



1HourTooth™  
.com

CAD/CAM

101

*Introduction*



*Dr. David Jin*

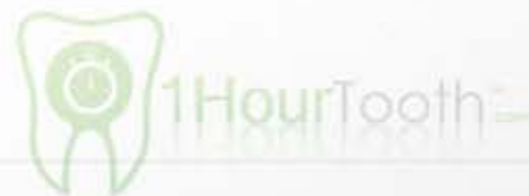
How do you commit time, resource and investment capitals effectively in hope to generate a profit from the idea of being “Modern”?

**1HourTooth** Coaching is a team of experts that can assist you to be “Modernized.”



**Our greatest weakness lies in giving up!**

**53mins**

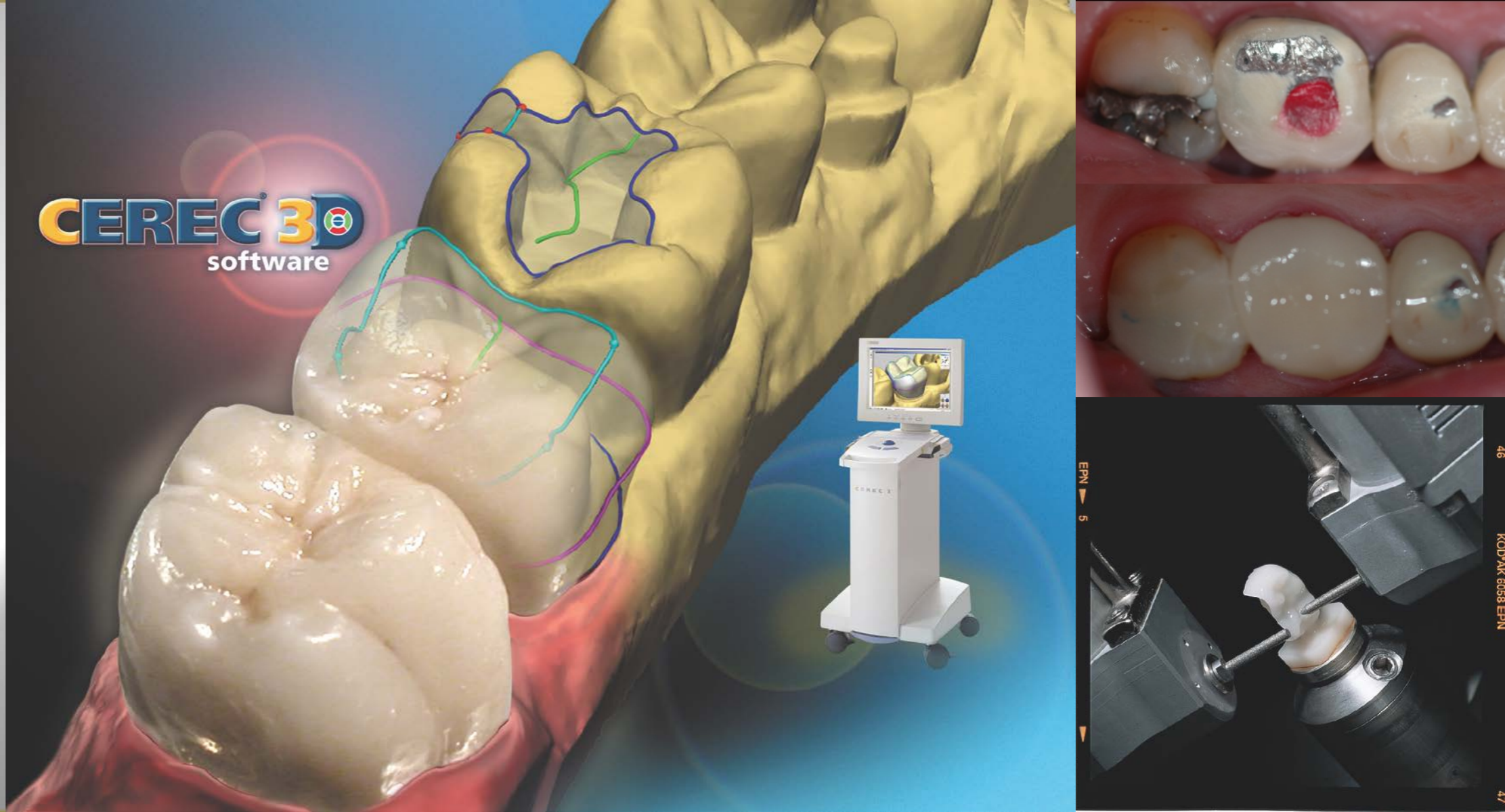


**The most certain way to succeed is  
always to try just one more time...**

**- Thomas Edison**

# Summary of Topics

- CAD/CAM the most powerful Practice Builder
- What is CEREC?
- CEREC Requirements
- 3P's of CEREC
  - Preparation
  - Powdering
  - Pictures
- Design
- Cementation
- Adjustments
- Advance Training







# Let's revisit: **Why CEREC?**

Simply put

We are a

Bunch of

perfectionist

- 1 - visit, same visit = WOW your pt's
- No impression, No second visit = \$\$\$
- Empress - Aesthetic, tooth-colored
- Leucite-reinforced = strength & durable
- Manufactured ceramic blocks =  
uniformity in material  
no air pockets  
Friendly to opposing tooth structure
- Bonded restoration

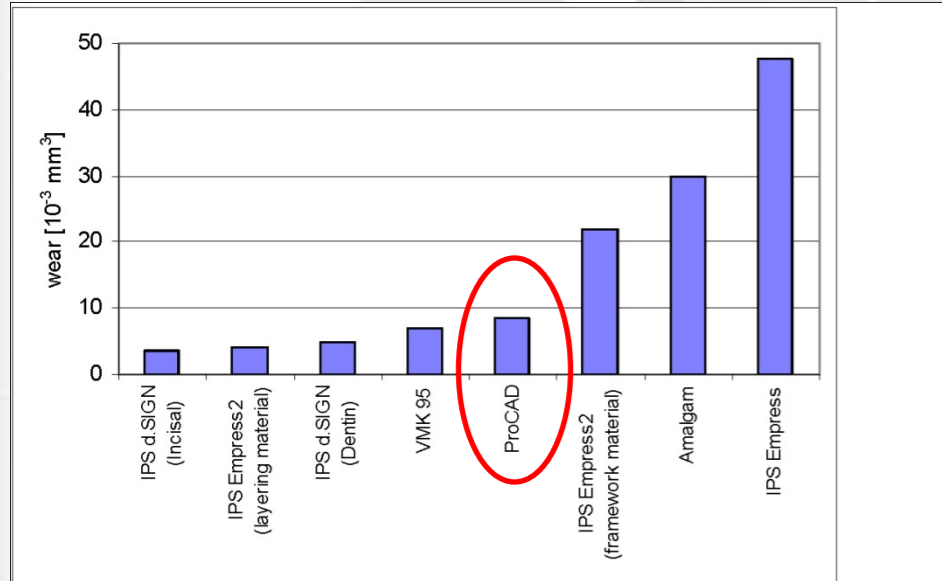




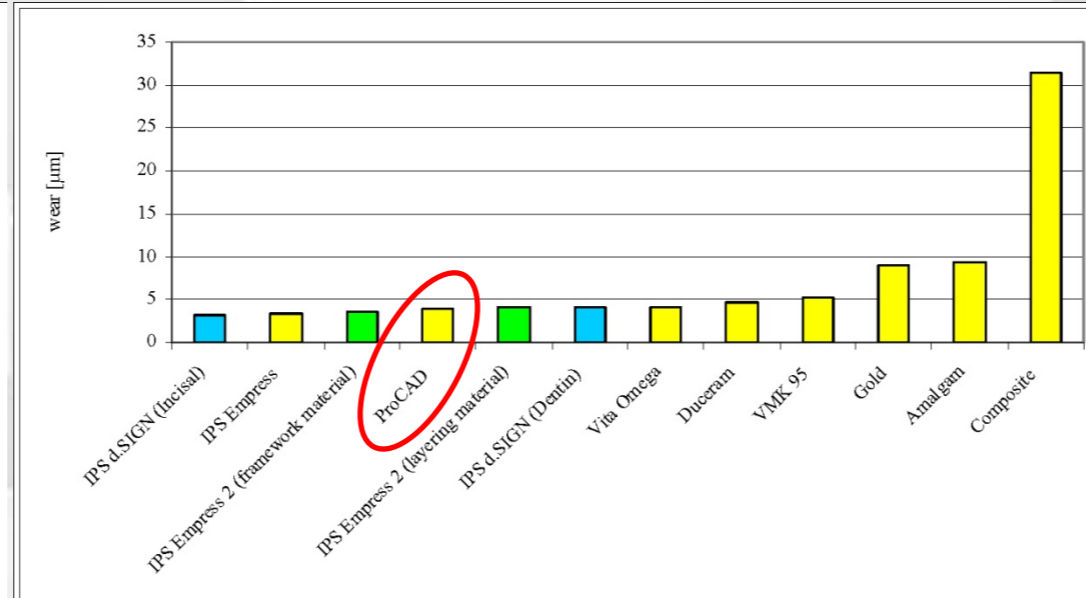
# Why EmpressCAD?

- Most reliable
- Better aesthetics

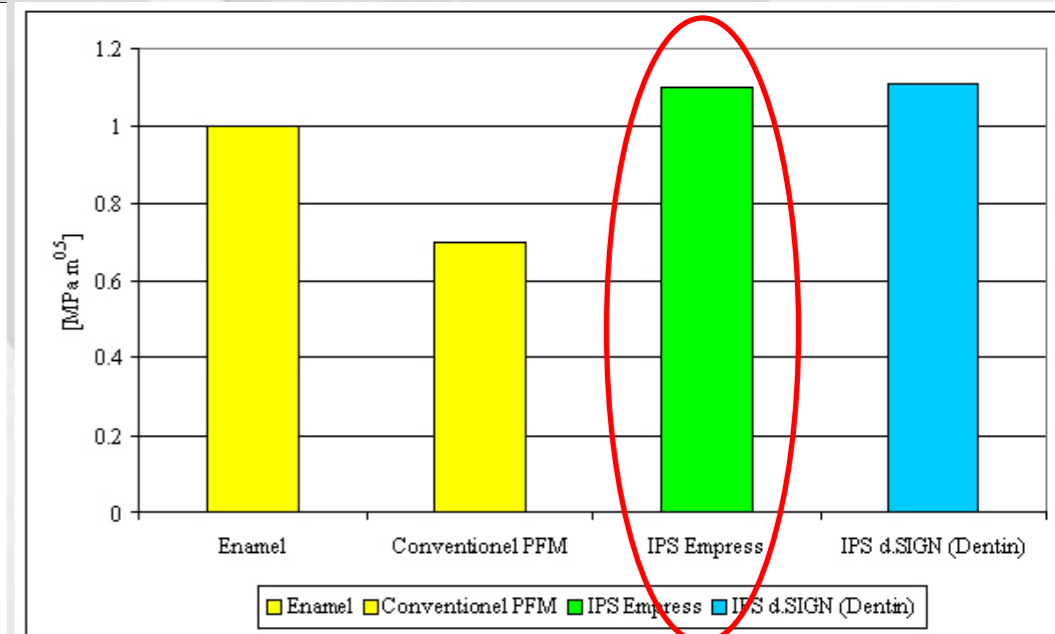
- Friendlier to opposing tooth structure
- Better fracture resistance

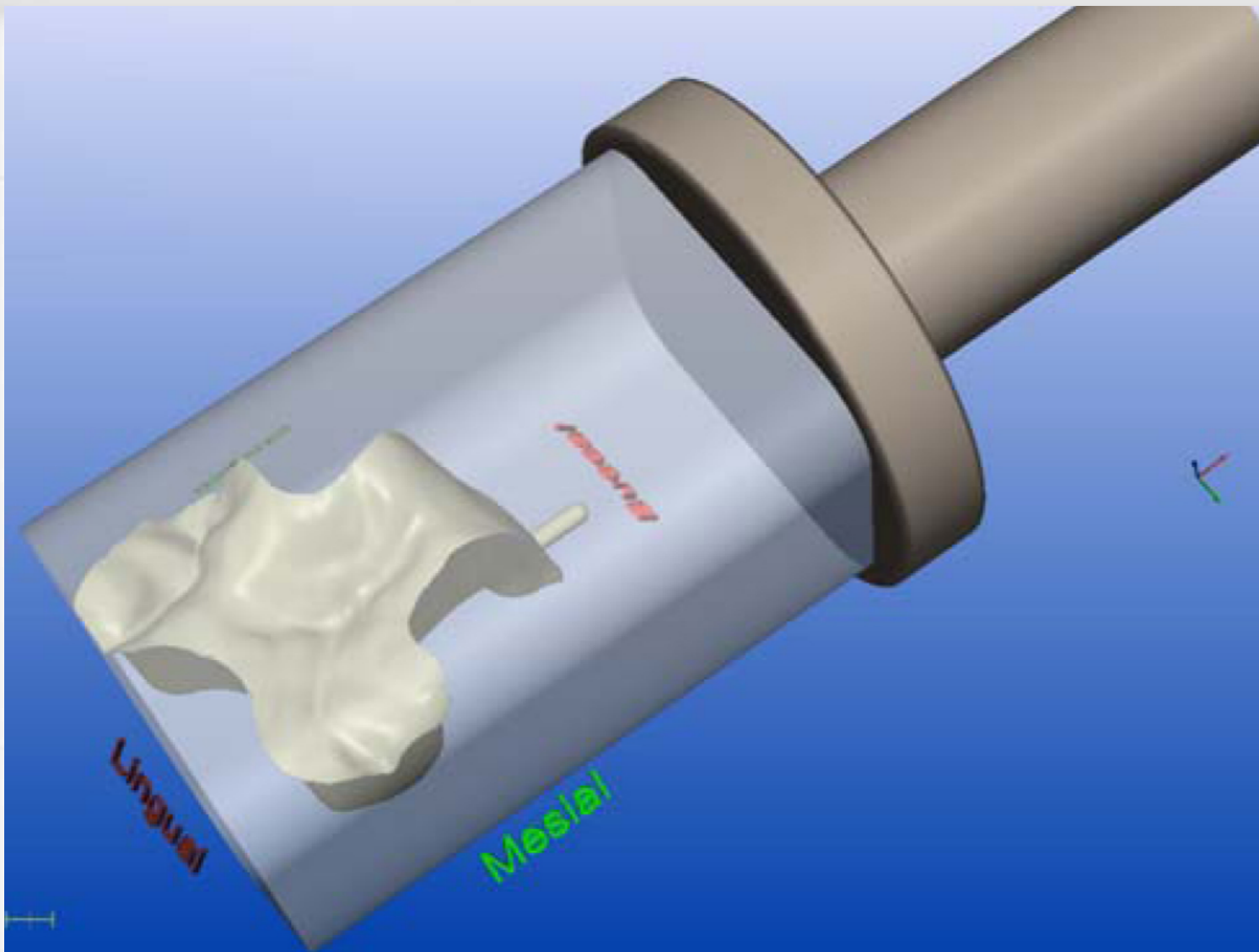


Pelka (1998), Rumi et al (2000), Lohbauer et al (2001)



Pelka (1998)





## Characteristics of all ceramics *(Potential Problems)*

- Relies on supporting tooth structure  
remember your weakest link
- Restoration must be bonded with a Resin-Modified Glassionomer
- Restoration shall only be adjusted for occlusion after it is fully cemented

# CEREC Requirements

Always keep this in mind

- **Garbage in = Garbage out!!**
- **House is only as strong as its foundation**

Always look out for the weakest link

Which one will have a better prognosis?



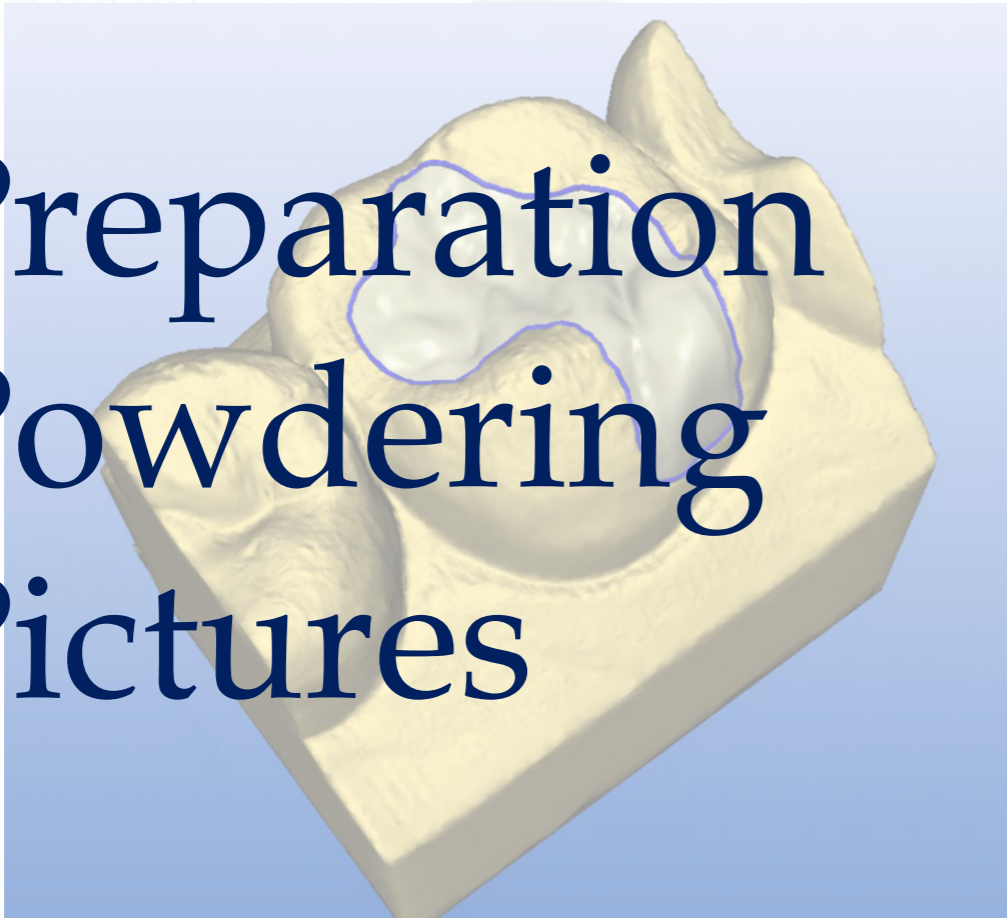




1 Hour Tooth

# 3 P's of CEREC

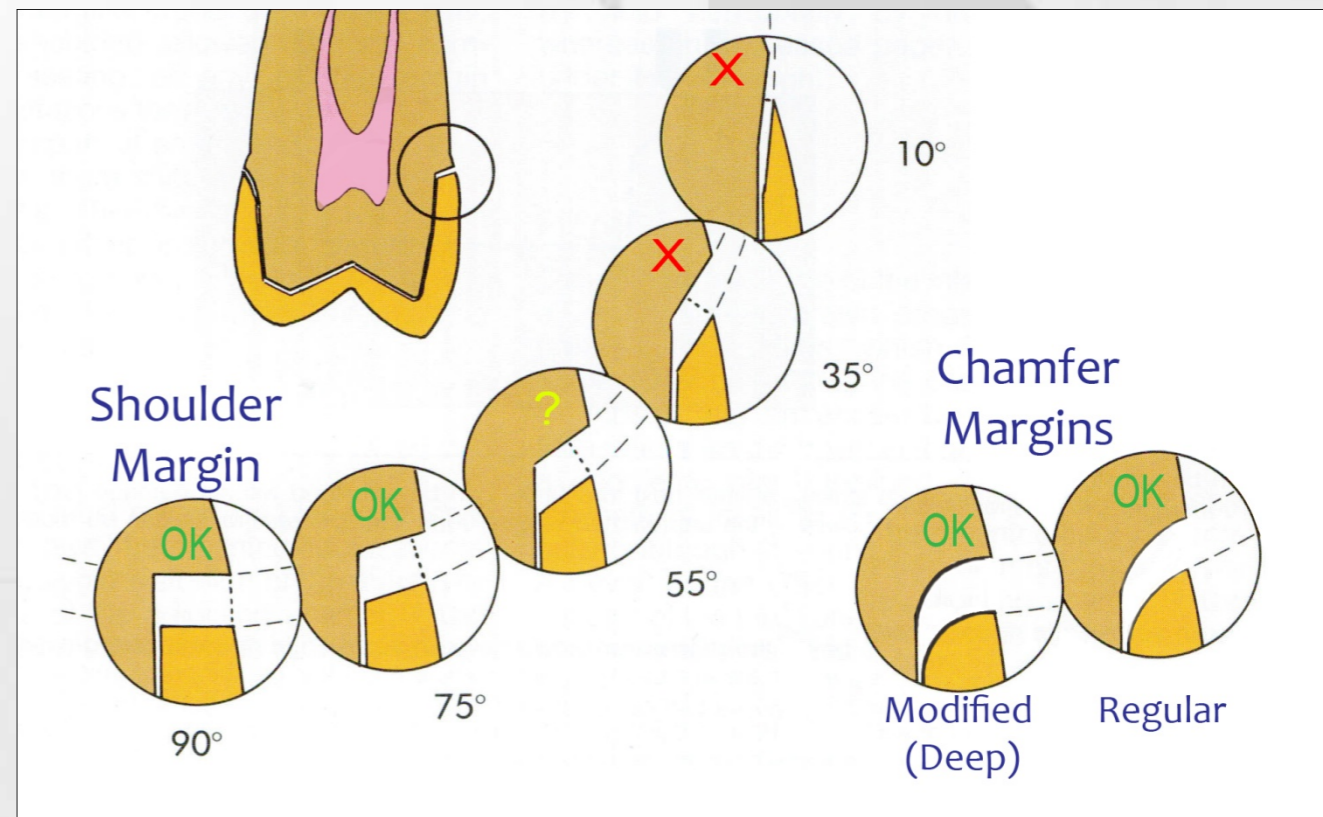
- ✓ Preparation
- ✓ Powdering
- ✓ Pictures



