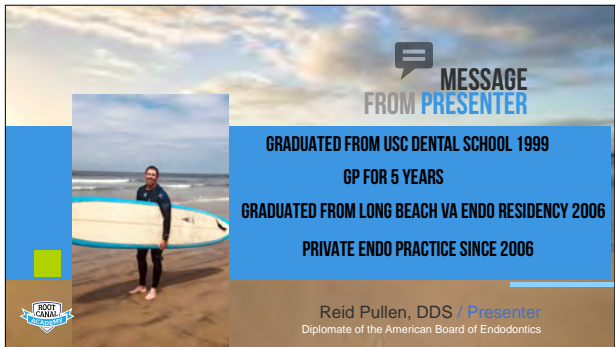
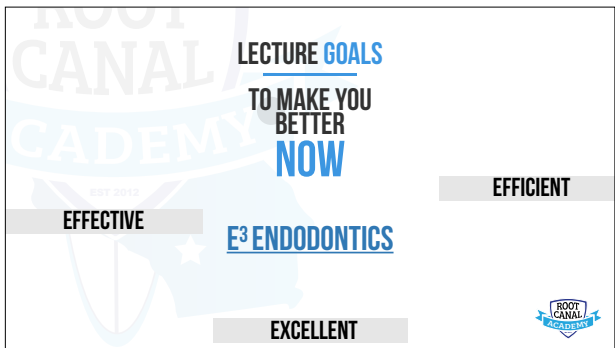




1



2



3

Two Biggest Challenges in Endo?

1. Finding all the canals
2. Getting down all the canals



4

The Truth About Endo

1. Sometimes it's Easy
2. Sometimes it's a circus



5

When the going gets tough, the tough hand file.

The true endo masters know how to hand file.

When in doubt hand file the apical
1/3.



6

The RCT Playbook

Write your RCT Technique down

5 Minutes



7

The RCT Playbook

Are you ready?



8

RCT PLAYBOOK

PICK UP YOUR FILE SPONGE

FOLLOW ALONG WITH ME



9

ROOT CANAL PLAYBOOK- QUICK REVIEW

10

1. Access and locate all canals
2. Coronal negotiation 10-15mm down each canal with a #10C 21mm file
3. Coronal flare- ProTaper Gold SX (4-5 brushes to the outer wall)
4. Negotiate to Patency with a #10K (or #8 or #6) 25mm file
5. Accurate Working Length with a Root ZX
6. Loose #10 K file to VWL
7. Open Glide Path with hand files or NiTi files
8. Shape- WaveOne Gold or ProTaper Gold or ?
9. Final Disinfection- QMix with EndoActivator
10. Dry Canals/Obturation



File Bend

11

PICK UP A #10 K 25 MM FILE

PLACE A 2MM 45° APICAL BEND

SHOW ME



SLIDER GOLD PLAYBOOK

12

1. Access and locate all canals
2. Coronal negotiation 10-15mm down each canal with a #10C 21mm file
3. Use ProTaper Ultimate Slider and gently run it to VWL (may take 2-3 passes)
4. Use ProTaper Gold Shaper 1 (S1) and perform a middle flare
5. Use WaveOne Gold Primary and shape the apical third
6. QMix/EndoActivator/Cone Fit/PA's
7. Dry Canals/Obturate



RECIPROC BLUE PLAYBOOK

13

1. Access and locate all canals
2. Start shaping with the Reciproc Blue R25/X-Smart Pro+
3. Expect 2-6 shaping passes to get to WL
4. Expect 2-6 minutes to shape to VWL
5. QMix/EndoActivator/Cone Fit/PA's
6. Dry Canals/Obturate



Once you find the canal
or canals:

14

FOLLOW THE RCT PLAYBOOK!

**“Make the call. Stay in the office.
Play this. Finish the office.”**

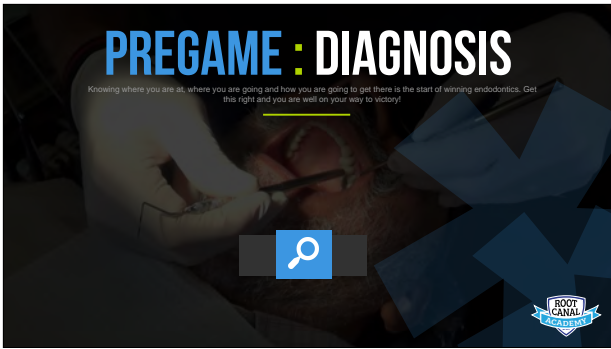


RECIPROC BLUE PLAYBOOK

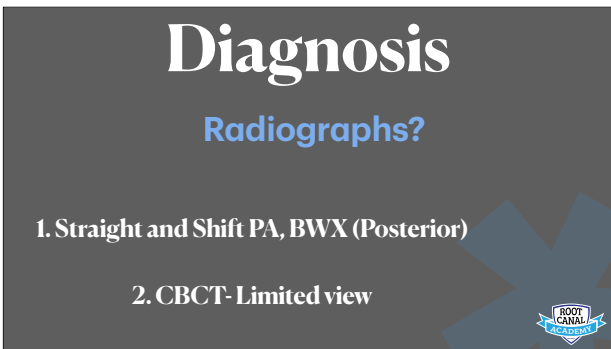
15

1. Find the Canals
2. Coronal Negotiation
3. Place Reciproc Blue R25 in canal and Shape to Length.

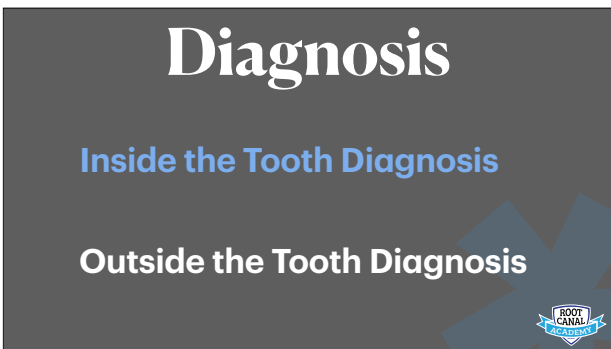




16



17




18

PG : DIAGNOSIS **DX**

HOW?

S-O-A-P



19

DIAGNOSIS


S-O-A-P
FORMAT

SUBJECTIVE CC

OBJECTIVE Ex

ASSESSMENT Dx

PLAN Tx



20

Diagnosis

TAKE OUT YOUR
DIAGNOSIS SHEET

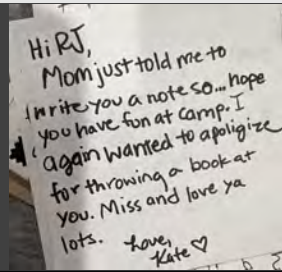


21

TAKE AWAYS

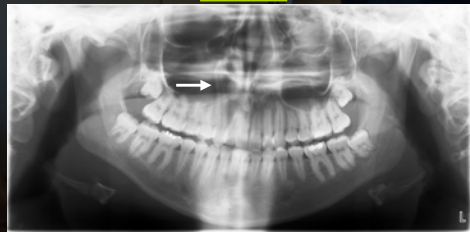
1. TEST MULTIPLE TEETH (START WITH A "NORMAL TOOTH")
2. USE ENDO ICE (AT THE END)
3. IS THE TOOTH GUILTY BEYOND A REASONABLE DOUBT?

QUESTIONS?



PREGAME : CASE SELECTION

Knowing exactly what you are dealing with and having a plan to execute a great result or refer the case out will save a lot of headaches for you and your patient.



PG : CASE SELECTION




- C**ALCIFIED TEETH
- E**LONG ROOTS
- L**XTREME CURVATURE
- A**RGE PARLS




25

PG : CASE SELECTION



PITA
WAITING FOR
REFER IT OUT
NCOMMON ANATOMY



26

PREGAME : CASE SELECTION

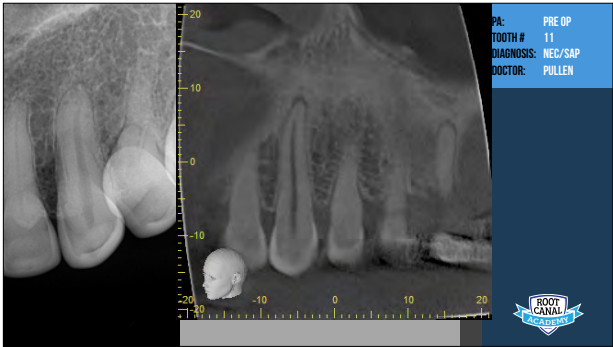
PRE OP #28



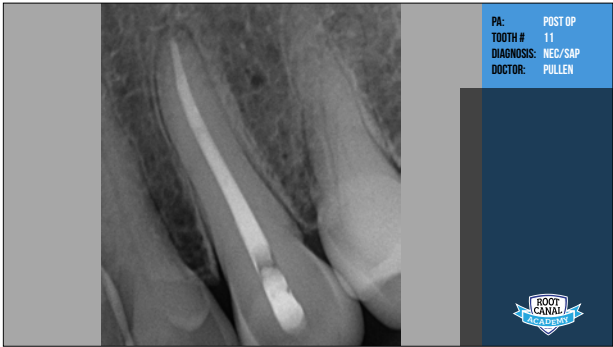
27



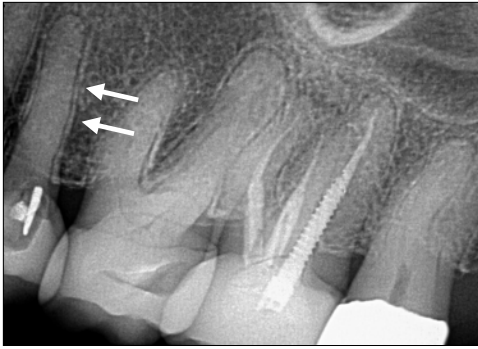
28



29



30



PA: PRE OP
TOOTH # 13
DIAGNOSIS: NEC/SAP
DOCTOR: PULLEN

31



PA: POST OP
TOOTH # 13
DIAGNOSIS: NEC/SAP
DOCTOR: PULLEN

32



PA: PRE OP
TOOTH # 12
DIAGNOSIS: NEC/AAP
DOCTOR: PULLEN

33



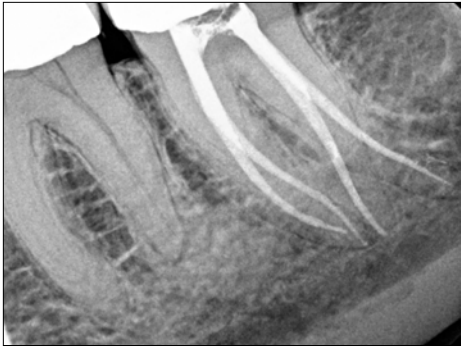
34



35



36



PA: POST OP
TOOTH # 18
TREATMENT: RCT
DOCTOR: PULLEN



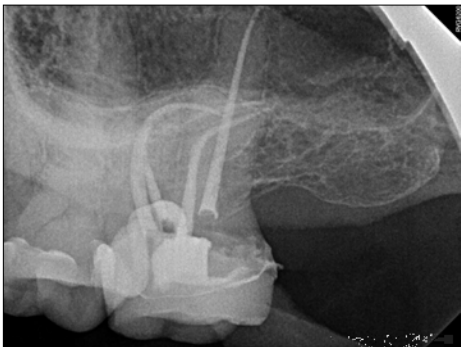
37



PA: PRE OP
TOOTH # 15
DIAGNOSIS: NECROSIS/SAP
DOCTOR: PULLEN



38



PA: POST OP
TOOTH # 15
TREATMENT: RCT
DOCTOR: PULLEN



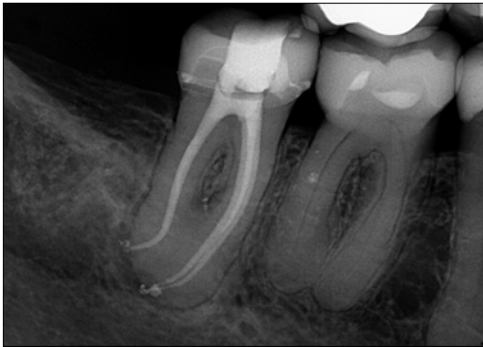
39



PA: PRE OP
TOOTH # 31
TREATMENT: RCT
DOCTOR: PULLEN



40



PA: POST OP
TOOTH # 31
TREATMENT: RCT
DOCTOR: PULLEN



41



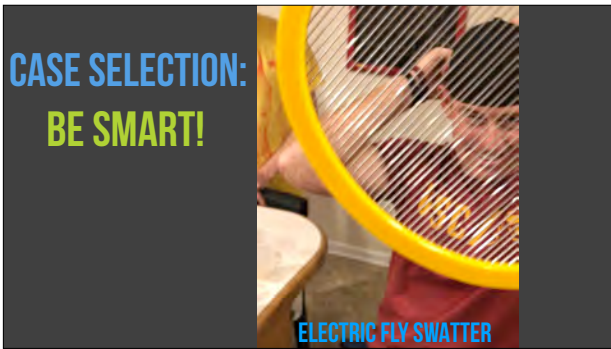
PA: PRE OP
TOOTH # # 19
TREATMENT: RCT
DOCTOR: PULLEN



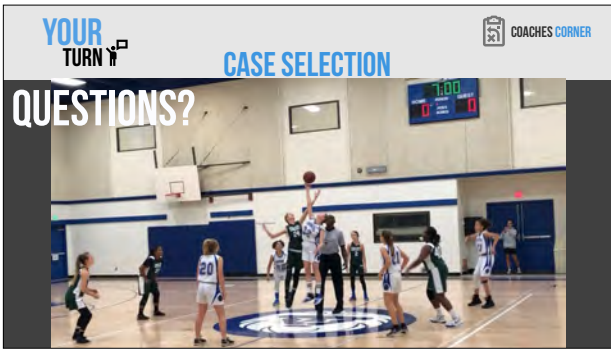
42



43



44



45

TIME OUT : PT MANAGEMENT

RCT TAKES 1-1 1/2 HOURS

WHY?

IT MAY BE TOO INFLAMED.

