



32 DENTAL SOLUTIONS™

INTERNATIONAL STANDARD 3D ROOT CANAL TREATMENT

Siro Laser for
3D Root Canal
Sterilization



gutta•core™
for 3D canal sealing



3D ENDO

For those who want the best

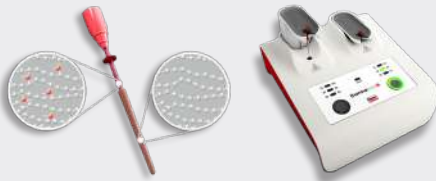
NEXT-GENERATION CBCT GUIDED LASER RCT WITH
3D CANAL CLEANING, 3D CANAL SHAPING & 3D CANAL SEALING



Workflow

International Standard 3D Root Canal Treatment

3D CANAL SEALING USING GUTTA CORE



3D CANAL SEALING WITH SUPER ENDO ALPHA & BETA



CBCT SCAN Taken



3D CANAL STERILIZATION USING DENTAL LASER – SIROLASER ADVANCE



International Standard 3D Root Canal Treatment



CBCT 3D RCT PLANNING DONE



3D CANAL CLEANING USING INTRACANAL HEATING OF SODIUM HYPOCHLORIDE



SEPTODONT ANESTHESIA GIVEN



3D CANAL CLEANING WITH ULTRASONIC IRRIGATION USING ENDOACTIVATOR



TEETH ISOLATION USING RUBBER DAM



3D CANAL CLEANING USING SAFE END NEEDLES



3.5 X MAGNIFICATION SET UP



3D CANAL CLEANING USING TRIO OF ROOT CANAL IRRIGANTS



TOOTH OPENING DONE USING STARTX ULTRASONIC TIPS



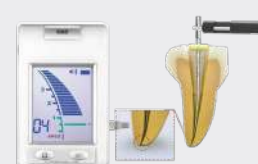
3D CANAL SHAPING USING NITI FILES WITH J MORITA ROTARY ENDOMOTOR



CONFIRMATION OF WORKING LENGTH WITH RADIOGRAPHIC METHOD



ELECTRONIC CANAL LENGTH MEASUREMENT USING J MORITA APEX LOCATER





How Do We Perform International Standard 3D Root Canal Treatment





How We Perform

International Standard 3D Root Canal Treatment

Excellent Root Canal Treatment starts with Excellent 3D Treatment Planning

Step 1 – Patient's CBCT is taken: We Know your Tooth 3 Dimensionally before even starting RCT. All thanks to CBCT (Dental CT Scans) which is the integral part of International Standard 3D Root Canal Treatment.



ENDO CBCT MODULE: Scan taken with In-House CBCT Machine, Ray scan alpha plus (A Samsung Subsidiary). The Endo Module takes CBCT of one tooth only with highest resolution of 68 microns for perfect 3D RCT Planning.





How We Perform

International Standard 3D Root Canal Treatment

Endo CBCT of patient's tooth is 3 Dimensionally studied in all the aspects and sections by our specialized Team of Doctors and a perfect 3 Dimensional Root Canal Planning is done for International Standard 3D Root Canal Treatment.



CBCT Scan tells us complete 3 Dimensional Anatomy of your Tooth. We can section the tooth as we like to know

- Exact number of canals
- Shape of the canals at different cross sections
- Length of the canals
- Any accessory or extra canals
- Any irregularity in the canals
- Any calcification within the canals.
- Extent of pathology
- Any resorption within the canal



Different Sections providing all the 3 dimensional information about the tooth anatomy

CBCT: CREATING BENCHMARK & SETTING HIGHEST STANDARDS FOR ROOT CANAL EVALUATION & TREATMENT





How We Perform

International Standard 3D Root Canal Treatment

Step 2—Preparation For Treatment—Anesthesia: Painless Local Anesthesia is given by Septodont Cartilage System to our patients



Septodont—(Best Anesthesia in its class with No Preservatives)

Step 3—Preparation for Treatment—Rubber Dam Application

We use Rubber Dam in performing Root Canal Treatment of our patient as it isolates the tooth which has to be treated from remaining other tooth

Rubber Dam is considered the standard of care in Root Canal Treatment (RCT) because of the advantages that it offers

- No saliva contamination
- Clean operative field
- Better access and visibility
- Protection of the patient
- Prevention of Inhalation & Injection of foreign bodies
- Aid to cross infection control



STEP 4—Preparation for Treatment – 3.5 X Magnification set-up

We perform the rct starting from first step to the end using state of the art Zumax TTL Loupes - 3.5X for better visibility and hence BETTER TREATMENT OUTCOME.