1 Hour Tooth

# Preparation

Margin: Shoulder or Modified Chamfer ONLY

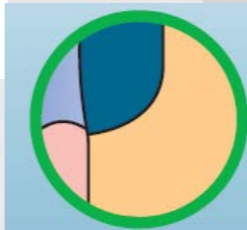
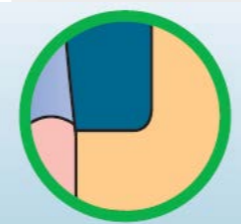
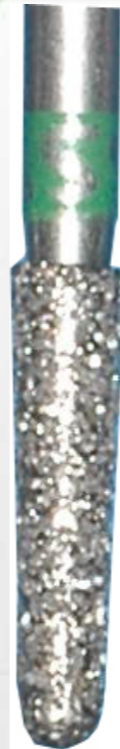




# My Choice of Burs



1HourTooth



Diamond Brush



Axis Ceragaze Polishing Burs



Gross Reduction Finishing Burs

LS Round



557



Inverted Cone



Chamfer



FlatEnd Tapered



End Cutting



# Preparation

no different than routine PFM's

- Consider pre-existing conditions
- Consider endo status of tooth
- Consider status of adjacent teeth/ area
- If tooth is endo'd, consider the need for a post

















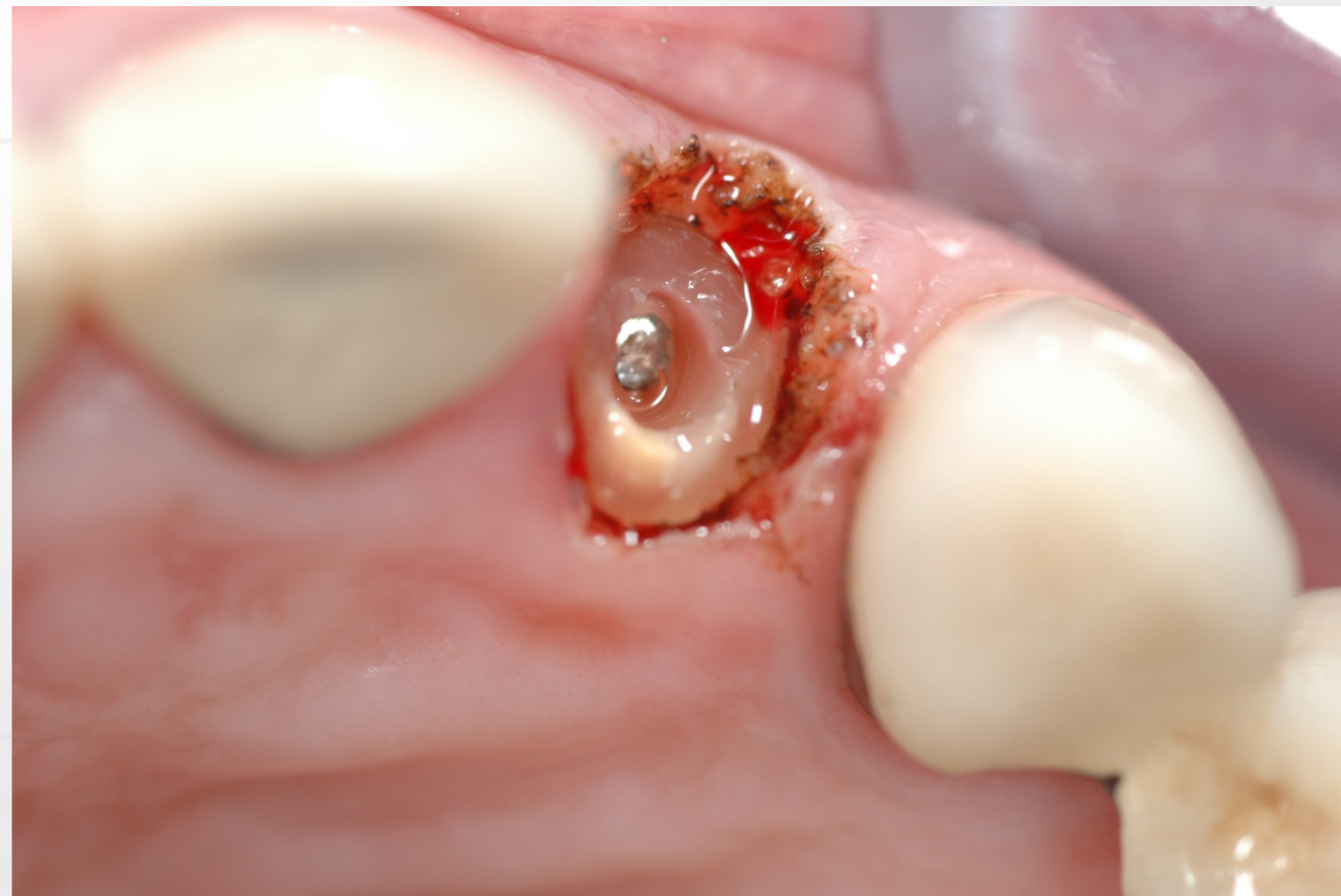


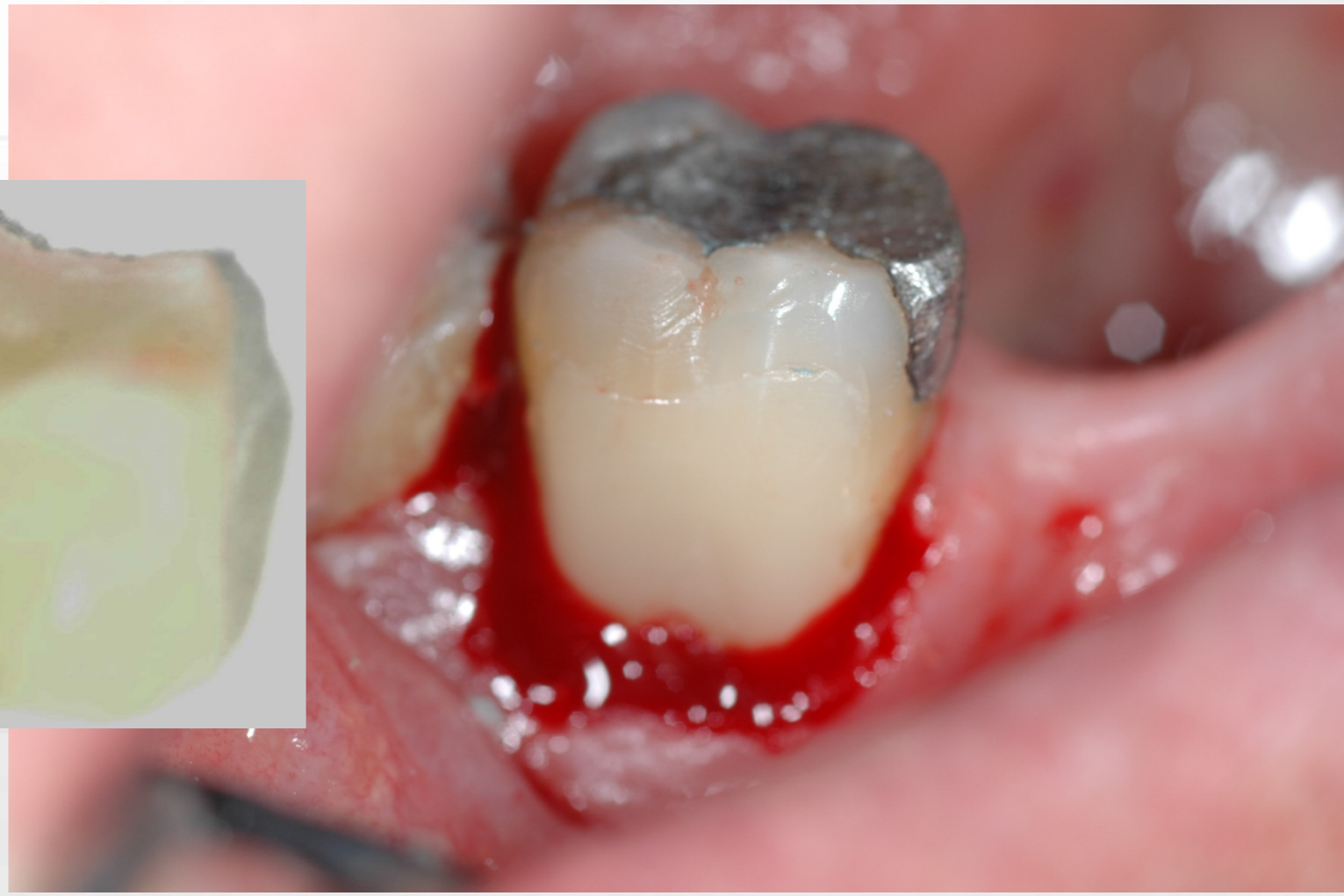
## Post Considerations

- All posts **MUST** be bonded (Weakest link)
- When tooth has an existing post, proper integrity must be assessed

## Build-up Considerations

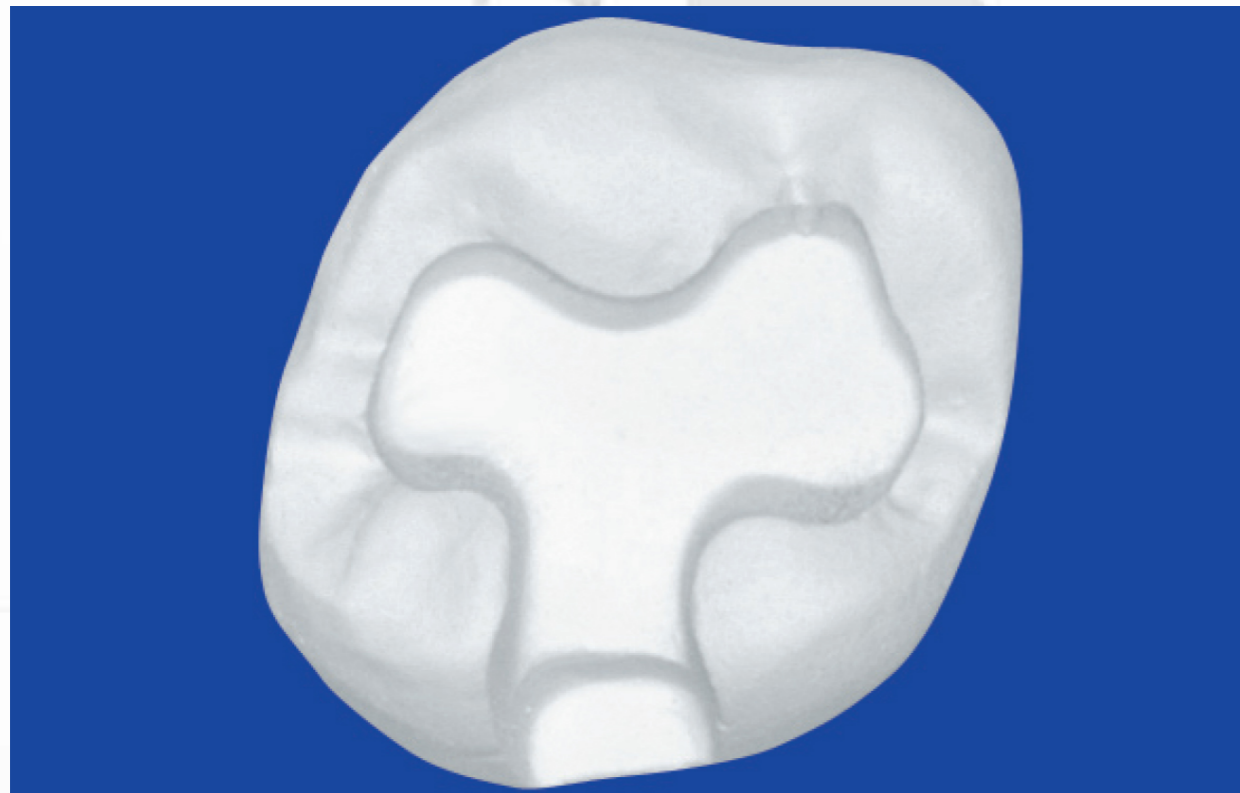
- Build-up's can be incorporated into the CEREC restoration (Weakest link)
- All Build-ups **MUST** be bonded







# Types of Prep's





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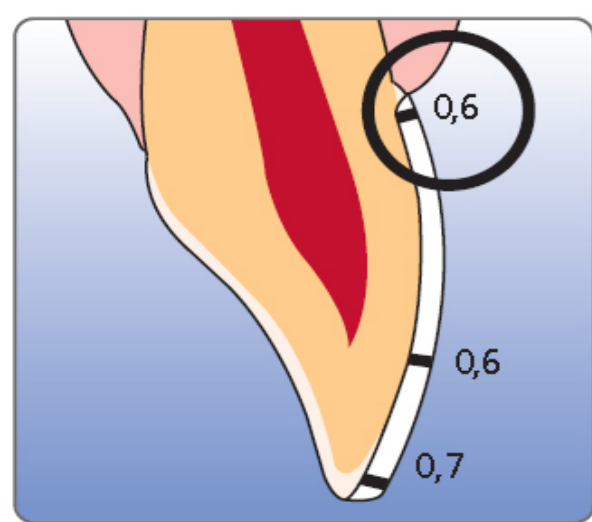




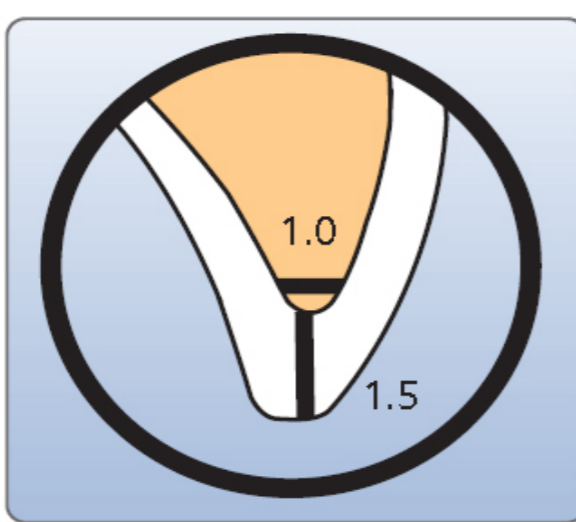
# Preparation Parameters

Recommended thickness

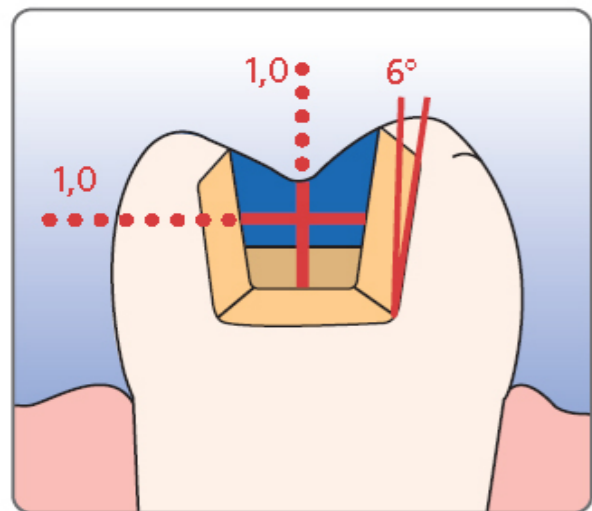
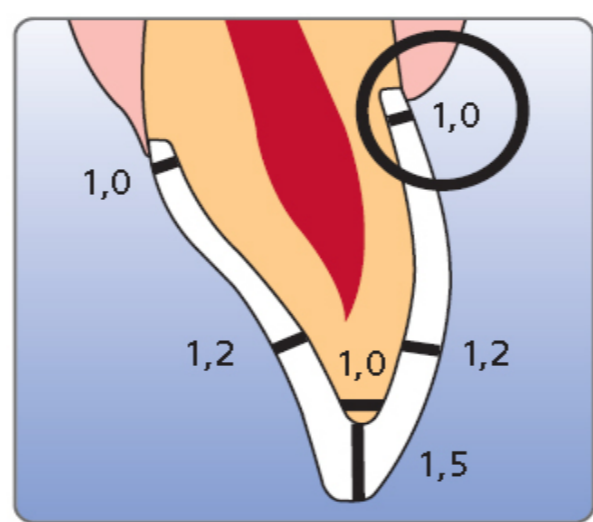
*no different than any  
all-ceramic restorations*



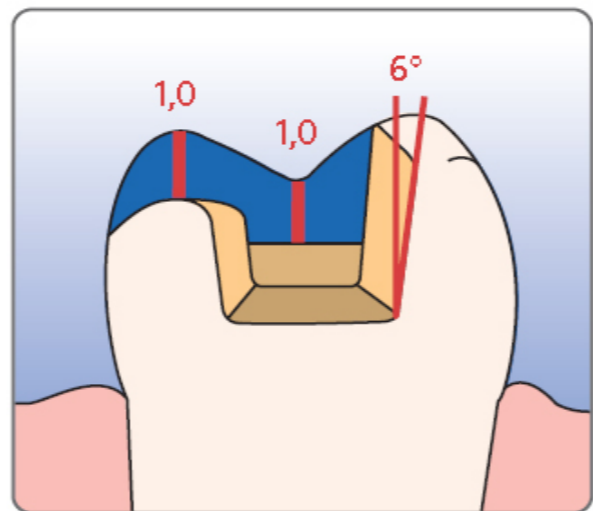
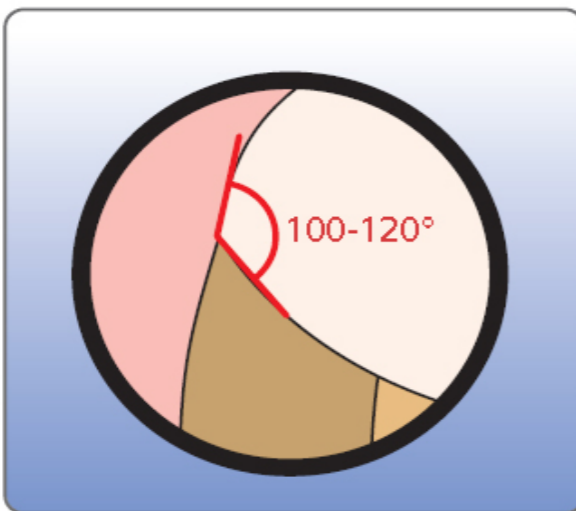
Veneer



