Endodontic Lab 724

Laboratory Session XV

May 5, 2022

Remember the fish

Plan of Attack

8:00-8:15	Intro to Pre-Clinical Competency Exam
8:15-8:30	Intro to lateral compaction
8:30-8:45	Bleaching
9:00-11:45	Projects
	Lateral compaction of maxillary incisor
	Bleaching of maxillary incisor
	Completion of all projects (including “access only” teeth)
	Prepare for practice PCEs- find and mount teeth

Pre clinical Competency Exam

- May 12 — Practice anterior PCE- may be one of mounted "access only" teeth
- May 19 — PCE anterior tooth
- May 26 — Practice posterior PCE- multirooted molar
- June 2 — PCE multirooted molar

- For the practice exam:
  - Anterior tooth: Access, C&S, obturate (May 12)
  - Multirooted molar: Access, identify all canals; C&S, obturate pre-determined canal of your choice (May 26)
  - Only instructor check necessary is when you have finished (but can ask for more assistance if needed)
  - Self evaluate using WREB criteria (p 79)

Preclinical Competency Exam

- Competency patient number (Endo 724, PCE_DExx)
- Tooth must be signed off by instructor prior to mounting
- Pre-op facial and proximal radiographs, using the holder (so sphere is visible), at least 2mm visible beyond apex
- Mount with putty surrounding the apex and at least 2mm thick.

Lateral or vertical?

Remember

- Measure twice, Cut once!
- Irrigate, irrigate, irrigate!!
- Gates-Gliddens
- All work done under RDI unless instructed otherwise

Anterior tooth PCE

- 8:00-12:00 Access / clean and shape / obturate single canal
- At start:
  - Worksheet with patient chart number (A330…)
  - Have properly mounted anterior tooth (single tooth)
  - Preop proximal and facial views of mounted tooth in holder
- At end:
  - sextant with finished tooth (with “patient” number on masking tape)
  - preop and postop facial and proximal views (4 films) in “Local View”
  - Worksheet with self evaluation (with “patient” number)
  - In plastic bag identified with “patient” number on masking tape

ANTERIOR PCE

Pt. chart # (A330_ _ _):_____

Tooth #:_____

2015 ENDODONTIC
SCORING CRITERIA RATING SCALE

ACCESS OPENING	Outline	Near ideal shape, size and location. For anteriors, esthetics are not affected. If crown is fractured, access is intact or outline and shape can be determined by putting pieces back together.	Some variation in shape, size and/or location. May be slightly over or under extended. For incisors, minor encroachment on incisal edge, but is acceptable for apical instrumentation. If crown is fractured, access is intact or outline and shape can be determined by putting pieces back together.	Shape, size and/or location are functional. May be moderately over or under extended. For anteriors, encroachment on incisal edge is more than necessary for apical instrumentation. If crown is fractured, outline and shape can mostly be determined.	Improper shape, size and/or location (prevents proper instrumentation) or too large (crown is compromised by excessive estimation). For anteriors, severe encroachment on the incisal edge inappropriate for apical instrumentation. If crown is fractured, outline and shape can partially be determined.	Grossly improper shape, size or location; crown severely compromised by gross estimation. For anteriors, incisal edge is grossly violated, not necessary for apical instrumentation. If crown is fractured, outline and shape cannot be determined.
	Access	No obstructions to canals.	Slight over or under removal of tooth structure. Slight obstruction present.	Moderate over or under removal of tooth structure. Moderate obstruction present.	Excessive over or under removal of tooth structure (prevents proper instrumentation). Filled with gutta percha or other material preventing proper visualization of access.	External crown shape altered. Occlusal surface reduced. Coronal or furcal perforation.
	Chamber Roof/ Pulp Horn	Fully removed.	Not fully removed, a minor tooth ledge.	Not fully removed, moderate tooth ledge.	Not fully removed, excessive tooth ledge. Canal accessed through pulp horn only. Roof remains.	Not entered and canal not accessed.
CONDENSATION	Fill	Gutta-percha fully within root, less than or equal to 1.0 mm from apical foramen. Less than or equal to 1.0 mm of sealer extruded beyond apical foramen.	Gutta-percha fully within root, less than or equal to 1.5 mm from apical foramen. May have more than 1.0 mm but less than or equal to 3.0 mm of sealer extruded beyond apical foramen.	Gutta-percha less than or equal to 2.0 mm from apical foramen, short or long. Sealant extruded more than 3.0 mm beyond the apical foramen.	Gutta-percha less than or equal to 5.0 mm, short or long, from apical foramen.	Gutta-percha more than 5.0 mm short or long from apical foramen or none present, or an unacceptable material used.
	Density	Apical ⅓ dense and without voids. Slight voids in the coronal ⅓ of the fill.	Apical ⅓ dense and without voids. Slight voids in the coronal ⅓ of the fill.	Slight voids in the apical ⅓ or moderate voids in the fill.	Significant void in the fill.	Gross voids in the fill. No evidence of gutta percha condensation or compaction.
	Shape	Smooth and tapered from CEJ to apical foramen.	Smooth and tapered, minor irregularities. Minor under or over instrumentation.	Tapered with moderate irregularities. Moderate under or over instrumentation. Apex transported but less than or equal to 1.0 mm.	Tapered with significant irregularities. Excessive over or under instrumentation. Apex transported greater than 1.0 mm or less than or equal to 3.0 mm, creating an artificial canal.	Root perforation due to stripping. Apex transported greater than 3.0 mm creating an artificial canal.

