

# Endodontic Lab 724

Laboratory Session V  
February 3, 2022

Remember the fish





# Today's Plan of Attack

8:00-8:15

Quiz

8:15-9:15

Review access, overview of grading criteria, intro to cleaning, shaping, apical gauging

9:15-9:45

Instructor demo on acrylic block

9:45-11:45

Acrylic block- WL, C & S, apical gauge, fit master cone

Mandibular Premolar Access, WL, C & S, apical gauge

11:45-12:00

Review and prepare for next week



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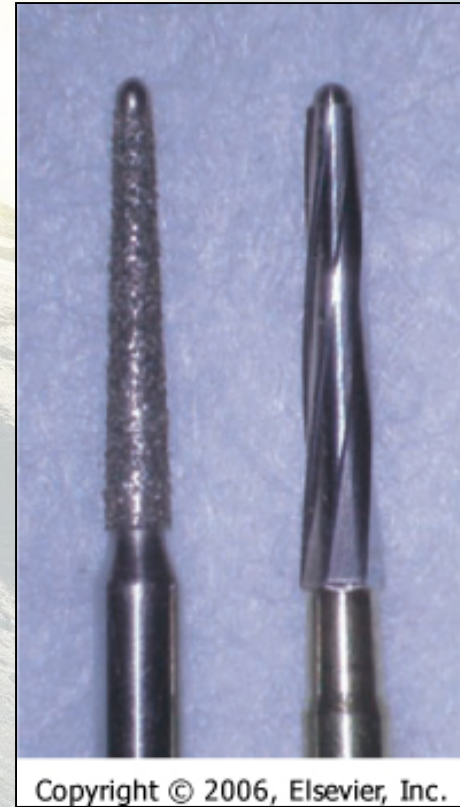
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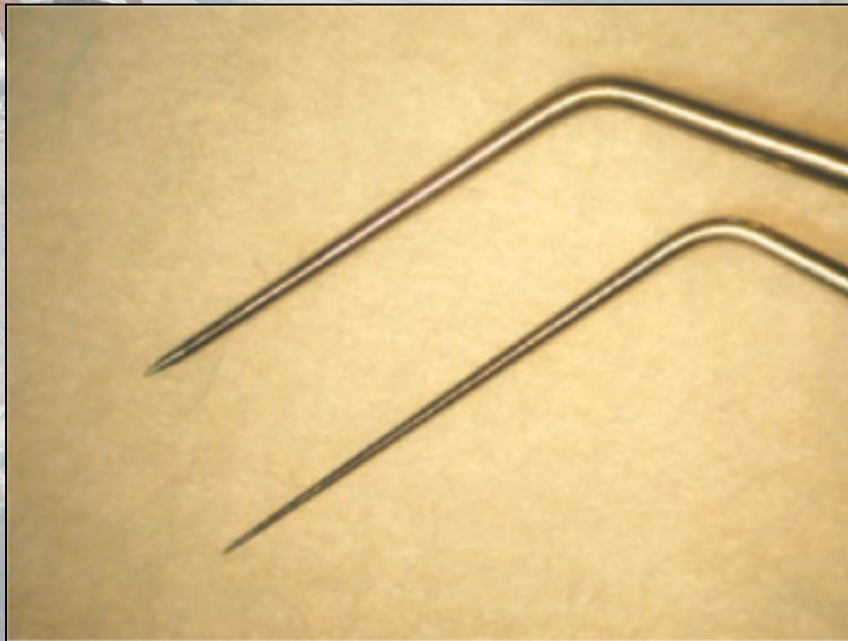