IT MAY BE TOO INFECTED.

IT MAY TAKE 2 VISITS



46

Q1: ANESTHETIC

USE ENOUGH!
CARP RULE



47



STRONG TOPICAL

Compound Pharmacy - \$50

48

Q1: ANESTHETIC **3 CARP RULE**



MAX TOOTH - 30 GAUGE SHORT
1 carp. 4% Septo
2 carps 2% Lido w/1:100 epi

MAND TOOTH - 27 GAUGE LONG
2-3 carps 2% Lido w/1:100 epi + 1 carp 4% Septo B infiltration



49

Q1: ANESTHETIC **GOW GATES**



GO HIGH
10 MINUTE ONSET



50

Q1: ANESTHETIC **GOW GATES**



HIT BONE AND READJUST



51

NEVER NUMBS

What is your anesthetic plan for a "HOT" mandibular molar?

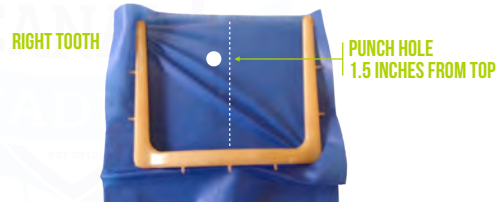
- Mandibular block (I prefer the Gow Gates method)- 2-3 carpules of 2% Lidocaine with epi
- Buccal- 4% Septocaine with epi
- Wait 5-10 minutes (are 1/2 the lip and tongue numb?)
- Test the tooth with Endo Ice
- PDL injection with 4% Septocaine
- Stabident or X-Tip
- Intrapulpal

52



53

MAXILLARY INCISOR, PREMOLAR AND MOLAR



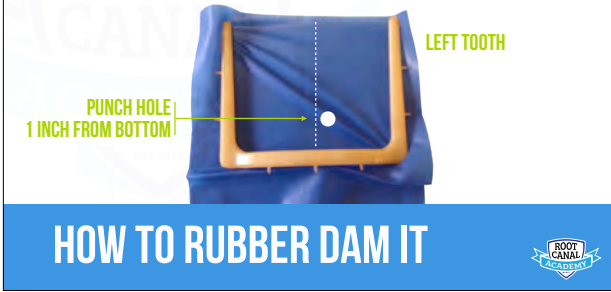
HOW TO RUBBER DAM IT



54

MANDIBULAR INCISOR, PREMOLAR AND MOLAR

55



ALL ABOUT WINGS

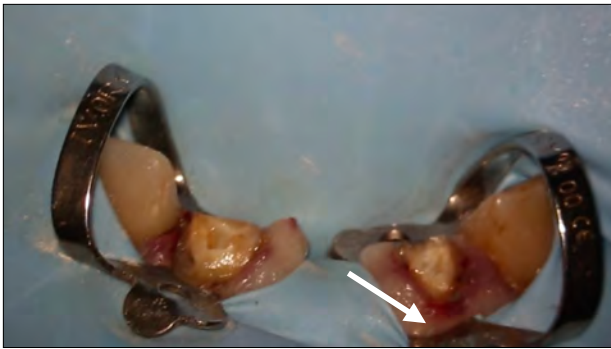
56

- ALL ANTERIORS: #9 (HAS WINGS)
- ALL PM'S: #1
- ALL MAX MOLARS: #12A OR #13A
- ALL MAND MOLARS: #56
- ALL PREPPED MOLARS: #14
- ALL MOLARS WITHOUT RETENTION: #14A





57



58



59



60

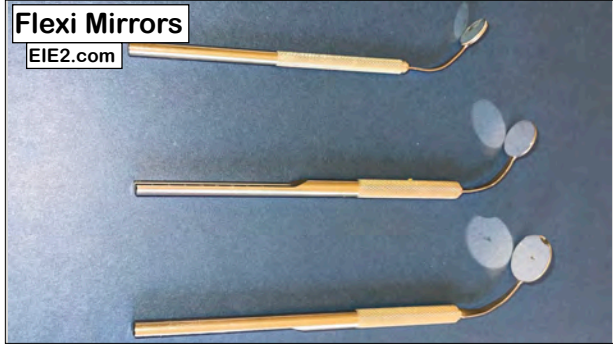
Zirc Mirror



61

Flexi Mirrors

EIE2.com



62

Nu Block

0.40 Cents per block



63



64



65

ACCESS PRINCIPLES

1. Drilling cycles (4-5 cycles per pulp access)
2. Course correct (look at contours and CEJ often)
3. Follow DARKER tooth structure
4. Visualization (SL Burs)
5. Zen Endo

66

CORE CONCEPTS

ACCESS

67

1. DRILLING CYCLES

1-3 mm apical drilling/rinse/dry/inspect

2. LOCATE 1 CANAL

Use this as your pulpal floor road map

3. BRUSH AWAY CALCIFICATION

#1/2 SL Round Bur

ACCESS BURS

68

1. Anterior/Premolar (Tooth structure or Composite)- #330 L

2. Anterior/Premolar (Porcelain or PFM crown)- Cylinder diamond



ACCESS BURS

69

1. Molar (Tooth structure or Composite)- 1st #536, #245, or Trilawk, 2nd #537 SL



2. Molar (Porcelain or PFM crown)- Ball diamond, Trilawk,



3. Molar (Deep drilling)- #1/2 SL Round bur

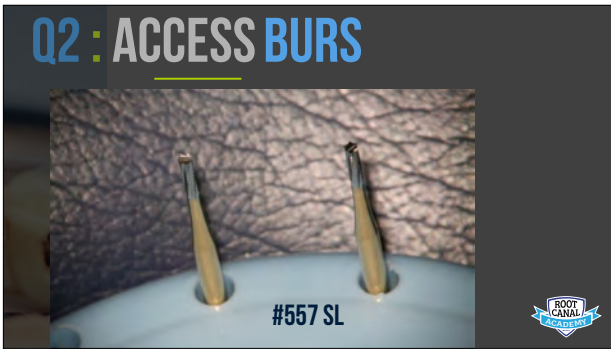
Q2 : ACCESS BURS

70



Q2 : ACCESS BURS

71





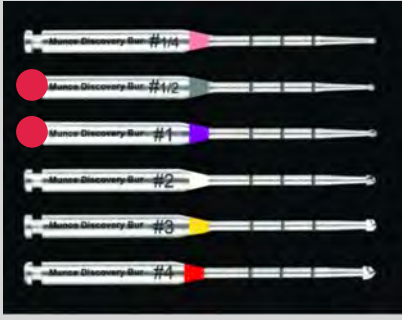
72

Munce Burs

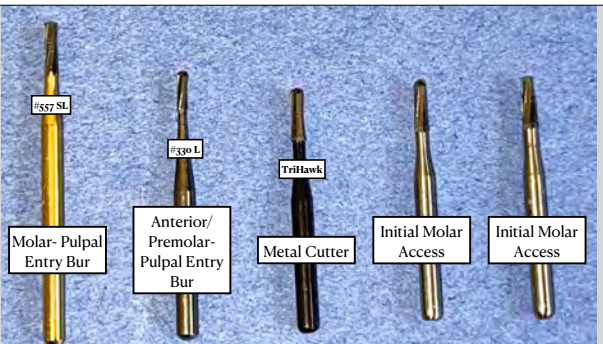
Latch bur for calcified cases

Use the #1 or #1/2

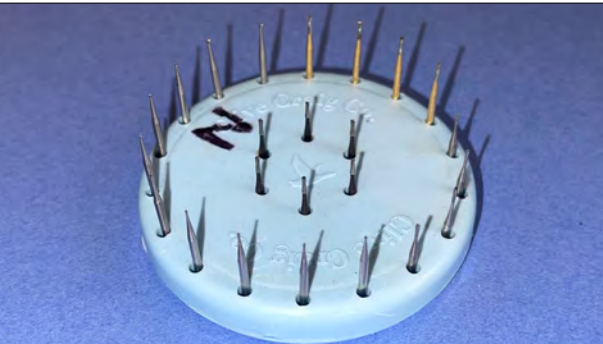
Use at 1500- 3000 RPM's



73



74



75



76

Q2 : OPEN ORIFICE

PROLUBE VERSUS **BLEACH**

PROLUBE 100%
RC PREP 100%
GLYDE

3-6%
BLEACH

A diagram comparing two irrigation techniques. On the left, a blue circle with a smaller blue circle inside represents Prolube. On the right, a larger green circle represents Bleach. A grey vertical bar is positioned between the two circles. The Root Canal Academy logo is in the bottom right corner.

ROOT CANAL ACADEMY

77

Q2 : OPEN ORIFICE

BLEACH

BLEACH PIRANHAS

3-6%
BLEACH

A diagram comparing Bleach and Piranhas. On the left, there is a bottle of Clorox bleach, a piranha fish, and a close-up of a piranha's mouth with gears. On the right, a larger green circle represents Bleach. A grey vertical bar is positioned between the Piranhas and Bleach sections. The Root Canal Academy logo is in the bottom right corner.

ROOT CANAL ACADEMY

78

Triton Irrigation (Brassler)

1. Sodium hydroxide- anti-bacterial
2. Sodium laurel sulfate- detergent (foaming)
3. Surfactant
4. Citric Acid- remove the smear layer



79

Q2 : IRRIGATION

SIDE VENTED NEEDLE
NEEDLE ALWAYS LOOSE
25, 27 OR 30 GAUGE



80

The RCT Playbook
Slider Gold Playbook
The Reciproc Playbook
(3-D Demo Upstaris)

81

1. CORONAL NEGOTIATION

#10 C 21 mm

2. CORONAL FLARE

ProTaper Gold SX (4-5 brushes)



82

Step 1- Coronal Negotiation- #10 C 21 mm



83

PRINCIPLES

1. When you open the top, it's easier to get to the bottom.
2. Coronal negotiation ensures the canal is free and open
3. Coronal flare opens up the orifice
4. 4-5 brushes to the outer wall (out-stroke)
5. 5-7% Sodium hypochlorite



84



PROTAPER GOLD SX

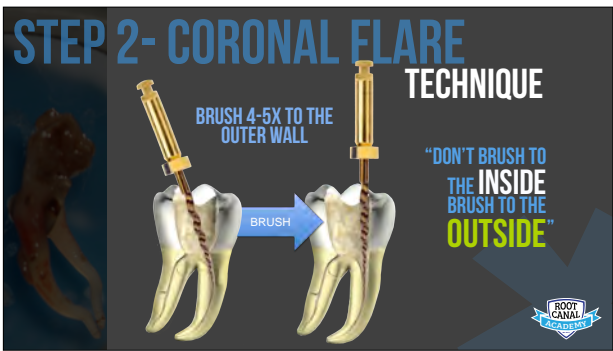
85



CORONAL FLARE

PROTAPER GOLD SX

86



STEP 2- CORONAL FLARE TECHNIQUE

BRUSH 4-5X TO THE OUTER WALL

"DON'T BRUSH TO THE INSIDE BRUSH TO THE OUTSIDE"

87

CORONAL FLARE **VORTEX ORIFICE OPENER**

500 RPM

25/08
OR
20/08

#25 TIP

ROOT CANAL ACADEMY

88

GATES GLIDDEN #2

ROOT CANAL ACADEMY

89

Medium to Difficult case

ProTaper Gold S1
(Optional)

-Middle Flare Brilliance

Dr. Fulle

90



91



92



93

NEGOTIATION TO PATENCY
WHY?



- CLEAN THE ENTIRE CANAL
- CLEAN THE APICAL REDZONE
- ELECTRONIC APEX LOCATORS



94







NEGOTIATION TO PATENCY
TECHNIQUE

- PLACE LUBRICATED #10K FILE INTO CANAL UNTIL RESISTANCE
- RECIPROCATE THROUGH RESISTANCE
- PUSH/PULL OR UP/DOWN TO SMOOTH RESISTANCE
- CONTINUE UNTIL PATENCY OR HIT THE BRICK



95

Q2 : NEGOTIATION TO PATENCY RULES

| | | | |
|--|--|--|---|
|  ALWAYS USE RC PREP OR PROLUBE |  RECIPROCATE PUSH-PULL |  #10 K FILE  |  WALK THE APEX  |
|--|--|--|---|

96

97

Super Secret #12 K File
(Mani)



98

HOW DO YOU AVOID LEDGING?

GENTLE HANDS

NEVER FORCE A HAND FILE DOWN IF HITTING THE



DIFFICULT TO LEDGE WITH A #6, #8, OR #10 K FILE

PLACE A 45° APICAL BEND ON THE FILE AND WALK THE APEX



99

CORE CONCEPTS

NTP/AWL

1. Negotiation to Patency #10 K 25mm/RC Prep/Reciprocate

2. Accurate Working Length Exit the foramen and come back

3. Loose #10 K file to WL

3. NEGOTIATION TO PATENCY

#10 K 25 mm (file lube)

4. ACCURATE WORKING LENGTH

Electronic Apex Locator (ProMark or Root ZX II)

5. LOOSE #10 K TO WL



100

Q2 : ACCURATE WORKING LENGTH

PULP CHAMBER DRY/CANALS WET

GO PATENT/COME BACK IN CANAL

FLAT RED LINE= WL, RED CIRCLE=PA TISSUE

IF INCONSISTENT READING GO 1 FILE SIZE LARGER



101

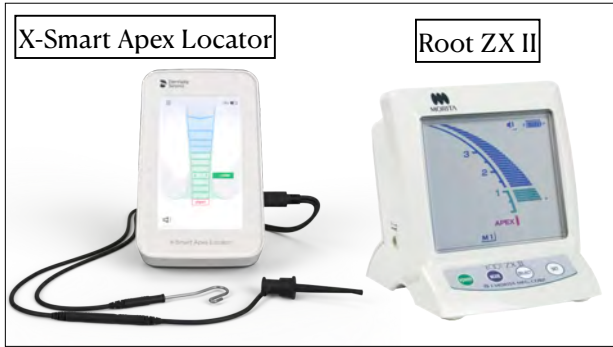
PROMARK EAL TECHNIQUE



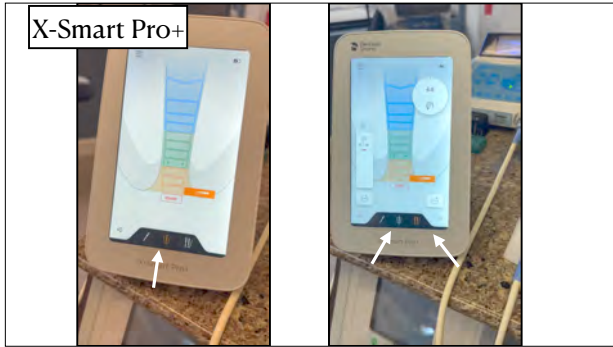
102



103



104



105

WORKING LENGTH PRINCIPLES

106

1. EAL on/Attach lip clip prior to negotiation.
2. If you feel the file “pop” attach clip to file handle.
3. Repeat the reading for accuracy.
4. Wacky? Dry the pulp chamber.
5. Place rubber stopper at reference point.
6. Loose #10 K file to WL.