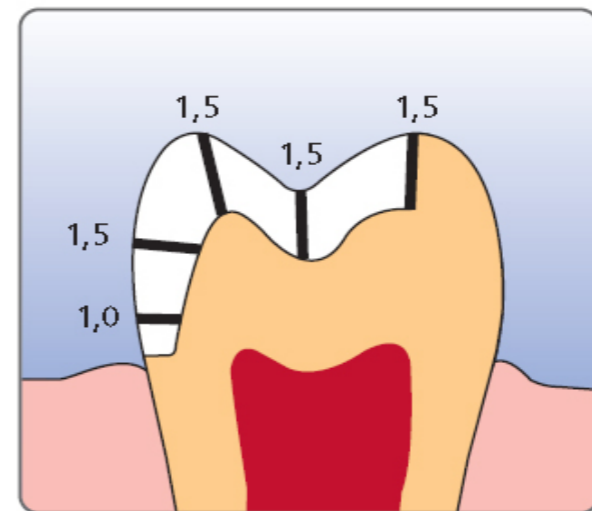
Anterior crown



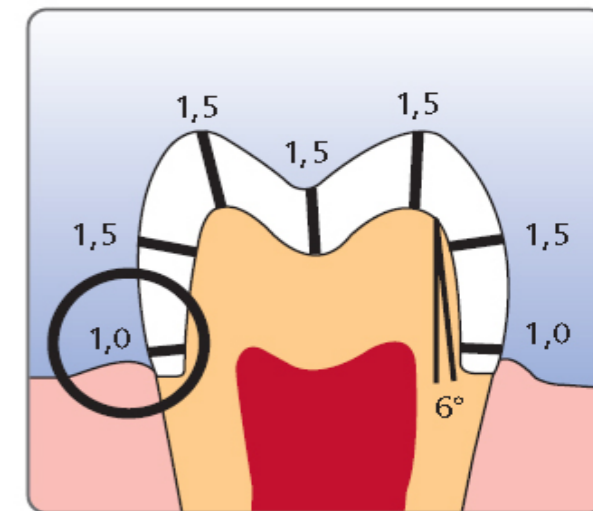
Inlay



Onlay

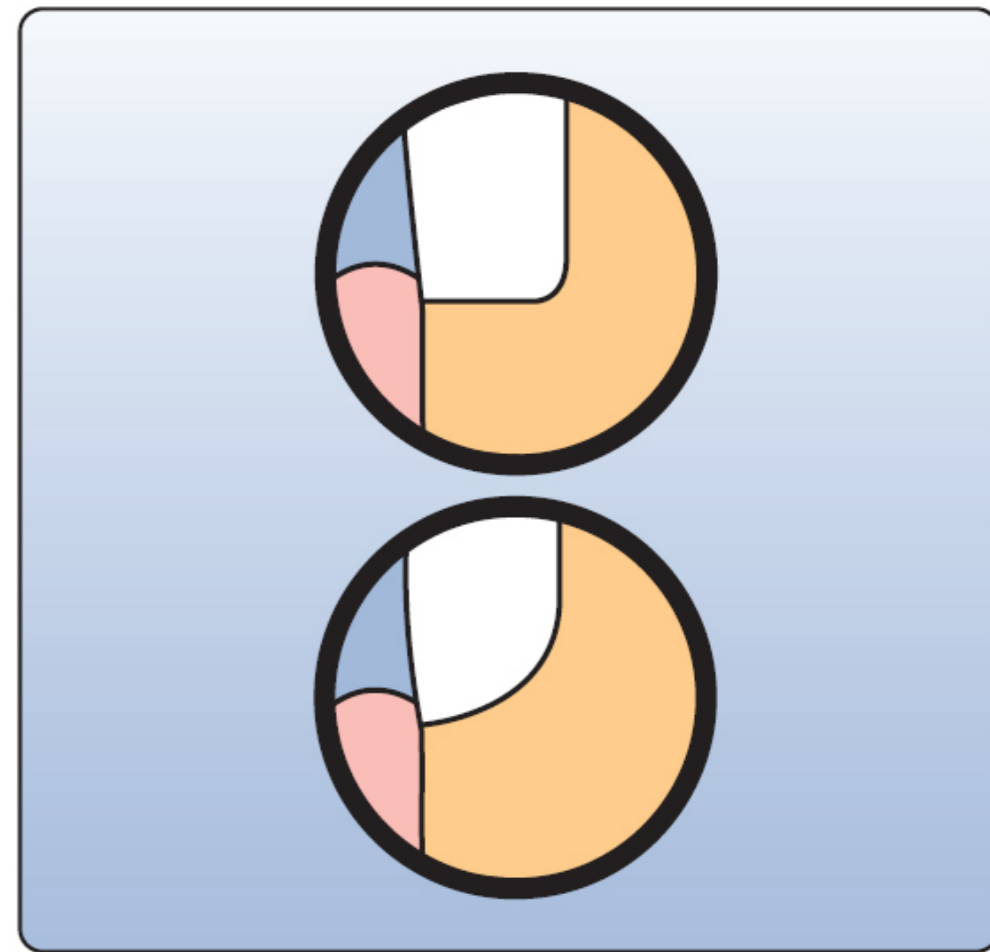
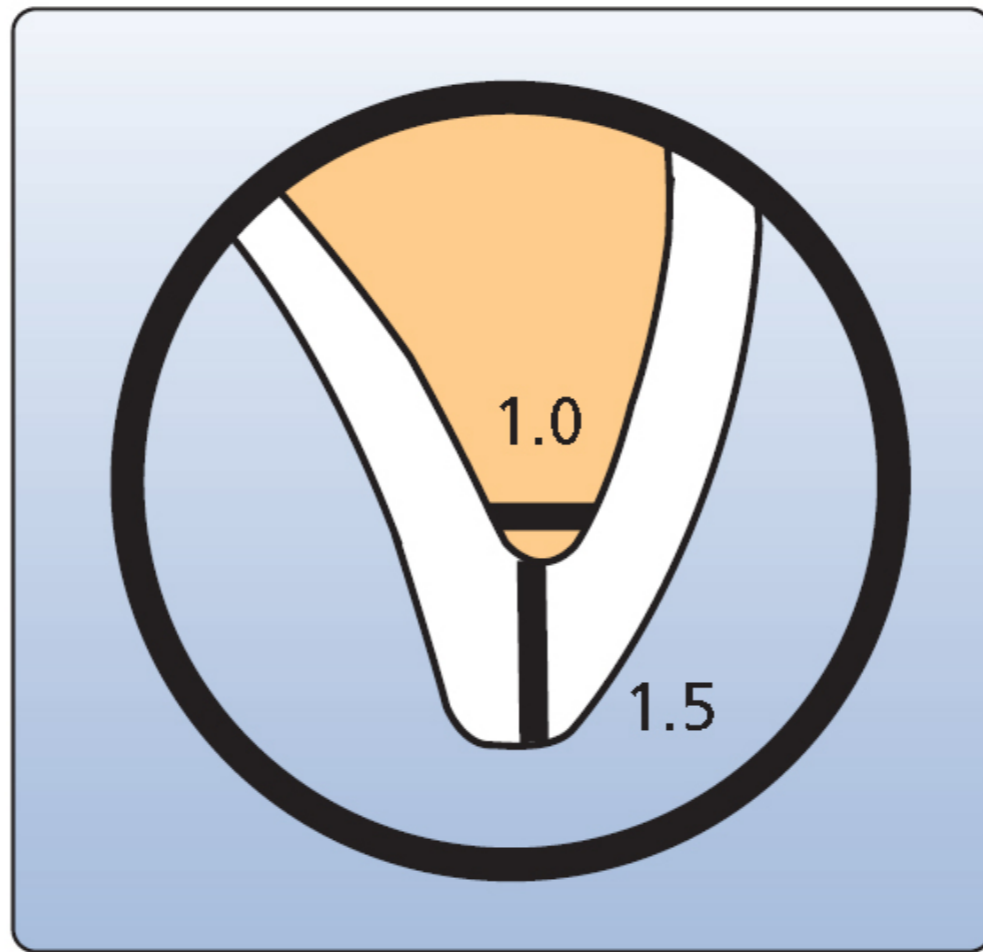
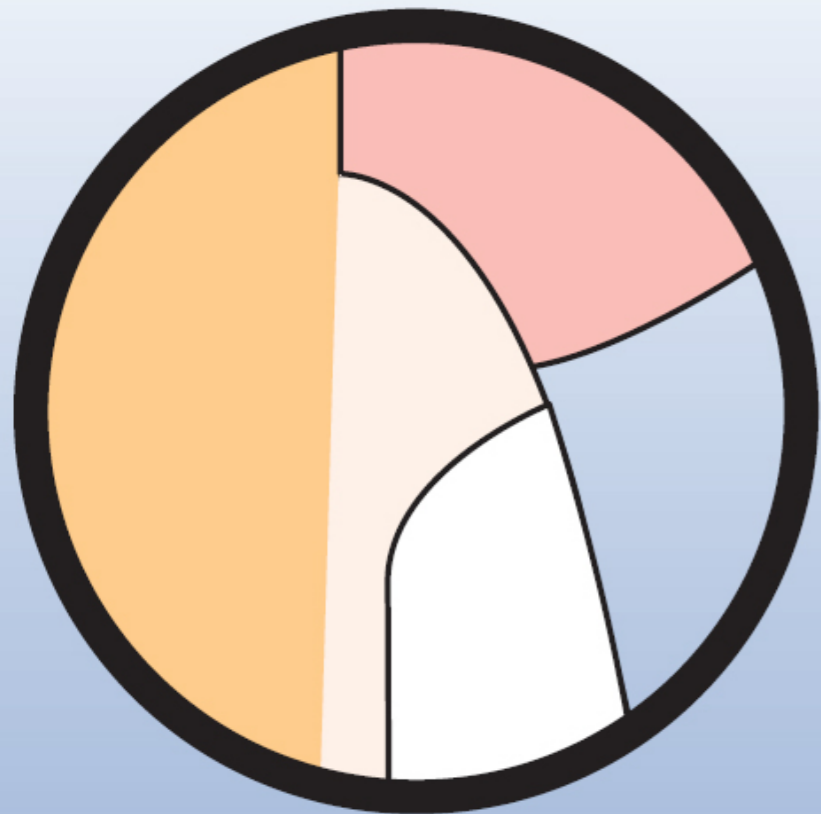


Partial crown



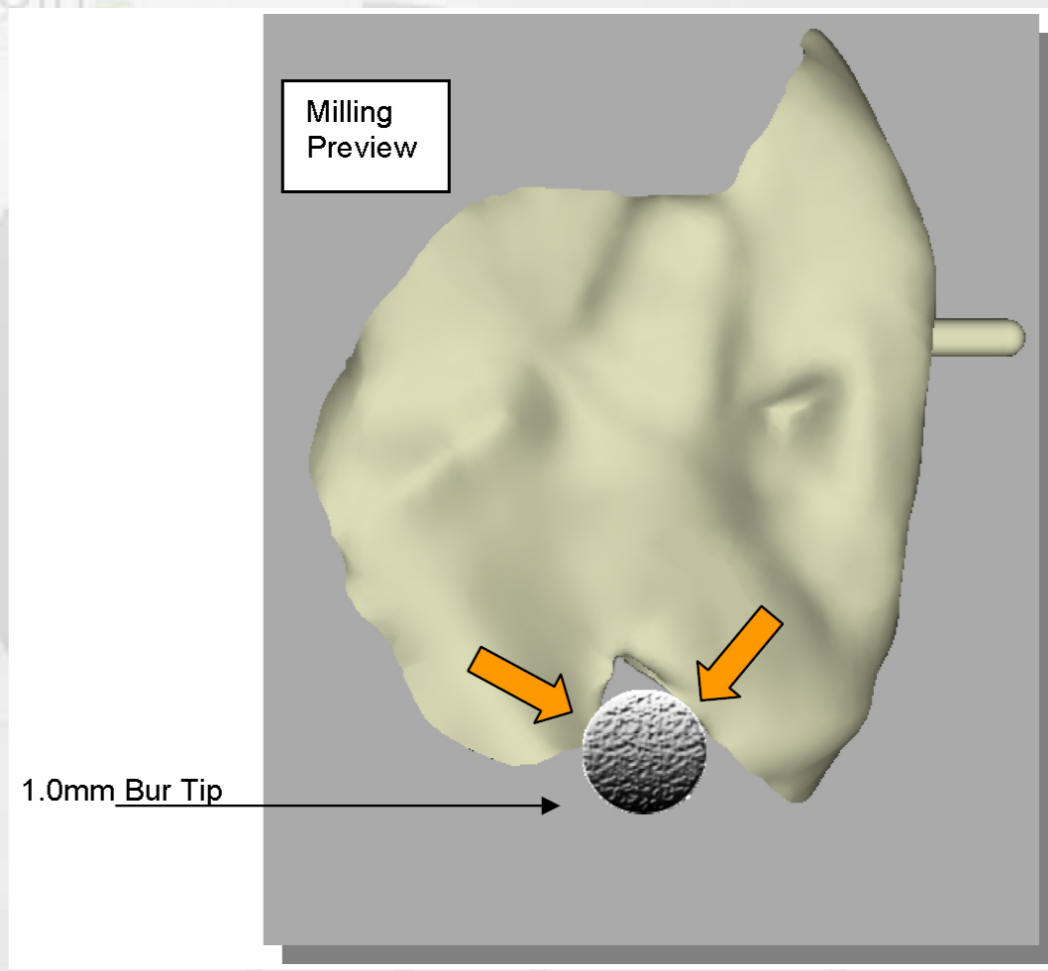
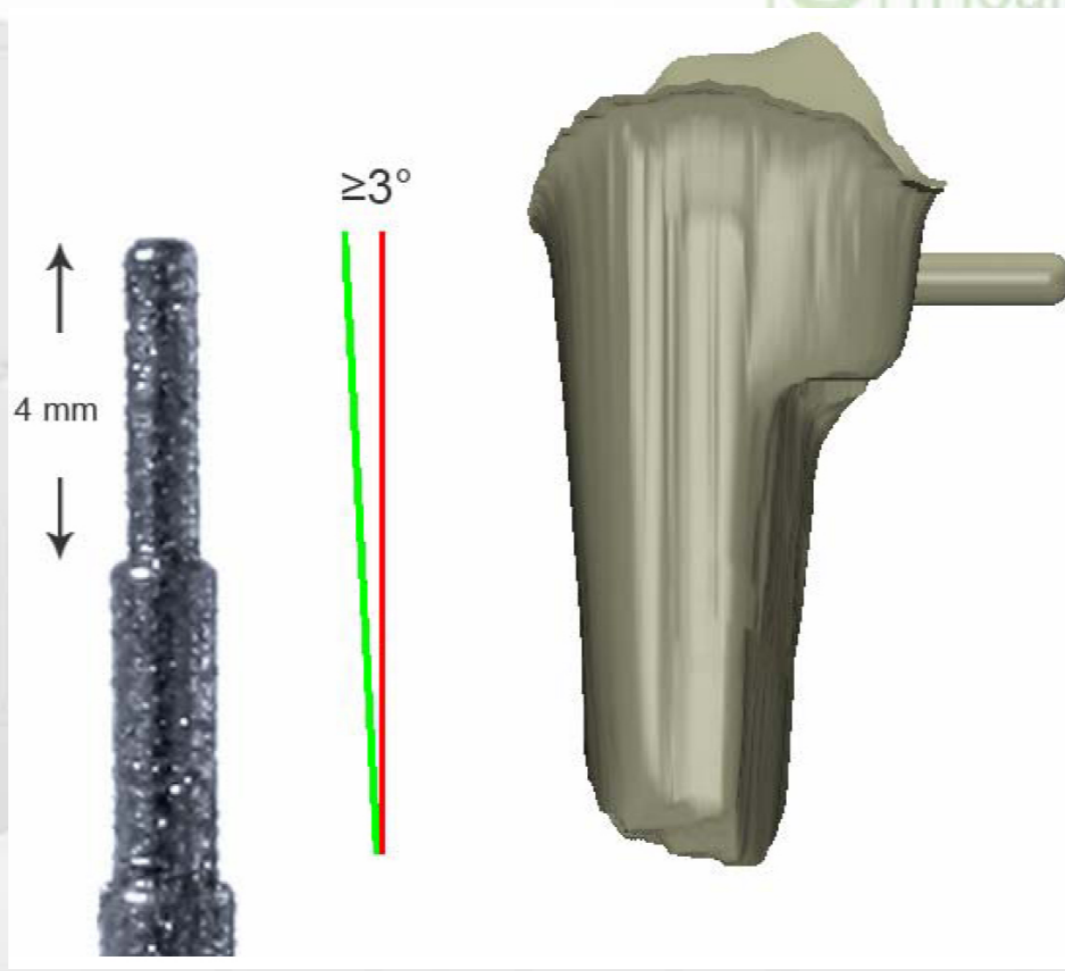
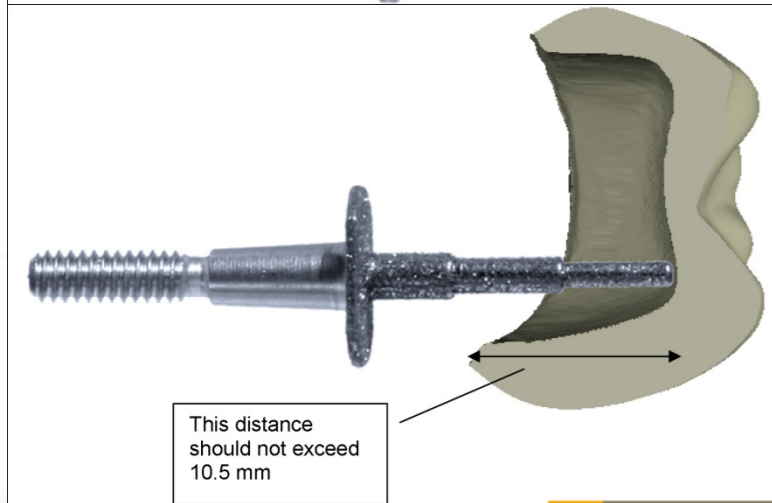
Posterior crown