# Armamentarium for Access

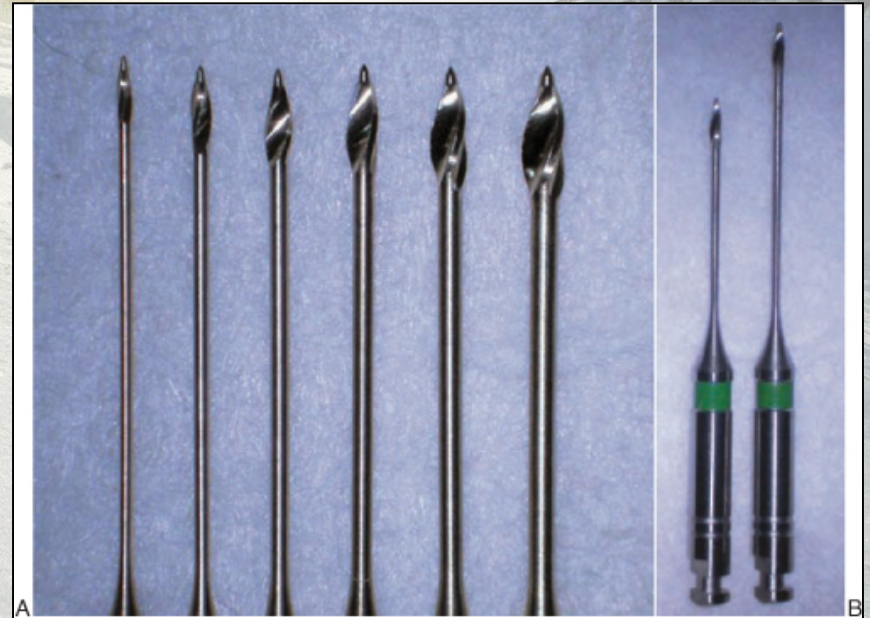




# Armamentarium for Access



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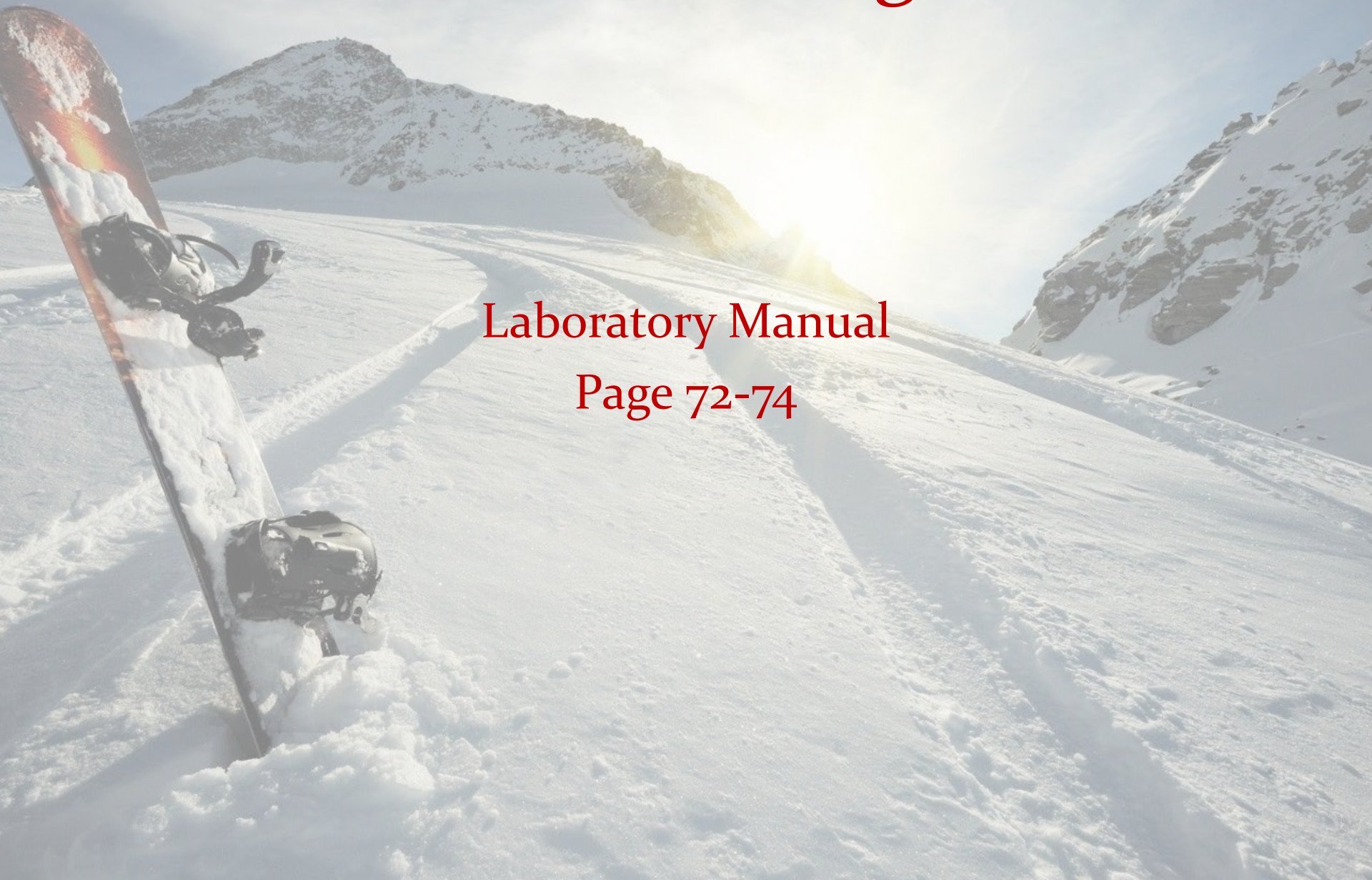


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# Overview of Grading Criteria

Laboratory Manual  
Page 72-74





# Intro to Cleaning and Shaping: OHSU Crown Down Technique

Reference: Lab manual pp 48-62

Access planning

Access

Working length determination (WL)

Pre-flaring, cervical/lingual bulge removal

Determine First File that Binds (*FFB*)

Verification of WL

WaveOne Gold canal preparation

Final apical preparation

APICAL GAUGING!!!!