A separated file in the canal will be scored based on established WREB criteria.
A root fracture can score no higher than a 3 for condensation.

Comments

Access:

Condensation:

Access grade:	_____ (37.5%)	Pass	Remediate
Condensation grade	_____ (62.5%)	Pass	Remediate
Case grade	_____		

Molar

- 8:00-12:00 Standard access of all canals/clean and shape/obturate **one predetermined canal** (before access)
- At start:
  - Have properly mounted molar (only tooth mounted in segment)
  - Worksheet with canal you plan on treating, faculty check off
  - Preop proximal and facial views of mounted tooth in holder
- At end (with patient ID# only):
  - Sextant with tooth
  - Preop and postop facial and proximal views (4 films) in “Local View”
  - Worksheet with self evaluation

Grading

- Grading is on a 1-5 scale (see WREB Criteria p. 79)
- Access opening is 37.5% of grade, condensation 62.5%
- Minimum passing score is 3 in <u>all</u> sections- if 2 in any section will fail that part (fail access only or obturation only and will redo that specific section)
  - Example: Access opening
    - Outline- 2
    - Access- 4
    - Chamber Roof- 5

    Grade would be "2" (which would be a fail and necessitate remediation of the access opening portion)
- Scores above 3 will be averaged
  - Example: Access opening
    - Outline- 5
    - Access- 5
    - Chamber Roof- 3

    Grade would be "4.33" for access opening

    Condensation
    - Fill- 3
    - Density- 3
    - Shape-5

    Grade would be "3.66" for condensation

WREB Grading Criteria

2017 ENDODONTIC
SCORING CRITERIA RATING SCALE

		5	4	3	2	1
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	Density	Apical ⅔ dense and without voids. Slight voids in the coronal ⅓ of the fill.	Apical ⅔ dense and without voids. Slight voids in the coronal ⅓ of the fill.	Slight voids in the apical ⅓ or moderate voids in the coronal 2/3 of the fill.	Significant void in the fill.	Gross voids in the fill. No evidence of gutta percha condensation or compaction.
	Shape	Smooth and tapered from CEJ to apical foramen.	Smooth and tapered, minor irregularities. Minor under or over instrumentation.	Tapered with moderate irregularities. Moderate under or over instrumentation. Apex transported but less than or equal to 1.0 mm.	Tapered with significant irregularities. Excessive over or under instrumentation. Apex transported greater than 1.0 mm or less than or equal to 3.0 mm, creating an artificial canal.	Root perforation due to stripping. Apex transported greater than 3.0 mm creating an artificial canal.