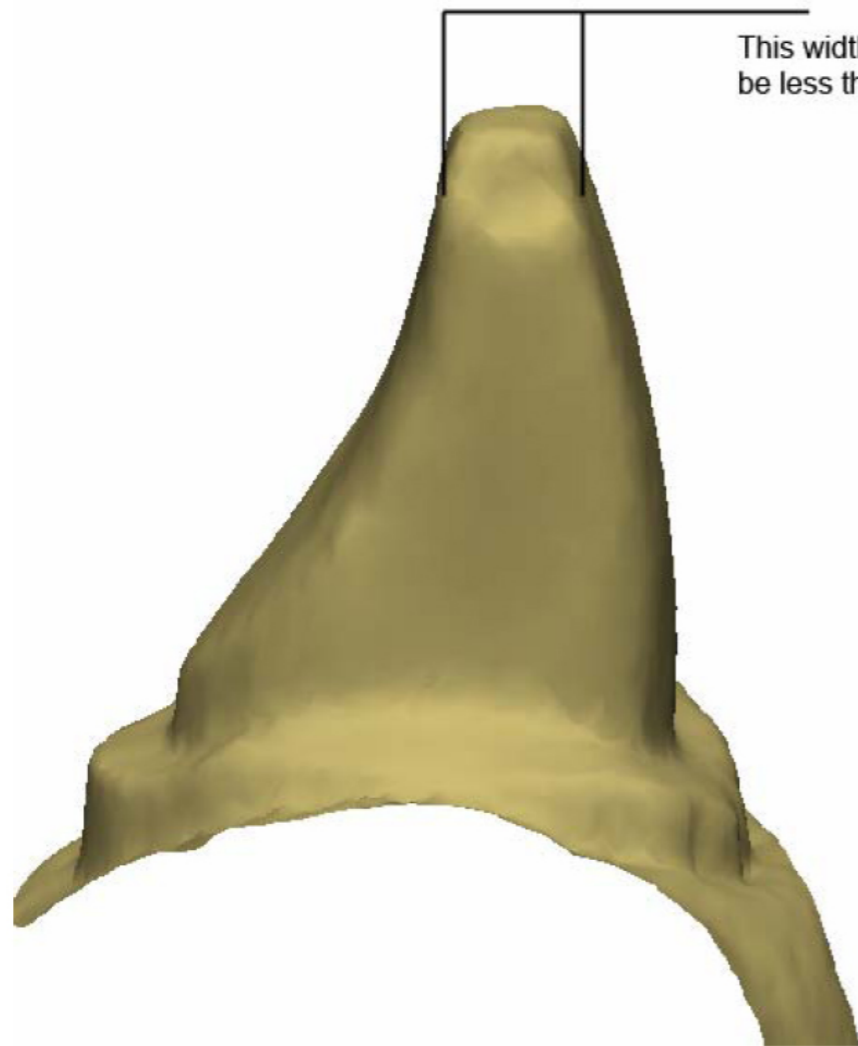
# Types of Margin that all ceramic restoration likes - well supported





# Preparation Considerations - Instrument Limitations





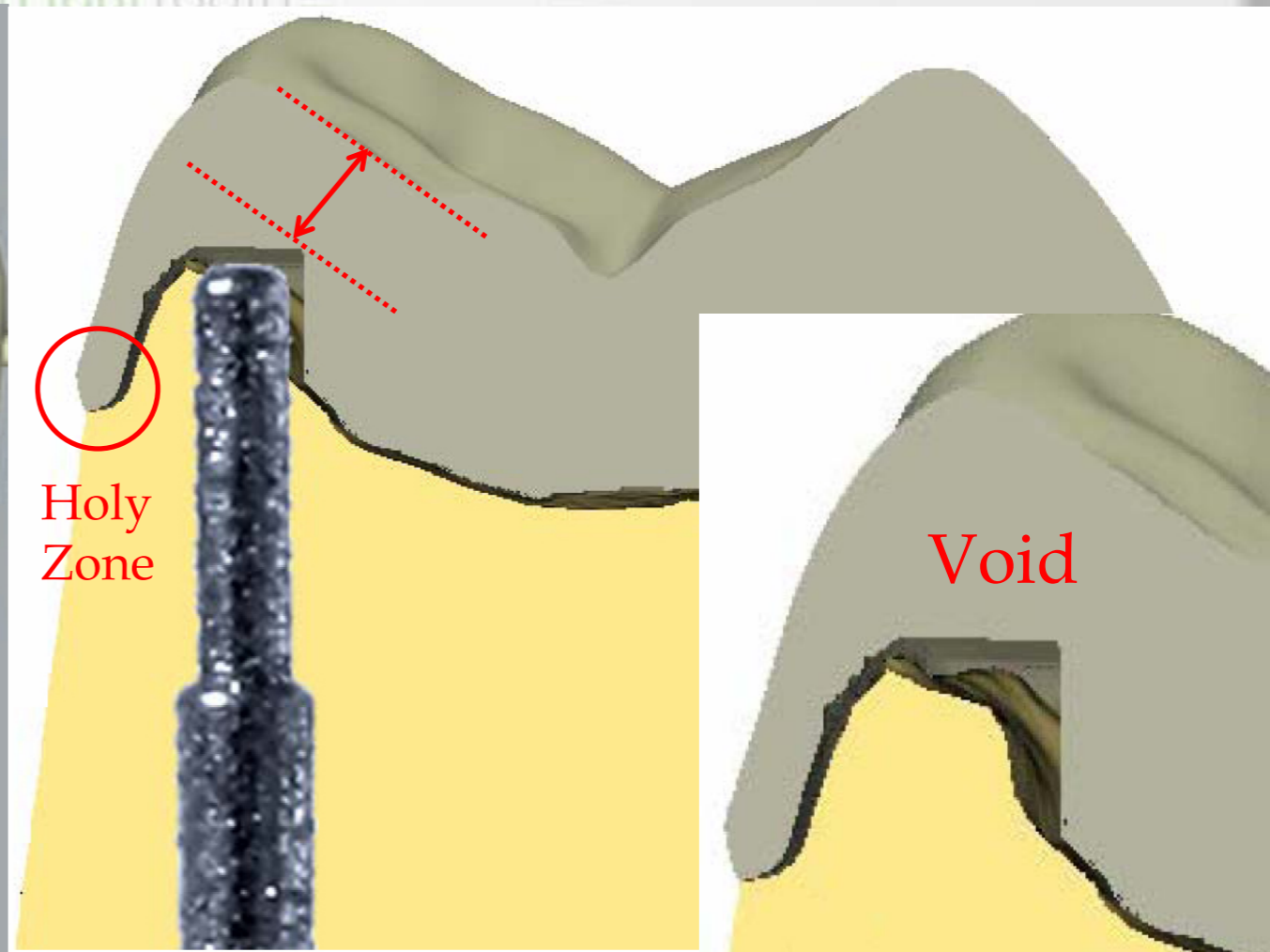
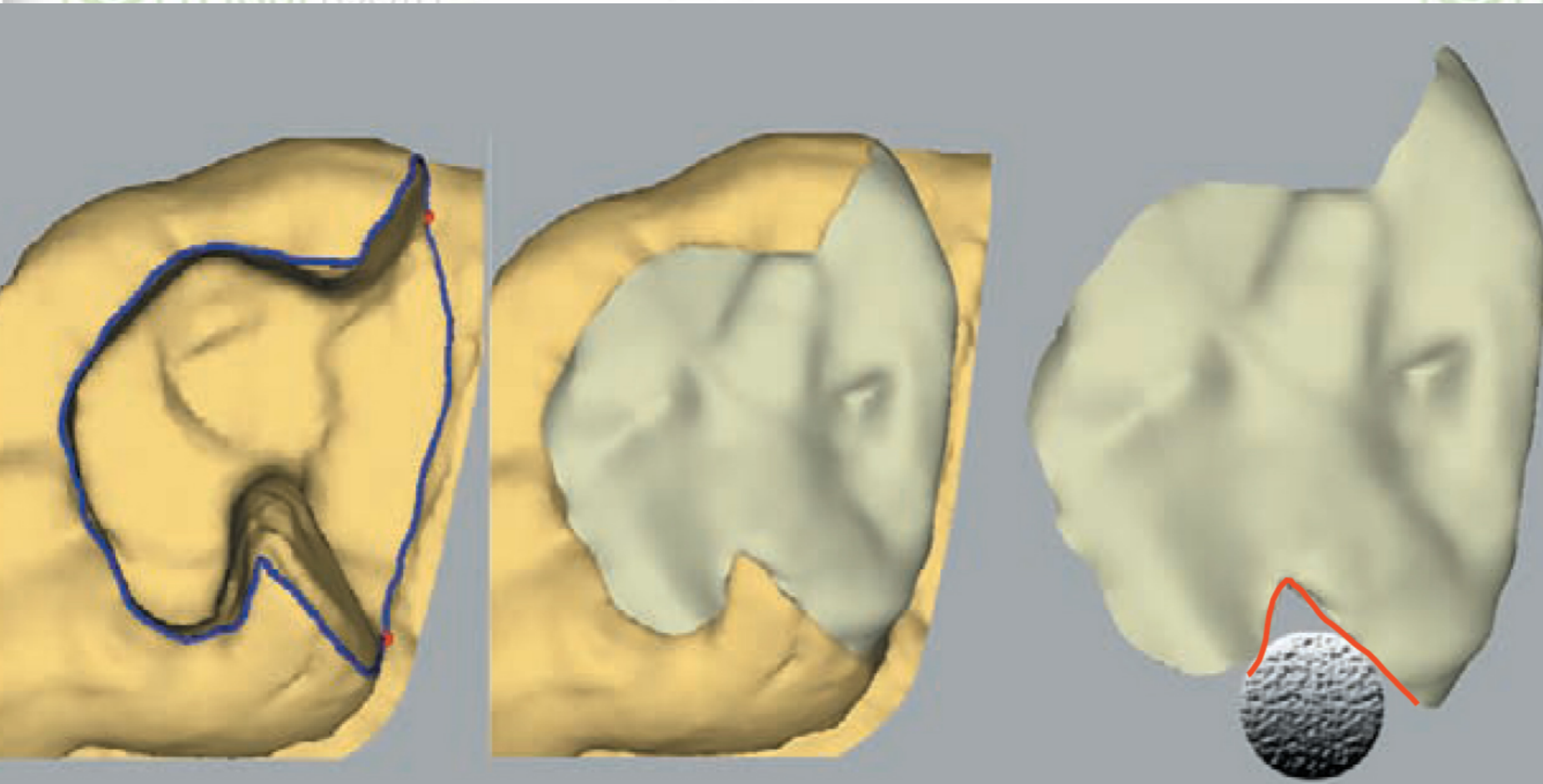
This width should not be less than 1.0 mm.



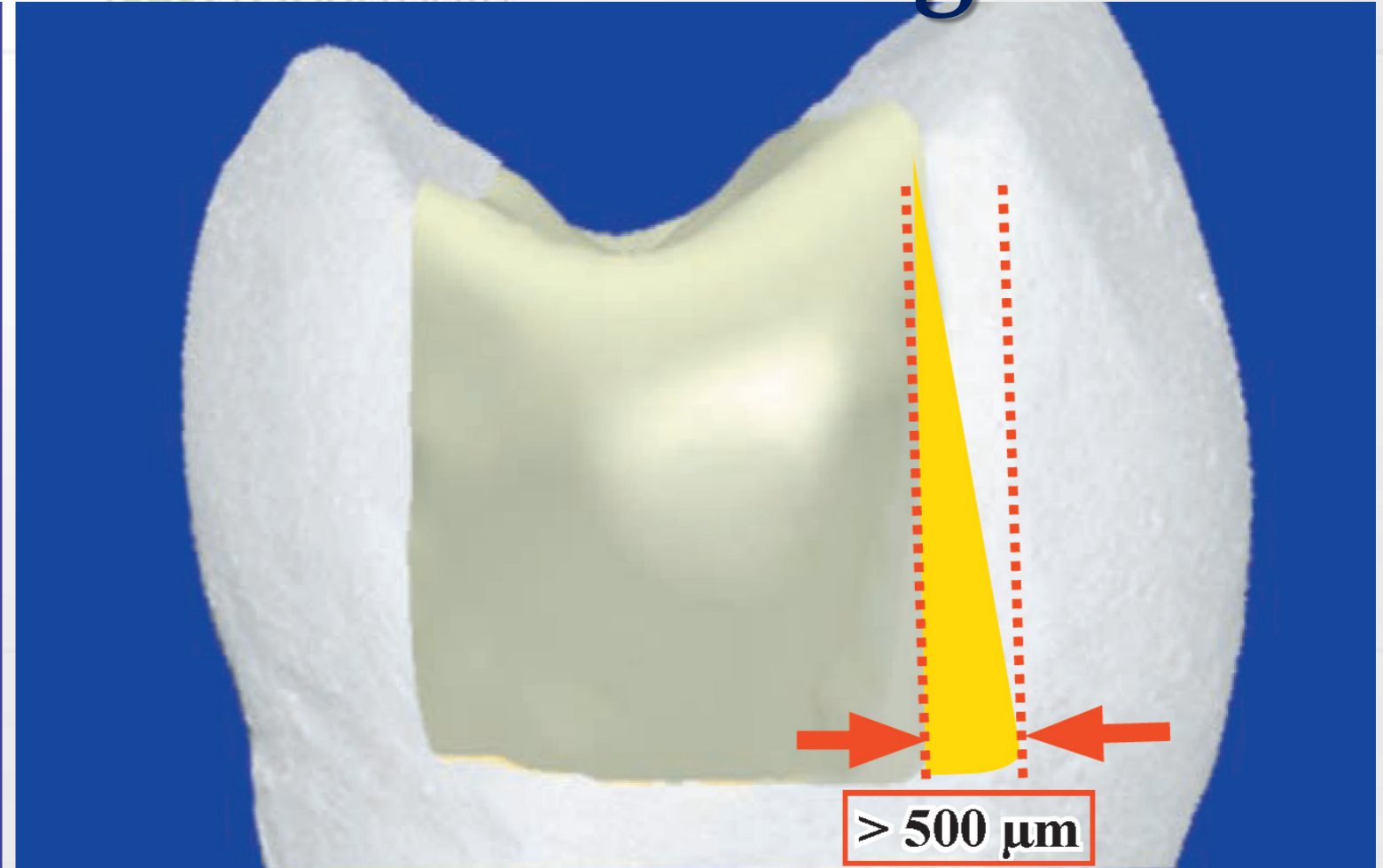
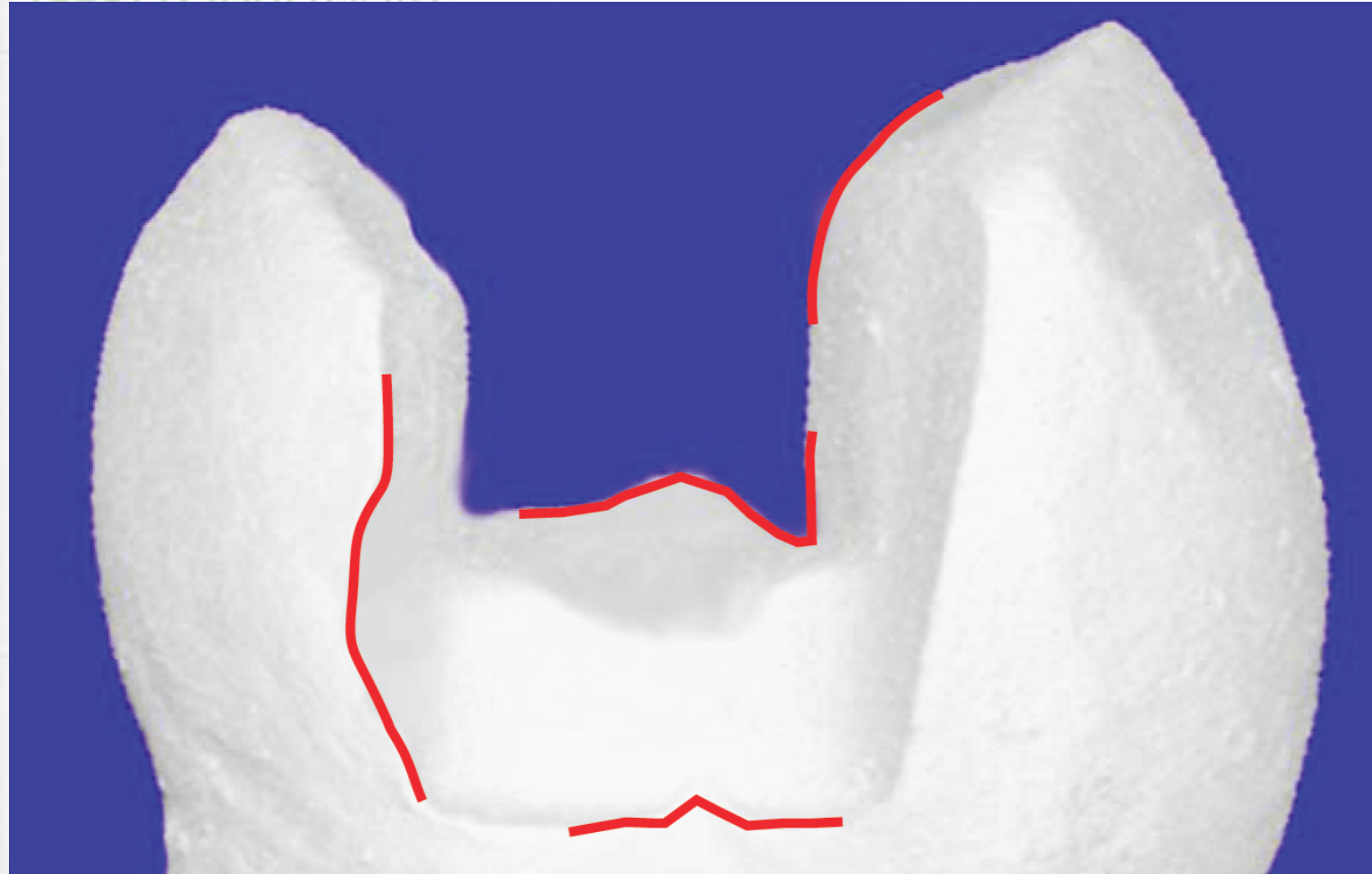
This height should not exceed 10.5 mm



