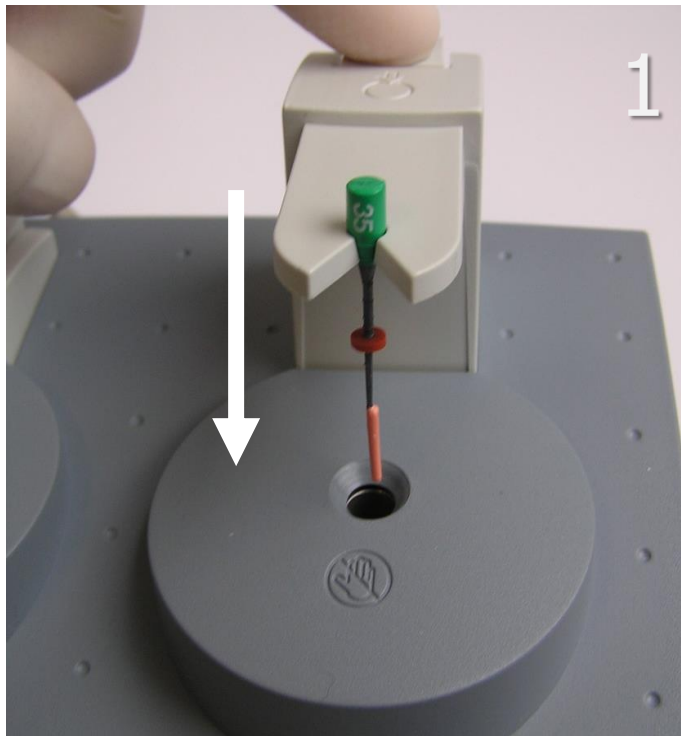
Shaping ...



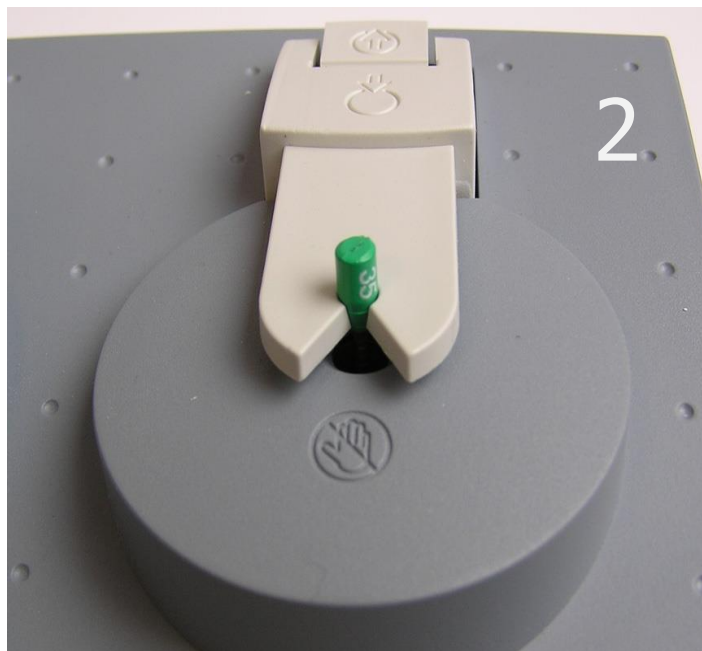
Gauge the Canal with Verifiers,  
which should snug within  
0,5mm form Working Length



