

OrthoMTA

Root Canal Graft

RESEARCH & DEVELOPMENT

BioMTA

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BioMTA

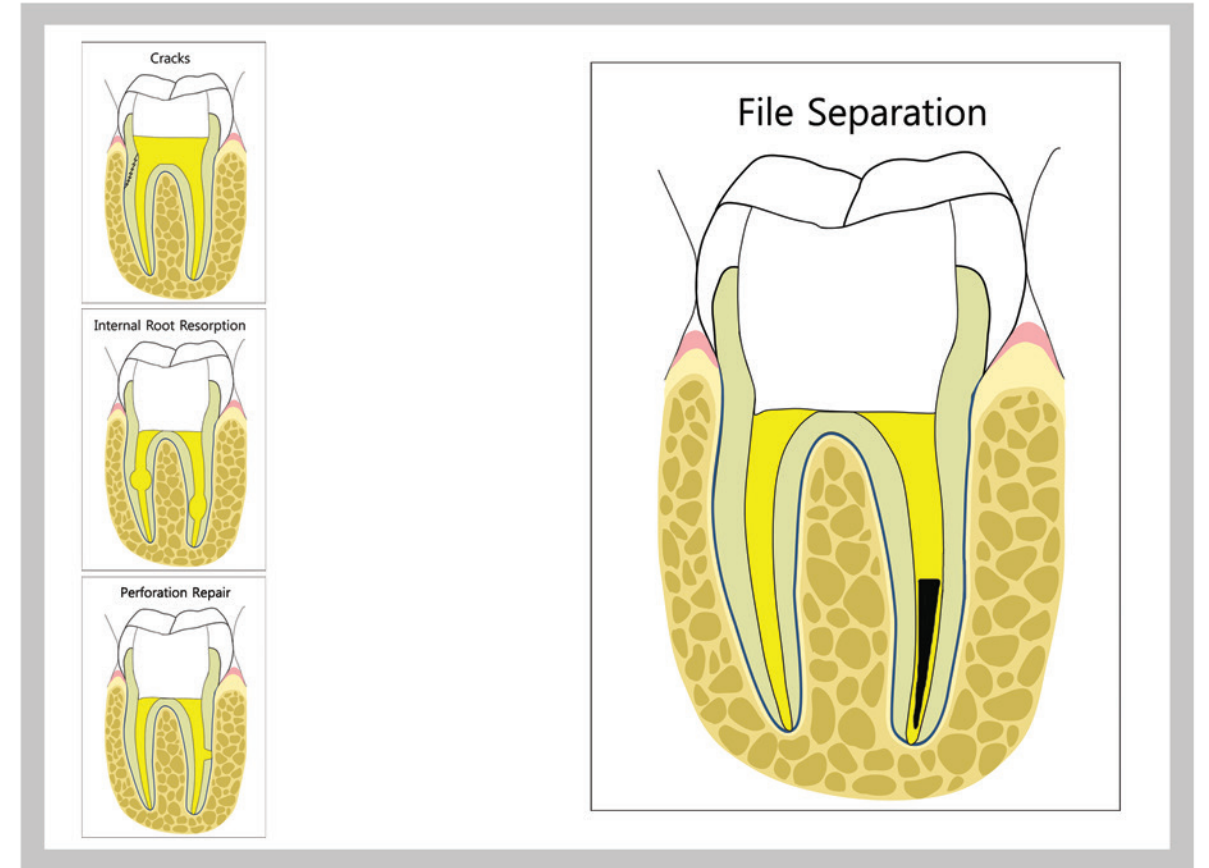
What is OrthoMTA?

OrthoMTA is an orthograde root canal filling material that was synthesized by mineral trioxide aggregate's active ingredient through Bio-ceramic manufacturing process. It was formulated to meet the ideal requirements of root canal filling material necessary for a clinically effective root canal treatment on cases of file separation, cracked tooth, severely infected canal, and retreatment of acute apical abscess.

OrthoMTA is a root canal filling material that is proven for remarkable long-term clinical success rate.