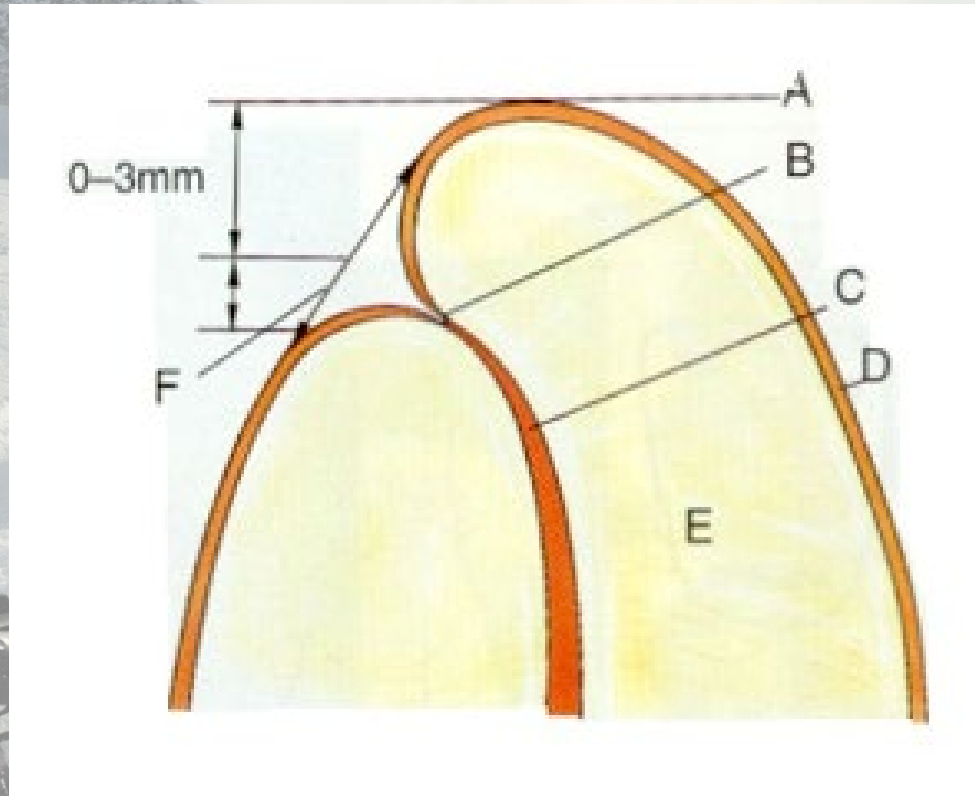


# Access planning

(pp 54)

- Case assessment (pp 76-77)
- Access planning
- Cusp tip/incisal edge to pulp chamber distance
- EWL (estimated working length) determination
  - Cusp tip/incisal edge to radiographic apex minus 1 mm
- Rubber dam placement
  - Remove from patient's nose!!!!!!
  - Make sure rubber dam is under the wings of the clamp
  - In lab, do not clamp the tooth you are working on





A- Radiographic Apex  
B- Apical Constriction  
F-Apical Foramen



A wide-angle photograph of a snowy mountain landscape. In the foreground, a ski slope descends towards the viewer, marked with tracks. A pair of skis and a helmet are lying on the snow on the left side. In the background, a large, snow-covered mountain peak rises against a bright sky. The sun is low on the horizon, creating a strong lens flare and illuminating the scene. The overall atmosphere is bright and crisp.

# Access

Haven't we covered this  
enough already?



A photograph of a snowy mountain slope. In the foreground, a ski is stuck vertically in the snow, with two ski helmets resting on it. The slope is covered in snow with visible ski tracks. In the background, there are snow-capped mountains under a bright, hazy sky. The sun is visible, creating a lens flare effect.

Yeah, but now we're gonna throw  
you a curveball

Before using Gates-Gliddens to  
remove the bulge/shoulder....



# Working Length Determination

- You should already have determined EWL preoperatively (Length of tooth less 1 mm)
- Use glide path files (10,15) and reciprocal reaming to EWL, instead of just to the apical third (EAL in clinic)
- If you cannot “get” to EWL with #10 file, pre flare with Gates- Glidden drills and try again.



A background image of a snowy mountain landscape. In the foreground, a ski pole is stuck upright in the snow, with a pair of ski gloves resting on its shaft. The ski track winds through the snow-covered slopes under a bright, hazy sky.

# Pre-flaring and cervical bulge/lingual shoulder removal with Gates- Gliddens

Enough said!!