## Place the Obturators



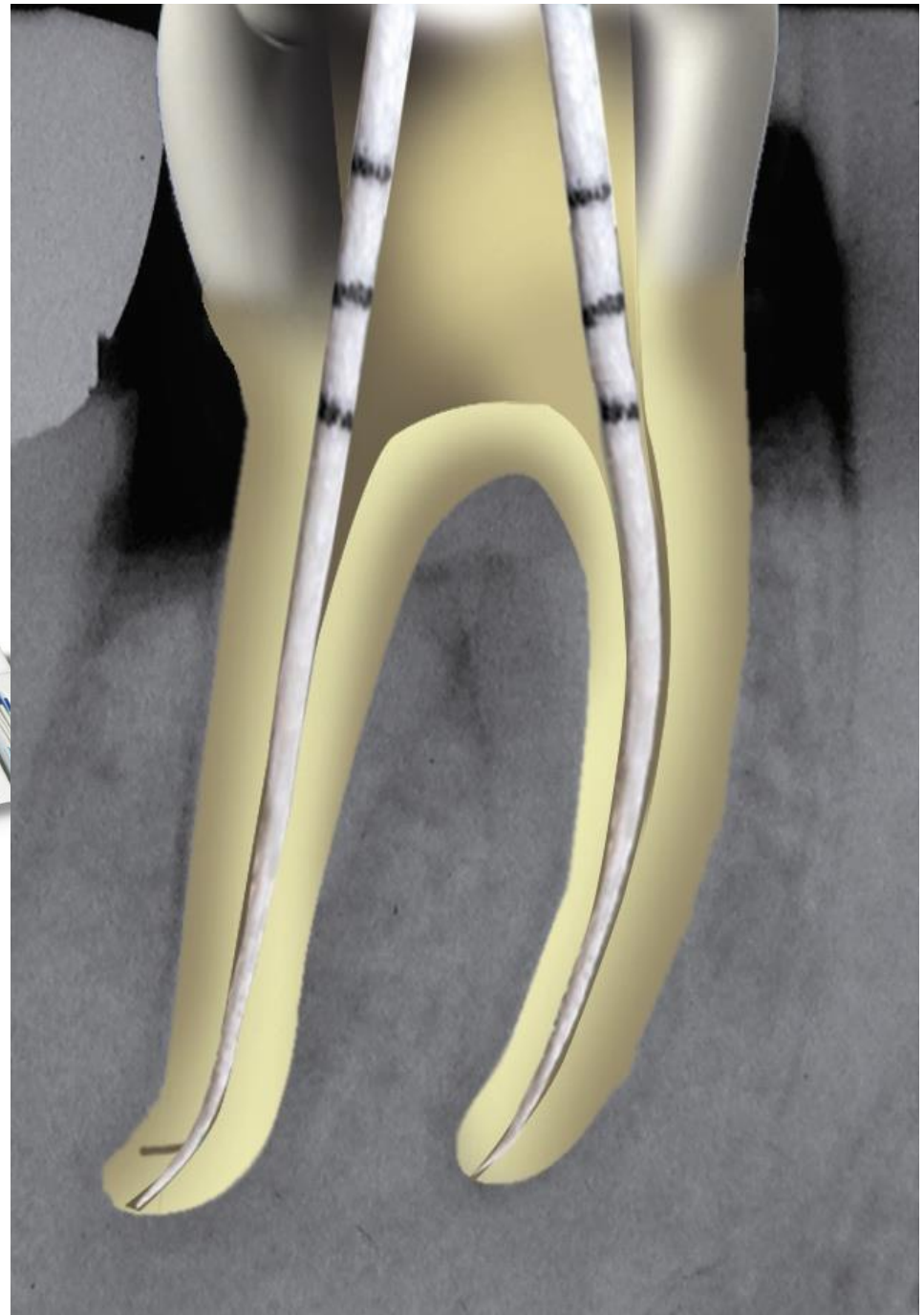
Heat The  
Obturator



Select the right  
size and start



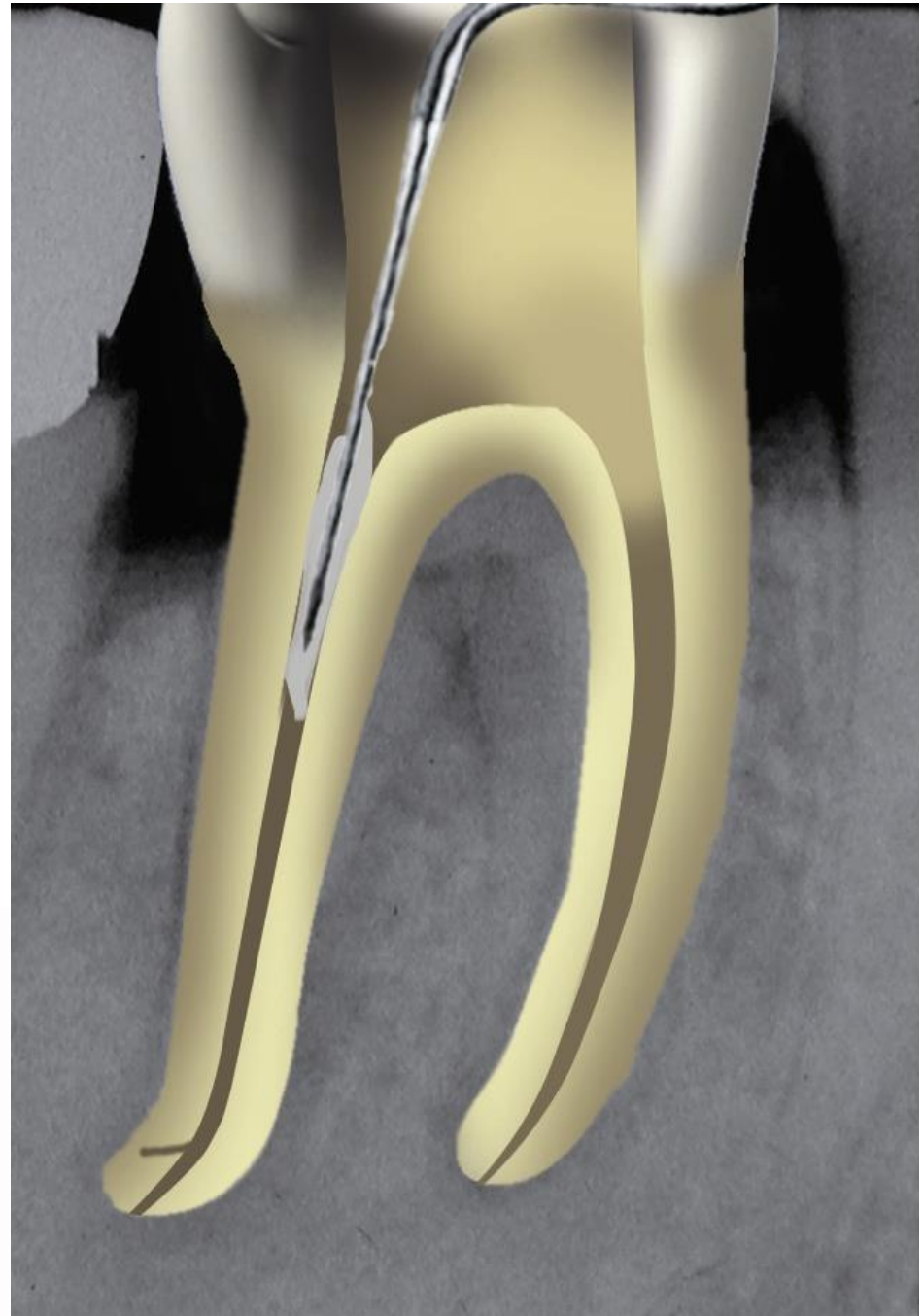
# Dry the Canals with Sterile Paper Points

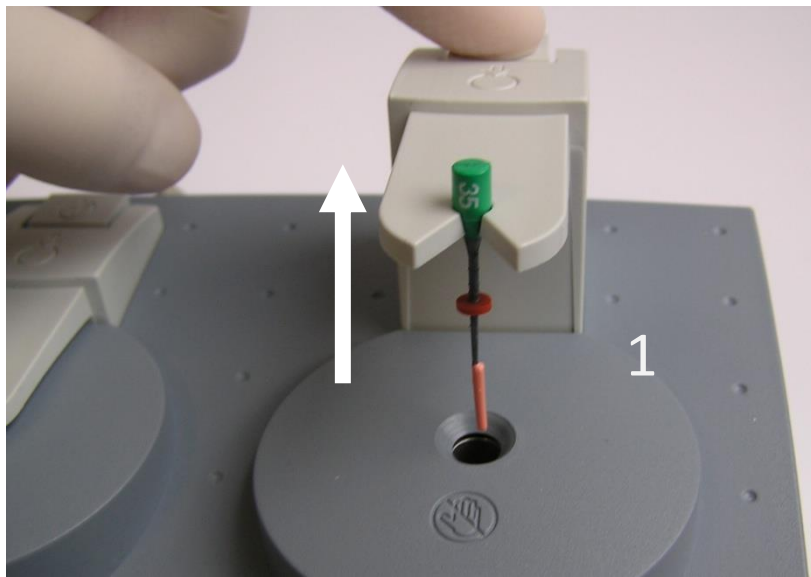


**Mix the Sealer and coat  
thewalls of the canal with a  
thin layer using a Probe or a  
paper point**

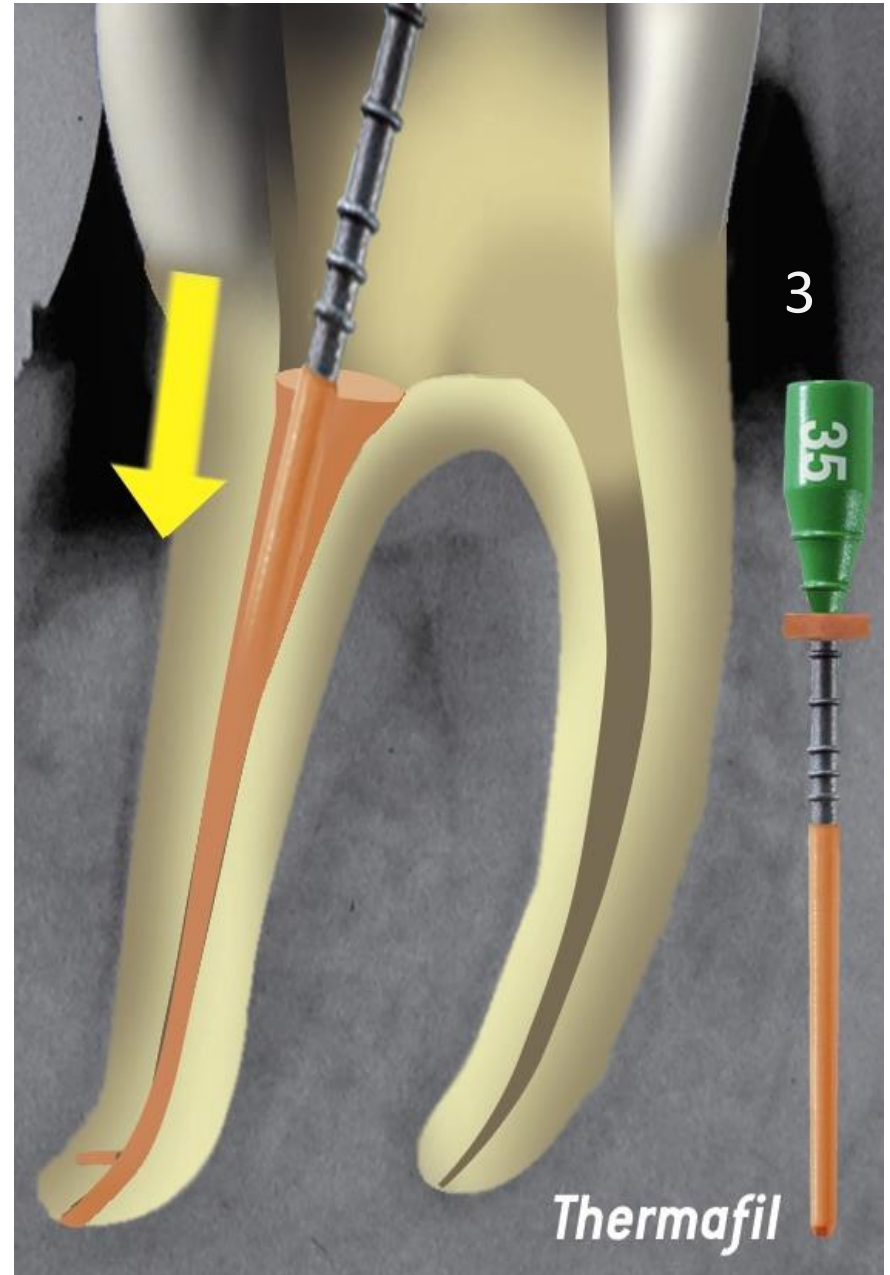
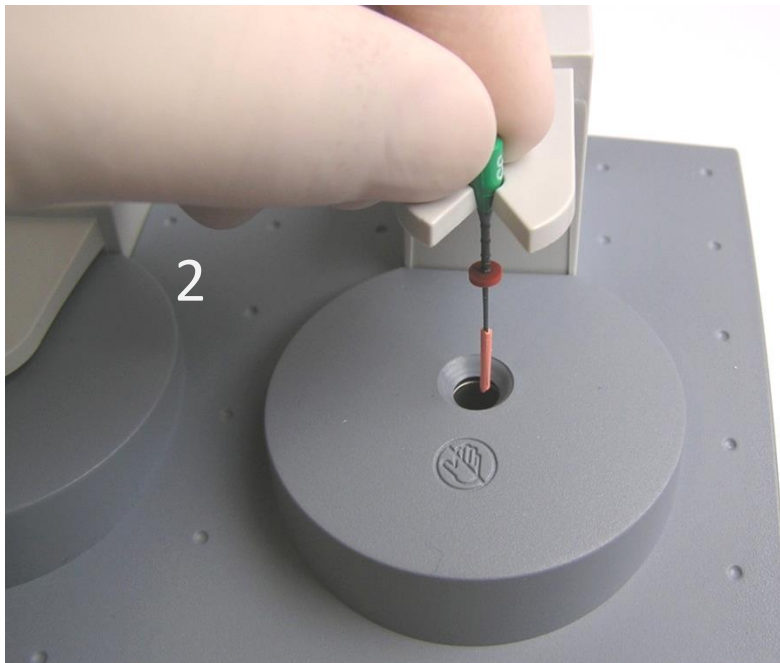