# CEREC don't like SHARP inside-corners

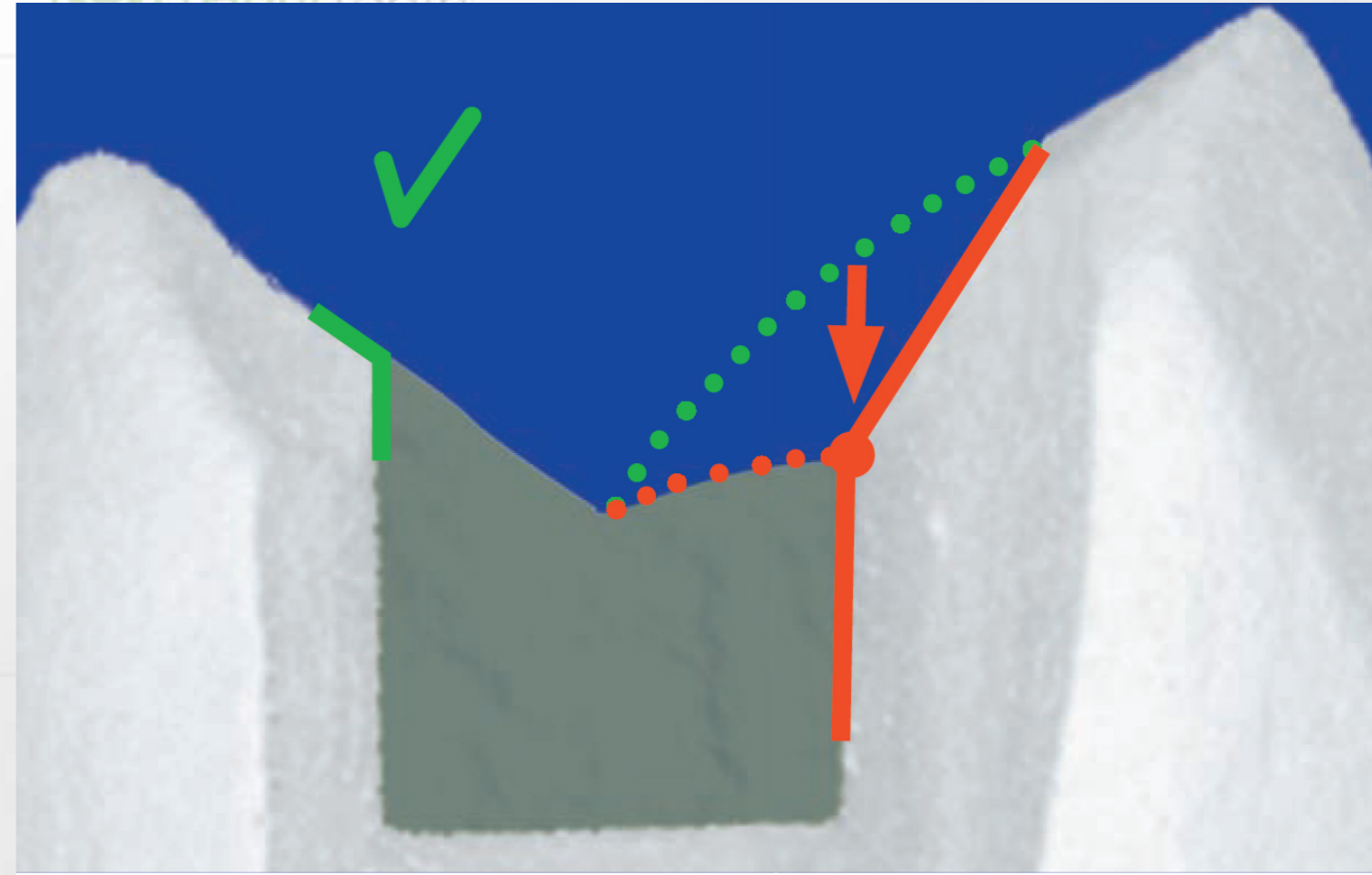
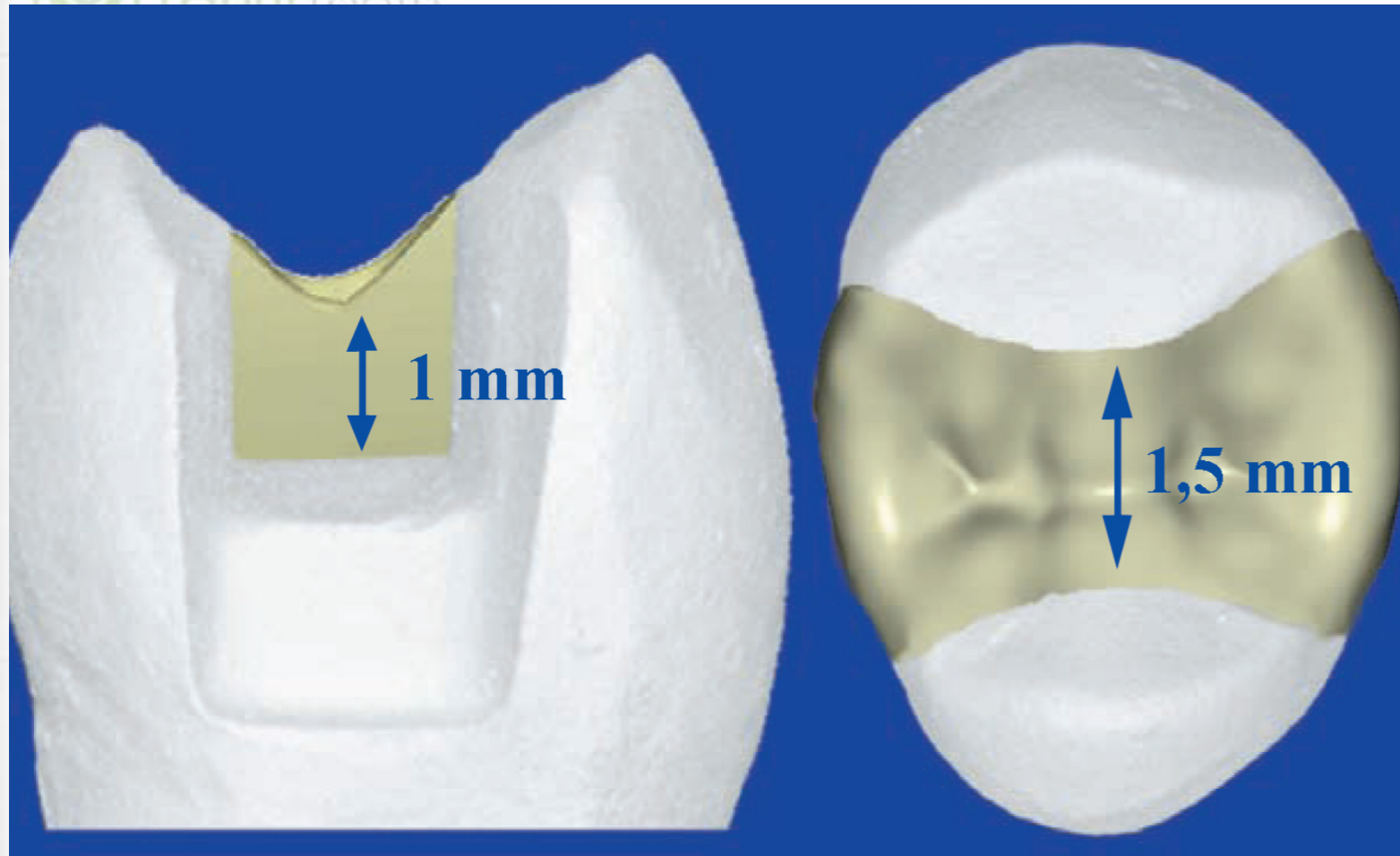


# CEREC can't mill areas that the drills can't get to...

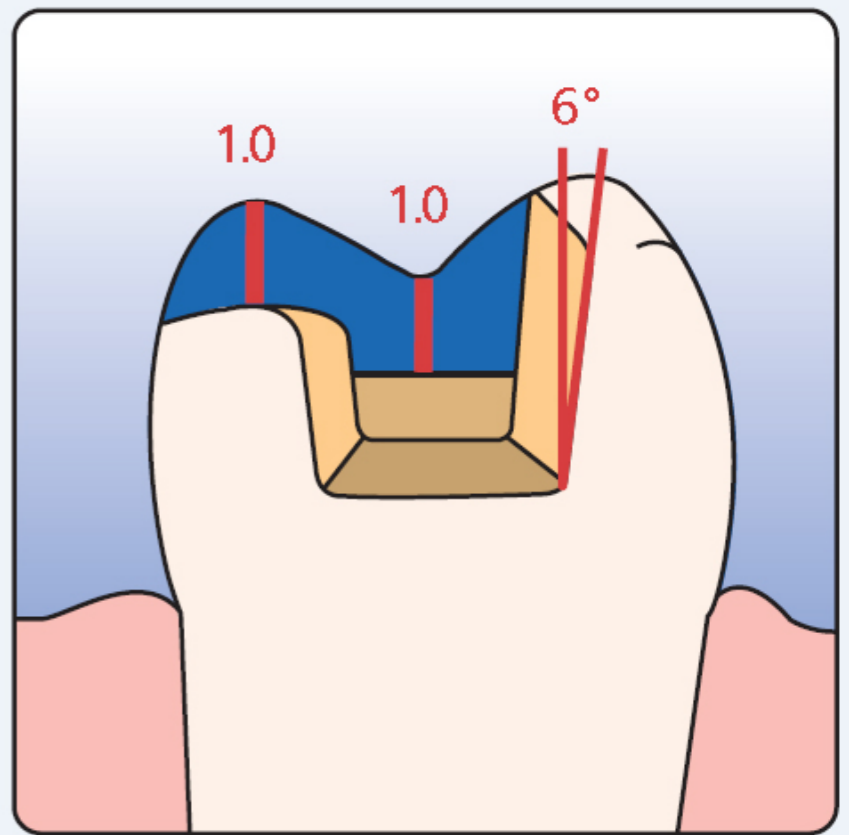
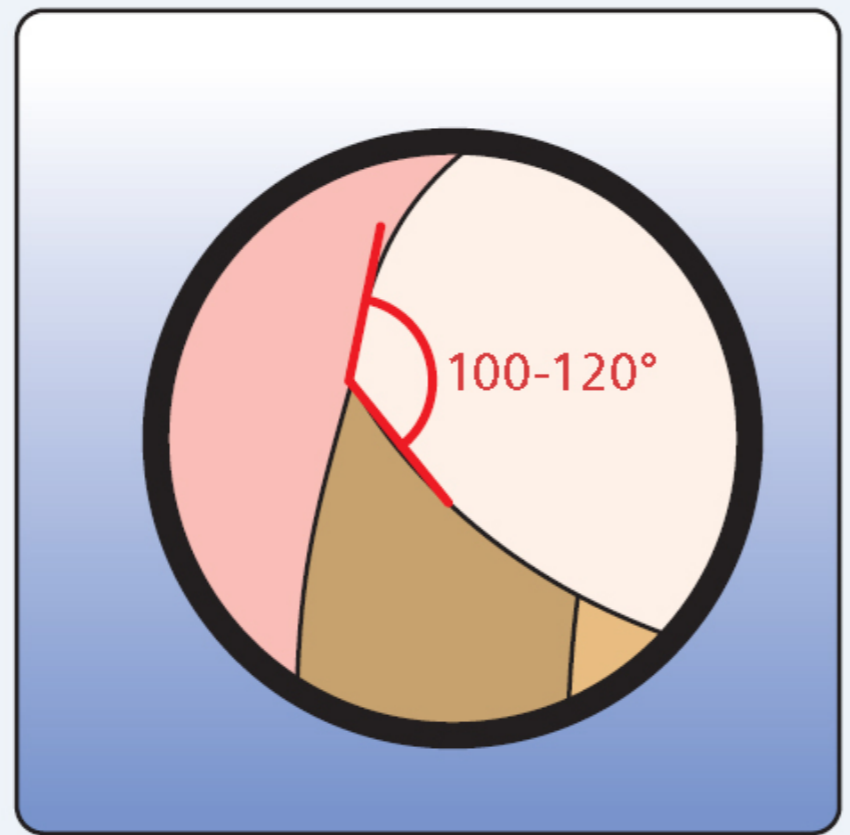
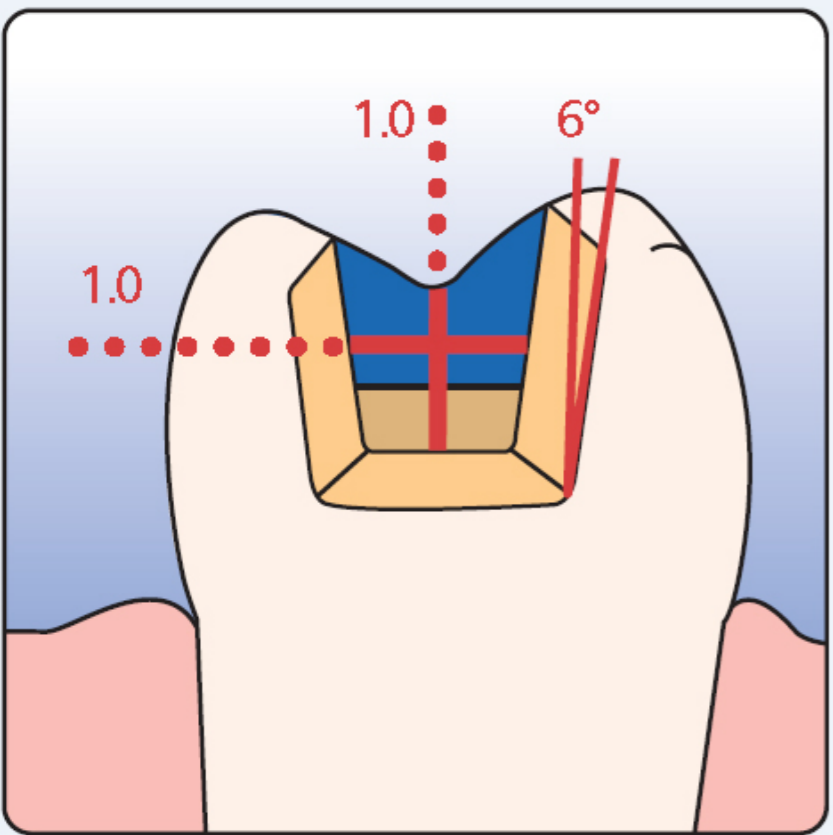




# Special topic: inlays

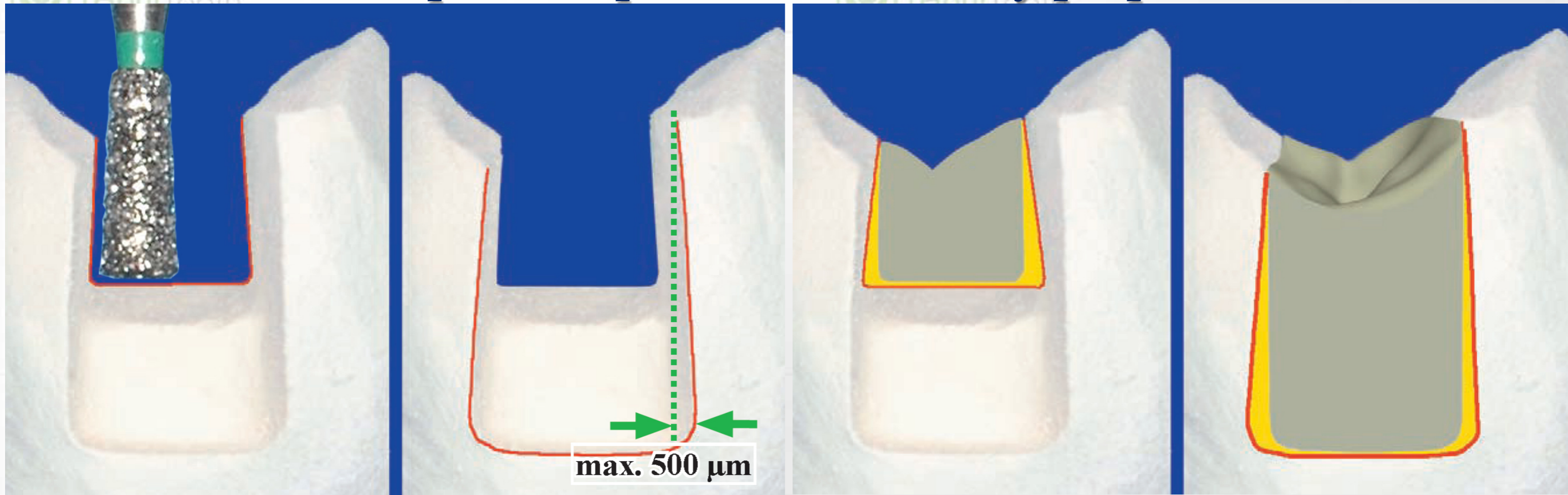


# Special topic: inlays

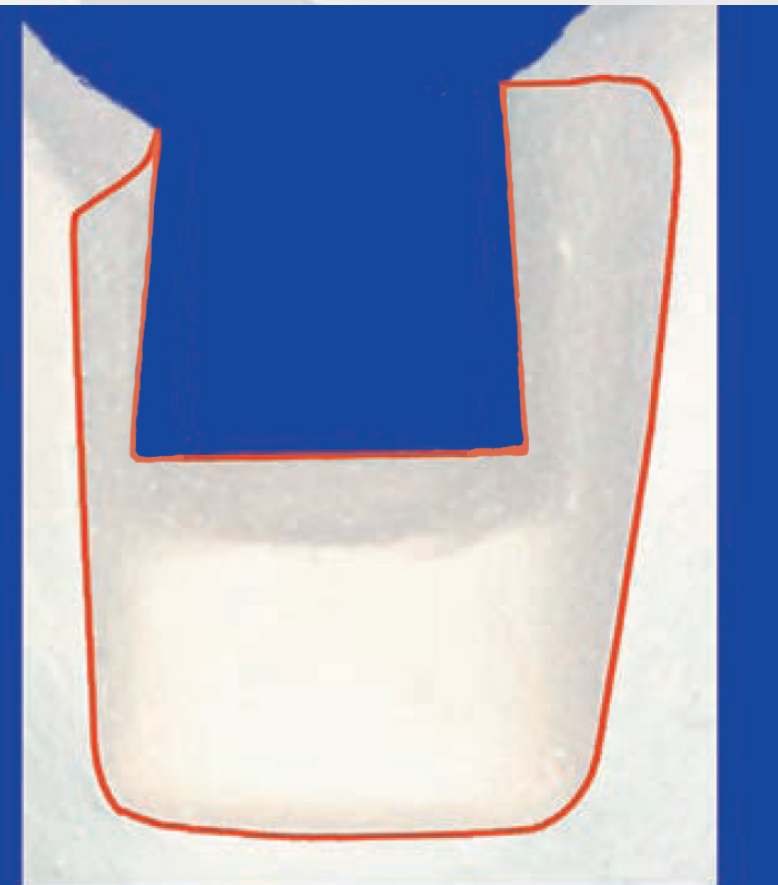
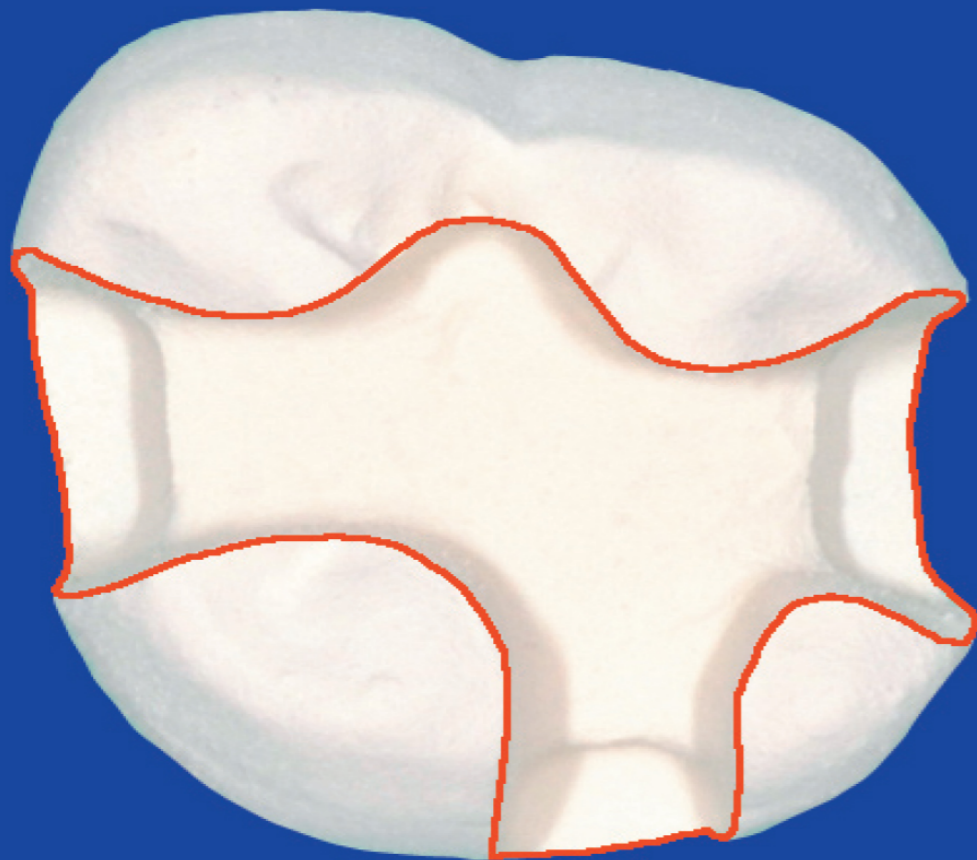




# Special topic: Preferred inlay prep



# Preferred Tooth Preparation Outline





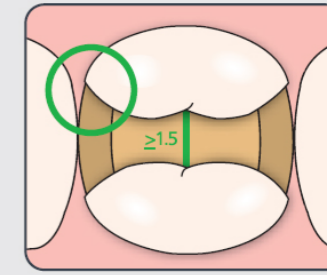
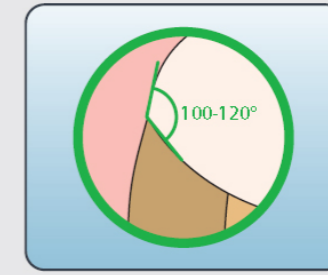
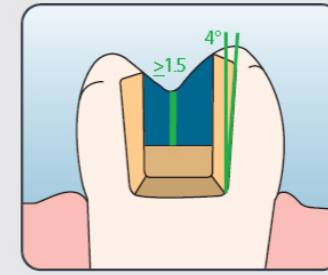