A separated file in the canal will be scored based on established WREB criteria.
A root fracture can score no higher than a 3 for condensation.

Grading (cont'd)

- Access: 4.33 x .375= 1.62
- Condensation: 3.66 x .625= 2.28
- Final (anterior): 1.62 + 2.28= 3.9

Grading

- Final combined score (50% of lab grade)
  - Anterior tooth score (50%)
    - Access score (37.5%)
    - Condensation score (62.5%)
  - Molar tooth score (50%)
    - Access score (37.5%)
    - Condensation score (62.5%)

Final Grade

Scores for each tooth will be averaged and converted to a percentage:

Anterior- 3.9

Posterior-4.0

Average-3.95

3.95/5= 79% (50% of course grade)

No Pressure but…

- You are required to pass this test to treat endo patients in clinic.
  - ≥3 on each section

Some differences from the WREB

- Eight hours to do both teeth
  - (instead of four).
- Scores in each criteria ≥3 will be averaged
  - (instead of taking the lowest score in the criteria)
- Failure = score <3 in any section
  - (instead of just the final combined score)
- WREB don't C&S and obturate molar at all

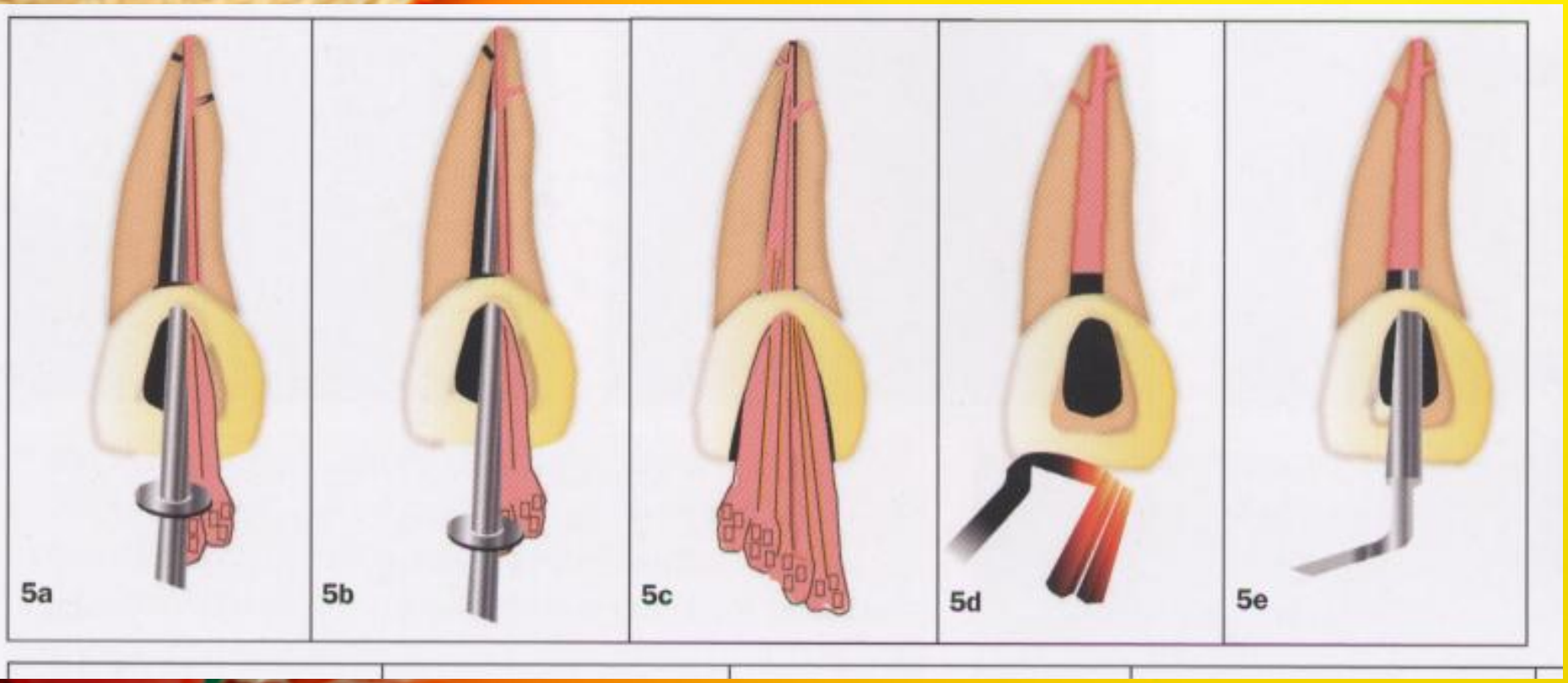
Questions?