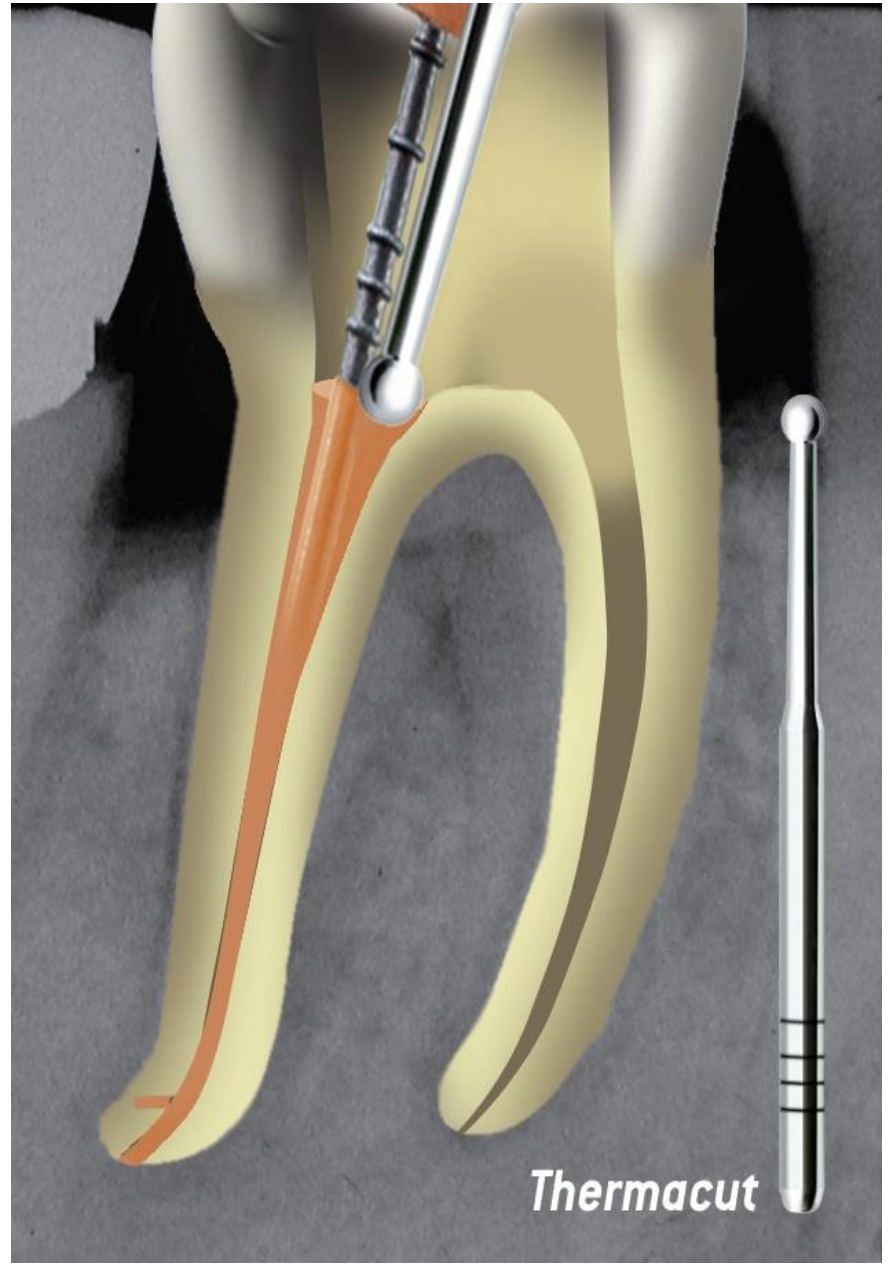
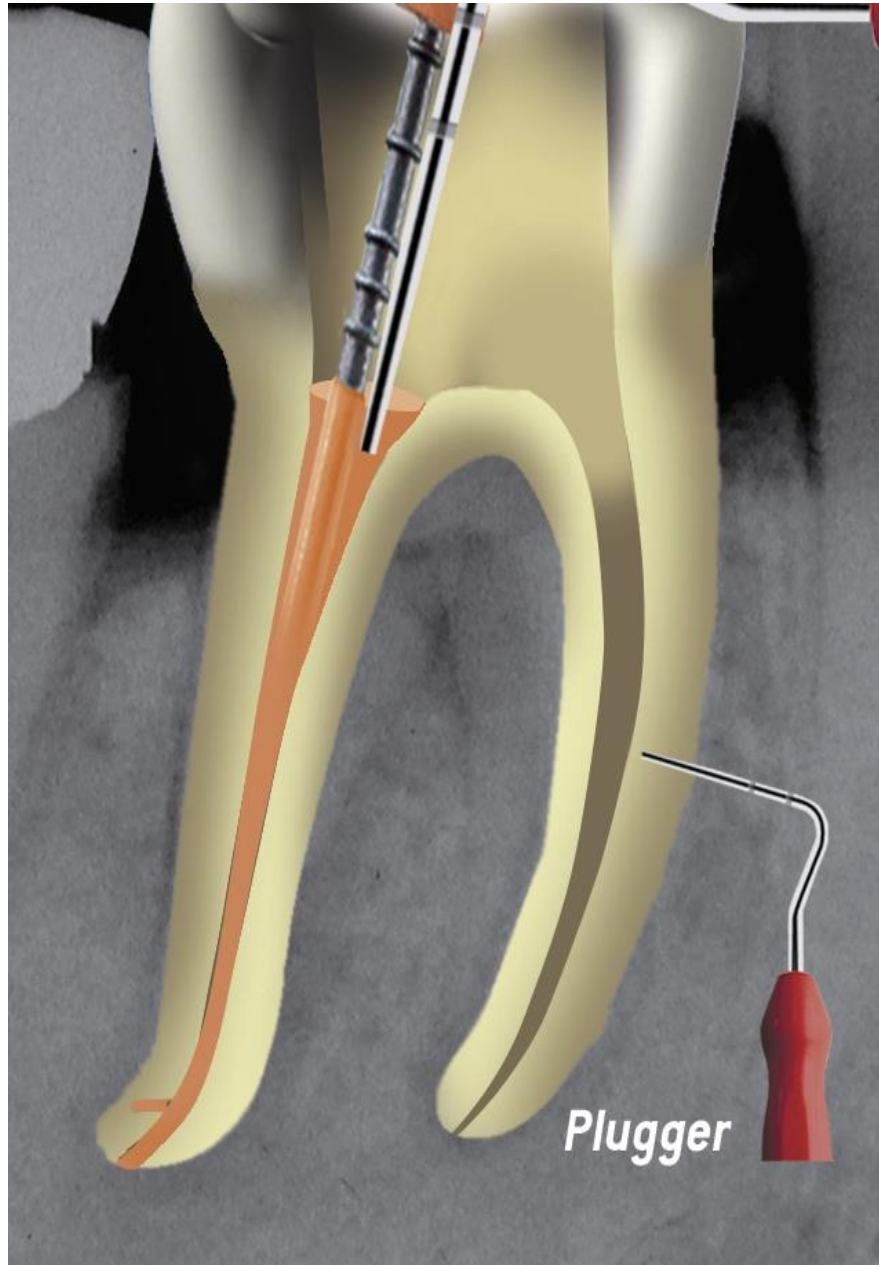
**Topseal MIX**