Step 5—Access preparation using—Start X Ultrasonic Tips

An access hole is prepared in the tooth towards the Canal exposing the infected or inflamed nerve. The perfect access is very important for better cleaning and shaping of canals.



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START-X™



We use ultrasonic tips along with diamond burs for better access hole preparation.

The ultrasonic has an upper edge in doing so, as it eliminates all the superficial obstruction encountered during approaching towards the canal leaving a perfect canal opening for better treatment success.



How We Perform International Standard 3D Root Canal Treatment

Step 6—Measuring the length of the Canal

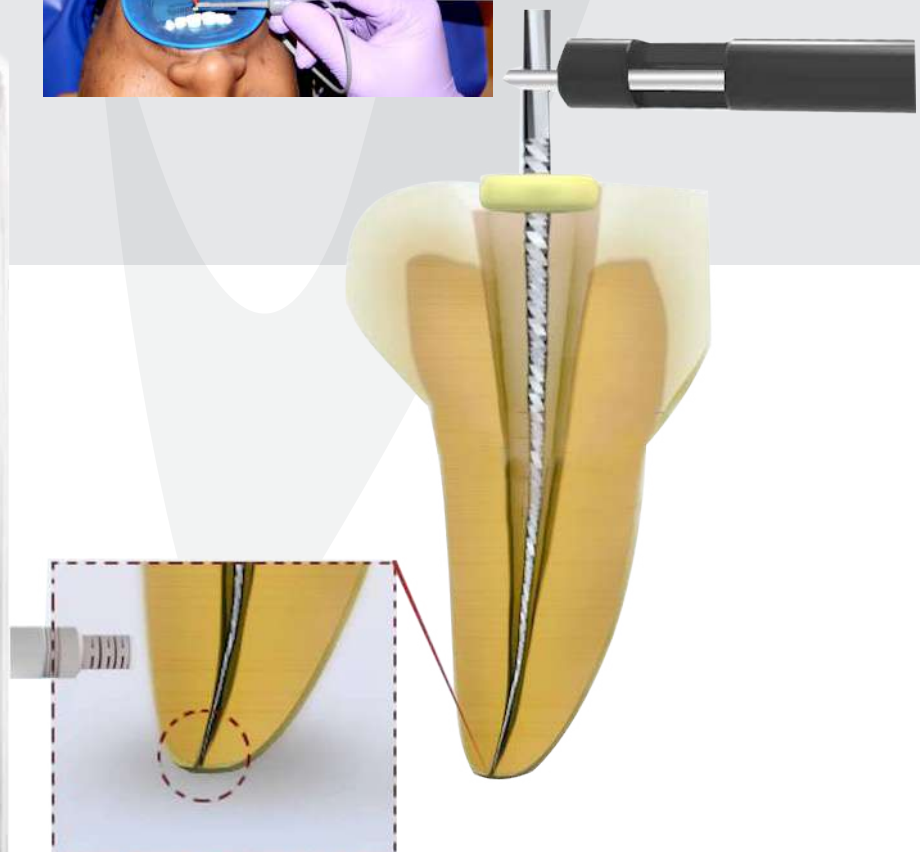
Working length is the length of root canal till the root apex.

If the working length calculation is short of actual length, complete length of the canal will not be cleaned and sealed leading to root canal failure.

We use two step protocol for calculating the working length.

a) J-Morita Apex Locator—Best mode of calculating the working length

We use world's best (j morita-japan) electronic apex locator to calculate the length of the canal electronically, which is 99.99 % Accurate in determining the length accurately. It is extremely helpful in cases where xrays are not indicated such as pregnancy etc.





How We Perform International Standard 3D Root Canal Treatment

Measuring the length of the Canal...

b) Radiographic Evaluation—Other mode of calculating the working length

We make sure that the apex locator length calculation is accurate and cross check the working length by Radiograph (X-Ray).