- What if I fail one part of this test?
  - You will be unable to treat endodontic patients until remediation and successful passing of failed portion of test is done(ie-if you pass the condensation but fail the access, you just have to remediate the access opening)
  - Retaken exams will be graded on same scale, but grade will be lowered by one point.
- What if I have a tooth that is 25mm or longer?
  - Complete your access and call an instructor over to grade. You will then remove enough of the crown to continue with the 25mm files

Some Final Points…

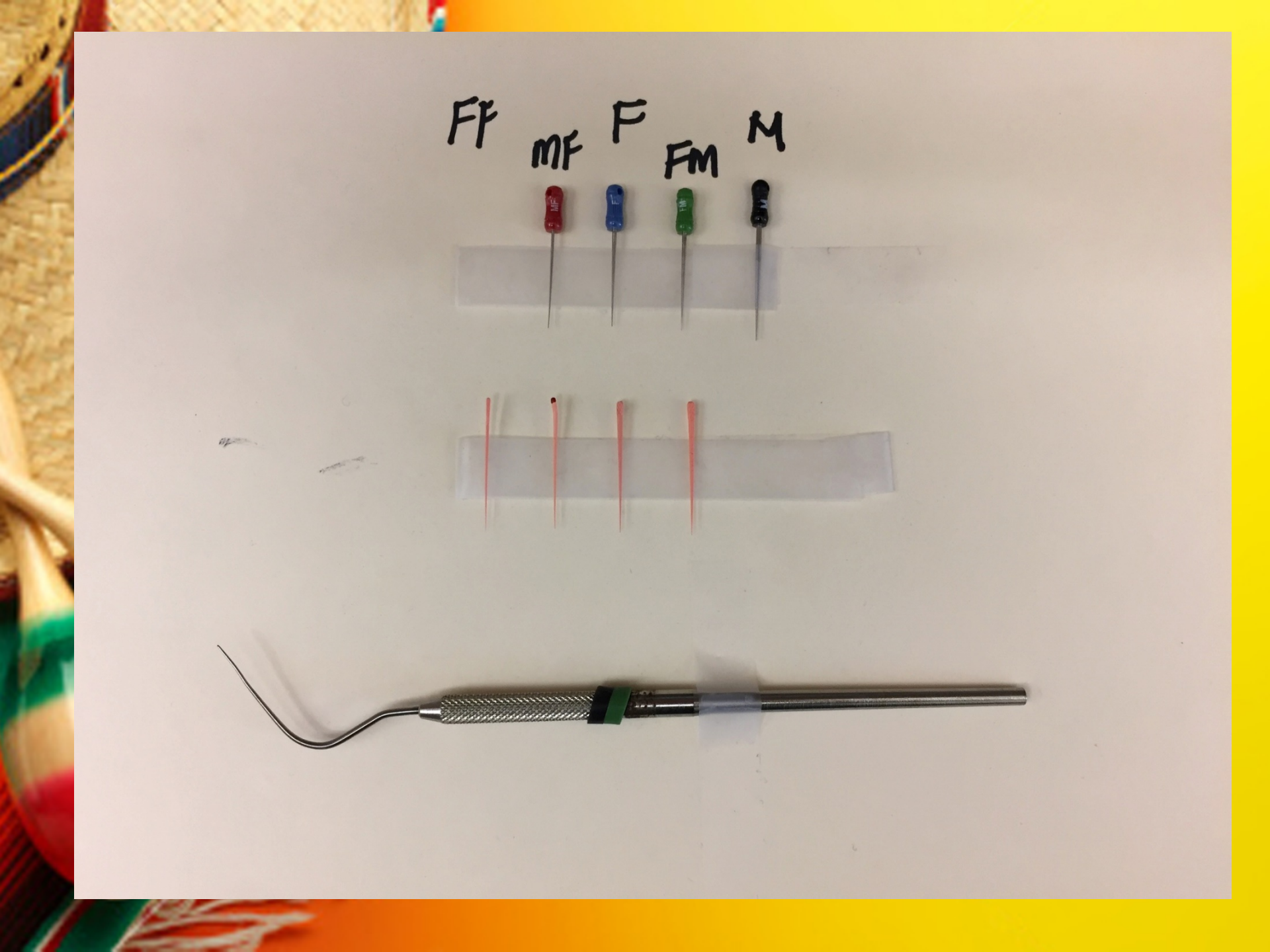
- Pick a good tooth (instructor MUST sign off your PCE teeth)
- Mount it properly/securely /neatly
- Don't rush through the access (you have four hours)
- Check for pulp horns
- Before cone fitting, prefit pluggers and gauge apex with .02 taper hand files
- If something bad happens, keep going (maximize your score)
- Mount radiographs with the correct and same orientation, please!