# Questions on Preparation?

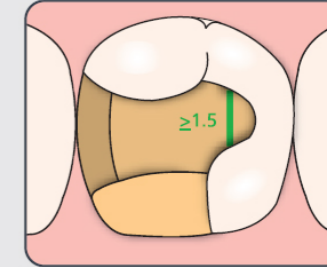
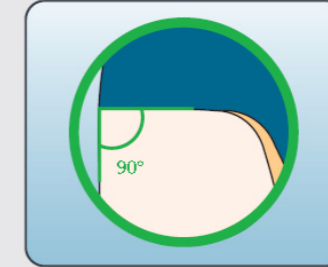
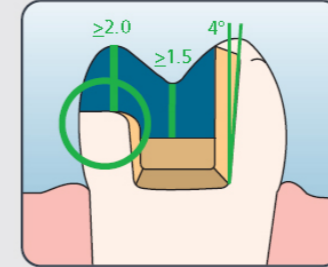


## INLAYS

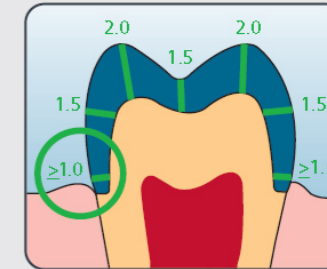
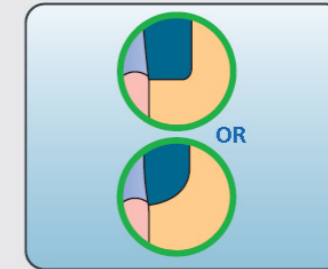
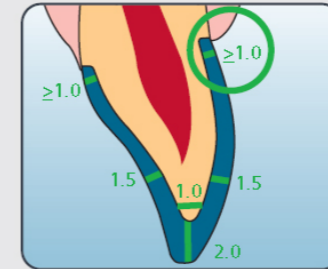
Dimensions in mm



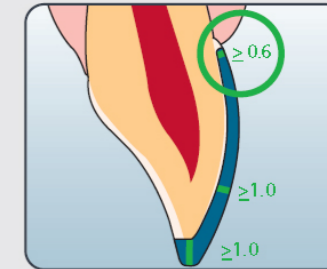
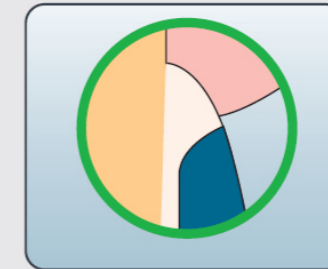
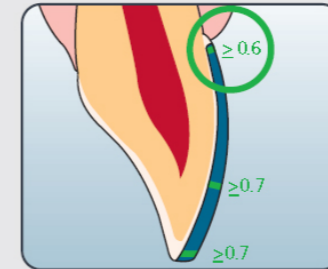
## PARTIAL CROWN



## FULL CROWN



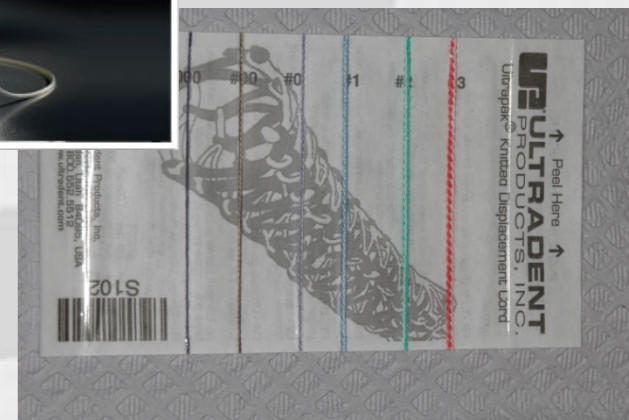
## VENEER





## Last thing - for preparation: DRY field

- What ever it takes, just like PVS
- Better field = Better images
- Better images = More predictable results
  - Thing I like to use are:
    - Dry Angles
    - Expasyl - Kerr
    - ViscoStat - Ultradent
    - Impression Chord - various
    - Hemodent - various
    - Laser - Diodes only

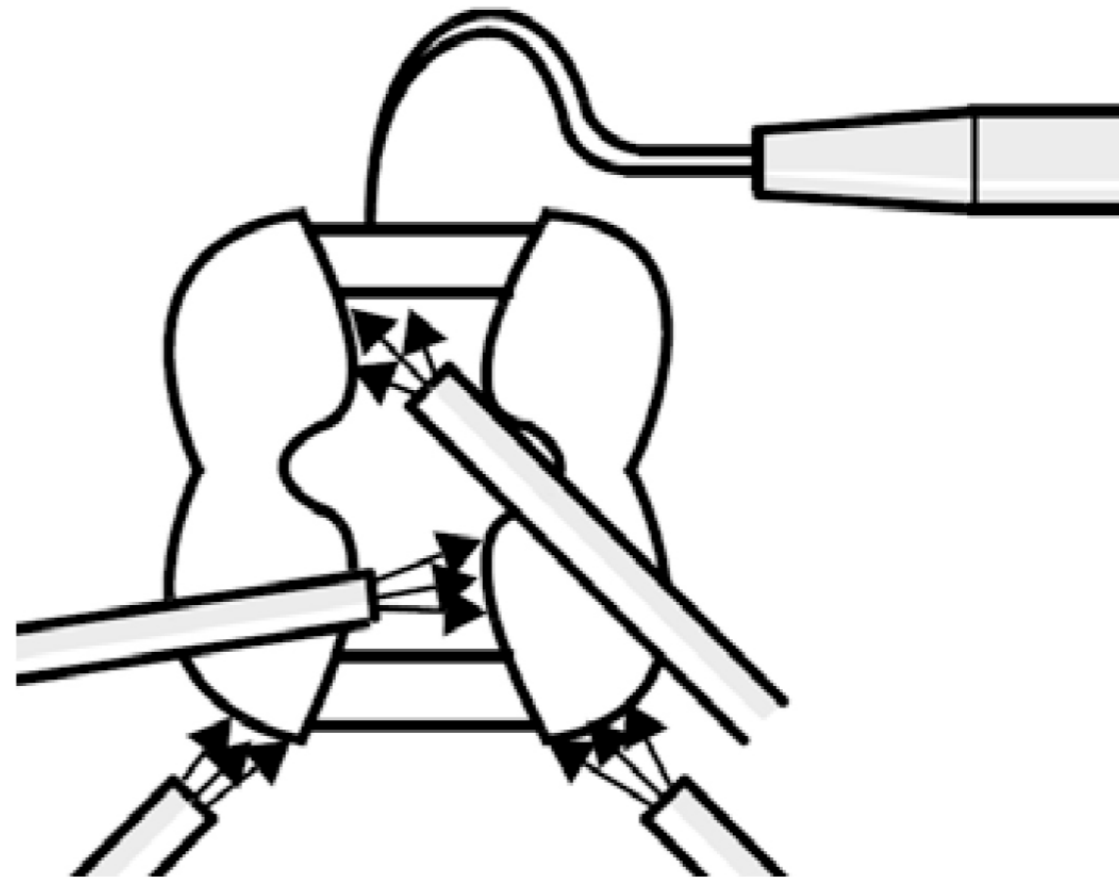




# Powdering

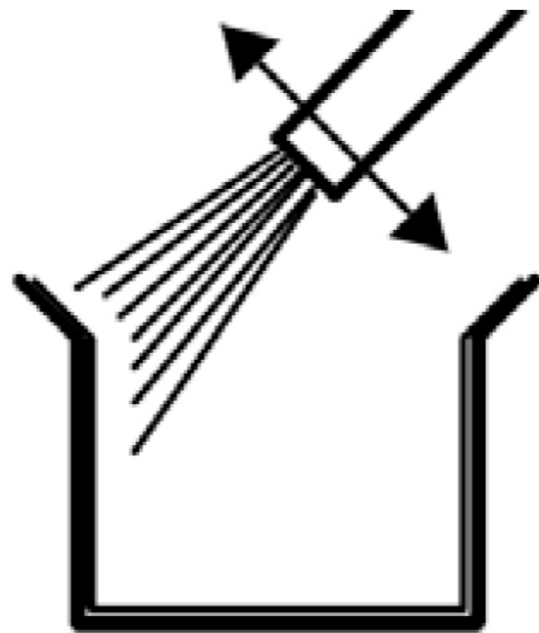
- Purpose: reflective powder ( $\text{TiO}_2$ ,  $\text{SiO}_2$ ) help camera to measure distances
- Goals:
  - Thin and even coat on detail area
  - Cover at least 1 tooth Mesial/Distal
  - Minimize clumping
- Contaminants:
  - Saliva (water)
  - Blood

- Clean and Air-dry area before application

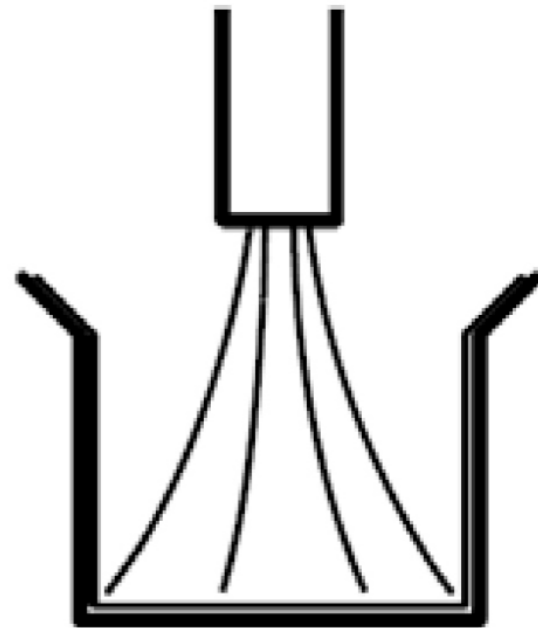




- Keep tips moving at 10~15mm away



right



wrong



Tip: Start spraying away from preped area, then sweep over the area in question

- Then lingual



- Start with Buccal



- Occlusal
- interproxymal



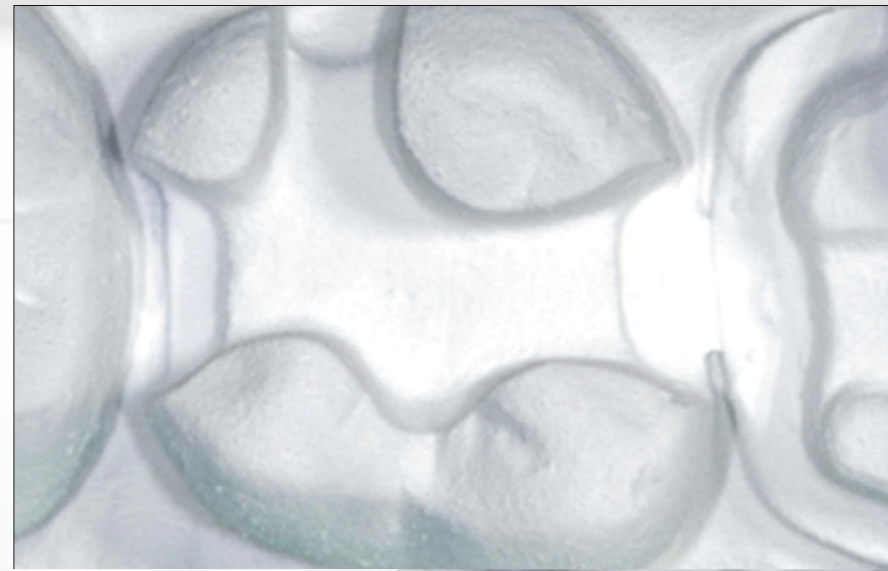
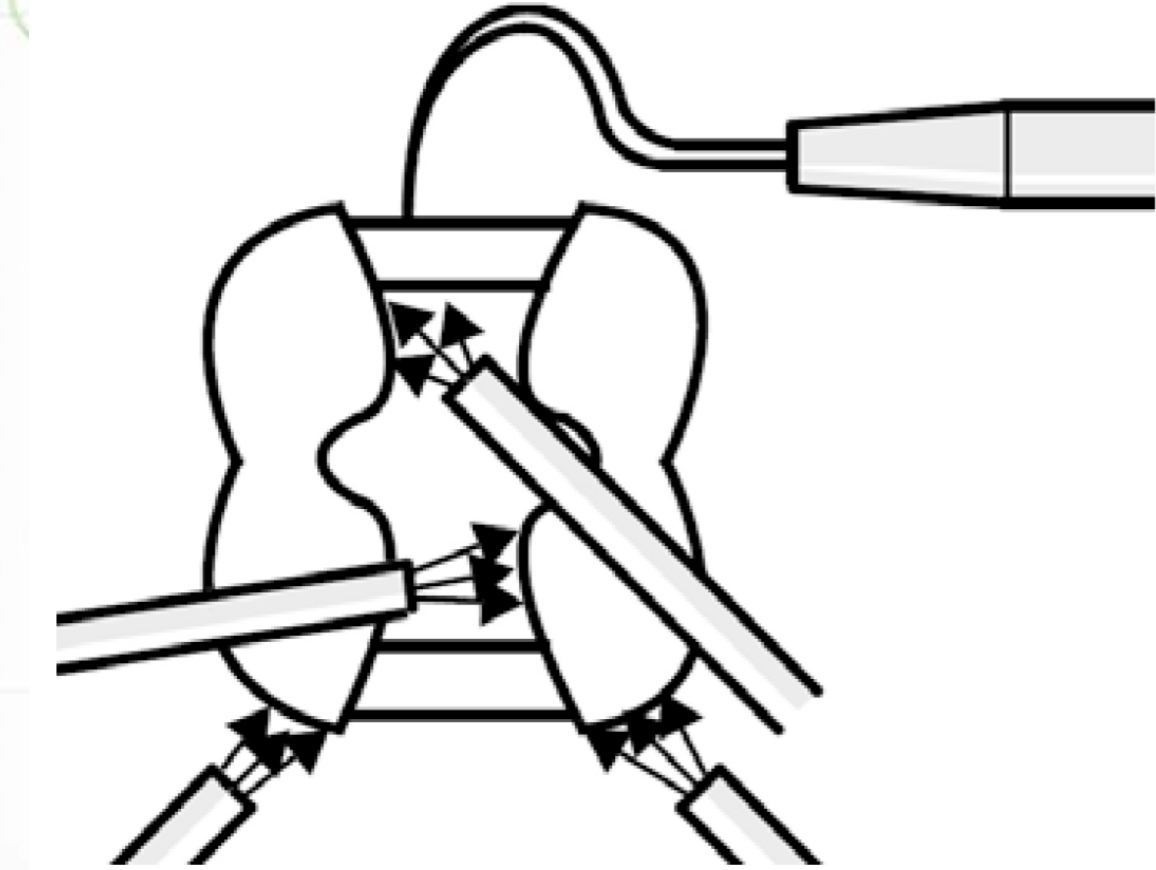
- Detail area must be covered