How We Perform International Standard 3D Root Canal Treatment

Step 7 — 3D SHAPING THE CANALS

THERE ARE TWO WAYS for shaping the root canal after achieving the working length

- a) **Using hand files** — Manually, till the desired working length — the canals are shaped till the apex using niti glide path files hand files in subsequent order from narrow to wide to create a better glide path.



- b) **Using nickel titanium rotary files** — We use dentsply protaper gold files and dentsply wave one gold reciprocating files used with j morita endomotor for shaping the root canals in international standard root canal treatment.





3D SHAPING THE CANALS...

Dentsply protaper gold & wavenone gold are special files which are highly flexible and more tapered for better cleaning and shaping the canals. Since it is more flexible it follows the curvature of the canal, providing efficient cleaning, resulting greater clinical success of your RCT.

The best part is that the J Morita endomotor and J Morita apex locator can be connected to each other, which during the canal shaping calculate and reads the root apex in real time, resulting in best canal shaping till the root apex with no over or under preparation of the root canal.





How We Perform International Standard 3D Root Canal Treatment

Step 8—3D CANAL CLEANING AND DISINFECTION

We use Four step protocol for 3D Canal cleaning & Disinfection

A) TRIO OF ROOT CANAL IRRIGANTS

We Strictly follow International Guideline Regimen for use of 3 Root Canal Irrigants



Sodium Hypochloride



(EDTA) Smear Clear

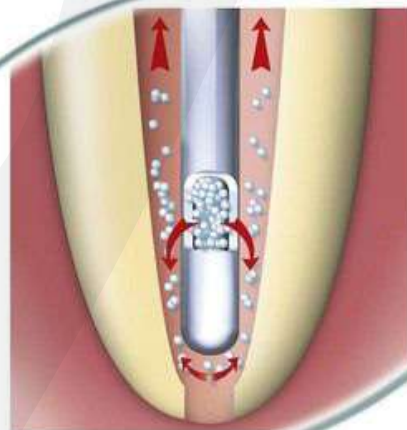


Chlorhexidine

All these three irrigants are widely studied and have shown excellent efficacy in cleaning and disinfecting the canal.

B) USE OF SAFE END SIDE VENT NEEDLES FOR IRRIGANT DELIVERY INTO THE ROOT CANAL

So that your Root Canal Irrigants are within the Canal & doesn't go Beyond the apex.



Since these Root Canal Irrigants have their high potency towards the Bacterial Decontamination, we want the irrigants to be constraint towards the Root Canal and in no way it should cross beyond the apex of the root Canal. So we use safe end needle for delivery of these irrigants. As the name safe end, the ends of the needles are blocked and the vent is on the side, the irrigants are not pushed downwards beyond the apex of the Root Canal.





How We Perform International Standard 3D Root Canal Treatment

3D CLEANING & DISINFECTING THE CANALS...

C) USE OF ULTRASONIC - ENDOACTIVATOR

Complete 3D Canal Cleaning by Ultrasonic Activation of Root Canal Irrigants using Endoactivator



Ultrasonic 3D Cleaning – It is highly advance procedure where, after shaping, the canals are cleaned using (Dentsply Endoactivator) Ultrasonic Irrigation Tip, resulting in 3 Dimensional Cleaning of the Root Canals eradicating 99% debris & smear layer and also dissolving the nerve remnants from lateral or accessory canals where the cleaning files can't reach.



The special polymer tips follow the curvature of the canal and it vibrates at sonic frequency to activate the Root Canal Irragants for better Cleaning & Disinfection.





3D CLEANING & DISINFECTING THE CANALS...

D) INTRACANAL HEATING OF THE SODIUM HYPOCHLORIDE ROOT CANAL IRRIGANT

Sodium Hypochloride, main Irrigant for Root Canal Cleaning & Disinfecting have been shown to increase in potency for removing the nerve fragment form lateral canal and accessory canals when heated into the Root Canal.



We use Super Endo Alpha for Intra Canal Heating the Sodium Hypochloride, for best treatment outcome.