Lateral Compaction



Lateral Compaction

- As part of a hybrid technique- usually to provide bulk of gp in addition to master cone in large canals, or to help “lock in” the master cone prior to down pack (as we learned previously). Spreader only need advance to middle third.
- As the primary obturation technique (as we will learn today). Spreader needs to advance to within 2 mm of working length. No down pack, no backfill.


FF
MF
F
FM
M

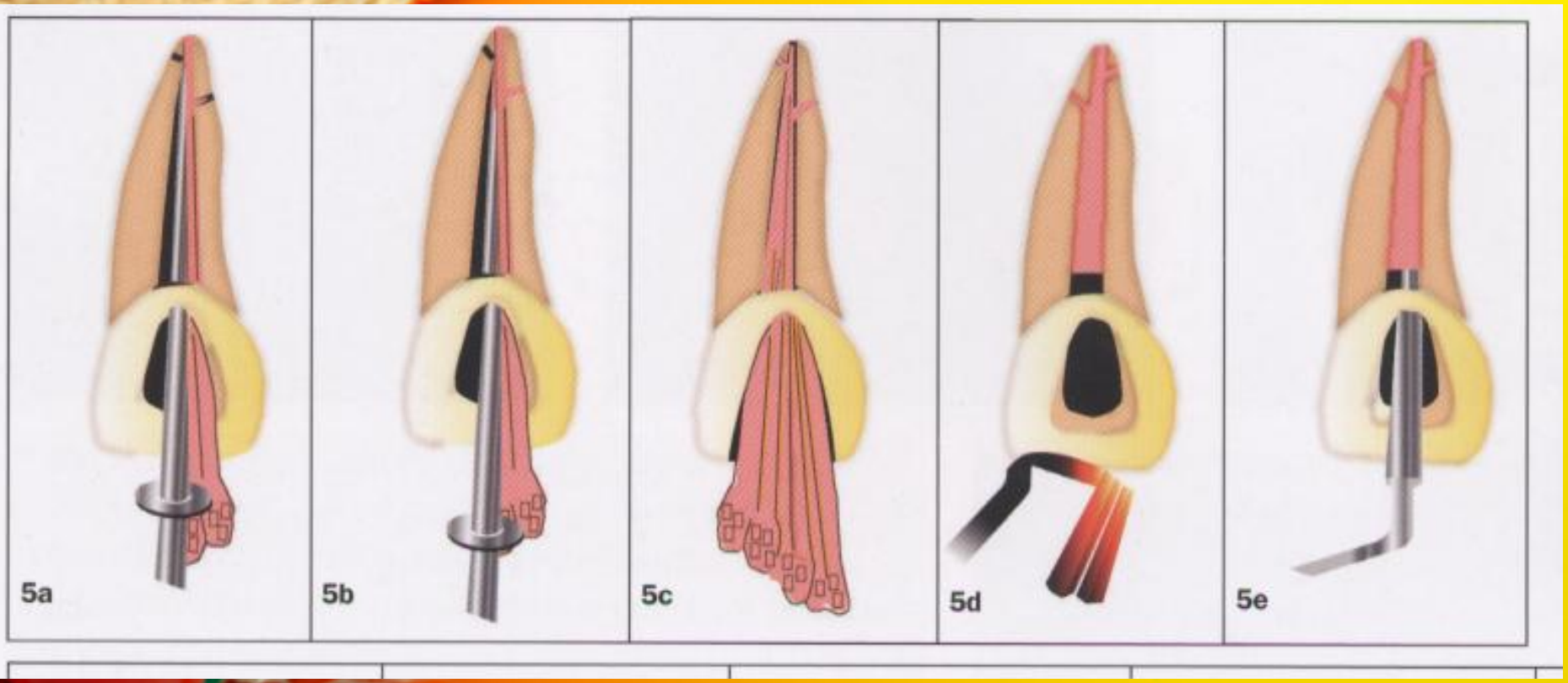
Lateral Compaction

- Cone fit- .02 or .04 depending on depth of spreader penetration
  - If spreader >2mm from WL move to .02 cone
- Cone fit radiograph.
- Dry the canal
- Apply sealer (file or paper point).
- Seat master cone (.04 or .02) to length.
- Place MF (red) finger spreader along side the master cone to within 2-3 mm of WL using the same pressure one would use to break a pencil lead, and remove
- Place MF gutta-percha cone (accessory cone) in the void left by the spreader (sealer on the tip)
- Repeat making sure to place the finger spreader in the same site
- Take a check film after 2-3 accessory cones- if OK, sear off excess and continue