THE RCT PLAYBOOK

6. OPEN GLIDE PATH

WAVEONE GOLD GLIDER

PROTAPER ULTIMATE SLIDER

Core Concept: Perform Shaping
Passes (4-5 Mini In-N-Outs)



107

PENALTY


NITI SHAPING PRIOR TO OPEN GLIDE PATH



108

OPEN GLIDE PATH GOALS


SMOOTH, REPRODUCIBLE FILE SLIDE PATH
SLIP AND SLIDE PATH FOR NITI SHAPING FILES
PROVIDE SMOOTH AND SAFE SHAPING
WHAT SIZE? MINIMUM #15 FILE



109

OPEN GLIDE PATH GOALS

WHAT SIZE?
MINIMUM #15 FILE



110

OPEN GLIDE PATH *Old Style*

#10 K HAND FILE
#15 K HAND FILE OFTEN FORCED TO LENGTH



111

Q2 : OPEN GLIDE PATH *New Style* 

LOOSE #10 K HAND FILE


LOOSE #12 K HAND FILE

LOOSE #15 K HAND FILE



112

WAVEONE GOLD GLIDER



RECIPROCATING GLIDE PATH FILE

Completing the WaveOne® Gold reciprocating system solution



113



PROGLIDER

0.16 TIP

VARIABLE TAPER

M WIRE NITI

300 RPM



114

PROTAPER ULTIMATE SLIDER

115

- 0.15 TIP
- VARIABLE TAPER
- M WIRE NITI
- 400 RPM



Q2 : OPEN GLIDE PATH

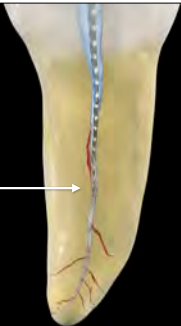
116

ENGAGE / DISENGAGE (MINI IN-N-OUT)

- ENGAGE/DISENGAGE 4-5X **PASS 1**
- IRRIGATE/PATENCY
- ENGAGE/DISENGAGE 4-5X **PASS 2**
- IRRIGATE/PATENCY
- UNTIL REACH WL

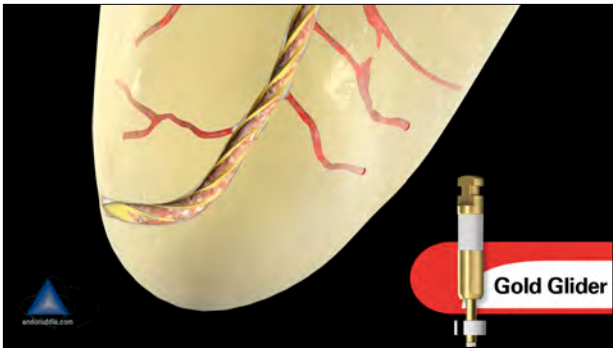


PASS #1



Gold Glider

117



118



119



120

GLIDE PATH PRINCIPLES

1. 10-20 minutes into the RCT.

2. Shaping Passes- Zen Endo time.

3. Irrigate between every pass.

4. Negotiate to patency between every pass (#10 K)

5. MB, DB, P canals- How many passes?

6. Now what?



121

YOUR
TURN

GLIDE PATH

COACHES CORNER

122

QUESTIONS?

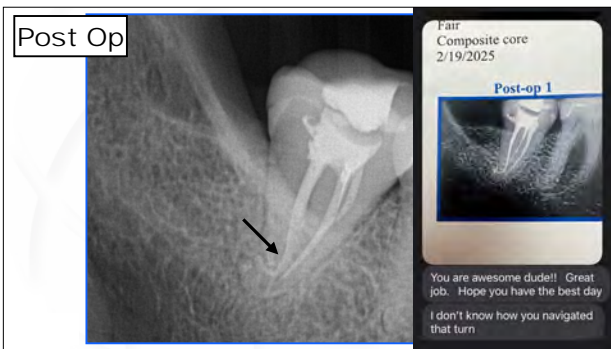


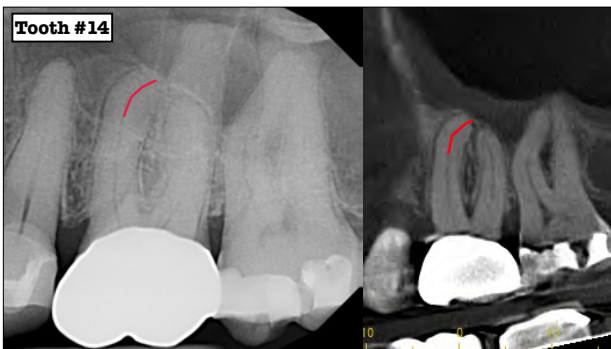
FREAKIN' HAND FILING

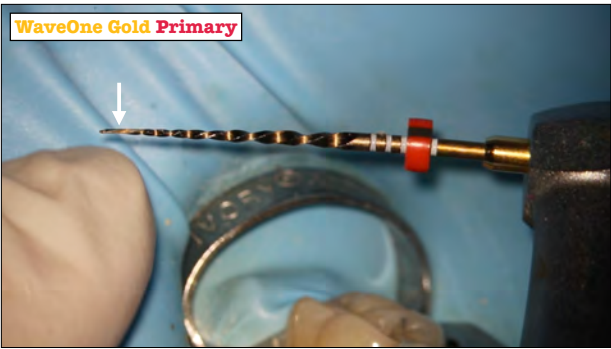
Hand File the
Apical 1/3

123

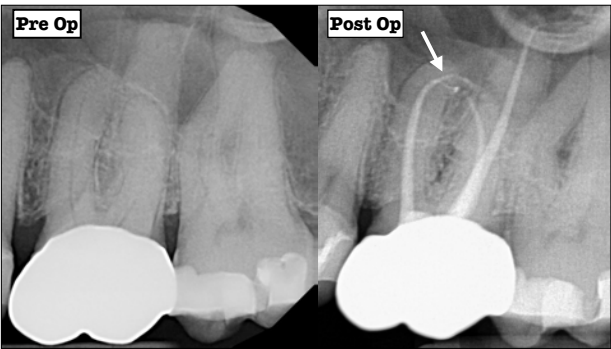









127



128

7. SHAPING

WAVEONE GOLD PRIMARY OR PROTAPER GOLD OR ?



129

CORE CONCEPTS

SHAPING

130

1. PASSES

PASS= 4-5 Mini In-N-Outs or Engagement/
Disengagements, Irrigate/Patency

2. ZEN ENDO (GENTLE, ARTIST HANDS)

HOW MANY PASSES WILL IT TAKE TO SHAPE TO
WL?

SHAPING PRINCIPLES

PERFORM SHAPING PASSES (ZEN ENDO)

~? SHAPING PASSES- MB, DB CANALS

~? SHAPING PASSES- PALATAL CANAL

MAKE-OUT WITH THE APEX (3-4 BRUSHES TO WL)

APICAL VERIFICATION- #25 K FILE



131

WaveOne® Gold



WaveOne® Gold Solution

A comprehensive treatment solution, building on reciprocation, with a short sequence that has everything you need to approach your next case with calm and confidence.

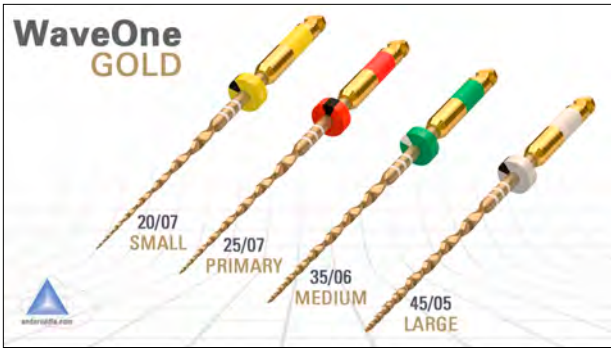
Reciproc® Blue



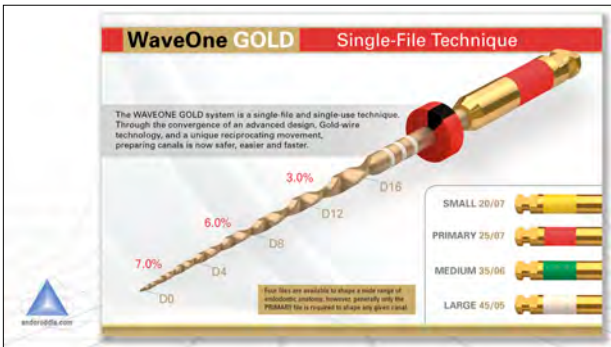
Reciproc (TM) Blue*

RECIPROC® blue instruments are produced with Nickel-Titanium (NiTi) that goes through heat treatment, modifying its molecular structure to give it increased resistance to cyclic fatigue and additional flexibility (vs original Reciproc) as well as its characteristic blue color.

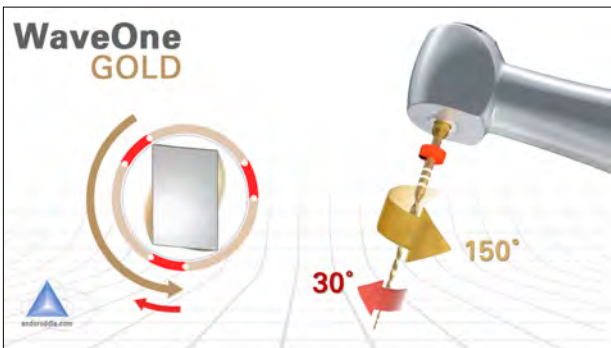
132



133



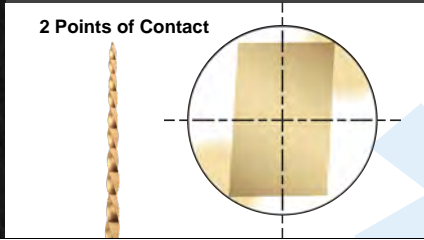
134



135

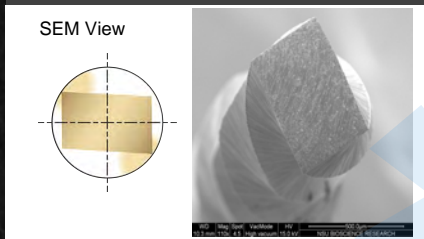
Q3: NITI SHAPING WAVEONE GOLD

136



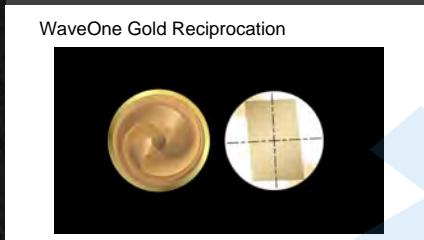
Q3: NITI SHAPING WAVEONE GOLD

137



Q3: NITI SHAPING WAVEONE GOLD

138



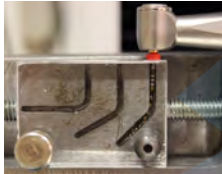
Q3: NiTi SHAPING WAVEONE GOLD

Design Rationale – Better Metallurgy

Fatigue Resistance

5 min 56 sec to failure
45° curvature
3mm radius

17.5% Improvement



139

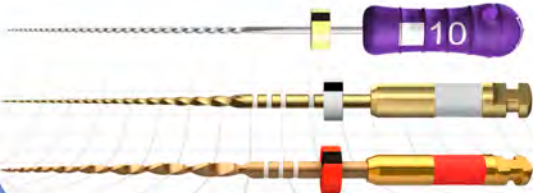
Q3: NiTi SHAPING WAVEONE GOLD

FILE SEPARATION INSURANCE



140

WAVEONE GOLD PROTOCOL



141

Q3: NITI SHAPING WAVEONE GOLD



142

IQ XSMART

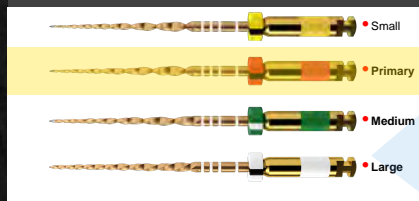


WOODPECKER



143

Q3: NITI SHAPING WAVEONE GOLD



144

Q3: NITI SHAPING WAVEONE GOLD TECHNIQUE

ENGAGE/DISENGAGE 4-5X

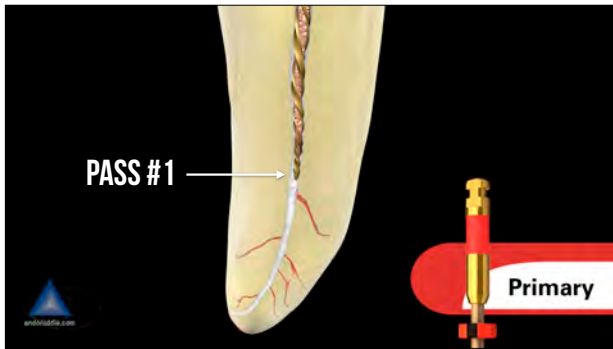
IRRIGATE/PATENCY

COMPLETED PASS #1

UNTIL REACH WORKING LENGTH



145

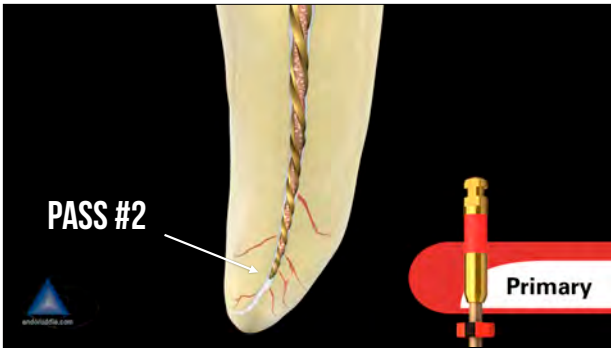


146

Q3: NITI SHAPING WAVEONE GOLD TECHNIQUE



147



148


Q3: NITI SHAPING WAVEONE GOLD TECHNIQUE

ENGAGE/DISENGAGE 4-5X

IRRIGATE/PATENCY

COMPLETED PASS #2

UNTIL REACH WORKING LENGTH



149

Q3: NITI SHAPING WAVEONE GOLD TECHNIQUE

SHAPE THE APEX

DON'T JUST PECK THE APEX

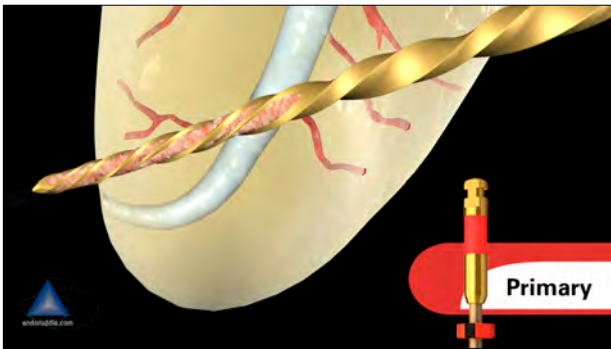
MAKE-OUT WITH THE APEX (1/2MM BACK) 3-4X