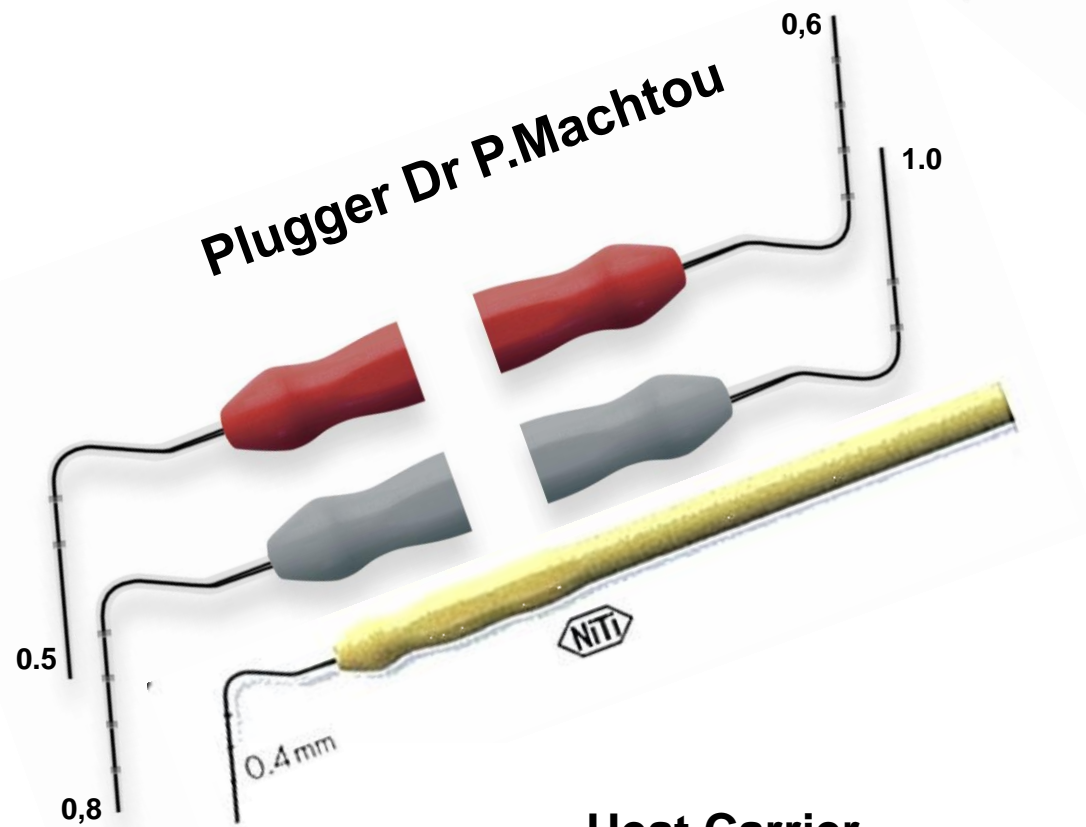


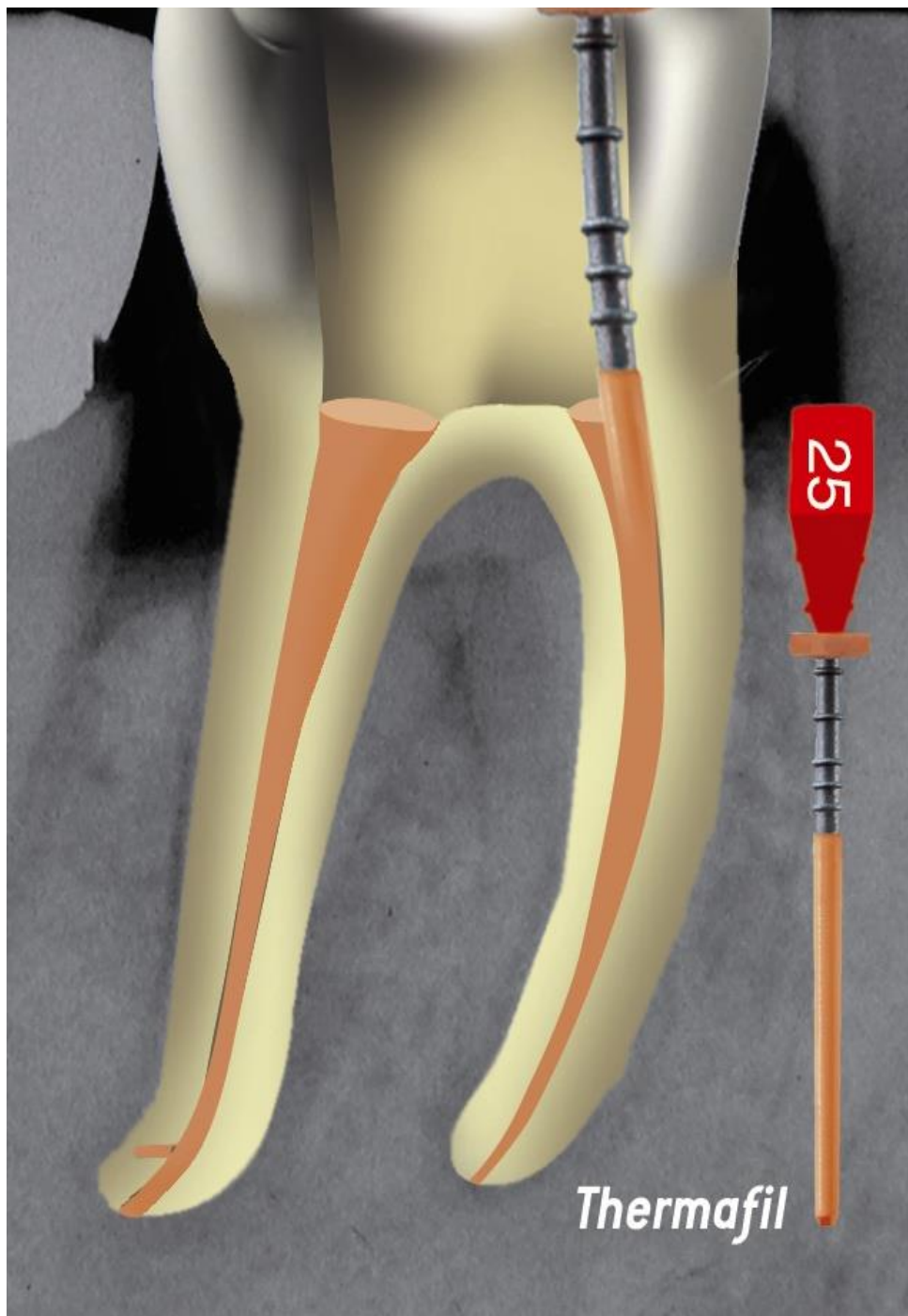
**Take it out  
and insert it in the canal**





Use of a selected Plugger to ensure homogeneity of the filling.