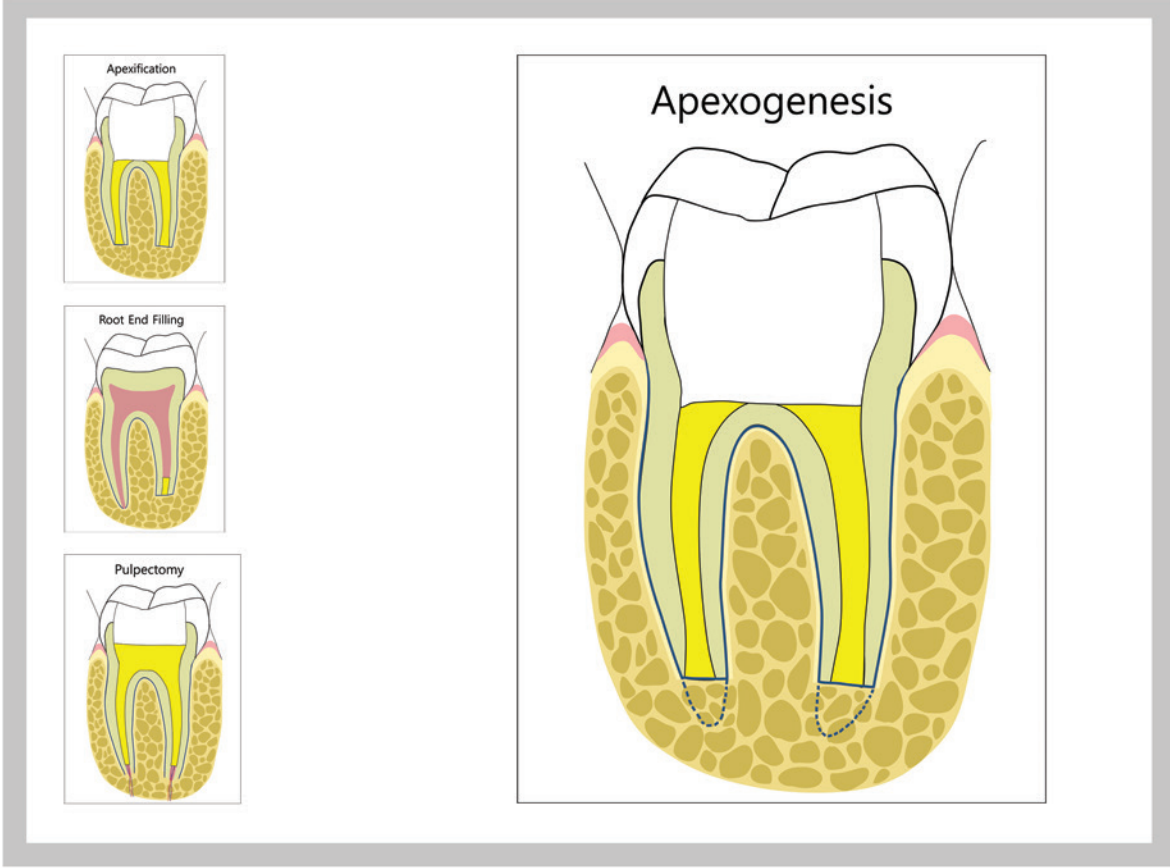
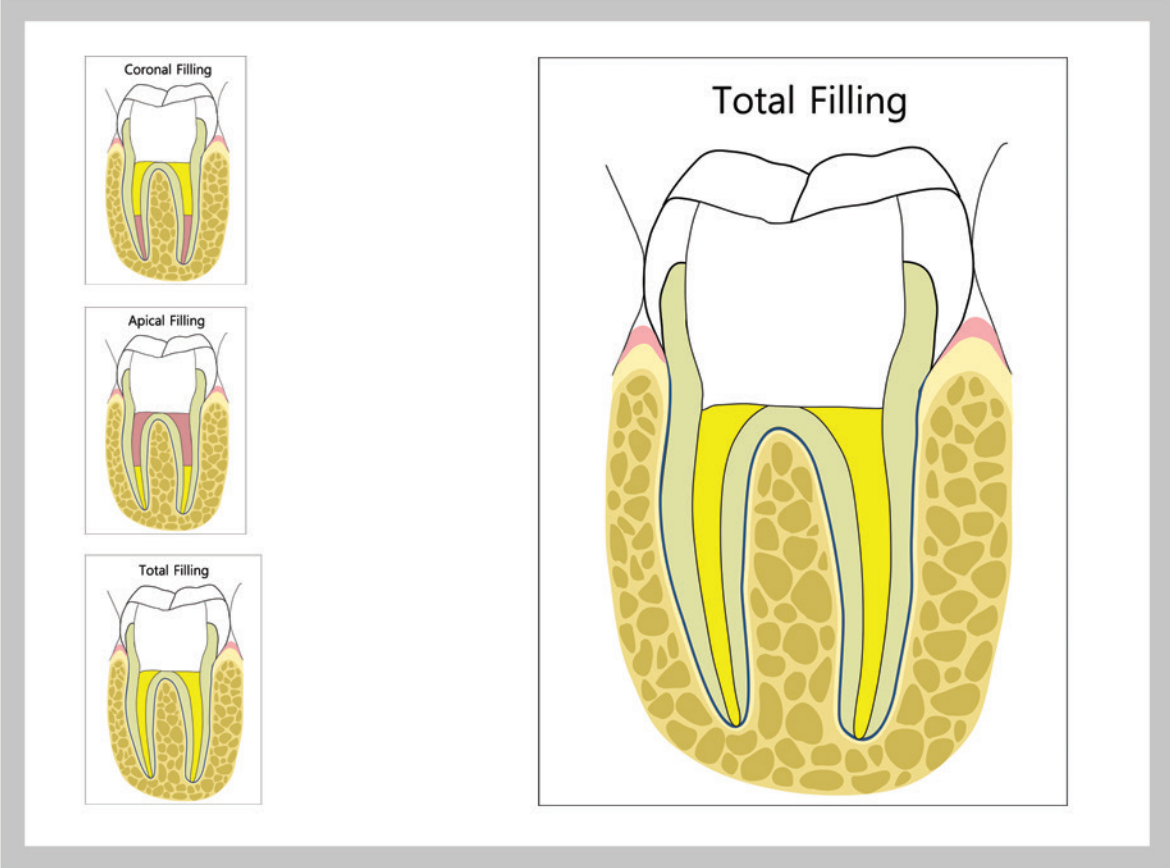