Lateral Compaction (cont'd)

- Repeat until filled to orifice level (spreader can only go 3-4mm into canal), searing off as you go (every 2-3 cones)
- Remove excess gp to lmm below orifice level or the CEJ with System B and condense with plugger or Glick. For our purposes today, remove gp 3mm below CEJ to prepare for bleaching.
- Hint: "Snap" off excess gp as you go

Lateral Compaction



Internal Bleaching (Walking Bleach)

Indications

- Discolored dentin
- Non-vital tooth (usually)
- Adequate RCT
- Minimal restorations

Risks

- End color may not be satisfactory
- Discoloration may come back over time
- Time involved (multiple appointments)
- Cervical resorption

Case selection

- Etiology? (dentin discoloration)
  - Aging: thinning of enamel, dentin hypercalcification
  - Necrotic pulp (commonly secondary to trauma)
  - Filling materials
    - Endodontic sealer (Ag, Eugenol)
    - Amalgam
  - Microleakage
  - Drug related
    - Tetracycline
    - Fluoride (surface)

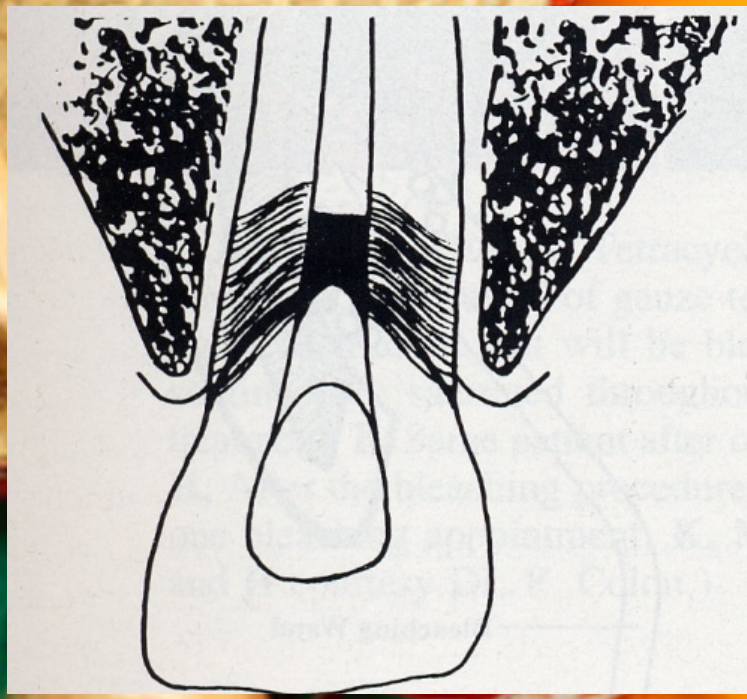
Internal Bleaching
(Walking Bleach)
Technique