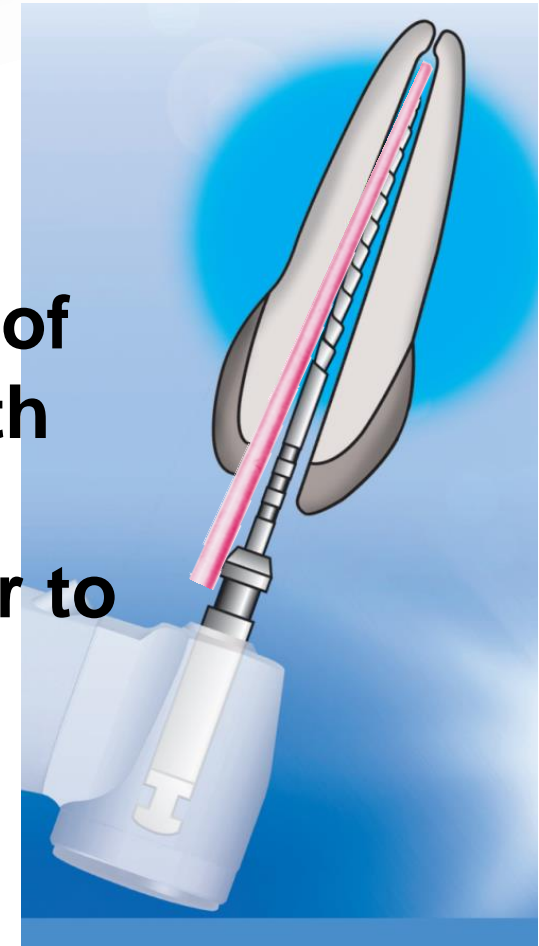




# Mc Spadden technique



**After each point of  
Gutta-Percha with  
sealer, use the  
Gutta-Condensor to  
melt and fill the  
canal.**

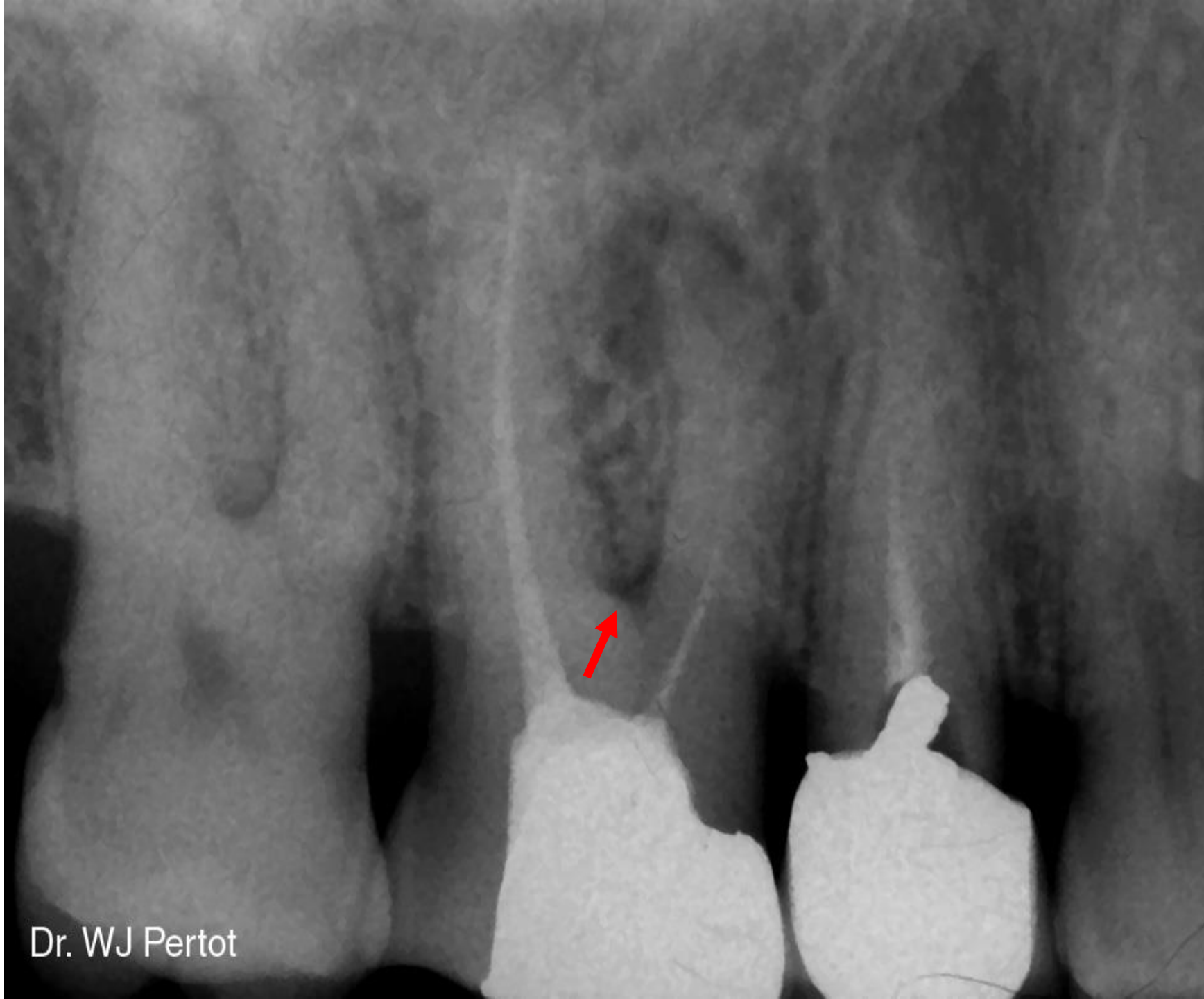


# Warm vertical compaction

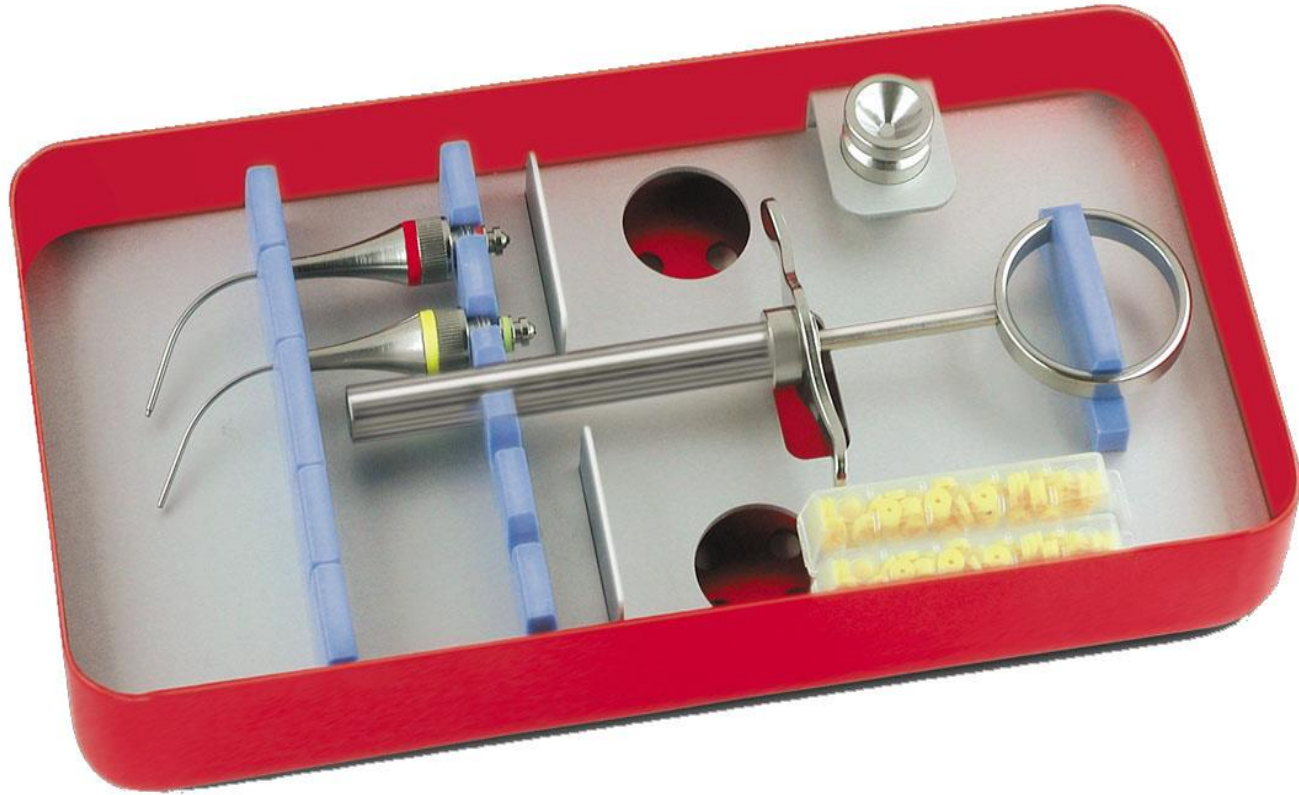
- Gutta cones are heated with special spreader  
– e.g.: Endo Twinn, Endotec and others.
- No widely used.