Root Canal Filling Material



Root Canal Filling Material

Root Regeneration

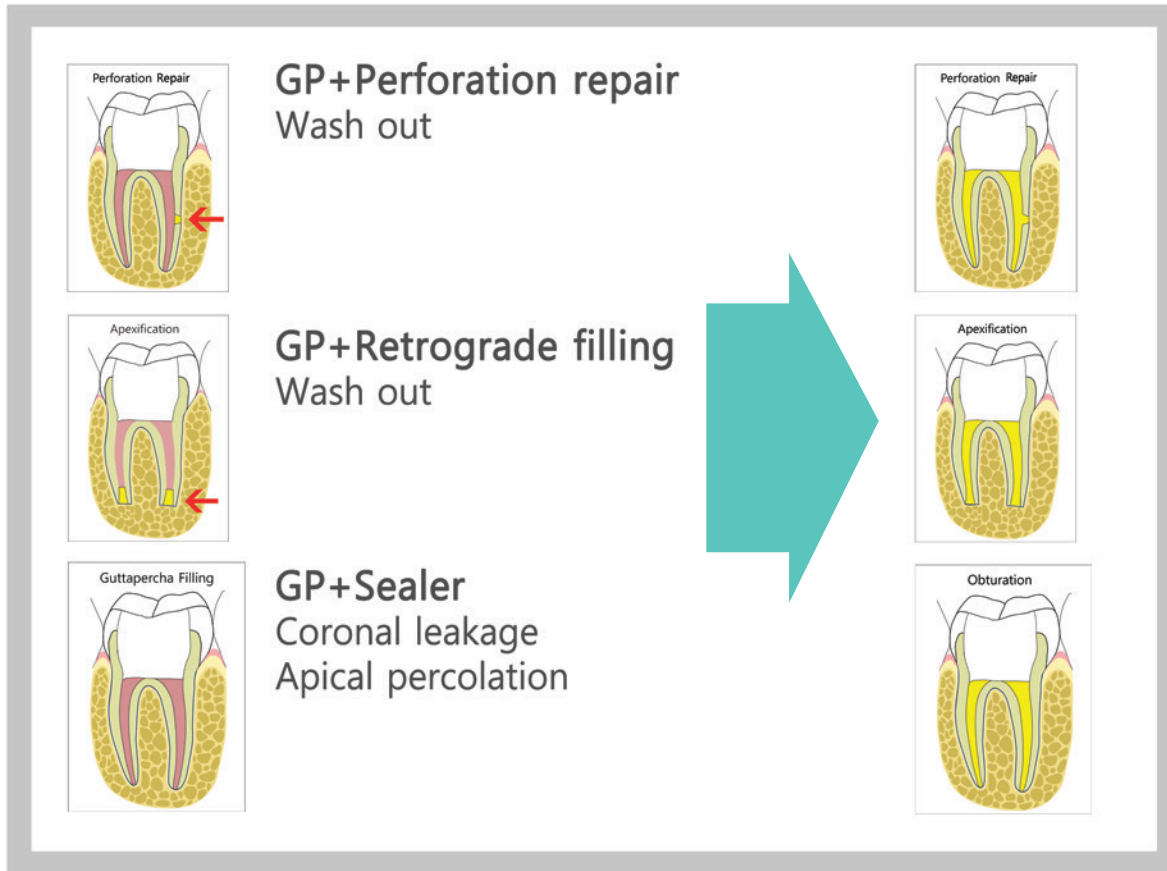


Rationale of OrthoMTA Grafting

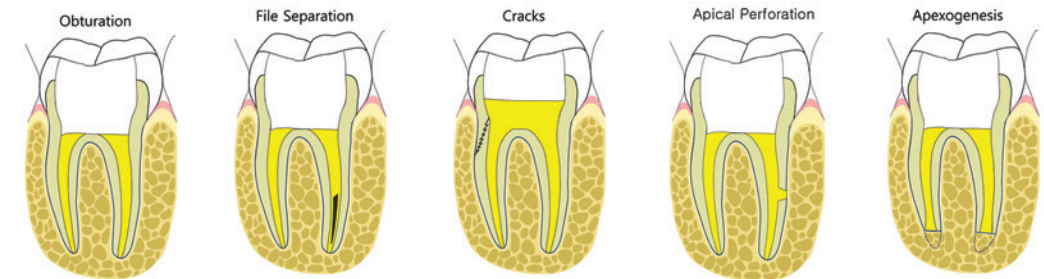
Gutta Percha + MTAs

vs

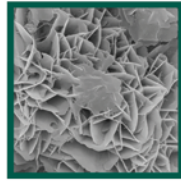
OrthoMTA



Root Filling Kit



Failure of Setting of Mineral Trioxide Aggregate in the Presence of Fetal Bovine Serum and Its Prevention. J Endod 2012;38:536-540
Physical and Chemical Properties of New-generation Endodontic Materials. J Endod 2010;36:524-528



PHYSICAL PROPERTIES

Property	OrthoMTA	P MTA
Specific gravity	3.106	-
Surface Area(m ² /kg)	961	409
Average particle size(μm)	2.62	6.9
90% finer than(μm)	4.64	19.97
50% finer than(μm)	2.36	6.85
10% finer than(μm)	1.18	0.97
Setting time, initial	180 min	74 min
Setting time, final	360 min	210 min

Property	OrthoMTA	P MTA
Particle size(μm) 1)	2.0	6.9
Content of free CaO wt.% 2)	0.66	1.74
Total crystalline phases(%) 3)	96.9	94.3
Expansion coefficient(%) 4)	0.09	2.78
Color	White	Yellow & Gray
Heavy metal	None detected	Cr,As,Ni,Fe,Mn

1) Mastersizer (Malvern co., Ltd. Ver. 2.15)

2) KSL 5120

3) Calculated from composition measured by QX-RD (Phillips, PW1710)