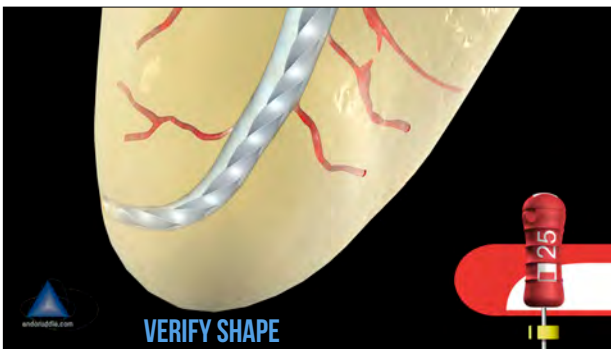
150



151



152



153

Q3: NITI SHAPING WAVEONE GOLD BRIDGING FILE

• Small
• Primary
• Medium
• Large

ROOT CANAL ACADEMY

154

Q3: NITI SHAPING WAVEONE GOLD GO BIGGER

• Small
• Primary
• Medium
• Large

ROOT CANAL ACADEMY

155

ROTARY PROTAPER GOLD

VARIABLE TAPER
300 RPM
4-5.2 NCM

SX S1 S2 F1 F2 F3 F4 F5

ROOT CANAL ACADEMY

156

PROTAPER ULTIMATE

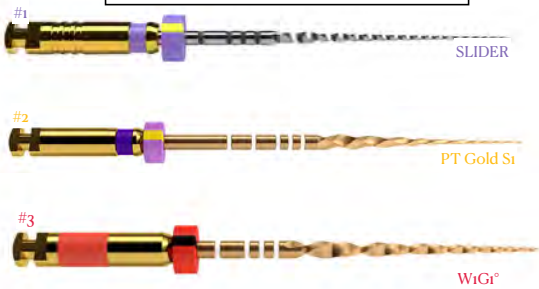


157

SUPER SECRET ENDO-
Fastest shaping west of the
Mississippi

158

SLIDER GOLD TECHNIQUE



159

The Slider Gold Technique

ProTaper Ultimate Slider
400 RPM



ProTaper Gold Shaper 1
400 RPM



WaveOne Gold Primary
Reciprocation



160

HOW DO YOU AVOID LEDGING WHILE SHAPING?

GENTLE HANDS

NEVER FORCE A SHAPING FILE DOWN IF HITTING THE "BRICK"

4-5 ENGAGEMENT/DISENGAGEMENTS (4-5 MINI IN-N-OUTS)

IRRIGATE/CHECK PATENCY BETWEEN EVERY SHAPING PASS



161

WHAT HAPPENS IF YOU DO LEDGE?

STOP SHAPING!

MOVE TO HAND FILES- #10 K 45° APICAL BEND

RENEGOTIATE BACK TO PATENCY

25-50 SMOOTHIES (SMOOTH OUT THE LEDGE)

REPEAT WITH #12 K AND #15 K FILE

GO BACK TO SHAPING (GENTLE HANDS)!



162

WHAT HAPPENS IF YOU DO SEPARATE?

FIRST OF ALL, DON'T DO THIS!

STOP, SEE IF YOU CAN BYPASS IT WITH A #10 C 25 MM FILE

IF SEPARATED IN THE CORONAL OR MIDDLE CANAL AND YOU CAN SEE IT THEN USE SKINNY ULTRASONICS TO TROUGH AROUND IT.

USE THE ENDO COWBOY TO LASSO 2-3 MM OF THE HEAD OF THE FILE

DIFFICULT TO DO!

IF IN APICAL 1/3 LEAVE IT.



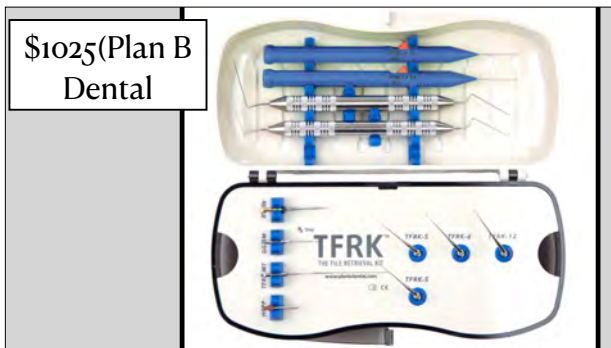
163



Endo Cowboy



\$1200 (Plan B Dental)

164




\$1025 (Plan B Dental)

165

YOUR TURN  SHAPING  COACHES CORNER


QUESTIONS?




166

8. DISINFECTION

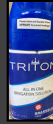

SLP ENDOACTIVATOR/
LASER (SWEEPS)




167



DISINFECTION



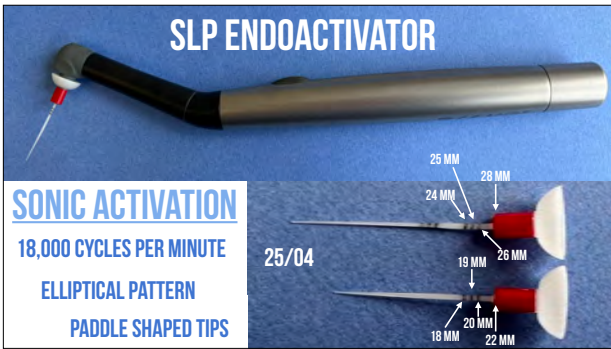
1. QMix- EDTA + Chlorhexidine- No rinse needed
2. 17% EDTA for 1 minute followed by a NaOCL rinse
3. I use Triton and then after shaping QMix and then Triton again



168



169



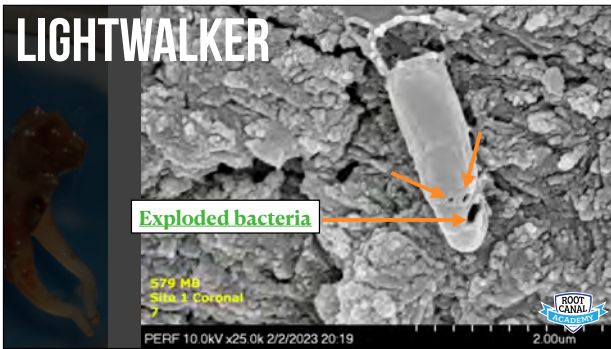
170



171




172



173

Technique
Mid-Tx Sequence – SWEEPS 20 mJ
15 Hz



| |
|--|
| • 30 seconds with NaOCl (Post access- Infected case) |
| • 30 seconds with NaOCl (Post Coronal Flare) |
| • 30 seconds with NaOCl (In between shaping passes) |
| • Once your done shaping |
| • Switch to Final Protocol |

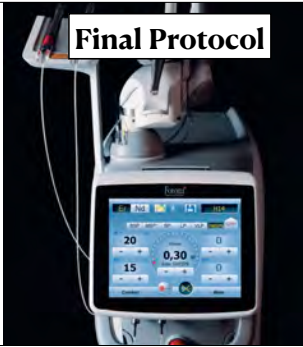


174

Technique
Final Sequence – SSP 20 mJ 15 Hz



- | |
|--|
| • 30 seconds with EDTA |
| • 30 seconds with sterile or distilled water |
| • 3 x 30 seconds with NaOCl (rest 15-30 s) |
| • 30 seconds with sterile or distilled water |
| • Dry canals and obturate |



175

9. CONE FIT

2 PA'S- STRAIGHT AND SHIFT



176

10. DRY CANALS

MICRO-SUCTION/PAPER POINTS



177

PAPER POINTS

178

1. Extra Coarse for WaveOne Gold Medium or ProTaper Gold F5 or larger
2. Coarse for WaveOne Gold Primary or ProTaper Gold F2
3. Medium for WaveOne Gold Small or ProTaper Gold F1 or .04 shapes
4. You can also use WaveOne Gold or ProTaper Gold paper points



11. OBTURATION

179



OBTURATION

180

1. Single Cone with Bioceramic sealer (NeoSealer Flo from Avalon Biomed or BC HiFlow from Brassler)
2. Warm Vertical Condensation (Pulp Canal Sealer EWT or Ribbon Sealer)
3. GuttaCore




BACK FILL


WARM VERTICAL OBTURATION

GUTTA-SMART

HEAT TIP



Gutta-Smart™
Launch Binder




181

OBTURATION PRINCIPLES

WARM VERTICAL CONDENSATION

1. BUTTER THE APICAL 1/3 OF CONE WITH RIBBON OR KERR SEALER.

2. PLACE GP CONE SLOWLY 3/4 TO LENGTH, LIFT UP 2 MM AND THEN SEAT THE CONE TO WL. DID IT SEAT TO WL? (CHECK CRIMPED PART)




182

OBTURATION PRINCIPLES

WARM VERTICAL CONDENSATION

3. USE THE SMALLEST HEAT TIP AVAILABLE (BLACK- GUTTASMART, 45/04- ENDOPRO 270) AND BURN OFF THE CORONAL 2/3RD'S OF THE CONE. LEAVE A ~5 MM APICAL PLUG.

4. GENTLY CONDENSE THE APICAL PLUG WITH A SMALL PLUGGER. HOW MUCH PRESSURE? WHICH PLUGGER?



183

OBTURATION PRINCIPLES

WARM VERTICAL CONDENSATION

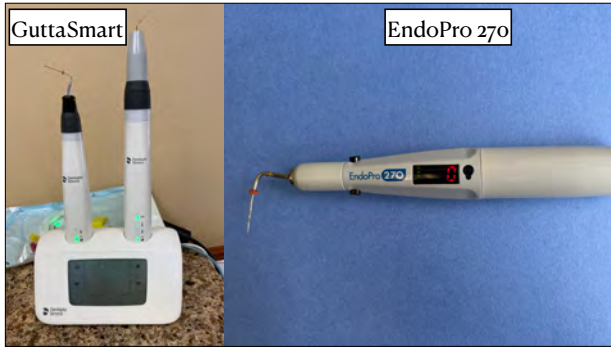
184

5. PACE THE SMALLEST BACKFILL NEEDLE (25 GAUGE) ONTO THE TOP OF THE APICAL PLUG. SLOWLY BACKFILL.

6. LET THE EXTRUDED GP SLOWLY PUSH YOU OUT OF THE CANAL.

7. FILL UP TO THE ORIFICE LEVEL. USE A LARGE PLUGGER AND CONDENSE.

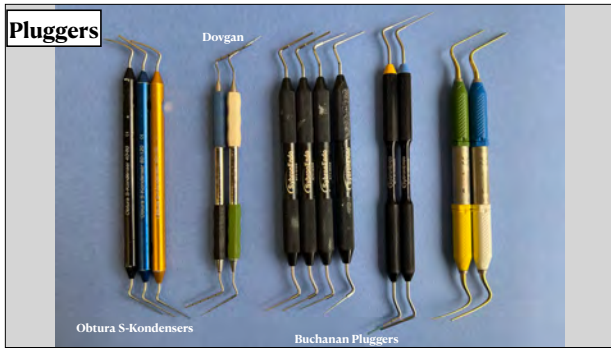




185



186




187

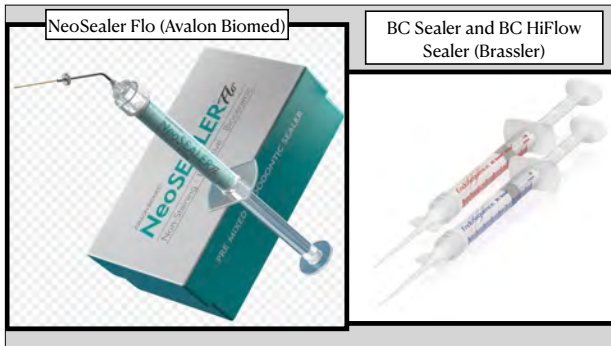
OBTURATION PRINCIPLES

SINGLE CONE WITH BC SEALER

1. DISPERSE A SMALL AMOUNT OF SEALER ON THE DAM
2. PLACE THE NEEDLE INTO THE MIDDLE THIRD OF THE CANAL (FREE AND LOOSE)
3. GENTLY INJECT UNTIL YOU SEALER COME UP AND OVER THE NEEDLE AND THEN SLOWLY REMOVE THE NEEDLE FROM CANAL.
4. PLACE GP CONE SLOWLY TO WL



188




189



190

POST-OP INSTRUCTIONS

3-5 DAYS OF SORENESS
BE GENTLE. DON'T CHEW ON IT.
ADVIL AND TYLENOL
NORCO 5 MG- 10 TABS




191

POST-OP INSTRUCTIONS

ANTIBIOTICS?