Plug of MTA

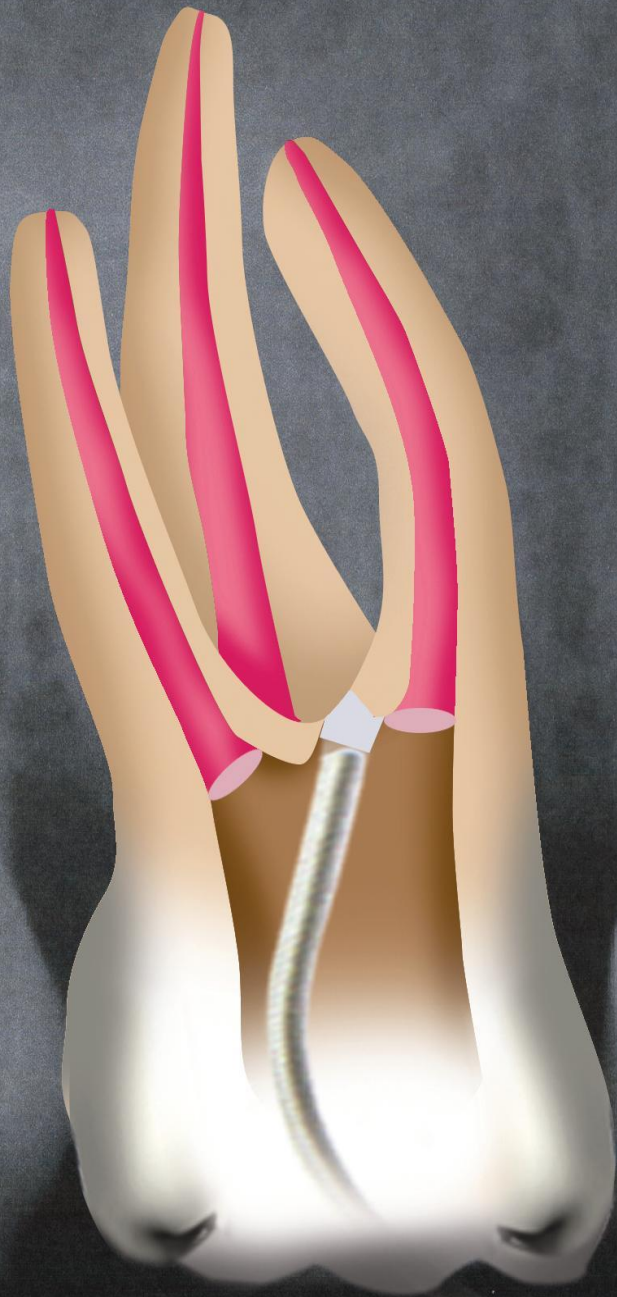


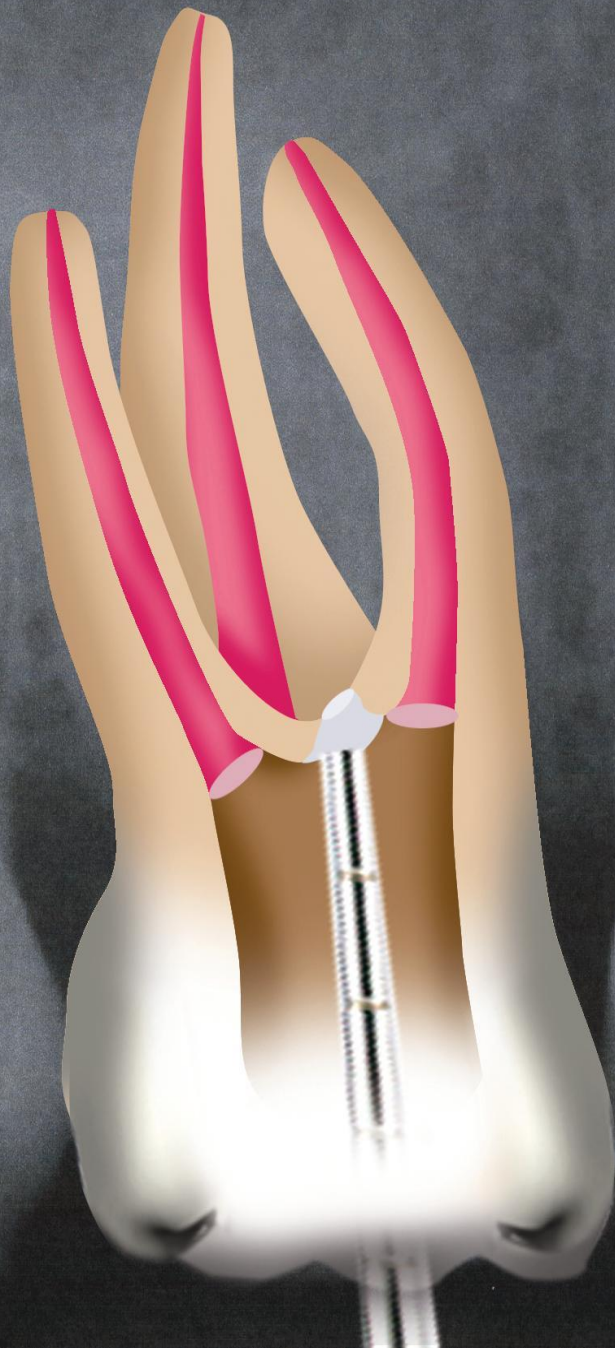
Dr. WJ Pertot



**MTA GUN**









Dr. WJ Pertot

2 Yrs

PLS

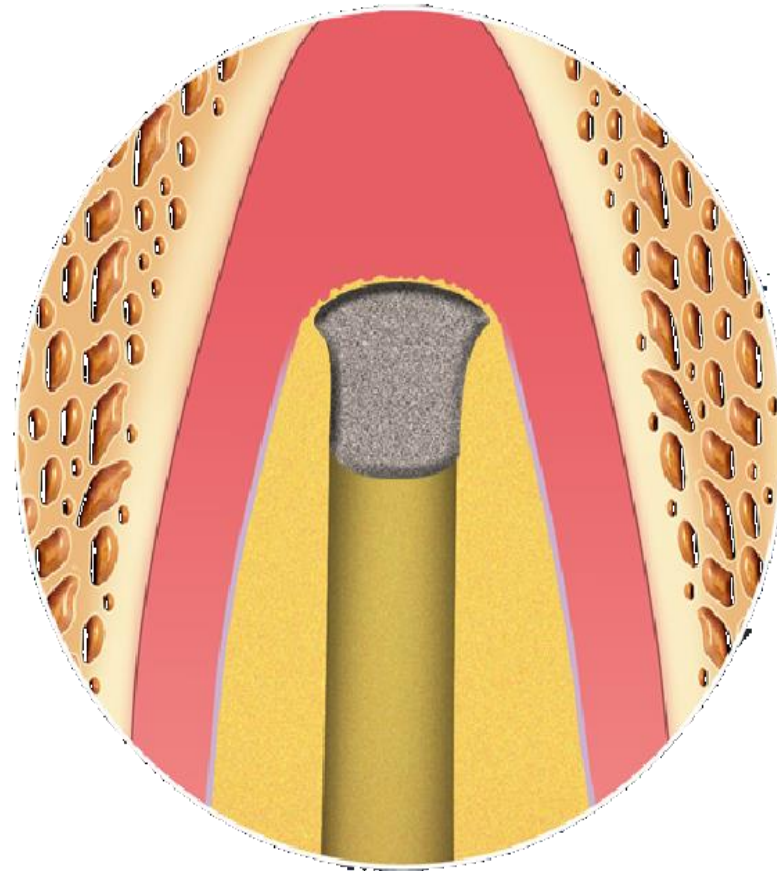
Dr. WJ Pertot



# ProRoot MTA

## For Apexification (Apical Plugs)

- Tittle et al. 1996
- Shahabang et al. 1999
- Hachmeister et al. 2001
- Felipe et al. 2006
- Simon et al. 2007



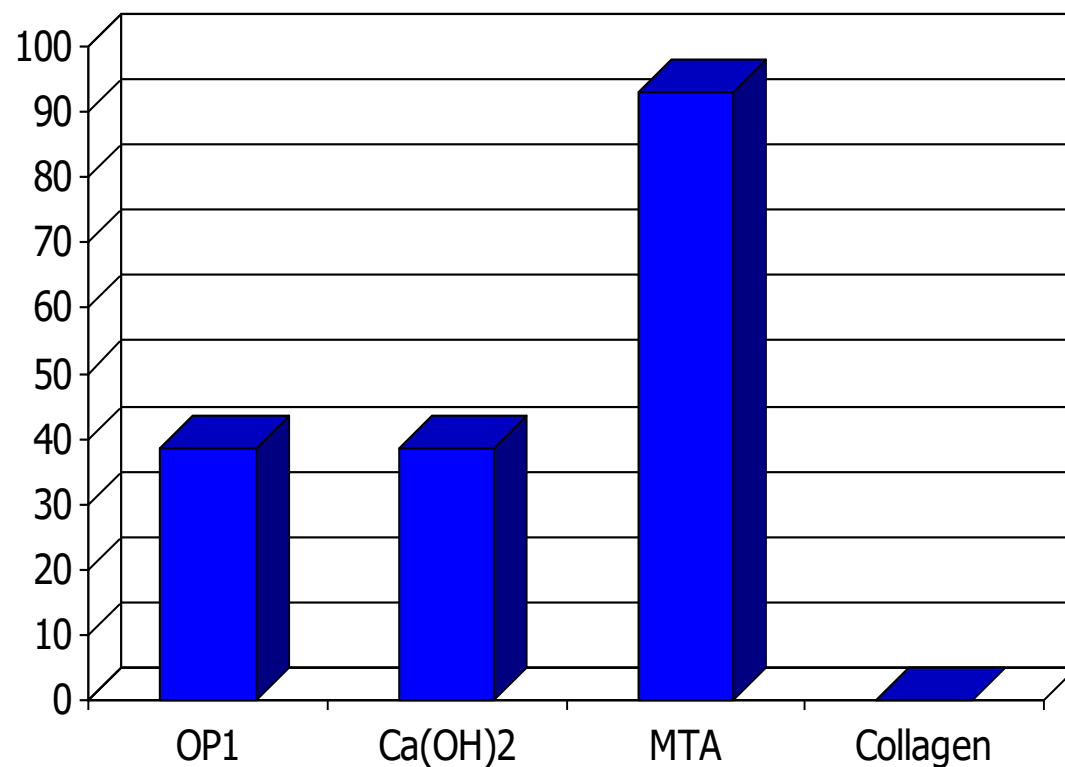


# A comparative study of root-end induction using osteogenic Protein-1, calcium hydroxide and Mineral Trioxide Aggregate in dogs.

Shahabang *et al.* J Endodon 1999 ; 25 : 1-5.