# Determination of FFB


- First
- File (.02)
- Bind at WL after Gates-Glidden use



# Verification of EWL

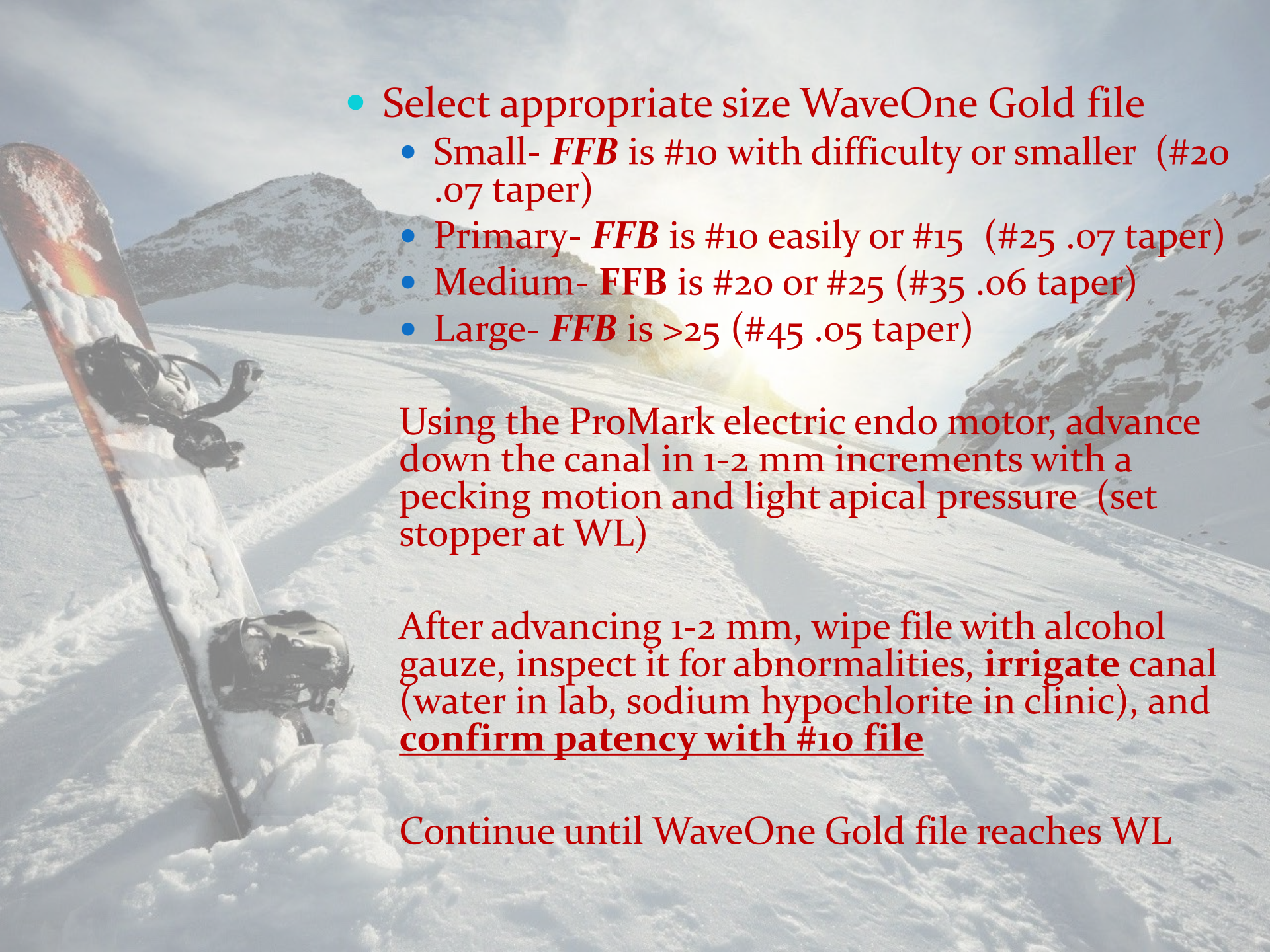
- Take a radiograph with the *FFB* (at least #15)
  - If EWL appears correct, it becomes WL and is recorded in the worksheet table (page 22 for today's project) and “Endo working lengths” form in axiUm
  - If an adjustment of more than 1 mm is needed (+ or -), re-verify with a new radiograph, and record.



A wide-angle photograph of a snowy mountain slope. In the foreground on the left, a snowboard with a red and orange design is partially buried in the snow, with two black ski boots attached. The snowboarder's tracks lead up the slope towards the background. The sun is shining brightly from the upper right, creating a strong lens flare and illuminating the scene. The sky is a pale blue with some wispy clouds. The overall atmosphere is bright and crisp.

# WaveOne Gold Canal Preparation



- 
- A background image of a snowboarder in a snowy mountain landscape. The snowboarder is wearing a black helmet and goggles, and is in a crouched position on a snowboard. The snowboard is white with black and red graphics. The background shows a snowy mountain slope with a clear blue sky and a bright sun. The text is overlaid on the right side of the image.
- Select appropriate size WaveOne Gold file
    - Small- **FFB** is #10 with difficulty or smaller (#20 .07 taper)
    - Primary- **FFB** is #10 easily or #15 (#25 .07 taper)
    - Medium- **FFB** is #20 or #25 (#35 .06 taper)
    - Large- **FFB** is >25 (#45 .05 taper)

Using the ProMark electric endo motor, advance down the canal in 1-2 mm increments with a pecking motion and light apical pressure (set stopper at WL)