How We Perform

International Standard 3D Root Canal Treatment

Step 9—3D CANAL STERILIZATION— Welcome to the world of Dental Laser

After thorough Cleaning & Disinfecting the Canals, we Sterilize Root Canal with the help of Dental Lasers – Sirolaser Advance



It has been proven that Diode Laser at 970nm is very effective in Root Canal Sterilization. Sirolaser Advance - Endo Mode with its special fiber tip, when inserted in the root canal causes alteration of the cell wall of the bacteria, leading to changes in osmotic gradients up to bacterial death and eradicating the biofilm.



Sirolaser Advance—Best Solution for Root Canal Sterilization



Step 10—3D SEALING THE CANAL

Three Dimensionally the canals are not uniform in shape and has multiple branches in the form of lateral or accessory canals.

It is very important to seal the canals 3 Dimensionally along with lateral and accessory canals, so that no open space is left for bacterial colony formation which can lead to future infection and ultimately failure. In International Standard RCT we have focus on how to completely Seal Root Canals with its branches 3 Dimensionally.

In Conventional Root Canal Treatment, the canals are sealed using Preformed Gutta Percha which is round in cross section and they do not completely seals the root canals leaving empty space as the canals are not always round in cross section.

How we seal the root Canals 3 Dimensionally : The idea of sealing Root Canals 3 Dimensionally is by using Gutta Percha(Natural rubber) in Melted/Plastic state, which flows to each and every portion of the canals along with lateral and accessory canals.

How we seal the root Canals 3 Dimensionally: We do it in two ways—

Using flowable guttacore with thermaprep oven



Using flowable Downpack and Backfill 3D Sealing





How We Perform International Standard 3D Root Canal Treatment

3D SEALING THE CANAL...

We use a carrier based system, where the Guttapercha in the form of Guttacore is heated in a special oven which softens the Gutta core.



The Gutta core will remain at softened state for 8-10 seconds, which in this soft state is administered into the root canal. The melted/softened Gutta percha will flow in all the portion of the Root Canal along with Lateral and accessory Canals, and thus sealing the Root Canal 3 Dimensionally.





How We Perform

International Standard 3D Root Canal Treatment

3D SEALING THE CANAL USING DOWNPACK AND BACKFILL 3D SEALING TECHNIQUE



This technique for 3D Sealing requires two units: After Preformed Gutta percha is inserted into the Root Canal, we use Super Endo Alpha and Beta for 3D Sealing the Root Canal.

Super endo alpha—down pack—for 3d sealing of the apical 4-5mm of the root canal



Super endo alpha has a silver tip which is electronically heated and is used to melt the preformed Gutta Percha into the apical region. The heated silver tip melts/soften the Gutta percha which flows 3 Dimensionally into lateral and accessory canals and sealing the apical 4-5mm portion of the root canal 3 dimensionally.

Super endo beta—backfill—for 3d sealing of the remaining root canal



Super endobeta is an electronic thermal device with in build oven which hold the Gutta Percha Pellets. Upon unit activation, it melts/soften the Gutta percha at 200 degrees centigrade and releases melted/softened Gutta Percha into the remaining Root Canal which is then 3 Dimensionally packed causing 3 Dimensionally sealing of the Root canal.





How We Perform International Standard 3D Root Canal Treatment

3D SEALING THE CANAL USING DOWNPACK AND BACKFILL 3D SEALING TECHNIQUE



Root Canal ready to be sealed after 3D shaping



Greater Taper Gutta Percha Cone inserted in the Root Canal



3D Sealing of the main Root Canal along with its lateral Canals



Greater Taper Gutta Percha Cone is down packed within the Root Canal for 3 Dimensional Sealing of Apical 4-5mm of the Root Canal using Super Endo Alpha



The remaining portion of the Root Canal is then 3 Dimensionally Sealed using thermoplasticized Gutta Percha using Super Endo Beta—Back Fill Technique





WHY 3D SEALING OF ROOT CANAL IS IMPORTANT

The golden rule is that there should not be any empty space in the root canal after sealing. Empty space in the root canals will be the site for bacterial growth, ultimately leading to root canal infection and failure.

Complete 3 dimensional sealing will result in elimination of empty space and thus reducing the chances of infection or failure to a great extent.