4) Measured by Laser displacement sensor Micro Track 7000

PHYSICAL PROPERTIES of OrthoMTA

- Orthograde root filling material
- Good sealing property and anti-bacterial effect
- Biocompatibility with surrounding tissues
- Good radio-opacity
- No heavy metals (No Cr6+, As, Ni, Fe)
- No expansion (0.09%)
- Easy handling methods
- Retrievability

Composition & Ingredient Information

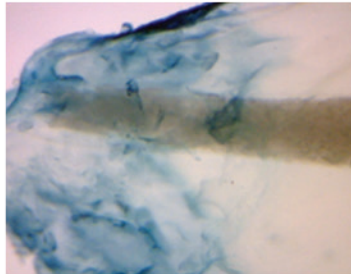
Component	OrthoMTA	D MTA
3CaO · SiO ₂	76.3	66.1
2CaO · SiO ₂	11.8	6.7
3CaO · Al ₂ O ₃	8.0	19.9
4CaO · Al ₂ O ₃ · Fe ₂ O ₃	0.8	1.6
Free CaO	0.7	1.7
Total Crystalline Phase	96.9	94.3

CONCEPTS

INTRA-TUBULAR Grafting

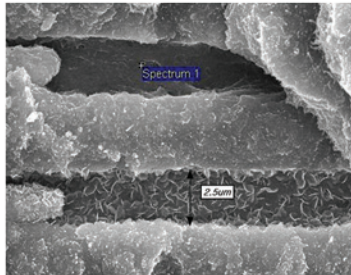
Entombment & Fossilization

of bacterium in dentinal tubules



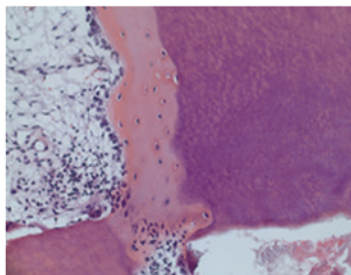
Physical sealing : Jamming effect

OrthoMTA perfectly seals the root canal space caused by jamming effect which is superior among other sealing materials.



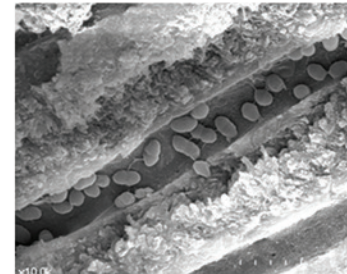
Chemical sealing : C-S-H & Hap

Short tags of C-S-H obturate the opening of the dentinal tubules which induces entombing effect.
Long tags of hydroxyapatite formed achieve fossilization of bacteria.