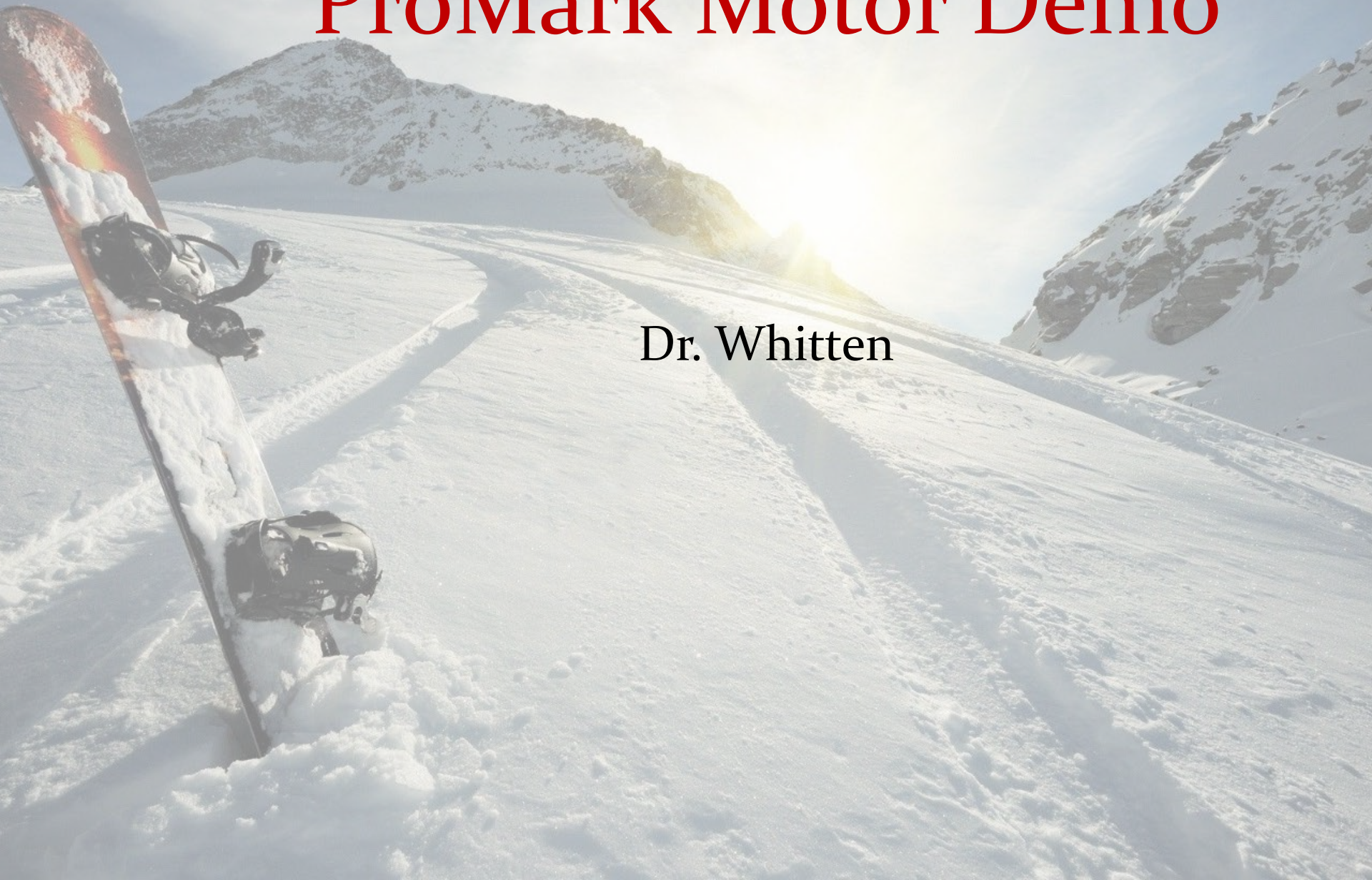
After advancing 1-2 mm, wipe file with alcohol gauze, inspect it for abnormalities, **irrigate** canal (water in lab, sodium hypochlorite in clinic), and **confirm patency with #10 file**