**% of roots with apical closure**



Dr. WJ PERTOT



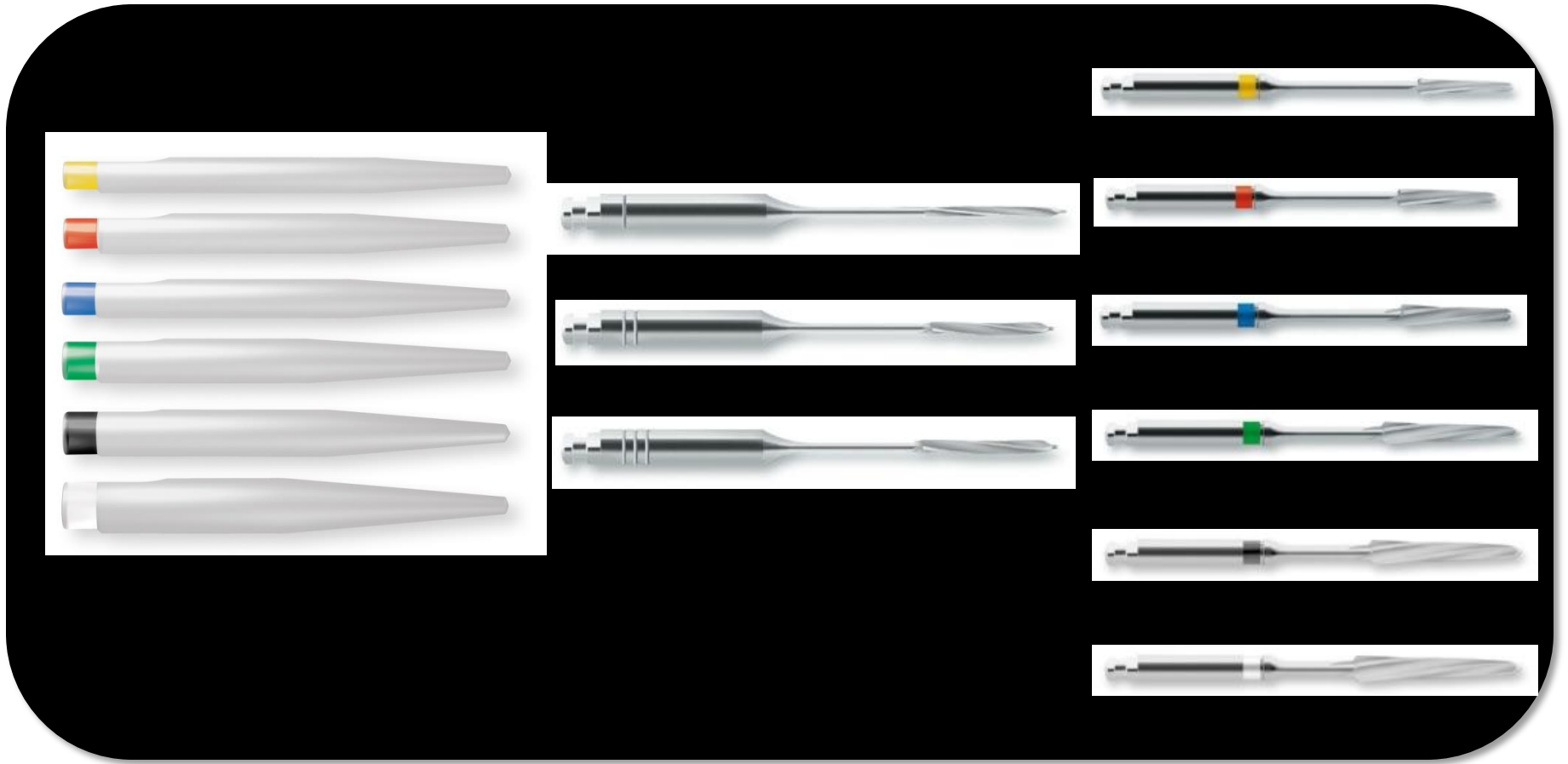
Dr. WJ PERTOT

1 yr



Reendo – an example of FRC post

# Radix<sup>®</sup> fiber **post**



- Translucent glass fiber posts in 6 sizes  
3 large reamers + 6 calibrated drills

Radix<sup>®</sup> fiber **post**



**X-Post<sup>™</sup>**



**DENTSPLY**

# X-Post™

# DENTSPLY



**Blister Refill**

## DENTSPLY Core & Post System ReOrder Information

### X-Post™

**Size 1 (yellow)**  
ReO 606.67.332 (5 pcs.)

**Size 2 (red)**  
ReO 606.67.333 (5 pcs.)

**Size 3 (blue)**  
ReO 606.67.334 (5 pcs.)

**Size 4 (green)**  
ReO 606.67.335 (5 pcs.)

### Mallefer Precision Drill

**Size 1 (yellow)**  
ReO C060100000100 (3 pcs.)

**Size 2 (red)**  
ReO C060100000200 (3 pcs.)

**Size 3 (blue)**  
ReO C060100000300 (3 pcs.)

**Size 4 (green)**  
ReO C060100000400 (3 pcs.)

### Mallefer Largo Peeso Reamer

**Size 1 (for Fiber Posts 1 + 2)**  
ReO A000924000100 (6 pcs.)

**Size 2 (for Fiber Posts 3 + 4)**  
ReO A000924000200 (6 pcs.)

**Self Cure Activator**  
ReO 634354K (1 bottle, 5ml)

**XP Bond™**  
ReO 606.67.281 (1 bottle, 5ml)  
+ 1 Clixdish™

**DeTrey® Applicator Needles for Conditioner 36**  
ReO 606.15.204 (25 pcs.)

**DeTrey® Conditioner 36**  
ReO 606.15.208 (2 syringes, 3ml each)  
+ 25 applicator needles

**Mixing/IntraOral Tips for Core-X™ flow**  
ReO 606.20.116 (40 pcs.)

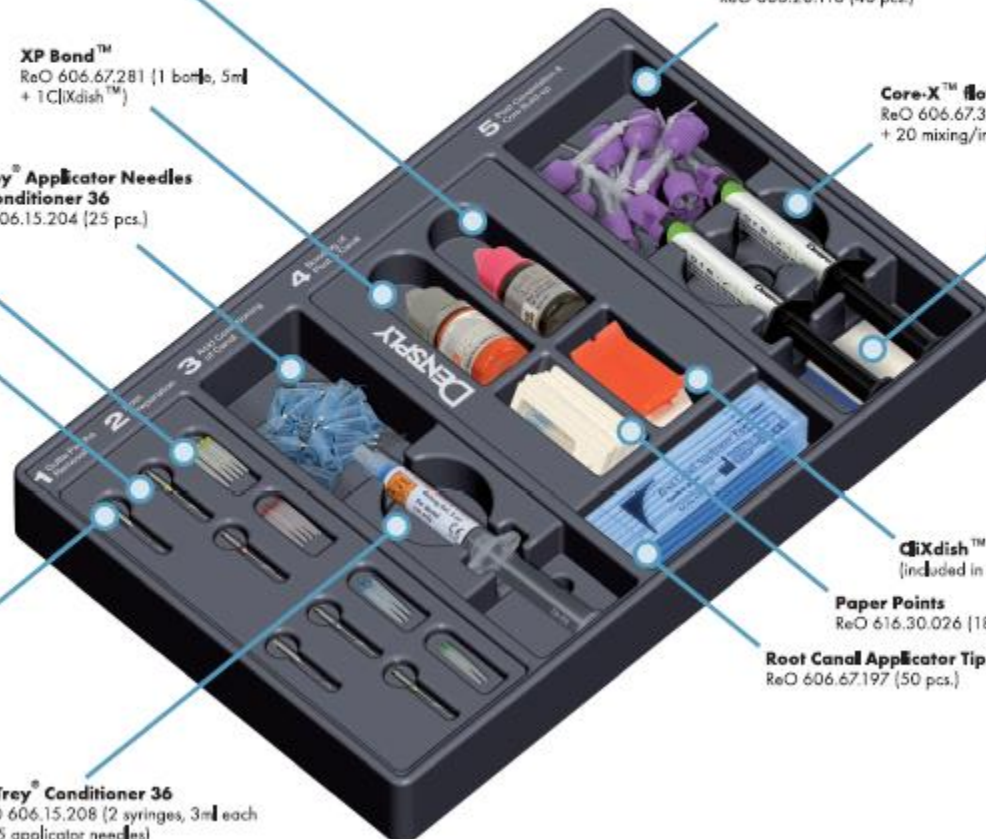
**Core-X™ flow**  
ReO 606.67.330 (4 syringes, 4.75g each)  
+ 20 mixing/intraoral tips

**Mixing Pad**  
ReO 611.05.990 (12 pcs.)

**Clixdish™**  
(included in XP BOND™ Refill)

**Paper Points**  
ReO 616.30.026 (180 pcs.)

**Root Canal Applicator Tips**  
ReO 606.67.197 (50 pcs.)



For better dentistry

# DENTSPLY

# Features & Benefits

- **Translucent & light conducting**
  - High aesthetics
  - Facilitates light curing
- **Excellent fatigue resistance**
  - Durable post for long-lasting restorations
- **High shear strength**
  - Optimal bond between post and cement
- **Radio opaque**
  - X-ray detection for easy diagnostics and monitoring
- **Compatible with all Dual Cure composite systems**
  - Corresponds to different user habits