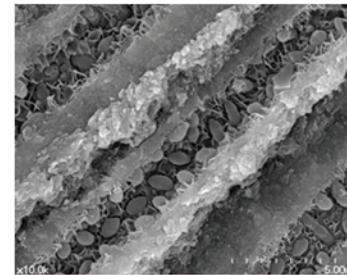


Biological sealing : New cementum

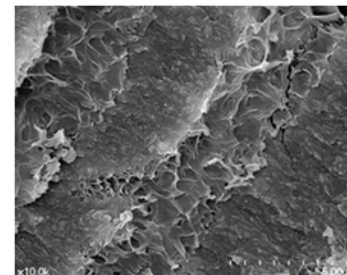
OrthoMTA is a bioactive material that has the ability to regenerate damaged periodontium and achieve biological sealing.



Experimental group (2weeks)
Initial stages of fossilization of *E. faecalis* in the infected dentinal tubules was seen.



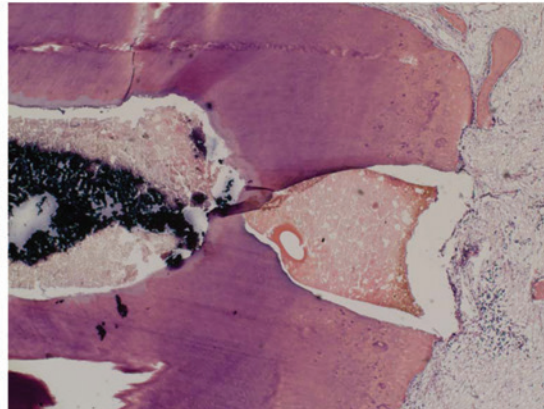
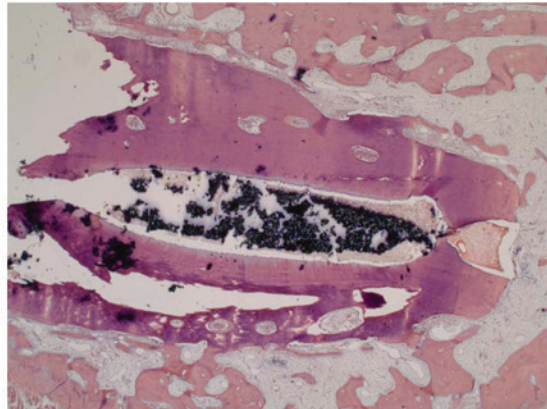
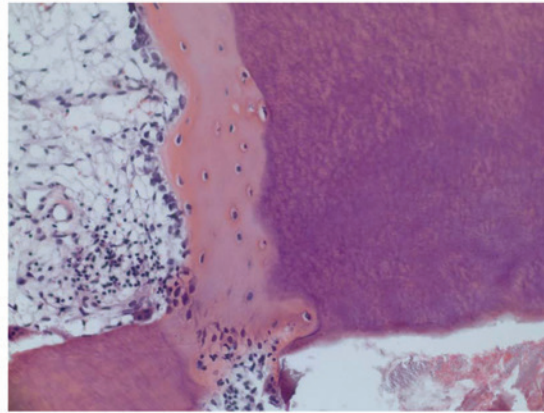
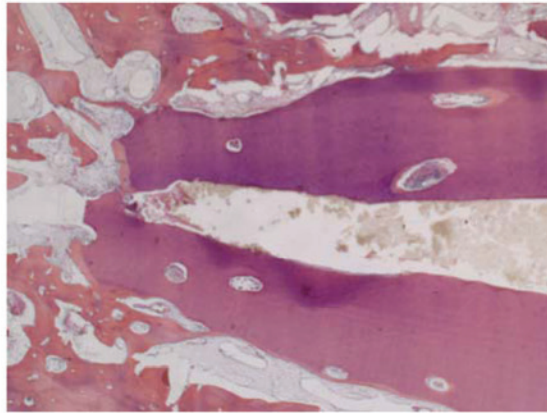
Experimental group (4weeks)
Fossilization of *E. faecalis* in the infected dentinal tubules has increased in time.



Experimental group (8weeks)
There is complete obstruction of the infected dentinal tubules and inter-canalicular space by the newly formed hydroxyapatite.

Bacterial Entombment by Intratubular Mineralization Following Orthograde Mineral Trioxide Aggregate Obturation; A SEM study". IJOS 2014

NEW CEMENTUM FORMATION



Orthograde grafting system

1 OrthoMTA

OrthoMTA is an innovative orthograde root canal grafting material that is unaffected by moisture or blood contamination.