Continue until WaveOne Gold file reaches WL



# ProMark Motor Demo

Dr. Whitten





# Plastic Block Video



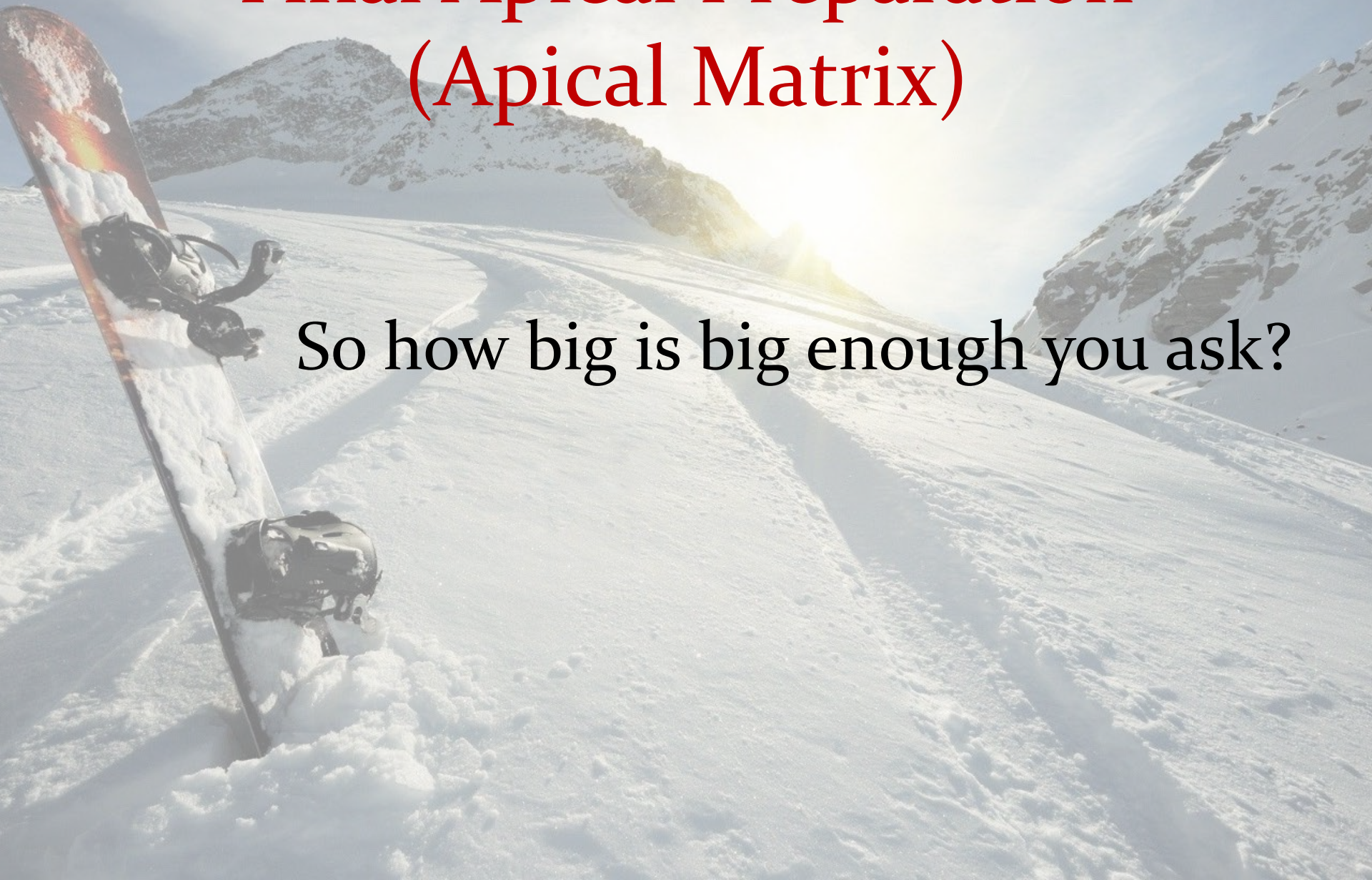






# Final Apical Preparation (Apical Matrix)

So how big is big enough you ask?





A wide-angle photograph of a snowy mountain slope. In the foreground on the left, a snowboard with a red and orange design is stuck upright in the snow, with a black helmet and goggles resting on its top. The snow is bright white with some tracks. In the background, a large, snow-covered mountain peak rises against a bright, hazy sky. The sun is shining from behind the mountain, creating a strong lens flare and illuminating the scene. The overall atmosphere is bright and crisp.

Ahhhhhhhh, good question!!!



A snowboarder is lying on their back on a snowy mountain slope. A snowboard and a helmet are visible in the foreground, partially buried in the snow. The background shows a vast, snow-covered mountain range under a bright, hazy sky.

## Guidelines: (p 49-50)

- at least 3 sizes larger than *FFB*
- at least size 40 in most larger canals
- at least size 25 in any canal
- “take what the canal will give you”
- clean shavings in the flutes
- what you instructor tells you (later, your gut)



# Final Apical Preparation (creation of the apical matrix)

Goal- Evaluate apical prep after WaveOne Gold and create an .04 tapered canal prep in the apical 1-3 mm as needed

How?

Example- The **FFB** is #15.

The primary WaveOne Gold was used and taken to WL. This means the canal is now at a size 25 (at least) .07 taper at WL. Using the “3 sizes larger than **FFB**” rule (#20, 25, 30) and a reciprocal reaming motion, now take: #30 .04 hand file to WL (irrigate, patency with #10)

Evaluate apical prep with *Apical Gauging* to decide if additional apical enlargement with the next .04 hand file is needed (35 .04 this example)

Repeat as needed till gauging confirms apical size and taper  
(see page 51)



# Apical Gauging!!!!

Apical gauging is used to:

verify the taper of the apical matrix that will provide the necessary linear resistance form for obturation

AND

determine the “precise” size of your apical preparation, size/taper of master gutta percha cone and to help prevent “apical slippage” or overfill



# Non-Surgical Endodontic Treatment "SCHOONERDONTICS"





# Apical Gauging (cont'd)

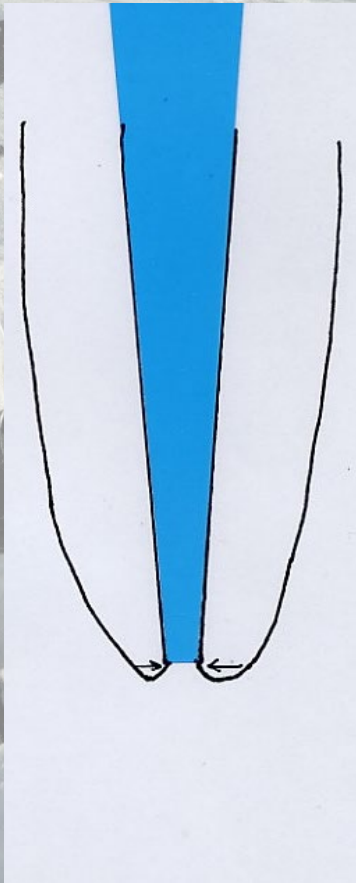
Use .02 taper files as a “Feeler Gauge” to measure the diameter of the apical matrix in the apical 3-4mm