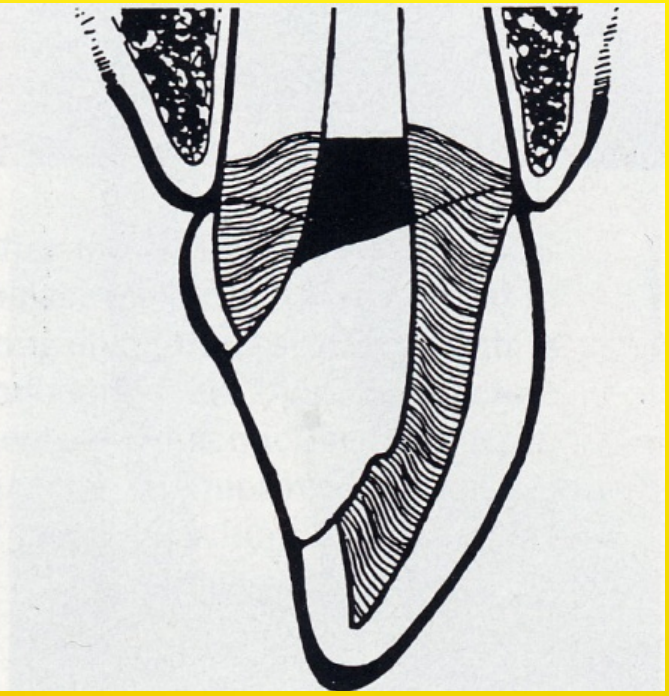
- Document shade (photo or shade guide with patient)
- RDI
- Place Barrier (protect PDL)
  - Remove gutta-percha 3 mm below attachment level or CEJ.
  - Place barrier material (GI, IRM, Cavit) back to attachment or CEJ level (3 mm thick).
- Place sodium perborate/water mixture, thick and grainy. Amalgam carrier works well
- Place temporary (2 mm thick), no sponge or cotton
- Return one week; if unsatisfactory, replace paste
- Repeat until satisfactory results attained (over correct)