# Clinical Case with Radix Fiber Post

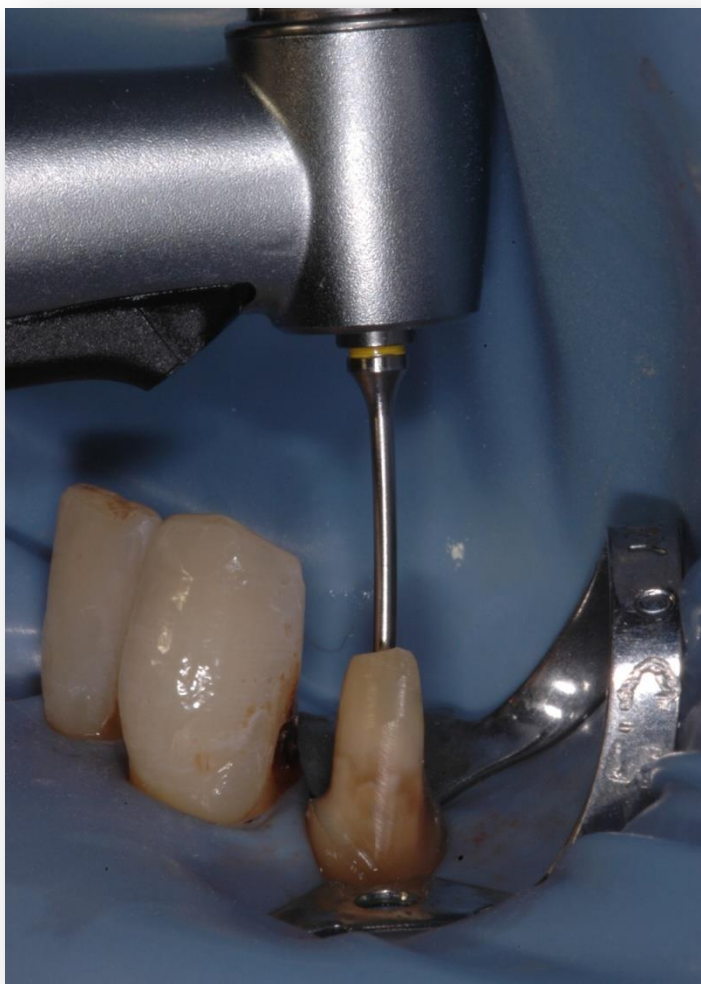
## X-POST



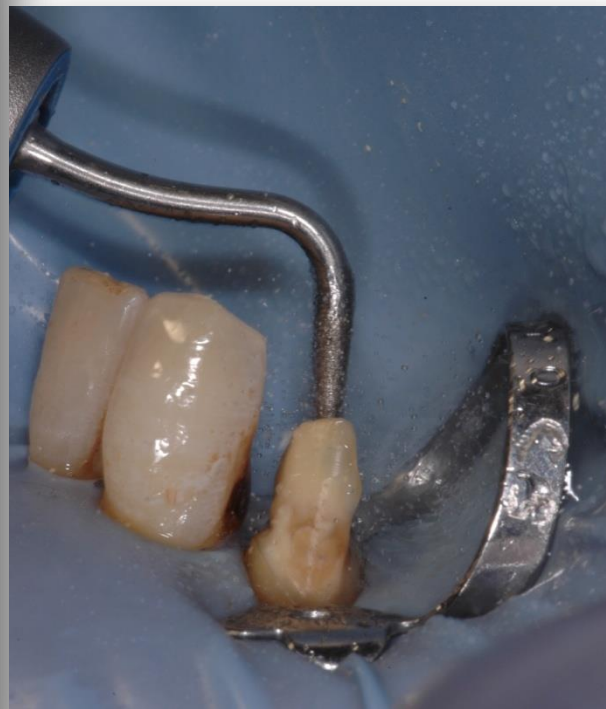
**Clinical View**



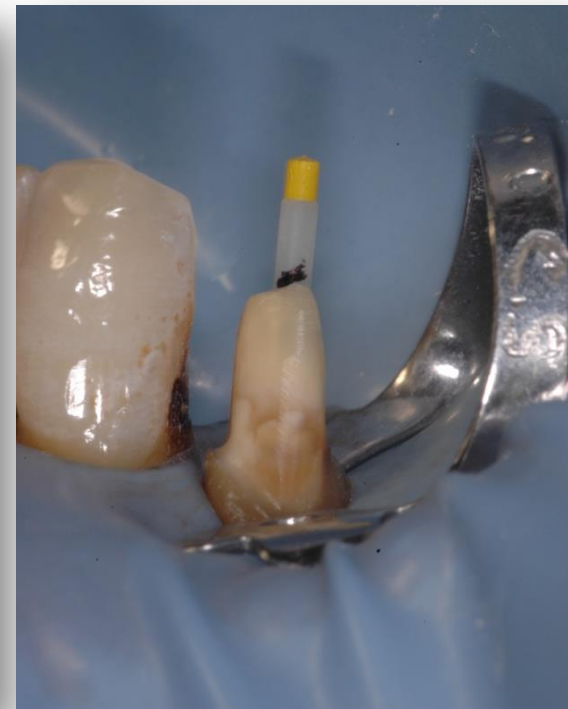
**Pre-op. X-Ray**



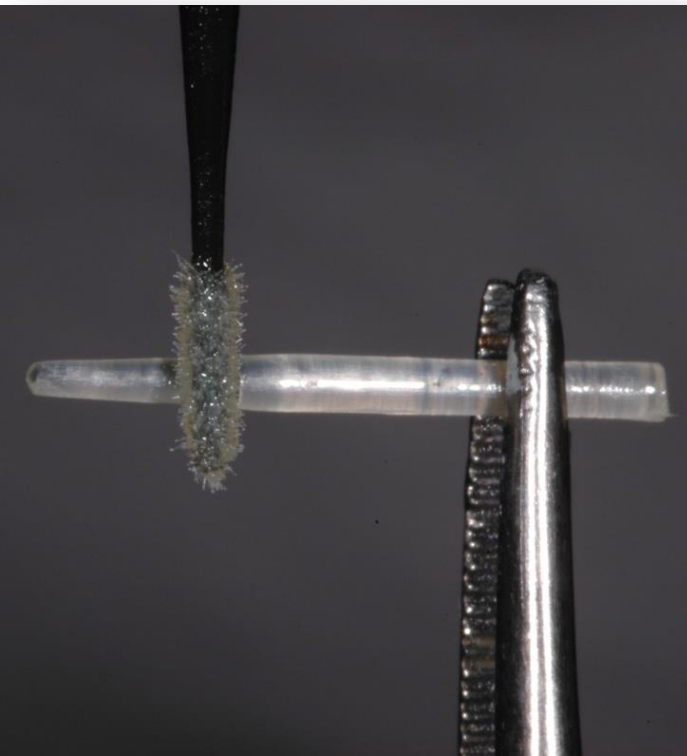
**Removal of root canal filling  
+ preparation of post space**



**Cleaning of root canal**



**Choice of post and  
length**



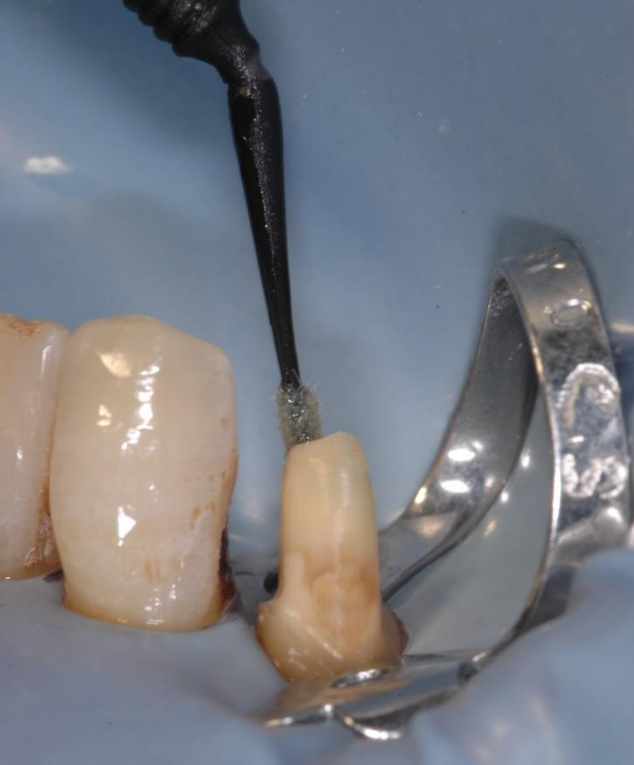
**Wetting of post  
with bonding agent**



**Validation of  
adapted pre-form for  
core build-up**



**Etching and  
rinsing of dentin**



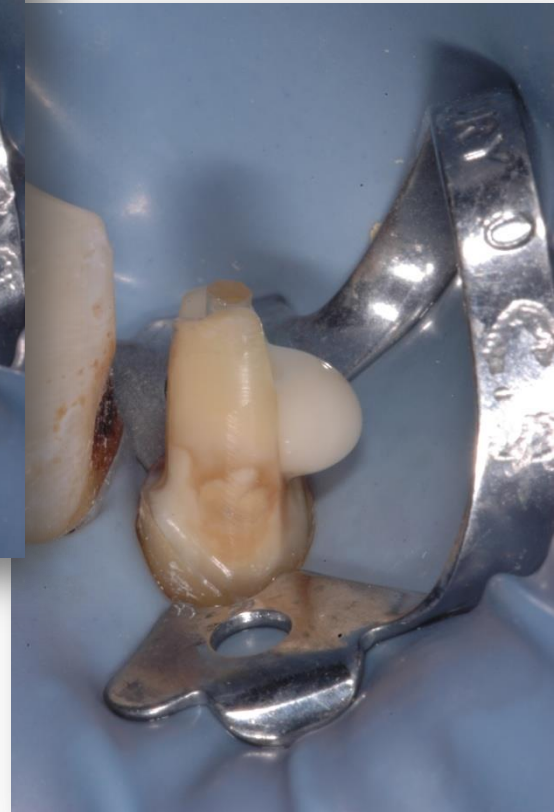
Application of the bonding



Elimination of surplus



Application of the cement



Placement of post



**Placement of pre-form**



**Elimination of surplus**



**Light-curing**



Core build-up