.02 taper files should (theoretically) only bind at the tip of the file in a larger tapered preparation thus measuring the diameter of the prep at the level that the .02 file contacts the walls (binds)

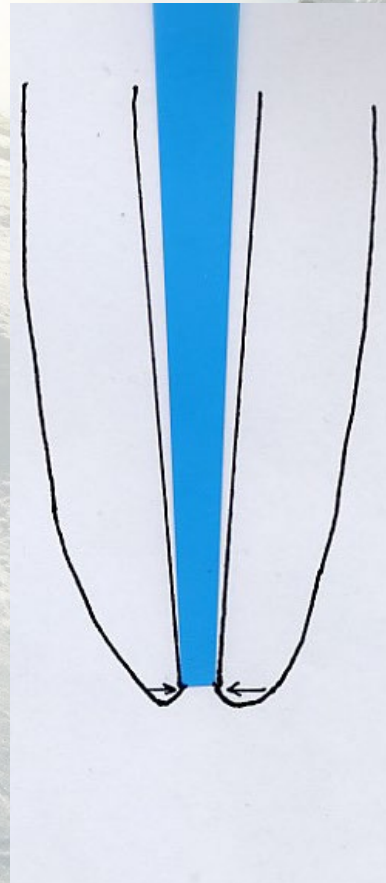


# Apical Gauging (cont'd)

.04 taper file



.02 taper file





# Apical Gauging (cont'd)

Example: *FFB* #20. Medium WaveOne selected, C & S to size #35 .06 to WL of 20mm (3 sizes larger than *FFB*):

place #35/.02 to WL with moderate apical pressure

If the .02 taper file meets resistance at WL, that tells you the apical size is at least #35, but may be bigger (don't assume it is not bigger)

Place the #40.02 file in the canal with moderate apical pressure. If it stops 0.5 mm or so from WL, you have now verified #35 as your apical size



# Apical Gauging (cont'd)

But, what if the #40.02 file goes to 20mm? #45.02 to 19.5 mm?

#40 is your apical size

#50.02 to 20 mm?

Go #55.02, etc., until you get to the size that stops at 19.5 mm



# Apical Gauging (cont'd)

## Most important

What if #35.02 file goes to 21mm? Your apical size is larger than #35 and if you obturate with a #35 gp point you will most likely over extend the fill. So...

apically gauge with successively larger .02 files until you reach the size that cannot be taken beyond 20mm(remember to always try the next larger size to verify it can not get to 20 mm)



# Apical Gauging (cont'd)

If the final apical size is different than what you thought (ie #40.02 instead of #35.02), you now need to create an .04 taper apical matrix by working the #40.04(pineapple) file to 20 mm with reciprocal reaming



# Apical Gauging (cont'd)

Ok, the final apical size has been “precisely” verified and can be recorded in the worksheet table and axiUm.

Now we can verify an .06 taper has been achieved by:(Apical size has been apically gauged as #35.02)