Remove gutta-percha 2-3mm below attachment level or CEJ

Place barrier material back to attachment level or to CEJ

Facial and Proximal Views of the Barrier





Place sodium perborate mixture

Internal Bleaching Diagram

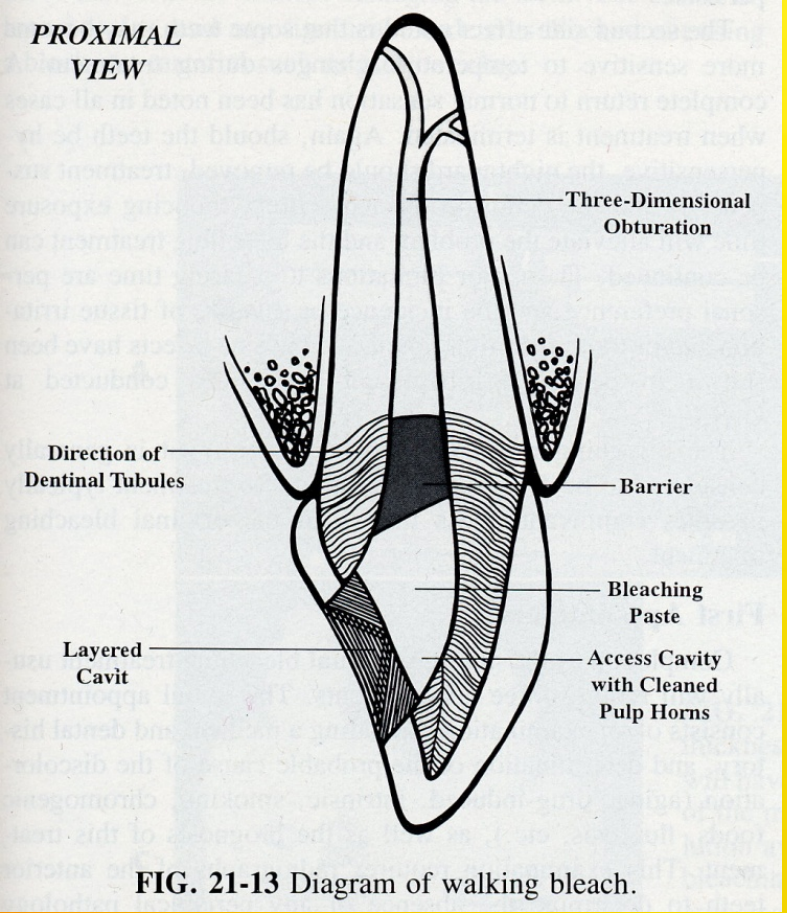
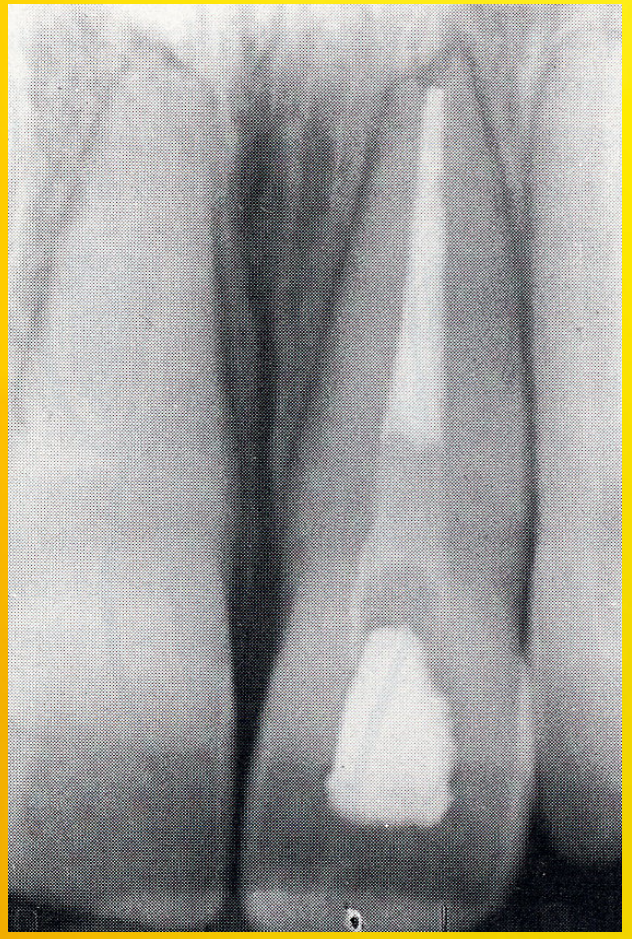


FIG. 21-13 Diagram of walking bleach.

Radiograph of Bleaching Case in Progress



Internal Bleaching

PRE-OP

POST-OP

One Year Recall

Checkpoints

-Master cone film

-Pre-melt check film

-Final film (with barrier, paste, and temporary, rubber dam off)

-Get “maxillary central” (page 25) and “internal bleaching” checked off on page 82

Next Week

- Practice PCE- Anterior
- Complete all unfinished projects and have them signed off on page 82
  - Turn in project sheet (must be turned in before able to take PCE)
- Theme: Favorite Superhero Day

And remember…

“A day without
endo
is a day without
sunshine”