AMOXICILLIN 500 MG (OR 875 MG BID)- DISP: 23
CAPS, SIG: T 2 NOW AND THEN 1 CAP TID

Z-PAK OR CLINDAMYCIN 300 MG- DISP: 23 CAPS,
SIG: T 2 NOW AND THEN 1 CAP TID



192

POST-OP INSTRUCTIONS

ANTIBIOTICS?

193

AUGMENTIN 500 MG (OR 875 MG)- DISP: 23 CAPS,
SIG: T 2 NOW AND THEN 1 CAP TID



RECALL?

194

6 MONTHS



ADVANCED ENDO

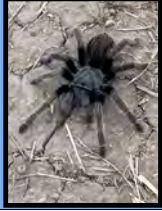
CONCEPTS

195



Advanced Endo

What do you do when things get hard or scary?



196

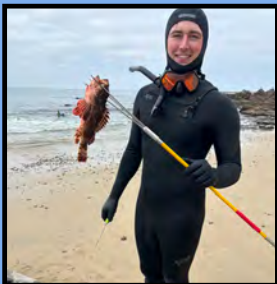
GOALS-

Find all Canals
Get down all Canals
Clean all Canals
Fill all Canals

197

What is advanced endo?

- Tough Diagnosis
- Difficult patients
- Never Numbs!
- Tough access
- Calcified access
- Tough negotiation

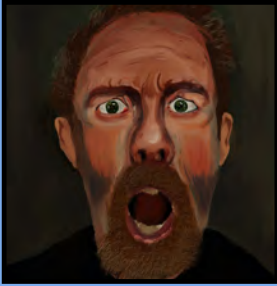


198

199

What are we covering?

- Long, curvy canals
- Ledge recovery
- Accurate working length
- The File won't advance
- MB2
- The cone is short
- Advanced obturation



200

TOUGH DIAGNOSIS

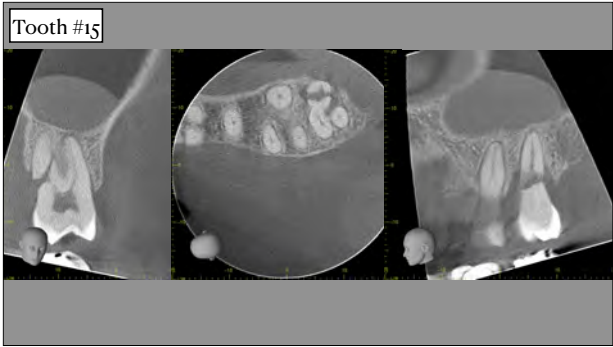
- Hot pain
- Vague Sx's
- Unable to duplicate CC
- Pt over reacts to everything
- Pt under reacts to everything
- The teeth all test NR to cold



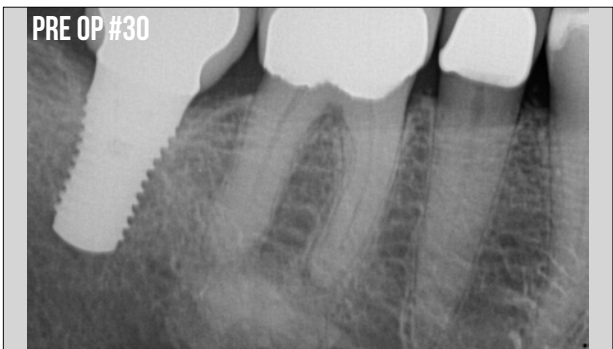
201

ADVANCED DX TRICKY DICK

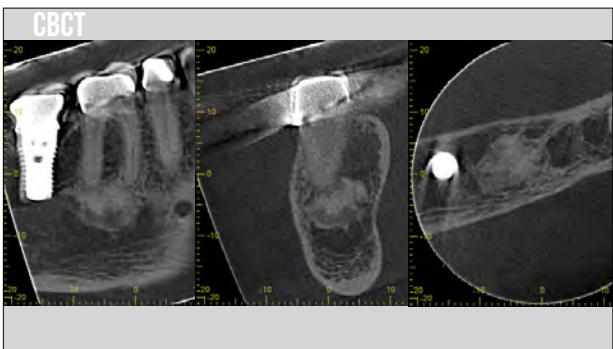




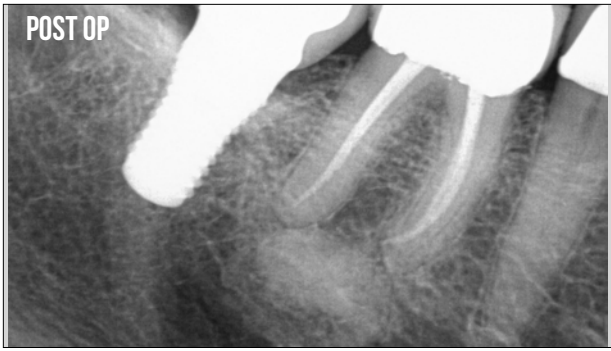
205



206



207



208

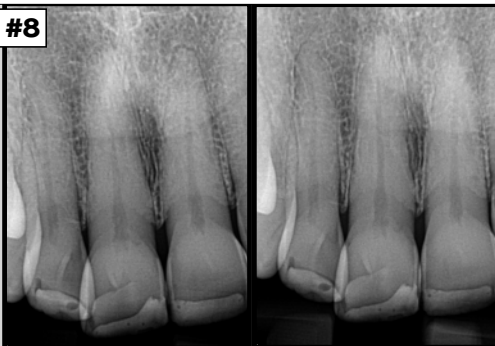


209

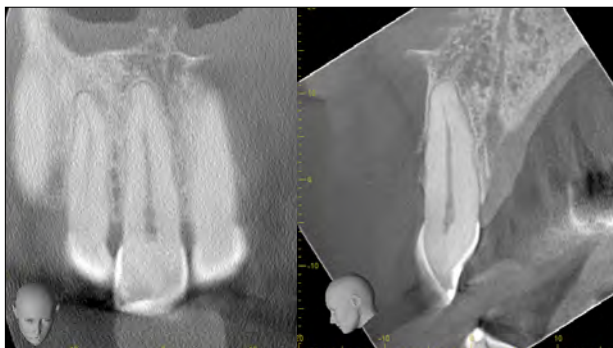


210

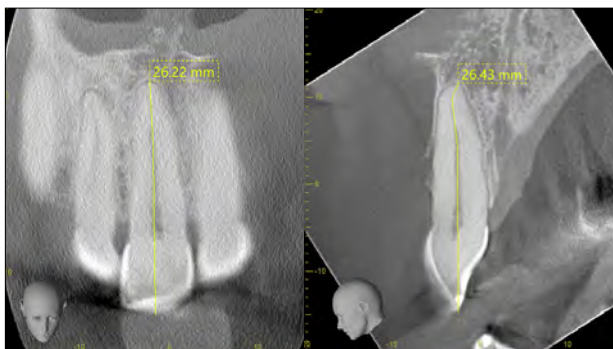
TOOTH #8



211



212



213



214



215



216



217

CALCIFICATION-
Calcified Pulp Chamber
Calcified Canals

218

CALCIFICATION **TOOTH #31**

• Thoughts?

A periapical radiograph of tooth #31. The image shows the root and crown of the tooth. There is a noticeable area of radiopacity (whiteness) in the pulp chamber and root canal area, indicating calcification. The surrounding bone structure is also visible.

219

CALCIFICATION

- Thoughts?



220

CALCIFICATION

- Mild, Moderate or Severe?
- Refer or treat?



221

Calcified Canals Rules

1. Brush away the dentin- use painting brush strokes
2. DO NOT Gauge at the dentin
3. Brush with small round surgical length burs (#1/2 round bur)
4. Use Drilling Cycles- slowly brush away 1-2 mm of the pulpal floor dentin, stop, rinse, dry, inspect, explore
5. NO- DO IT ALL OVER AGAIN
6. Follow the darker yellow tooth structure
7. Stay away from mottled or chalky white

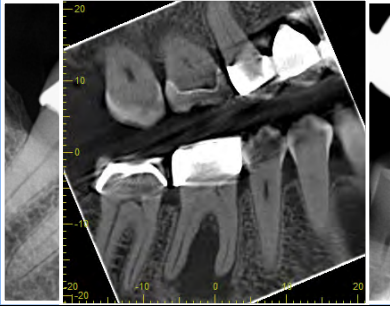
222

CALCIFICATION

TOOTH #30

223

- Mild, Moderate or Severe?
- Refer or treat?



CALCIFICATION

TOOTH #30

224

- Find the yellow ice
- Brush away the calcification 1-2 mm at a time (Drilling cycle)



CALCIFICATION

TOOTH #30

225



CALCIFICATION

TOOTH #30

226



CALCIFICATION

TOOTH #30

227

- 14 min Access!!!!
- Patience
- Drilling cycles
- Brush, not gauge





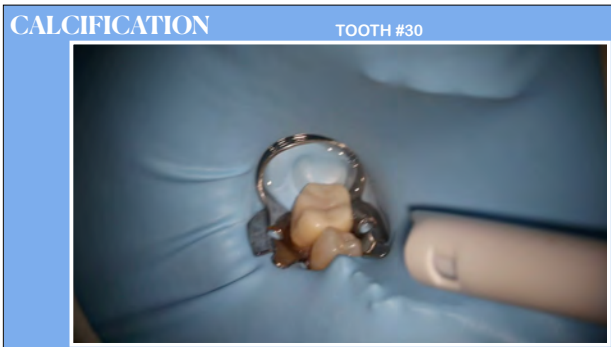
228



229



230



231



232



233

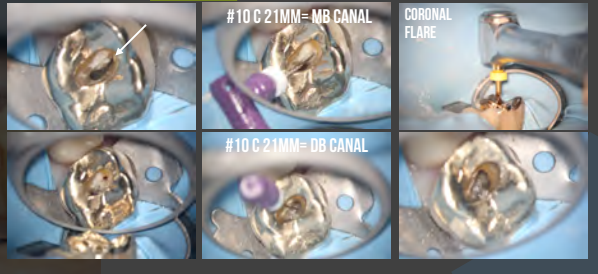


234

Q2 : ACCESS TOOTH #3



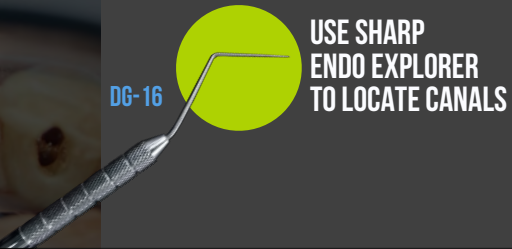
235



Q2 : ACCESS ENDO EXPLORER



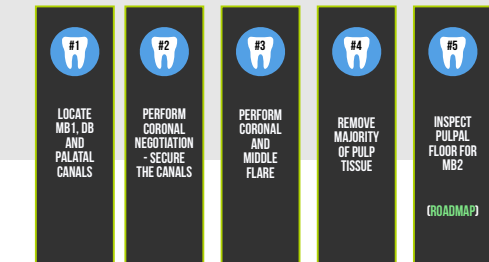
236



Q2 : MB2 ACCESS RULES



237



Q2 : MB2 ACCESS RULES

238

#6
PULL BACK THE MESIAL WALL - 1MM

#7
USE A #1/4 OR #1/2 SL ROUND BUR TO TROUGH ALONG THE ISTHMUS LINE OFF OF THE MB1 ORIFICE
OFTEN HAVE TO REPEAT #7 AND #8

#8
CHECK FOR A STICK WITH AN ENDO EXPLORER

#9
USE #10C 2MM FILE AND TRY TO THREAD IT IN THE MB2 ORIFICE FOR 5-10MM

#10
WORK THE #10C 2MM FILE 25-50 TIMES- SMOOTHIES (CORONAL NEGOTIATION)

ROOT CANAL ACADEMY

Q2 : MB2 ACCESS RULES

239

#11
PERFORM CORONAL FLARE (PROTAPER GOLD SX)

#12
EXPLORE THE CANAL WITH A #10 K 26MM FILE

#13
PERFORM MIDDLE FLARE (PROTAPER GOLD S1) OPTIONAL

#14
NEGOTIATE TO PATENCY/ OBTAIN WORKING LENGTH

#15
SHAPE

ROOT CANAL ACADEMY

Q2 : ACCESS MB2

CASE #2



240

#14

BWX

SECURE THE OTHER CANALS 1ST

PULL THE MESIAL WALL BACK

TROUGH THE ISTHMUS

MB2

NOW WHAT DO YOU DO?