- World's 1st orthograde bioceramic filling material
- Perfect sealing and biocompatibility
- No heavy metals (No Cr6+, As, Ni, Fe)
- No expansion (0.09%)



0.2g x 50 vials / pack

Effects of Calcium Silicate Endodontic Cements on Biocompatibility and Mineralization-inducing Potentials in Human Dental Pulp Cells. *J Endod* 2014;
Analysis of six heavy metals in Ortho mineral trioxide aggregate and ProRoot mineral trioxide aggregate by inductively coupled plasma-optical emission spectrometry. *Aust Endod J* 2013; 39: 126-130
Effects of Dental Mineral Trioxide Aggregate on Cellular Reactions Involved in Inflammation and Differentiation. *Biomaterials Research* (2013) 17(1) : 7-12

2 CARRIER

OrthoMTA is easy to handle with OrthoMTA Carrier.

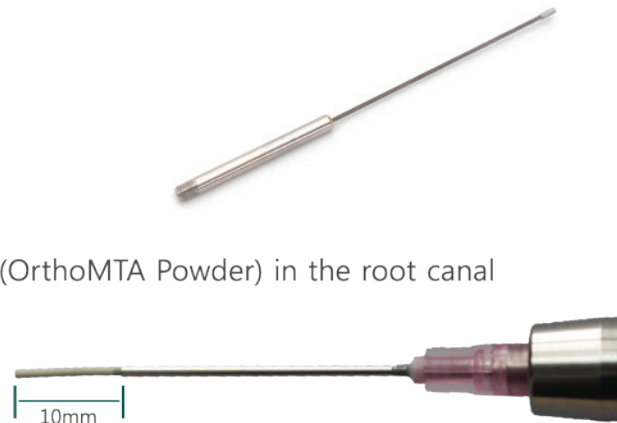
- For orthograde or retrograde MTA carrying and filling
- Easy to handle, durable & autoclavable
- Luer Lock syringe system
- Medical grade stainless steel body and NiTi Plunger
- Uses disposable and bendable needle tip to avoid cross-contamination.



3 ACCESSORY

Plunger

- Ni-ti tip of the OrthoMTA carrier
- Autoclavable
- Robust and durable
- 10mm of equal size in OrthoMTA Powder
- Can be reduced the chair time for grafting (OrthoMTA Powder) in the root canal



4 COMPACTER

- World's 1st compacter for delivery of bioceramic material
- Wonderful flexibility : no damage to canal wall
- Autoclavable
- Saves time & material



5 PLUGGER

- For plugging or back-filling of hydrated MTA granules
- Stainless steel tip with Aluminum handle
- 1 type of plugger
plugger (NiTi) - 1 mm & 0.3 mm



6 MTA REMOVAL KIT



0.5mm Ultrasonic Tip-rigid



0.3mm Ultrasonic Tip-bendable



0.25mm Ultrasonic CM Tip-soft



Directions for use

- Coronal – Middle : Using 0.5mm Ultrasonic Tip for removing foreign substances in the root canal.
- Middle – Apical : Using 0.3mm Ultrasonic Tip for removing other foreign substances in the root canal.
- Apical foramen : The final canal irrigation is using 0.25mm Ultrasonic CM Tip to clean and remove the residue.

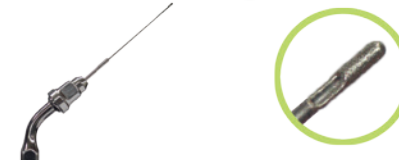
7 BIO IRRIGATION



0.25mm Ultrasonic CM Tip



0.3mm Single bent Ultrasonic Tip



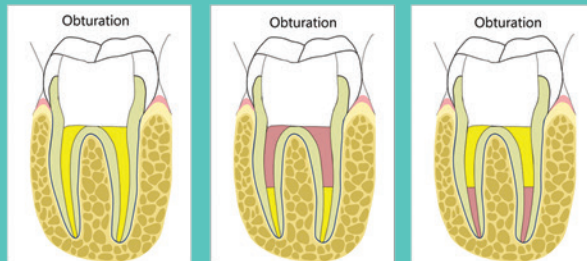
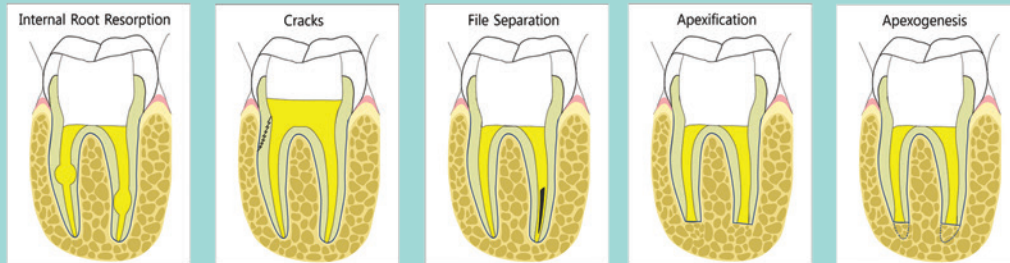
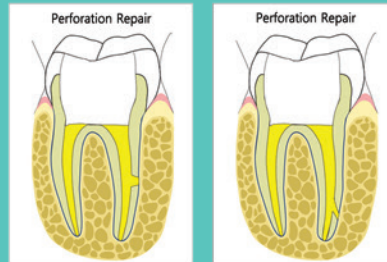
0.3mm Twist Irrigation Tip