Comparision of root canal sealing results with different techniques

Lets talk logical: we want to show evidence based results, so that your selection criteria is completely transparent and unbiased



Root canal ready to be sealed after 3D shaping

Root canal model showing mail canal and its 2 branches as lateral canals



Hand RCT—Root Canal Sealing with multiple less Taper Cones

- Main root canal is not completely sealed and clearly showing multiple areas where there are empty space
- Lateral canals are completely empty and are not sealed



Rotary RCT—Root Canal sealing with greater Taper Cone

- Main Root Canal is majorily sealed with little space in between
- Lateral Canals are completely empty and are not sealed



International standard RCT—Root Canal Sealing with Gutta Core or Downpack & Backfill Technique

- Main Root Canal is 3 Dimensionally completely sealed with no empty space
- Lateral Canals are also completely 3 Dimensionally sealed with no empty space

TRANSPARENT ENDO BLOCKS SHOWING THE RESULT OF DIFFERENT TYPES OF 3D SEALING OF ROOT CANALS





WE PROVIDE 5 OPTIONS TO CHOOSE YOUR RCT PROCEDURE

RCT TYPES SPECIFICATION	INTERNATIONAL STANDARD 3D RCT	CBCT LASER RCT	LASER RCT	ROTARY RCT	HAND RCT
CBCT DENTAL CT SCAN	Yes	Yes	No	No	No
CBCT 3D RCT PLANNING	Yes	Yes	No	No	No
PREPARATION FOR TREATMENT	<ul style="list-style-type: none">• Septodont anesthesia• Rubberdam application• 3.5x magnification	<ul style="list-style-type: none">• Septodont anesthesia• Rubberdam application• 3.5x magnification	<ul style="list-style-type: none">• Septodont anesthesia	<ul style="list-style-type: none">• Septodont anesthesia	<ul style="list-style-type: none">• Normal anesthesia
ACCESS OPENING	<ul style="list-style-type: none">• Start x ultrasonic• Rotary burs	<ul style="list-style-type: none">• Start x ultrasonic• Rotary burs	<ul style="list-style-type: none">• Start x ultrasonic• Rotary burs	<ul style="list-style-type: none">• Rotary burs	<ul style="list-style-type: none">• Rotary burs
WORKING LENGTH MEASUREMENT	<ul style="list-style-type: none">• Electronic length measurement using apex locator• Radiographic length measurement	<ul style="list-style-type: none">• Electronic length measurement using apex locator• Radiographic length measurement	<ul style="list-style-type: none">• Electronic length measurement using apex locator• Radiographic length measurement	<ul style="list-style-type: none">• Radiographic length measurement only	<ul style="list-style-type: none">• Radiographic length measurement only
3D SHAPING	<ul style="list-style-type: none">• Reciprocating waveone gold system• Rotary protaper gold sysem• With endomotor integrated apex locator	<ul style="list-style-type: none">• Reciprocating waveone gold system• Rotary protaper gold sysem• With endomotor integrated apex locator	<ul style="list-style-type: none">• Rotary protaper gold sysem• With endomotor integrated apex locator	<ul style="list-style-type: none">• Rotary protaper gold sysem with endomotor	<ul style="list-style-type: none">• Hand files
3D CLEANING	<ul style="list-style-type: none">• Trio of irrigants• Use of safe end needles• Ultrasonic irrigation• Intracanal heating	<ul style="list-style-type: none">• Trio of irrigants• Use of safe end needles• Ultrasonic irrigation• Intracanal heating	<ul style="list-style-type: none">• Trio of irrigants• Use of safe end needles• Ultrasonic irrigation	<ul style="list-style-type: none">• Trio of irrigants• Normal needles	<ul style="list-style-type: none">• Trio of irrigants• Normal needles
3D CANAL STERILIZATION	Laser using siolaser advance	Laser using siolaser advance	Laser using siolaser advance	No	No
3D CANAL SEALING	<ul style="list-style-type: none">• Guttacore carrier based sealingOr• Downpackand backfill sealing	<ul style="list-style-type: none">• Advance single cone sealing	<ul style="list-style-type: none">• Advance single cone sealing	<ul style="list-style-type: none">• Advance single cone sealing	<ul style="list-style-type: none">• Basic multiple cones sealing