Q2 : ACCESS MB2



241

#14

#10 C 21MM

EXTREMELY IMPORTANT

CORONAL NEGOTIATION

WORK IT 25-50 STROKES

CORONAL FLARE

PROPER ANG SX



Q2 : ACCESS MB2



242

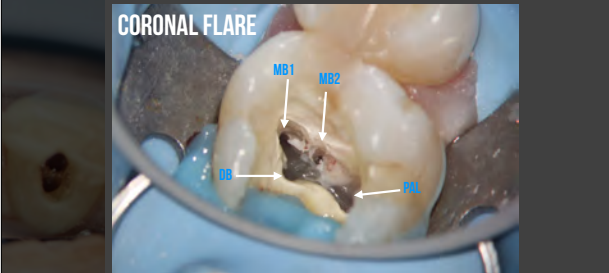
CORONAL FLARE

MB1

MB2

DB

PL



Q2 : ACCESS MB2



243

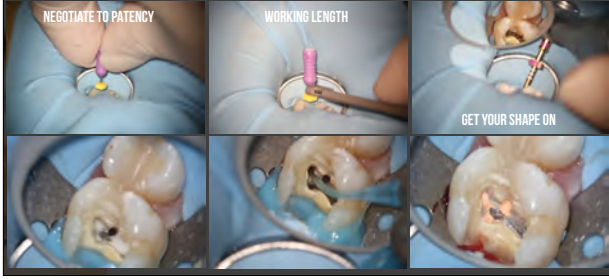
MB2



Q2 : ACCESS MB2



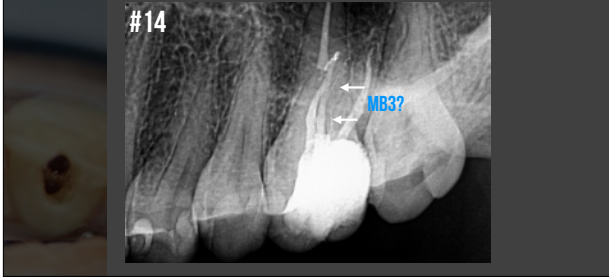
244



Q2 : ACCESS MB2



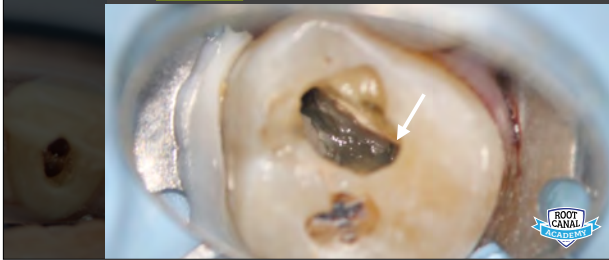
245



Q2 : ACCESS MB2

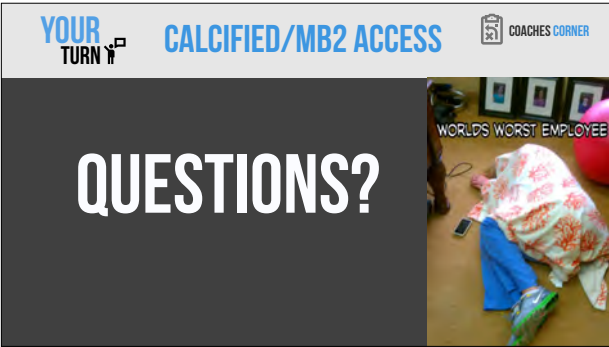


246





247





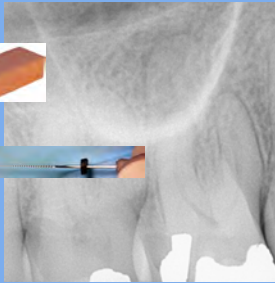
248



249

Tough Negotiation

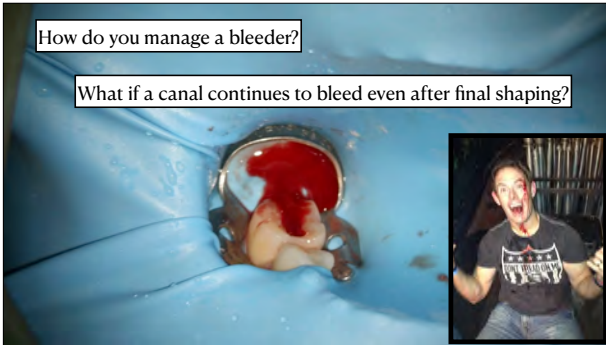
- Start with a #10 K 25 mm file → 
- Either move down to a #8 K or . . .
- Middle Flare with ProTaper Gold Si
- Place a 45° apical bend on a #8 K → 
- Walk the apex, find that apical curve
- Move to a #6 K if needed
- Move to #6 or #8 C files if needed
- Work the stick with mini push-pulls



250

How do you manage a bleeder?

What if a canal continues to bleed even after final shaping?



251

What if a canal continues to bleed even after final shaping?

1. Wait and walk away
2. Hemodent paper point
3. Sealer paper point
4. 3% Cold Hypertonic Saline
5. CaOH₂

252

When do you use Calcium Hydroxide?

253

1. Continuous weeping into the canal (blood, purulence, serous fluid).
2. Time
3. Tx Difficulty
4. Large PARL

UltraCal XS (Ultradent)

254



TOUGH CASES

255

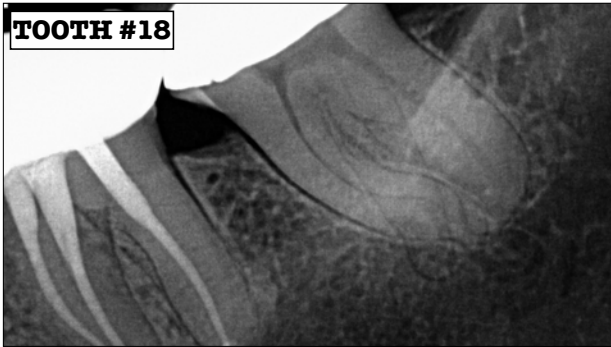
CAN YOU DO THIS? MANDIBULAR MOLAR

256



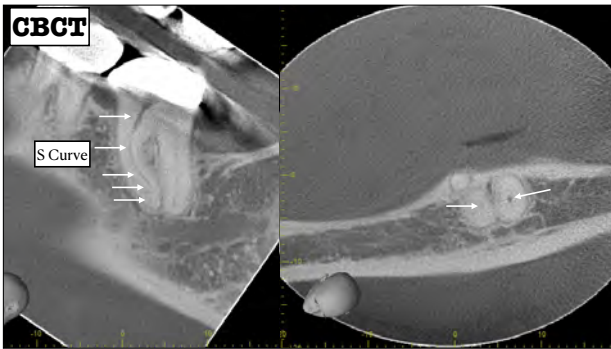
TOOTH #18

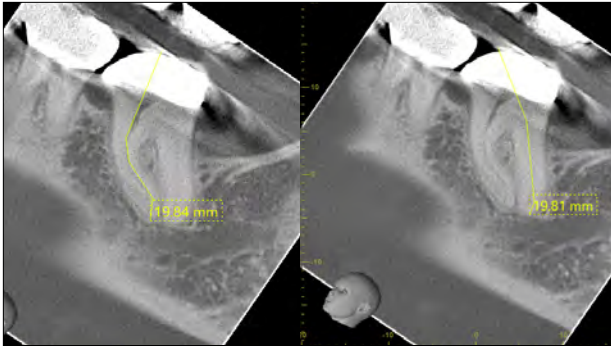
257



CBCT

258





259

Advanced Endo

Why?

- Radix Molar
- M root S curve
- Mandibular 2nd Molar
- DL canal appears calcified
- Pt is an RDA

Easy?

- Open pulp chamber
- M canals merge
- Normal root length?



260



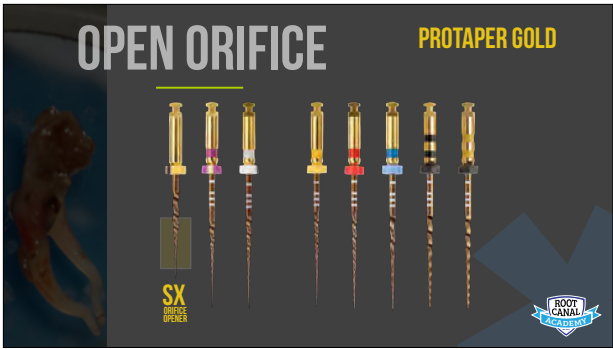
261

1- Coronal Negotiation with a #10 C 21 mm file.


2- Coronal Flare with a ProTaper Gold SX (300 RPM)

3- Middle Flare with a ProTaper Gold S1 (gentle)- 2 passes

4- #10 K (or step back to a #8 K) and Negotiate to Patency and achieve and Accurate Working Length



262



5- Loose #10 K and then loose #12 K file.

6- PT Gold S1 to WL or close

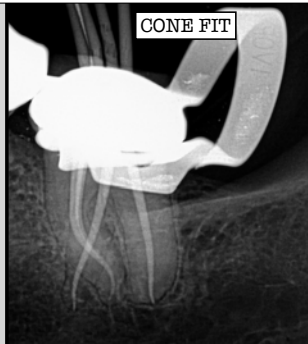
7- PT Gold S2 to length

8- PT Gold F1 and F2 to WL

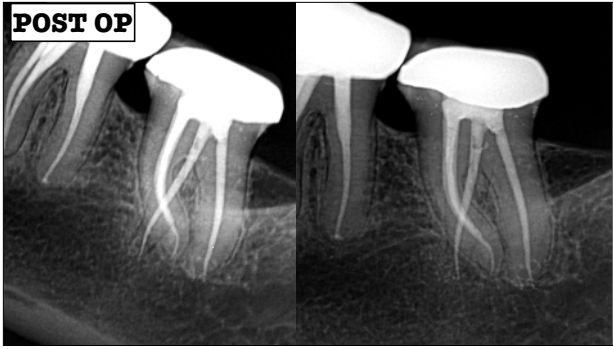
263

Questions?

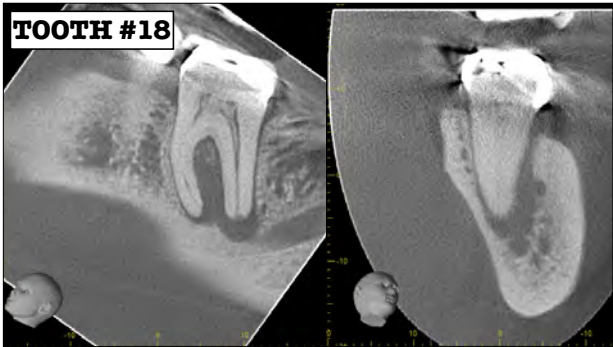
- Can you achieve this result?



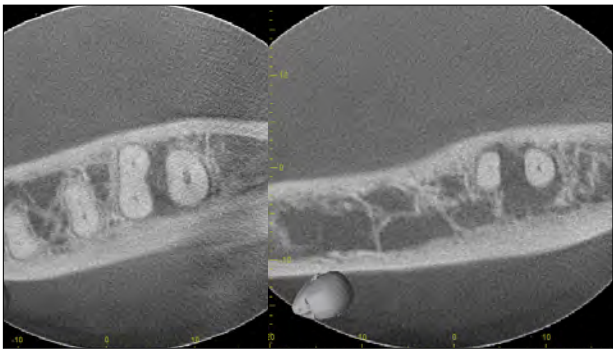
264



265



266



267

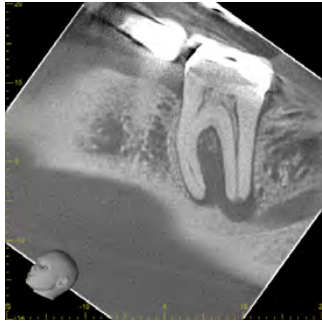
Advanced Endo

Why?

- PITA to the MAX
- PITA HUSBAND
- 1000 questions
- Couple Anxiety
- Mandibular 2nd Molar
- Calcified material in the M and D canals
- Strongest tongue this side of the Mississippi (I could barely give the injection)

Easy?

- M canals merge
- 1 Distal Canal



268

The Slider Gold Technique

ProTaper Ultimate Slider
400 RPM



ProTaper Gold Shaper 1
400 RPM

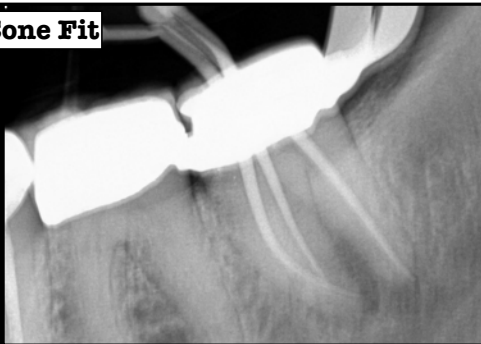


WaveOne Gold Primary
Reciprocation



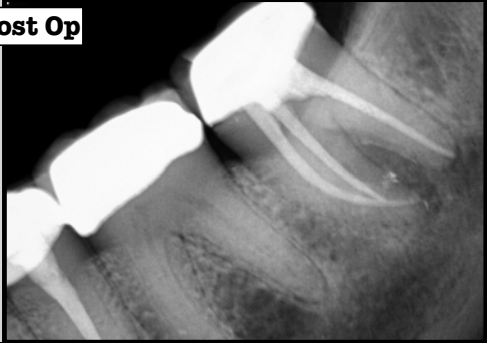
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Cone Fit

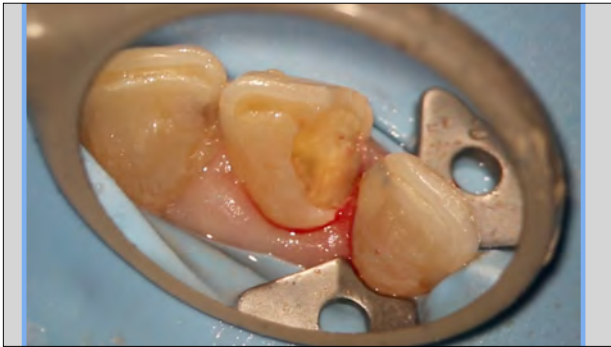


270

Post Op



271



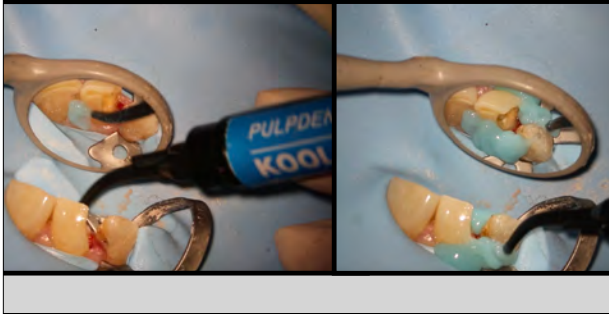
272



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Kool Dam (Pulpdent)

274



275



276

**SIMPLE-ADVANCED
RETREATMENTS**

Retreatment Diagnosis

277

1. Why did the root canal fail?

Undersized, Undercleaned, Underperformed, Over all shit!