Directions for use

- Less RPM 1500
- Gentle touch

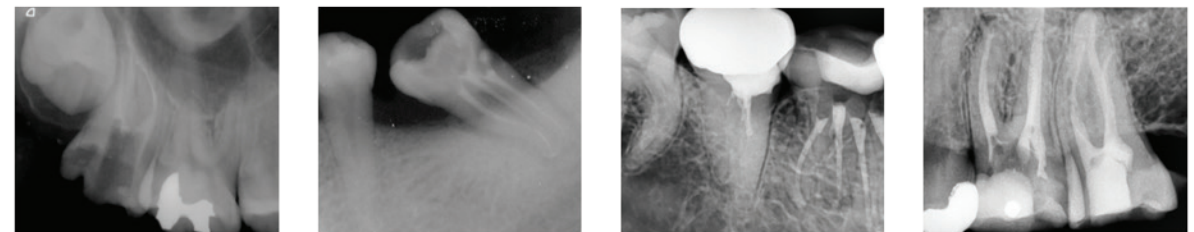
INDICATION



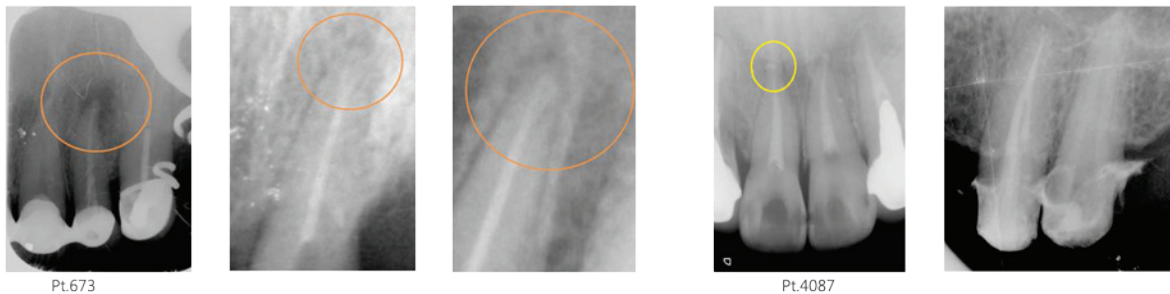
Root canal obturation



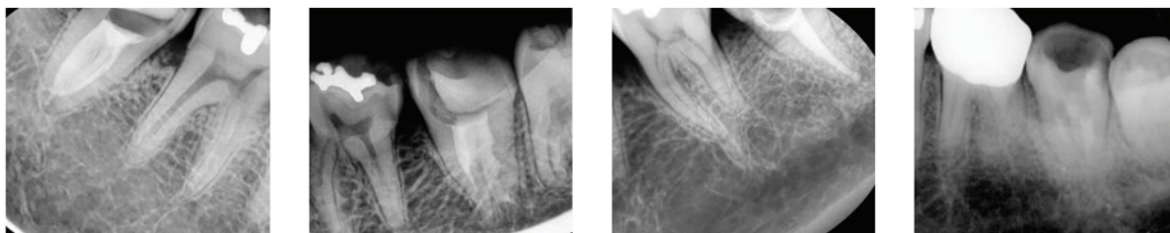
Curved root canal



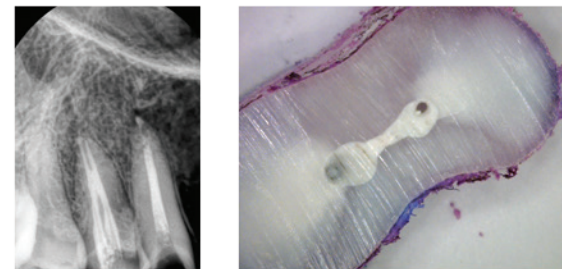
Y shape canal



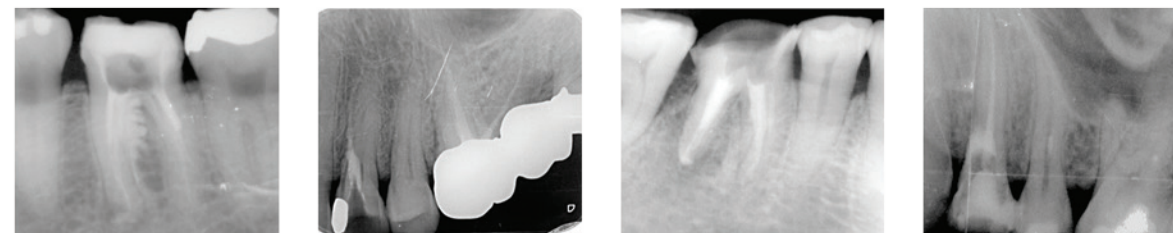
C shape canal



Isthmus



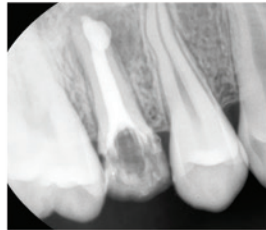
Perforation



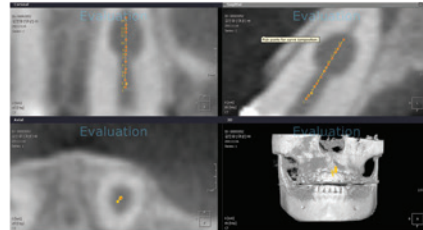
Root resorption



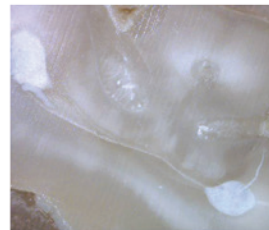
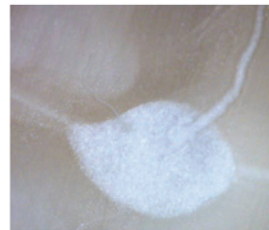
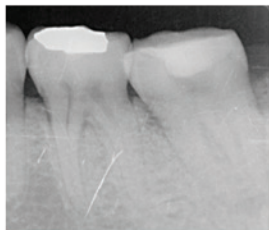
2010.09