- Finish





- Air dry and clean-up build-ups

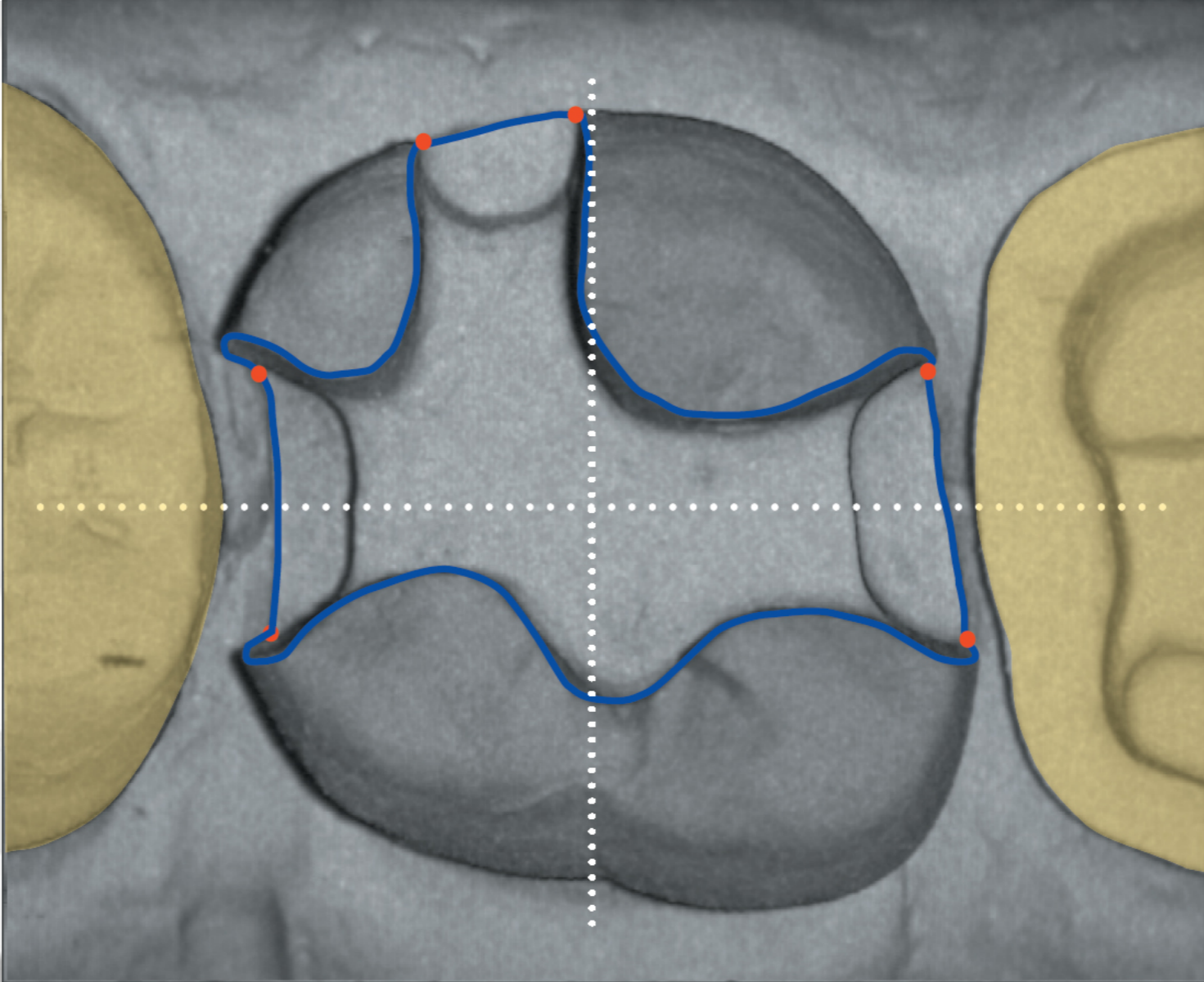






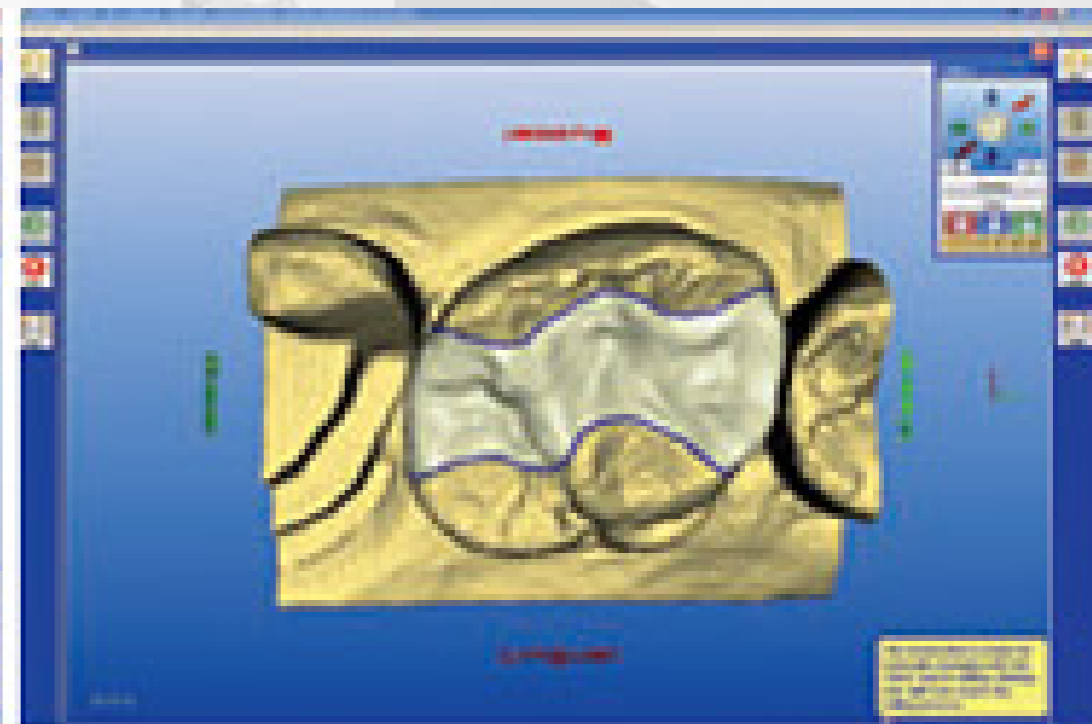
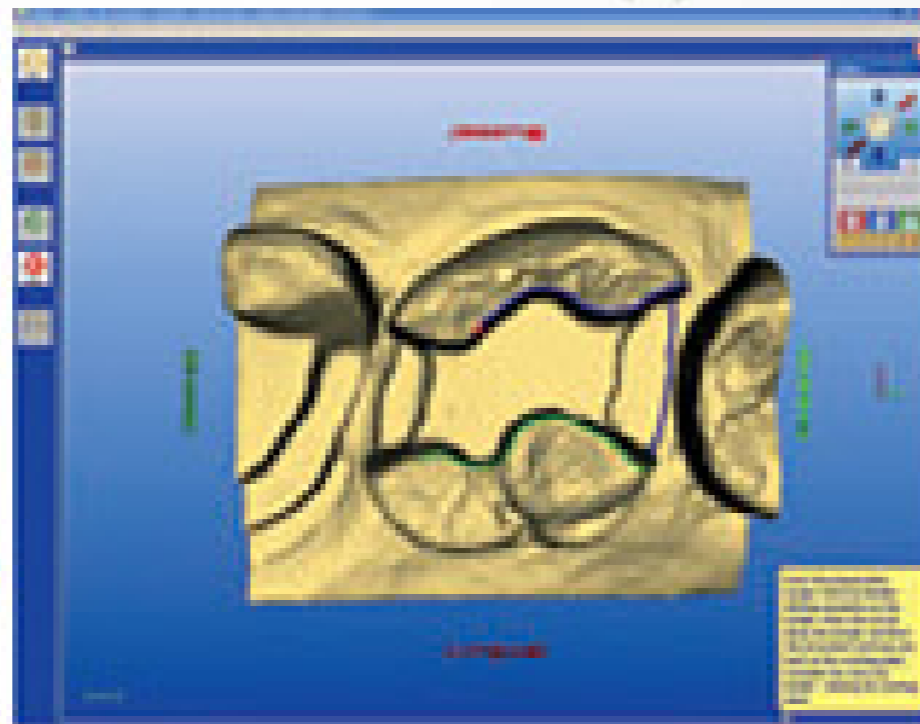
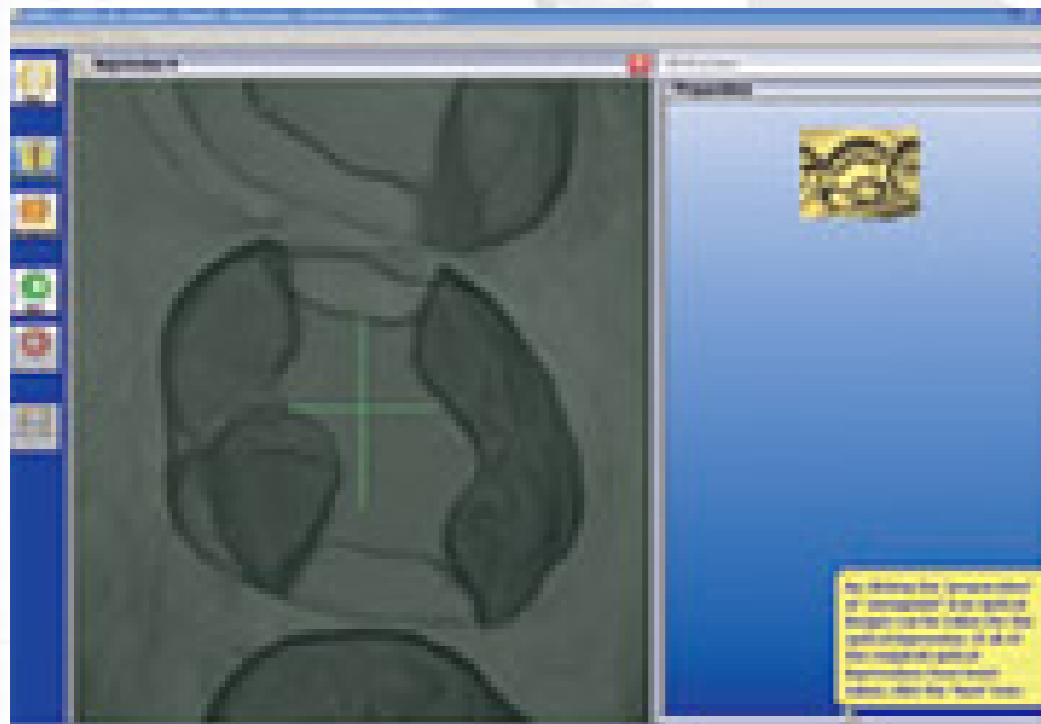
# Perfect Powdering

53m



# Perfect Pictures

mins



**Place the crosshair on to the center of the prep**



# Pictures

- Camera: 2 components
  - Optical
  - Infrared (need  $2/10^{\text{th}}$  of sec to capture)
- Purpose:
  - Digital impression of area in question
  - Used to take the impression of prep area
  - Used to take the impression of the bite

- Works just like intra-oral camera
- **Your trainer will assist you with this**



**Tip: Do NOT look at your hand, LOOK at the Monitor**



# Pictures



- Use proper finger rests

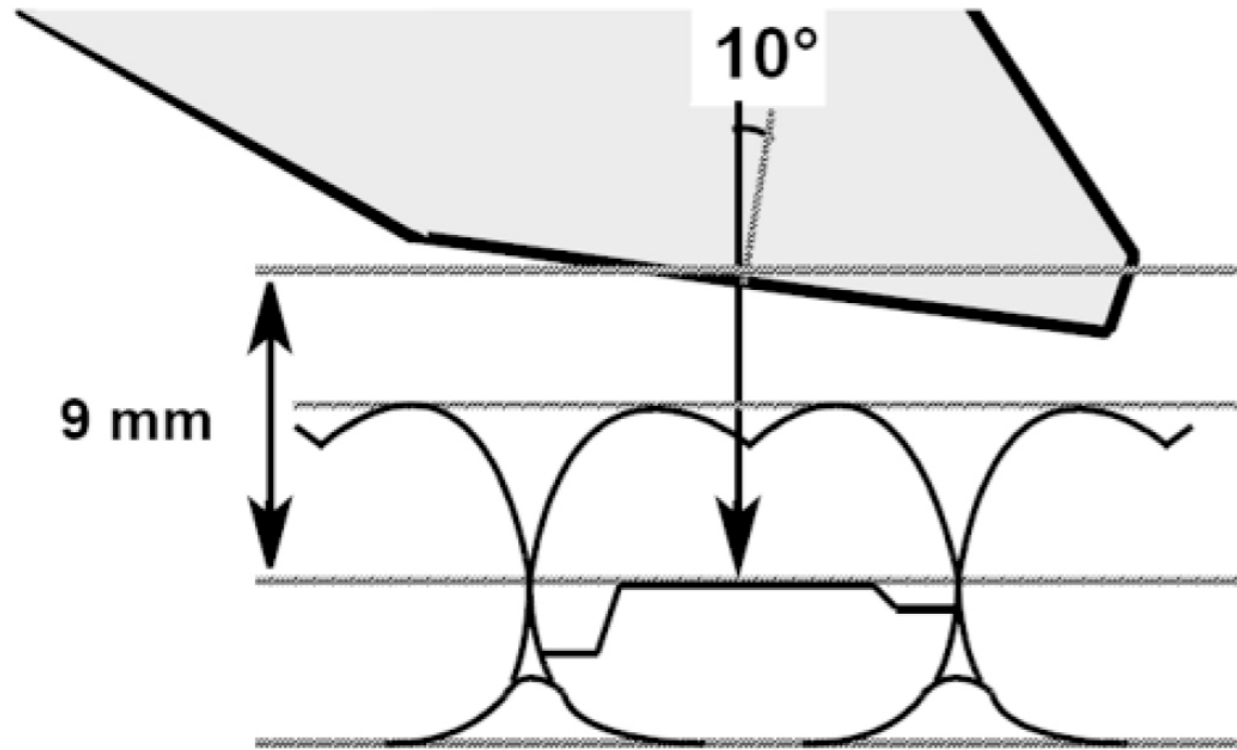
- Use camera rest too



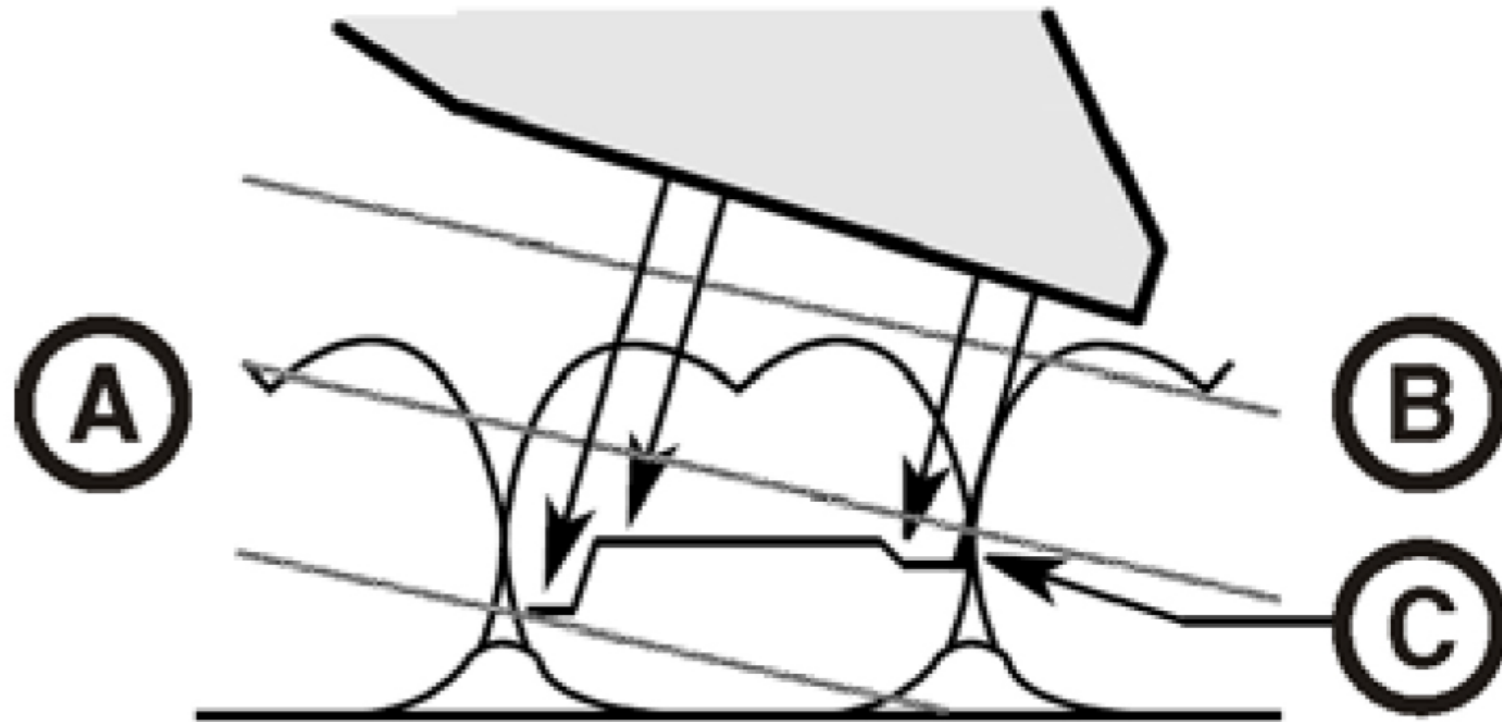
Tip: Do NOT look at your hand, LOOK at the Monitor



# Things to remember: Distance

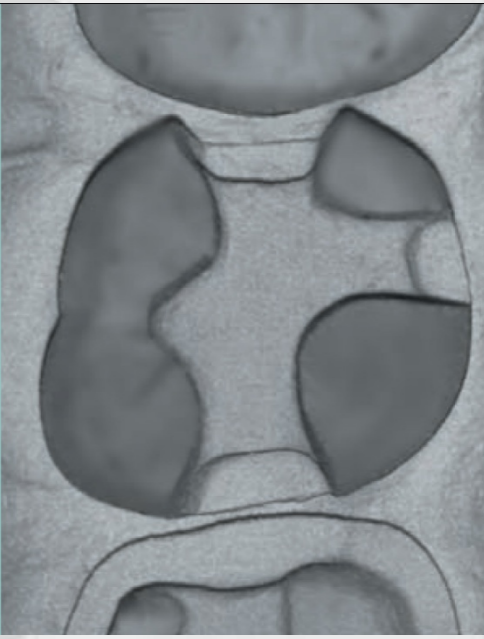
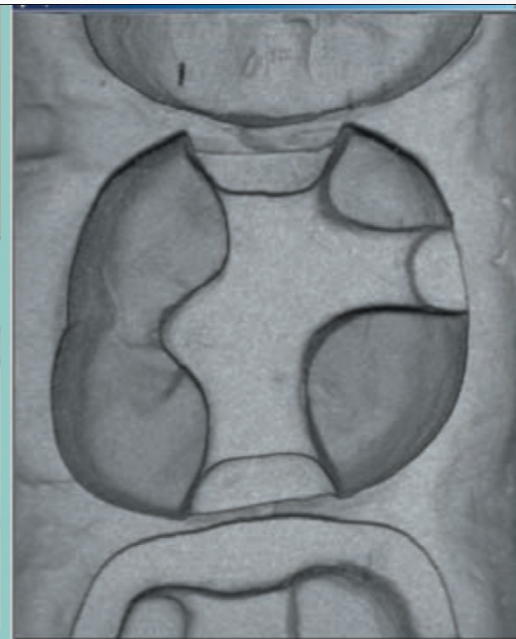
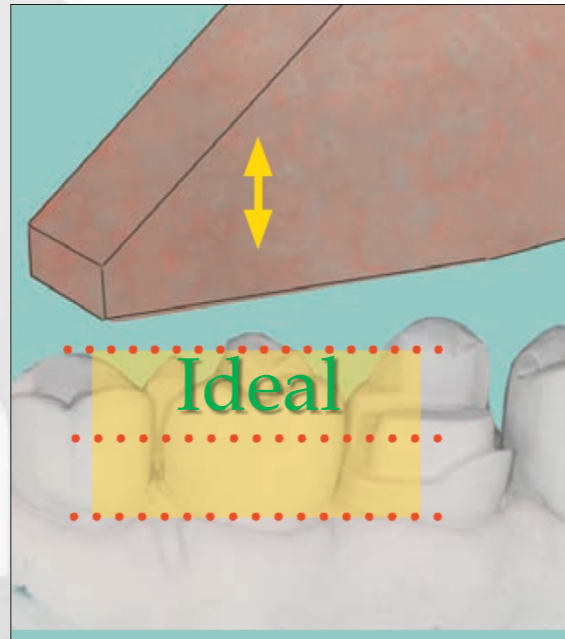
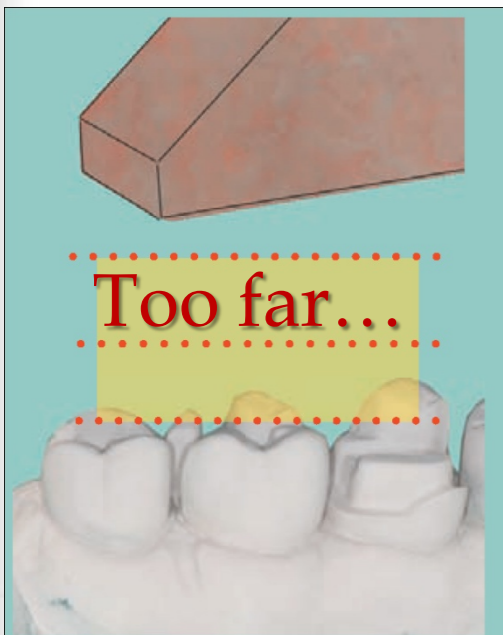