No rubber dam used, Missed canal (MB2), Did not use NaOCL

2. CBCT is your gold standard AND NEEDED.

3. Straight and a shift PA and a BWX

4. Clinical testing

5. What if you are not sure?

Retreatment Access

278

1. Follow the composite brick road down to gutta percha Oz.

2. Use drilling cycles and take your time.

3. Look for the orange gold at the end of the composite rainbow.

4. Find one canal and then use that as your pulpal floor road map.

5. Don't be afraid to open up the access a bit.

The Retreatment Playbook

279

1. Remove the coronal 2/3's gutta percha with combination of hand and NiTi files (use Chloroform).

2. Remove the apical 1/3 gutta percha with hand files.

3. Extra course and Course paper points in between #1 and #2 to remove the soupy gutta percha.

4. Negotiate to Patency and achieve an Accurate Working Length

5. Once the GP is removed it is now just a standard RCT.



How do you remove Gutta Percha?

280

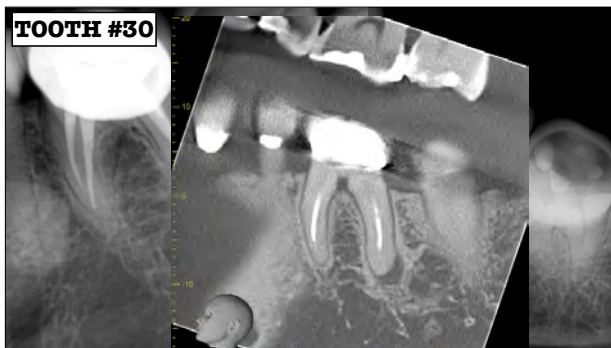
1. Profile 25/06 at 3000 RPM's- gentle touch- remove bulk 2/3 rd's GP.
2. Use Heat Tip (can use an ultrasonic tip also) and remove coronal 1/3 rd GP- create a Chloroform well.
3. Add Chloroform and use a #10 C 21 mm file and create a GP Glide Path ~10mm into the GP.

How do you remove Gutta Percha?

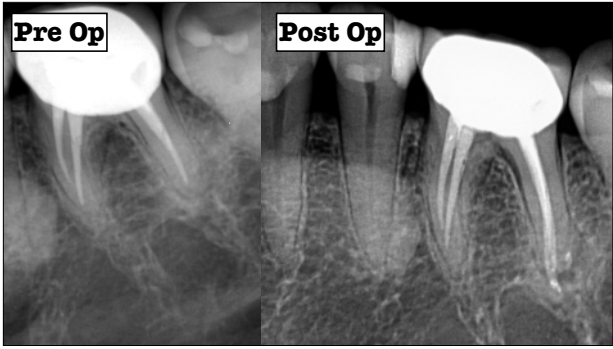
281

4. Use lots of Extra and Course paper points to remove the soupy GP.

("Give me a 3 and 3" = 3 extra course and then 3 course paper points)
5. Use Reciproc Blue R25 or WaveOne Gold Primary and remove coronal 2/3rd's GP.
6. Use #10, #15, #20 K hand files to remove apical 1/3 GP.



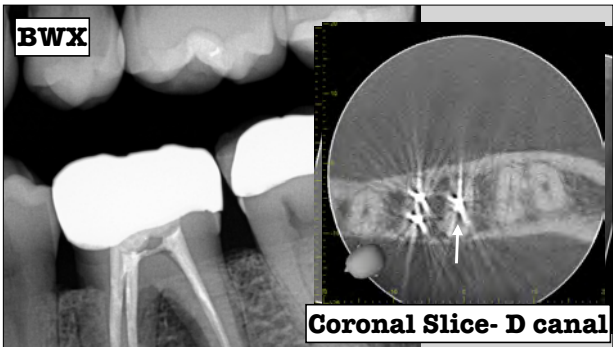
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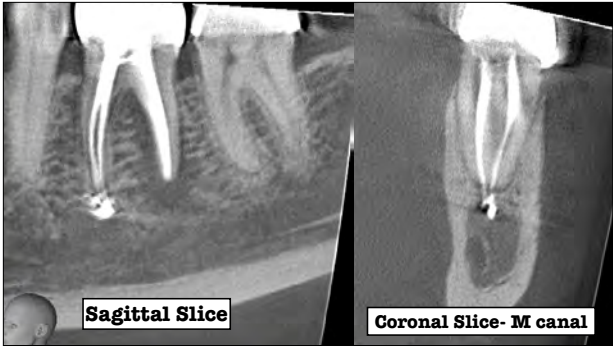
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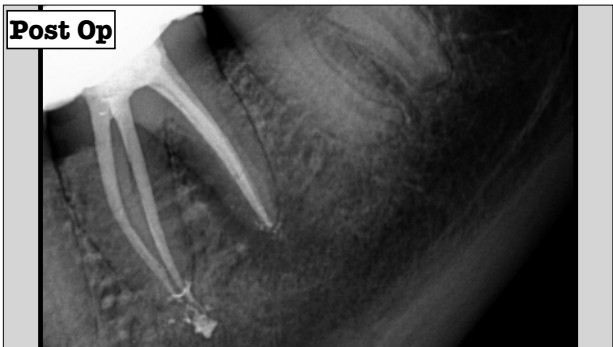
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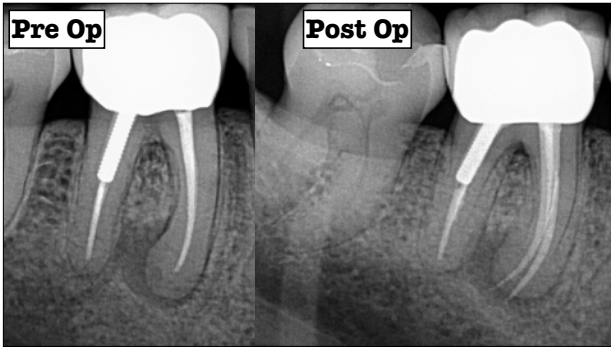
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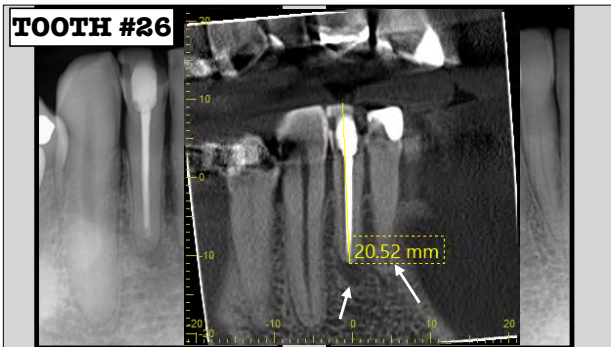
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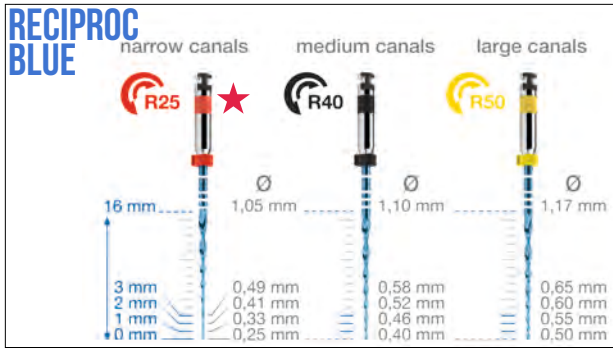
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295

The same apical prep you love...
 ...but with a more conservative MFD.

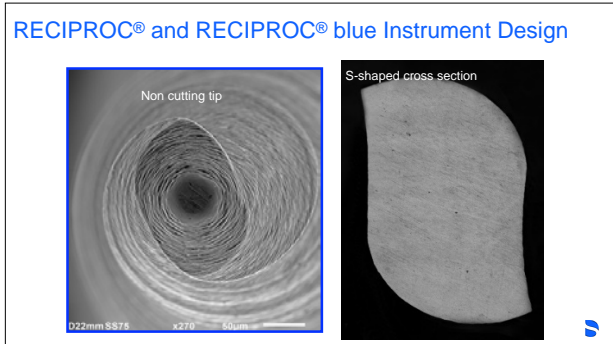
And far fewer instruments!

Time Savings

Reduces shaping time so you can focus on what matters: **quality irrigation.**

Dentsply **Bränd**

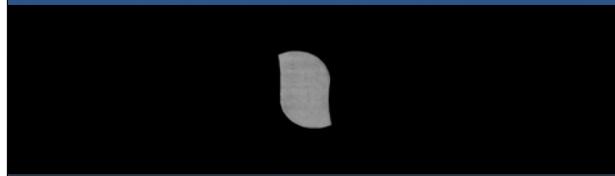
296



297

The cross-section provides **efficient cutting** and **debris removal**.

298



And reciprocation keeps everything **centered and safe**.



Reciproc Blue

Sizing

Shaping Choices



Optional Glide Path Management



Obturation Options



299

R-Pilot™

Glide Path File

- Tip 12.5/04 CT
- M-Wire thermal treatment
- S-Shape cross-section (same as Reciproc and Reciproc® Blue files)
- Stand alone / universal glide path file
- Used if and when needed with Reciproc blue, or with other file systems.

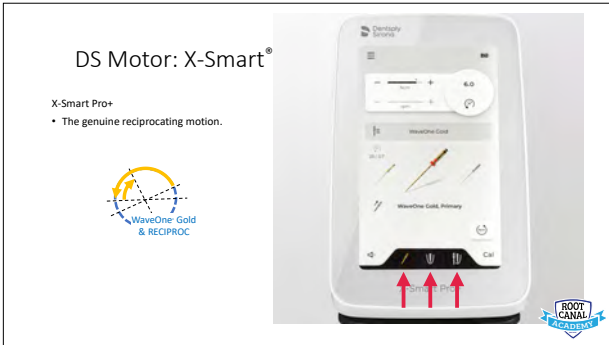


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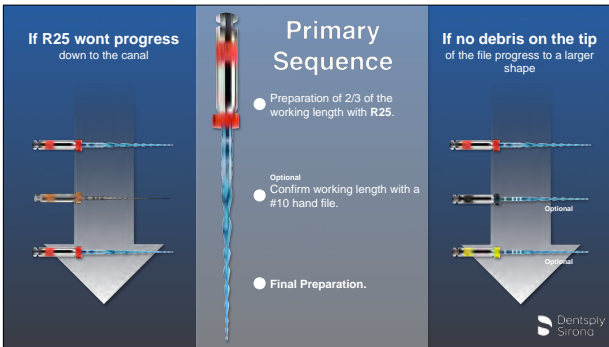
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302

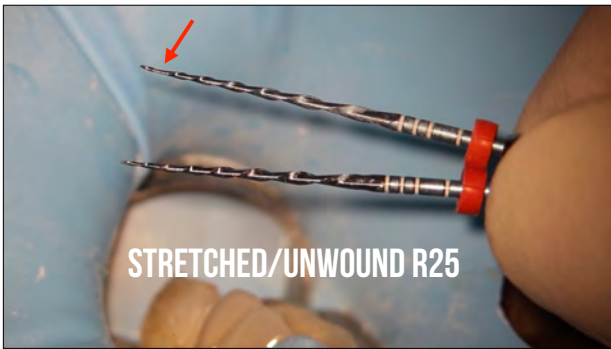


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307



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RECIPROC BLUE TECHNIQUE

1. Access
2. Coronal Negotiation- #10 C 21 mm file
3. R25- Shape ()= 1st shaping pass
4. Irrigate with NaOCl
5. R25- S (becks)= 2nd shaping pass

309

RECIPROC BLUE TECHNIQUE



310

6. Irrigate with 5-7% NaOCL

7. R25- Shape (4-8 pecks)= 3rd shaping pass

8. Irrigate with 5-7% NaOCL

9. R25- Shape (4-8 pecks)= 4th shaping pass
(Hit WL)

10. Irrigate with 5-7% NaOCL, Remove, Place QMix

RECIPROC BLUE TECHNIQUE



311

11. Activate with SLP EndoActivator or Laser

12. Remove QMix, place Triton (activate)

13. Cone fit + Cone Fit PA's

14. Adjust cones, dry canals

15. Obturate

RECIPROC BLUE TECHNIQUE



312

Perform 4-8 pecks and then get out

Anterior tooth- 2-3 shaping passes (to WL)

Premolar- 3-4 shaping passes (to WL)

Molar- 4-8 shaping passes (to WL)

RECIPROC BLUE TECHNIQUE



313

Shaping time- R25 to WL

Anterior: ~2-3 minutes

Premolar: ~3-4 minutes

Molar: ~4-8 minutes

RECIPROC BLUE TECHNIQUE



314

Shaping time- R25 to WL

Anterior (5 teeth)- 1:34 seconds

Premolar (6 teeth)- 2:53 seconds

Molar (21 teeth)- 5:18 seconds

Slider Gold technique- 4:29 seconds (1 tooth)

RECIPROC BLUE TECHNIQUE



315

Shaping Passes- R25 to WL

Anterior (7 canals)- 2.7 passes

Premolar (6 canals)- 3.3 passes

Molar (77 canals)- 3.18 passes

RECIPROC BLUE TECHNIQUE



316

What % did the R25 reach WL w/o a hand file?

Anterior (10 canals)- 100%

Premolar (10 canals)- 100%

Molar (115 canals)- 84.3%

**Combined
(135 Canals)-
87%**

RECIPROC BLUE TECHNIQUE



317

What % did the R25 reach WL w/o a hand file in ReTx?

Anterior (2 canals)- 100%

Premolar (7 canals)- 100%

Molar (41 canals)- 95.3%

**Combined
(52 Canals)-
96%**

ADVANTAGES OF BLUE

318

1. Reciproc Blue (R25) can often times shape down to WL without the use of hand files or a glide path.

2. You can bend the file to get into hard access cases.

3. You can push on this file and it does not appear to separate or ledge.



ADVANTAGES OF BLUE

319

4. Sometimes the R25 will advance to WL even when a #10 K won't.

5. If you have to UpShape the R40 or R50 will usually advance to WL in 1 pass.

6. The ease and efficiency of this file is pure insanity.



ADVANTAGES OF BLUE

320

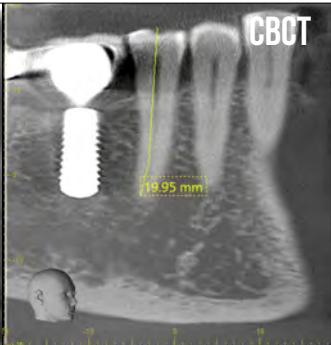
7. Shaping is so fast it allows plenty of time for activated irrigation and enhanced disinfection.