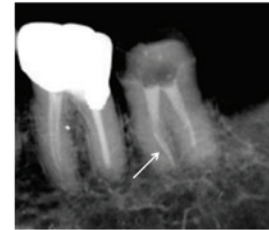
2010.10



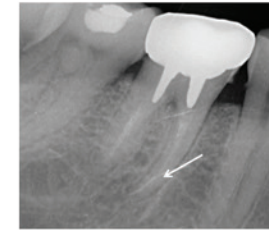
Crack tooth syndrome



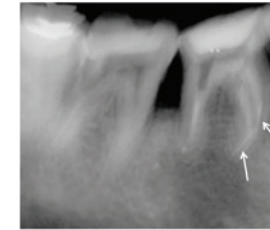
File separation



File separation & biofilling : 2yrs F/U



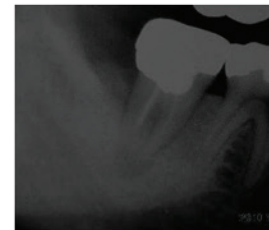
File separation & biofilling : 5yrs F/U



Multiple separation & Biofilling



Replantation



2004.09



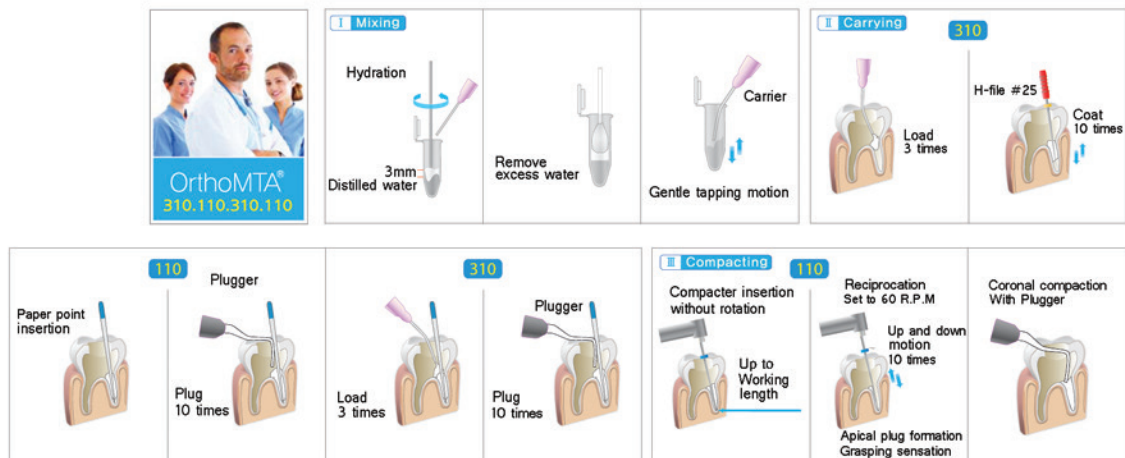
2009.10



2005.01. Apicoectomy & replantation after MTA filling

Orthograde grafting Method

OrthoMTA[®] MTA (Mineral Trioxide Aggregate)
Root Canal orthograde filling & Repair Material



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