#40.02 file ~ 19.5mm

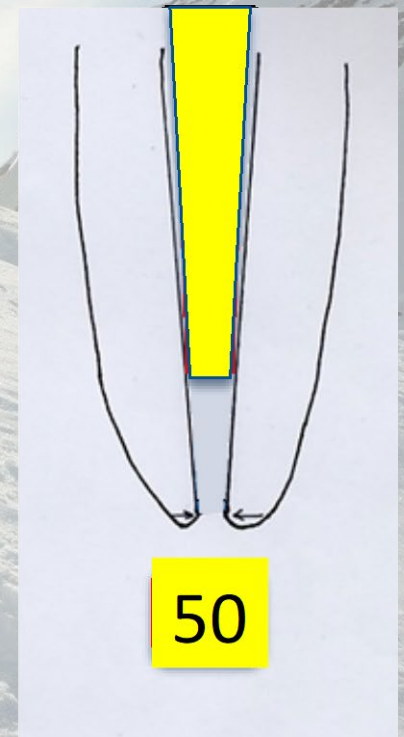
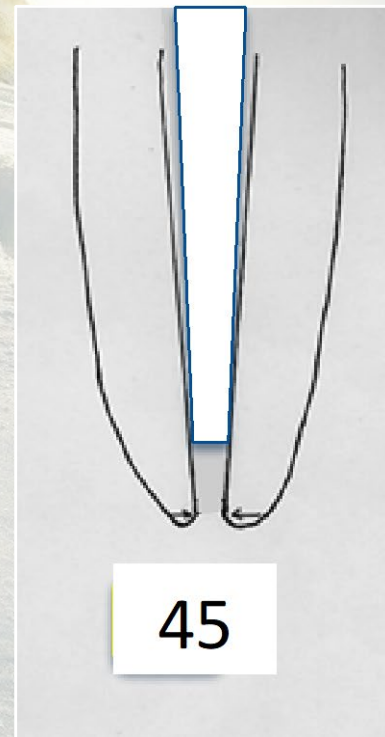
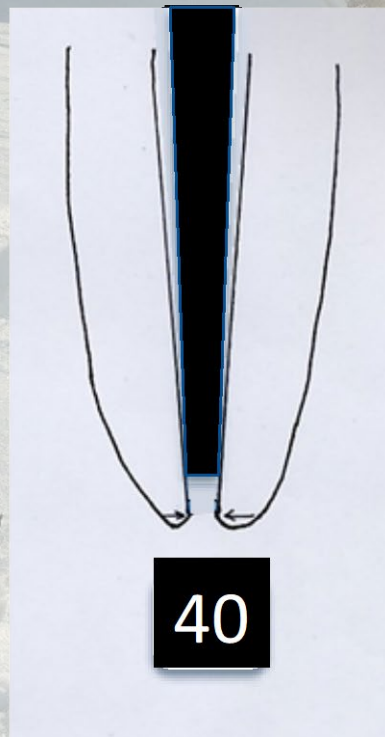
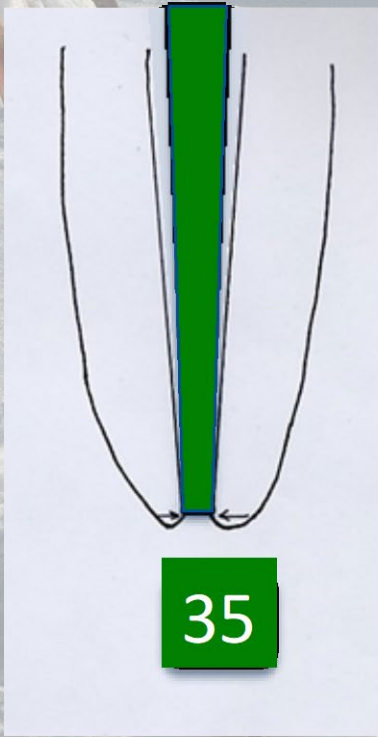
#45.02 file ~ 19.0mm

#50.02 file ~ 18.5 mm

#55.02 file ~ 18.0mm



# Check taper with sequentially larger .02 taper files





# Irrigation

Do not bind needle in the canal

Use blunt ended, side notched irrigation  
needle

1 ml of irrigant between each instrument use  
(after WL verification)

Use water in lab, 2% sodium hypochlorite in  
clinic



# Patency

**After each irrigation (hence after each file)**

**Take #10 file 0.5mm beyond WL to assure the canal is open (patent) to the foramen and to agitate the irrigant**



# Review

- Access
- Estimated Working Length
- Gates-Gliddens
- Determine *FFB*
- Verify WL with radiograph
- WaveOne Gold
- Final Apical Preparation (Apical Matrix)- if needed
- APICAL GAUGING



# Projects

Acrylic block

-Establish WL, GG, *FFB*, WaveOne Gold, create apical matrix, apical gauge

-Instructor and self assess p. 22



# Projects

- Mandibular Premolar
  - Mounted with preop B-L image
  - Halfway access check
  - Establish EWL, GG, *FFB*, verify WL with radiograph, WaveOne Gold, create apical matrix (as needed), apical gauge
  - Enter information in worksheet table (p 22) and in “endo working lengths” form in axiUm
  - Instructor and self assessment (p 22)
  - Instructors swipe “endo working lengths” form



# Remember

- Irrigate
- Patency
- Rubber dam- ALL work on mounted teeth done under rubber dam isolation (unless otherwise instructed) including working radiographs
- **GATES GLIDDENS!!!**



A first-person perspective of a snowboarder on a snowy mountain. A snowboard with a red and orange graphic is visible in the lower-left foreground, partially buried in the snow. The snowboarder's black boots are attached to the board. The slope is covered in deep, white snow with visible tracks from previous runs. In the background, a bright sun is low on the horizon, creating a strong lens flare and illuminating the scene. Snow-capped mountain peaks are visible under a clear blue sky.

**But first....**





**Fish toss!!**



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# Next Week

Obturation mandibular premolar

Next week's theme: Valentine's Day





A wide-angle photograph of a snowy mountain slope. In the foreground on the left, a snowboard with a red and orange design is stuck vertically in the snow. Two black ski helmets and a pair of black ski gloves are resting on the snow near the top of the board. The snow-covered slope leads up towards a bright sun that is partially obscured by a mountain peak in the distance, creating a lens flare effect. The sky is a pale blue with wispy clouds. The text "And remember..." is written in a bold, red, sans-serif font across the middle of the image.

And remember...



A scenic view of a snowy mountain slope. In the foreground on the left, a snowboard with a red and orange design is stuck upright in the snow, with a black helmet and other gear resting on it. The snow-covered mountain extends into the distance under a bright, hazy sky where the sun is shining, creating a lens flare effect. The overall atmosphere is bright and serene.

“A day without endo is  
a day without sunshine”