8. I feel very safe when using this file.

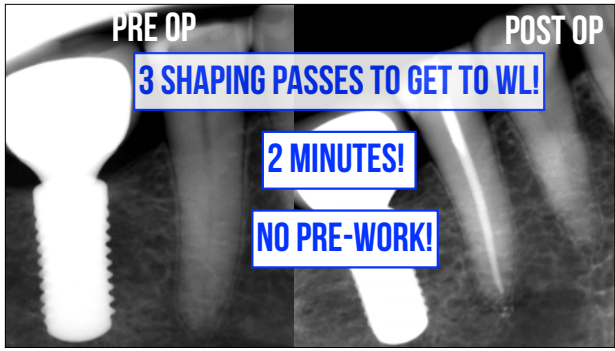
9. It is a fantastic ReTx file (as is WaveOne Gold).



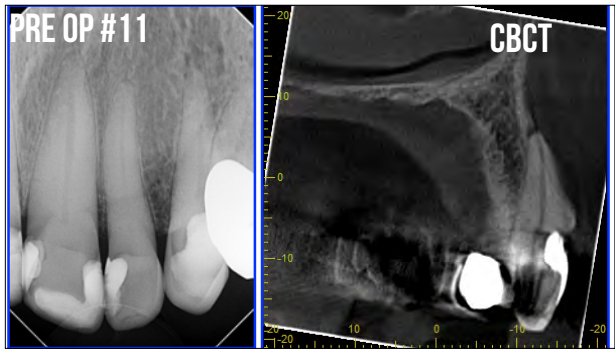
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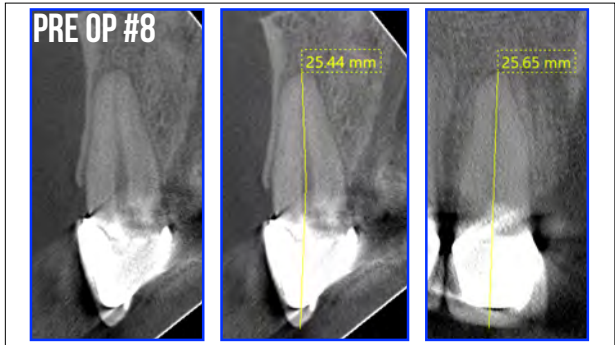
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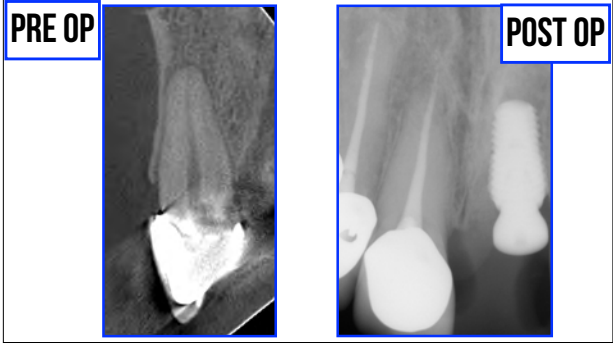
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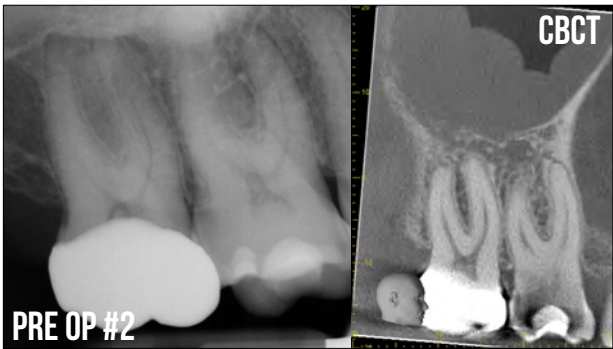
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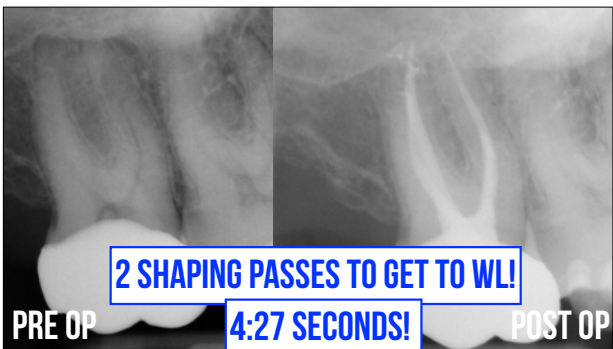
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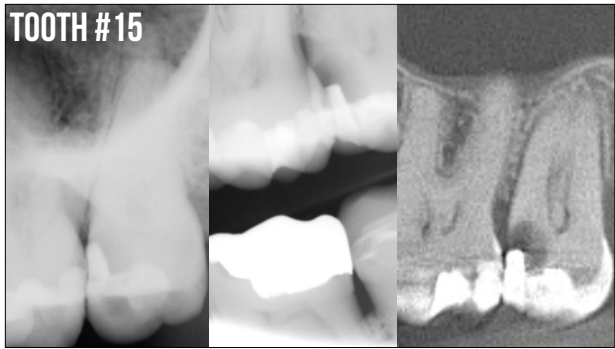
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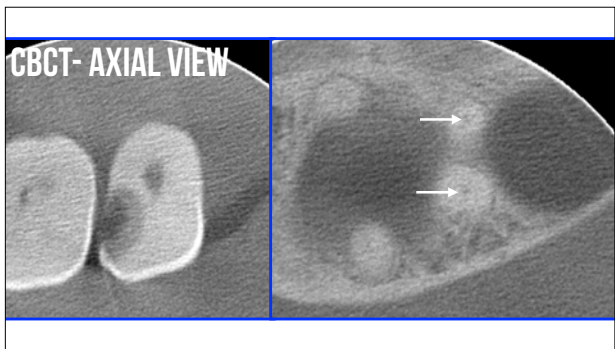
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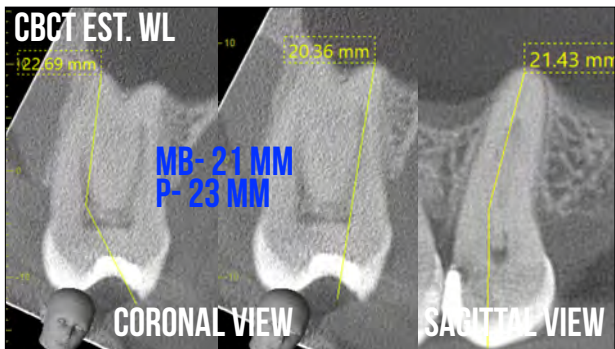
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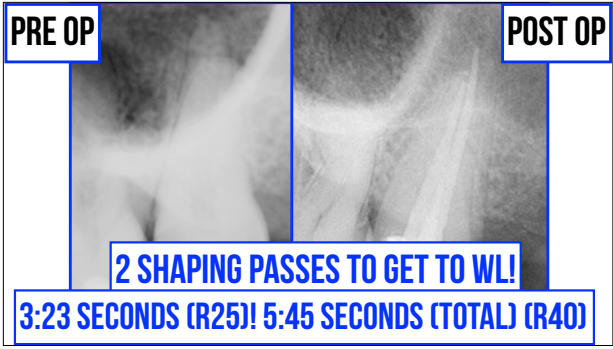
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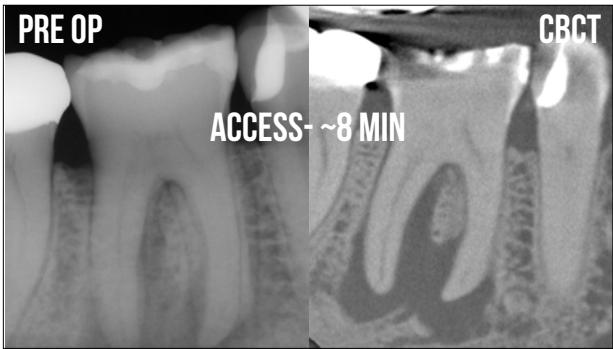
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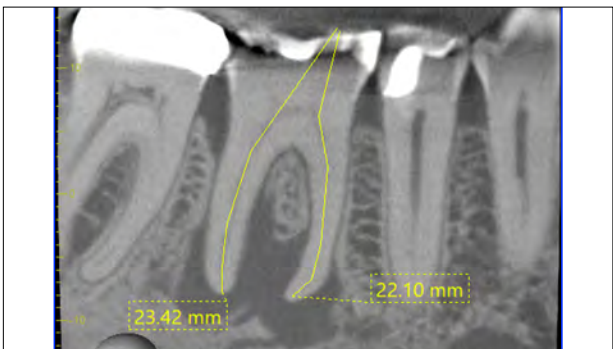
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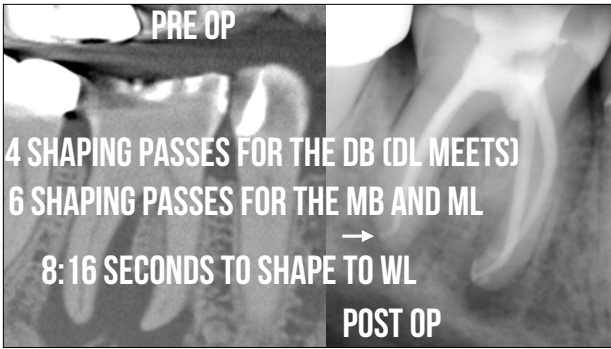
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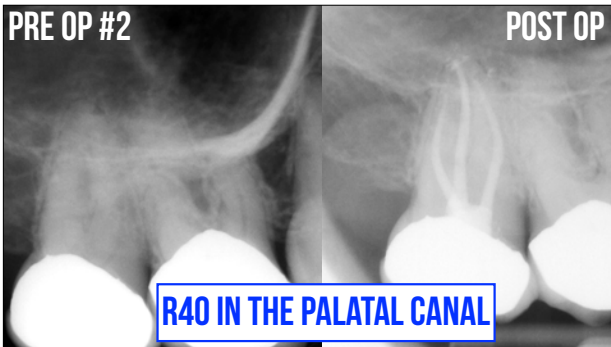
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334



335

RECIPROC BLUE RETX TECHNIQUE

1. Access- follow the composite brick road down to gutta percha Oz
2. Use a heat tip and remove coronal GP and create a chloroform well.
3. Place 2-4 drops of chloroform in each canal and create a -10 mm gutta percha "glide path" with a #10 C 21 mm file.



336

RECIPROC BLUE RETX TECHNIQUE

337

4. Place the Reciprocal Blue R25 into the gutta percha and start working down the canal.

5. Remove the R25 after 3-5 pecks and clean the flutes and add more chloroform (if needed)

6. Continue working down through the gutta percha with the R25.



RECIPROC BLUE RETX TECHNIQUE

338

7. Use paper points to sop up the soupy gutta percha.

8. Continue working down the canal with the R25 until you reach working length.

9. Use paper points until they come out white and all gutta percha is clear.



RECIPROC BLUE RETX TECHNIQUE

339

10. Place 5-7% NaOCL or Triton in the canals.

11. UpShape if needed with the R40 and R50 (usually if the R25 does not do much apical cutting or a PARL).

12. Irrigate and activate the QMix and 5-7% NaOCL (SLP Endoactivator or Laser) to enhance disinfection.



RECIPROC BLUE RETX TECHNIQUE

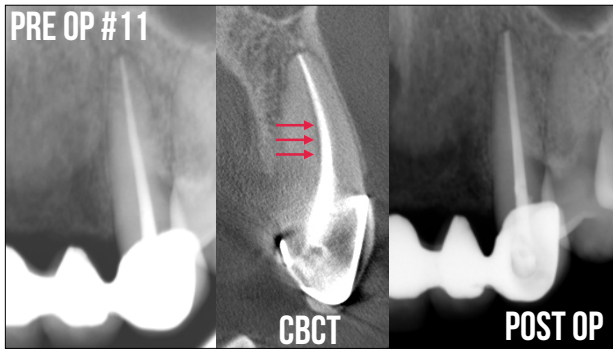
13. Cone fit and cone fit PA's

14. Adjust the cones and dry the canals.

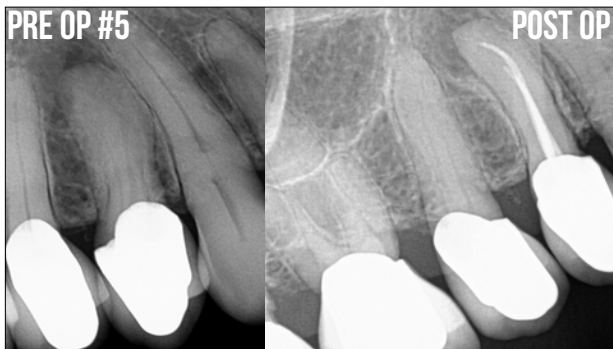
15. Obsolete



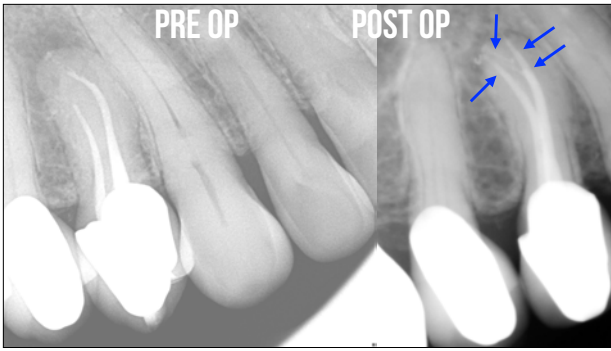
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342



343

THE SLIDER
What percentage did it reach the apex without the use of a hand file?

1590 canals tested

80% (79.87%) of the time the Slider advanced to the apex without the use of a hand file

COLLEGE OF DENTISTRY
WORLD 2022

Dentsply
Strong

344



345