# Angle: If camera angle is too steep



Tip: Do NOT look at your hand, LOOK at the Monitor

# The distance issue



Tip: Do NOT look at your hand, LOOK at the Monitor





**Positioning guide  
will help you in  
proper  
camera placement**

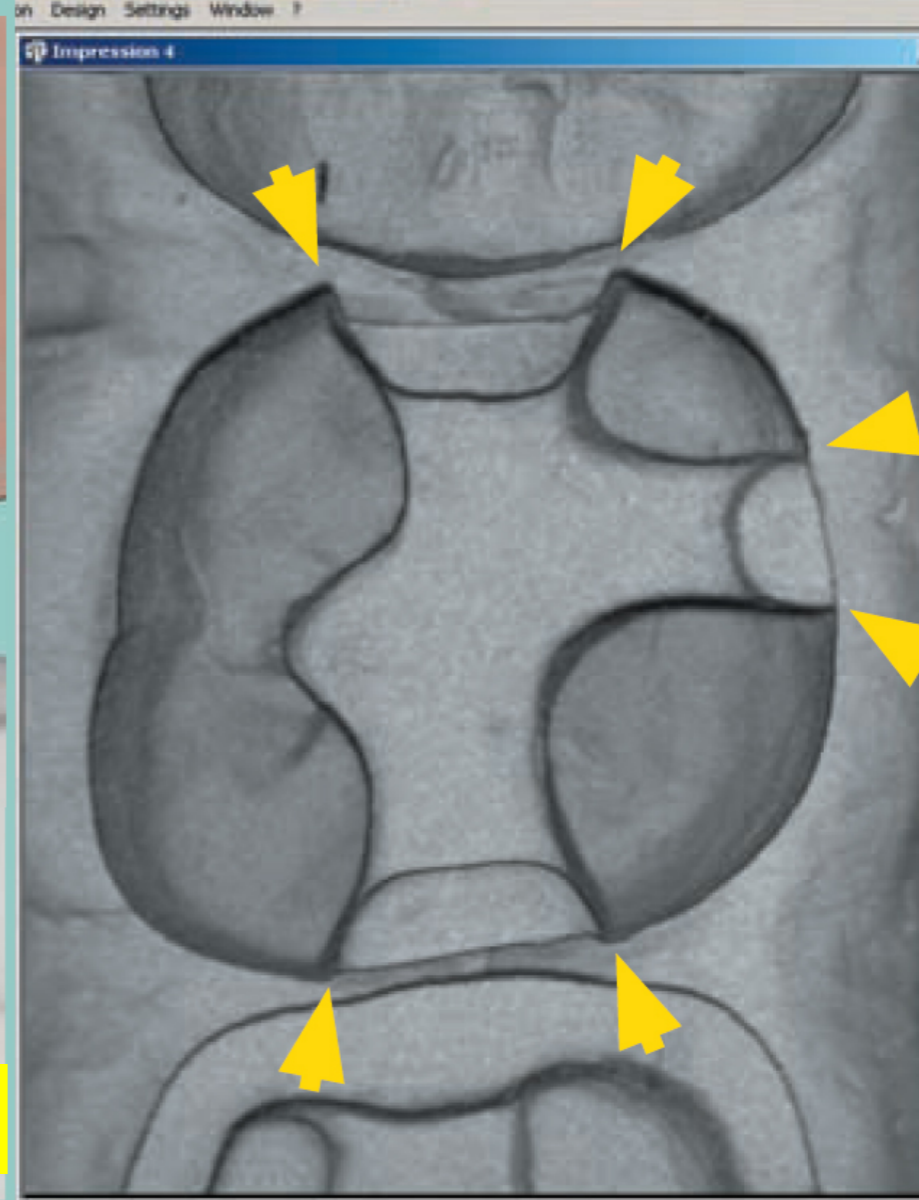
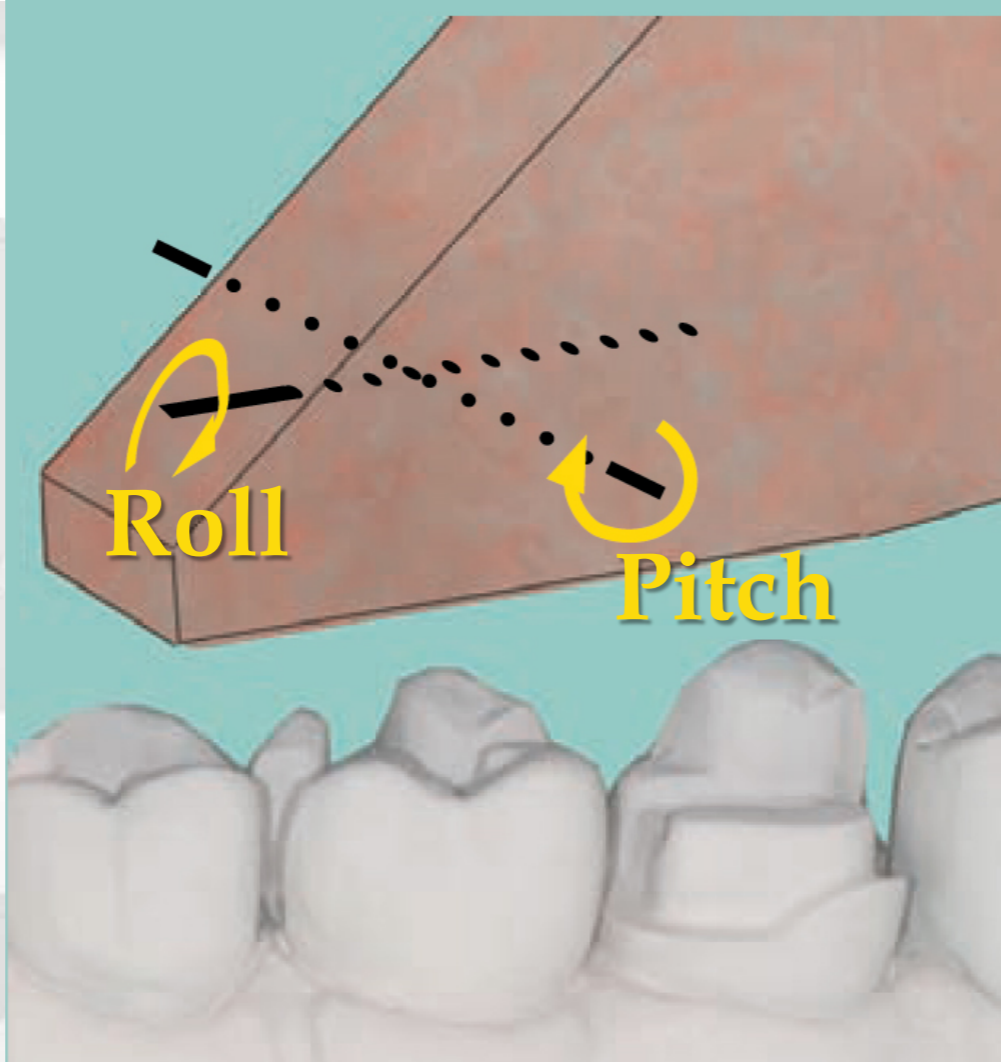
**Tip: Keep your eyes on the Monitor**





**What do you  
want to see...**

53min



**Tip: Do NOT look at your hand, LOOK at the Monitor**





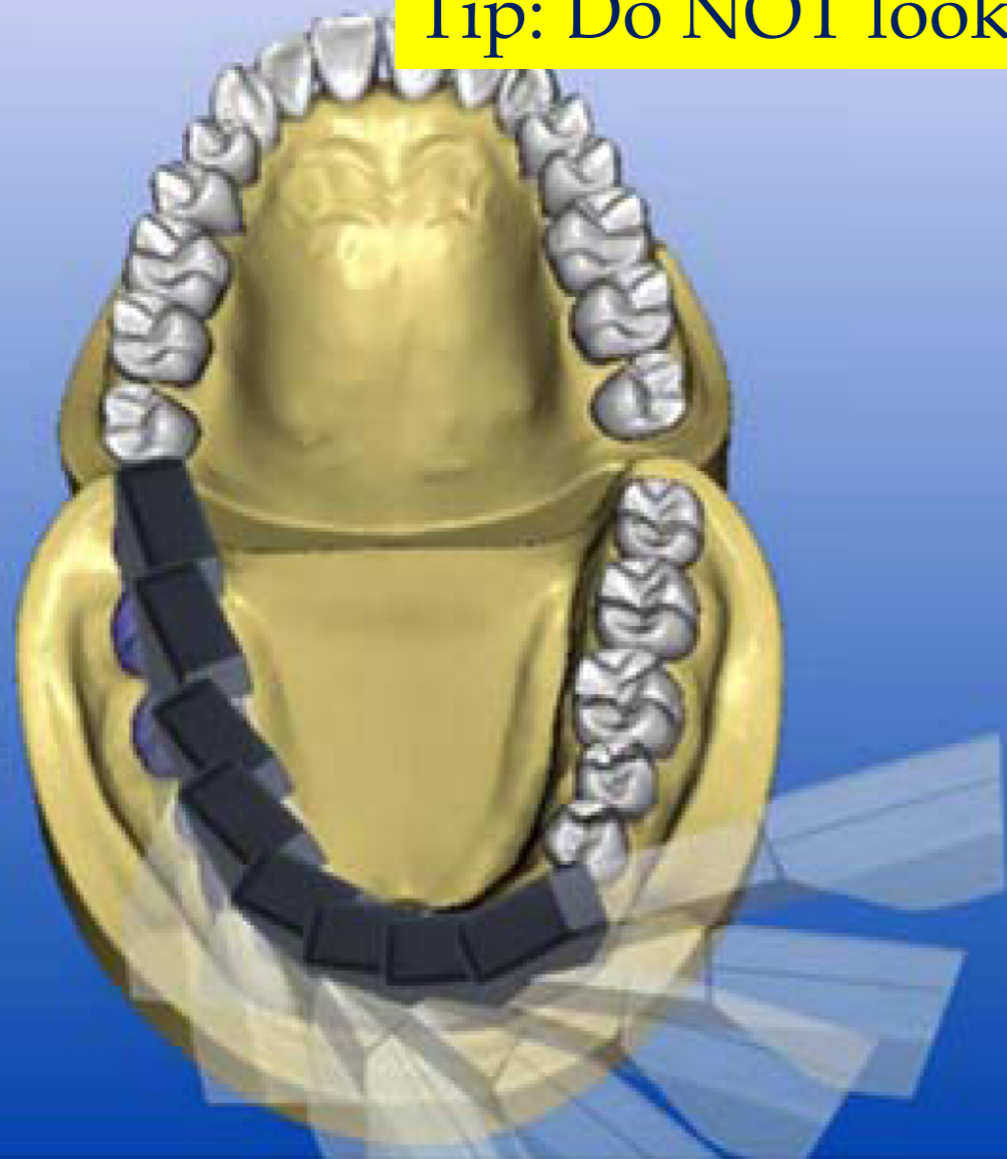
1 Hour Tooth

**Pitch  
+  
Roll**



**Tip: Do NOT look at your hand, LOOK at the Monitor**

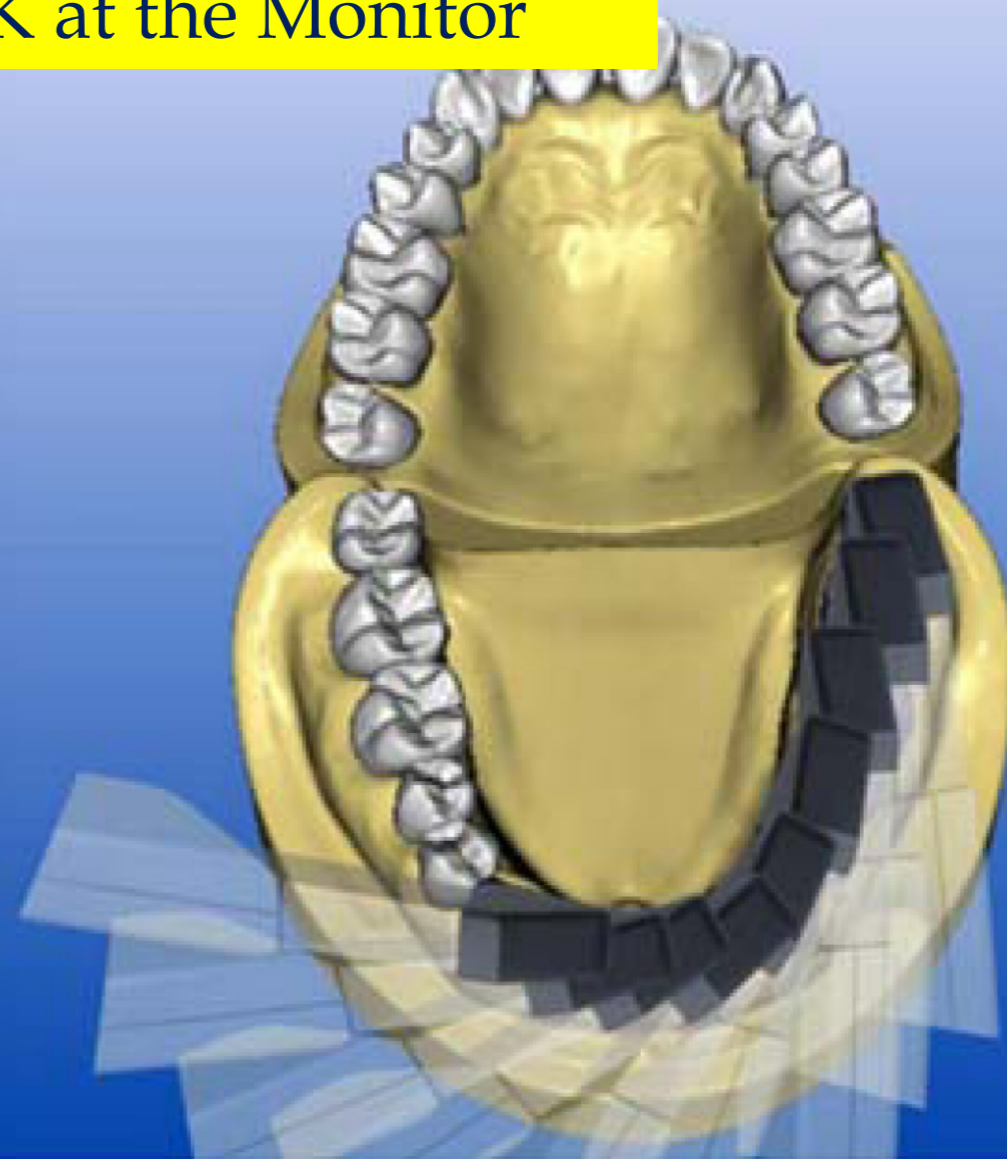
Tip: Do NOT look at your hand, LOOK at the Monitor



**Picture  
sequence**

**From distal  
to mesial**

**Walk forward  
1 tooth at a  
time**





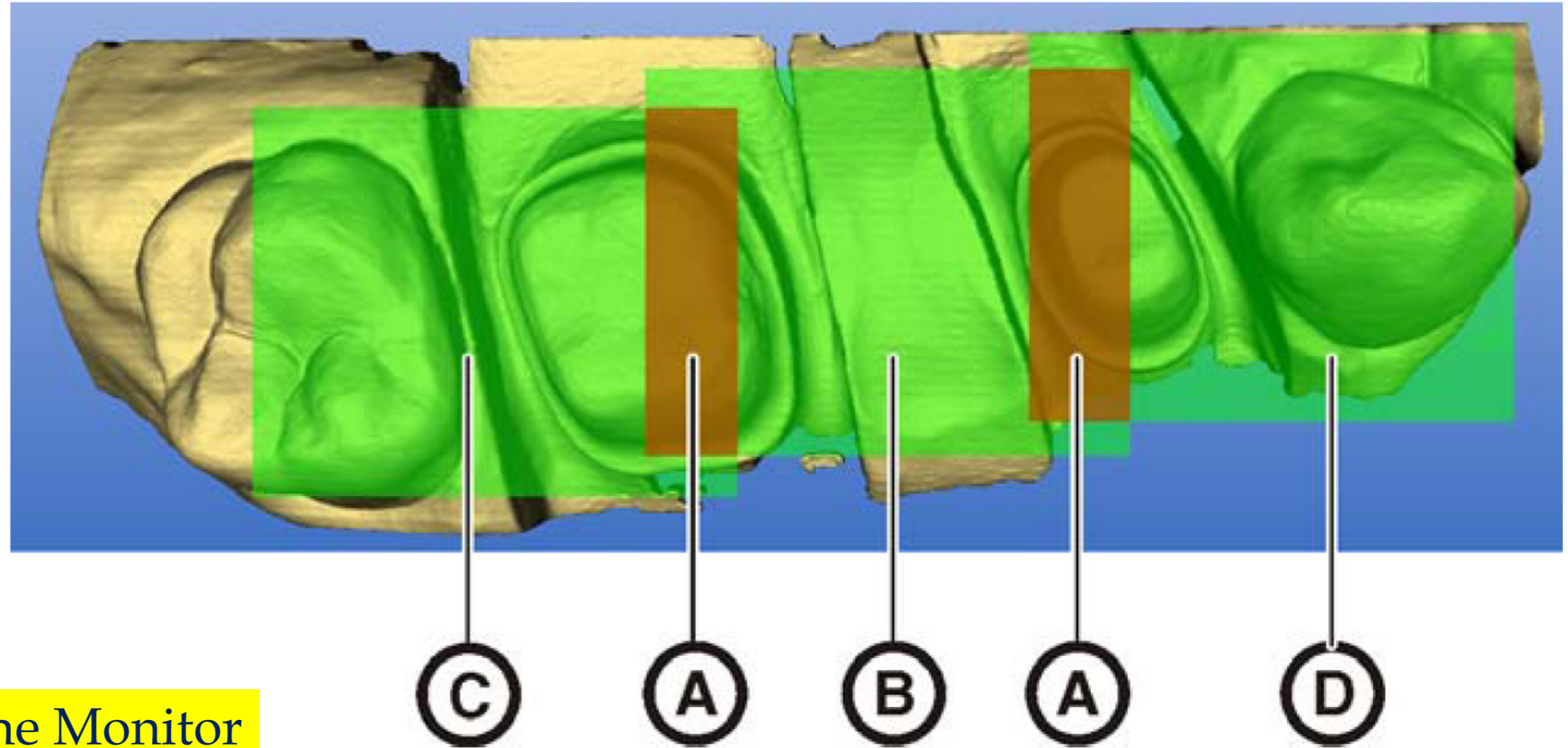


**3 pictures min.**

**Overlapping  
30% of pictures**

**for proper stitching**

**Tip: Keep your eyes on the Monitor**





**Roll camera as  
needed for  
additional details**

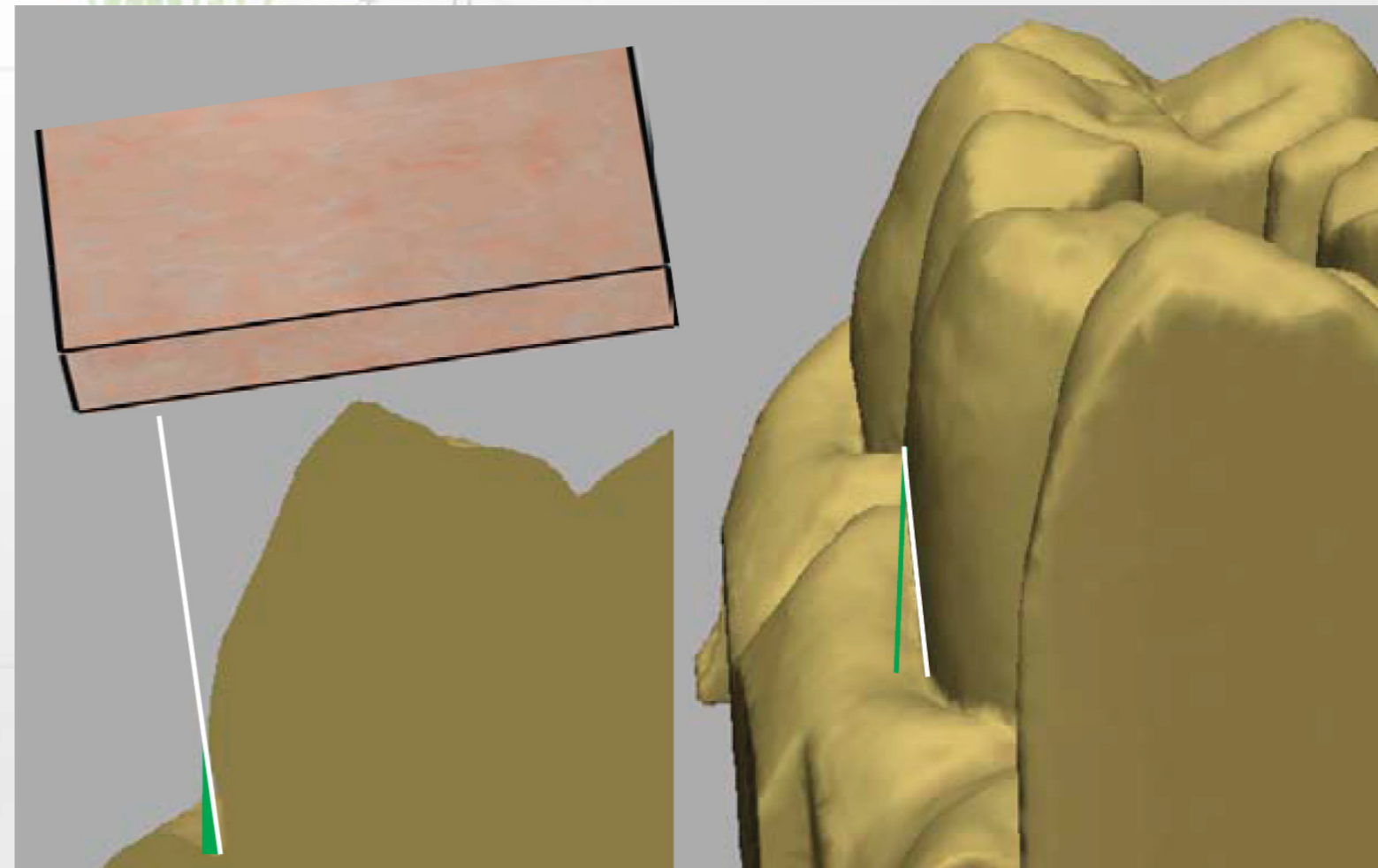
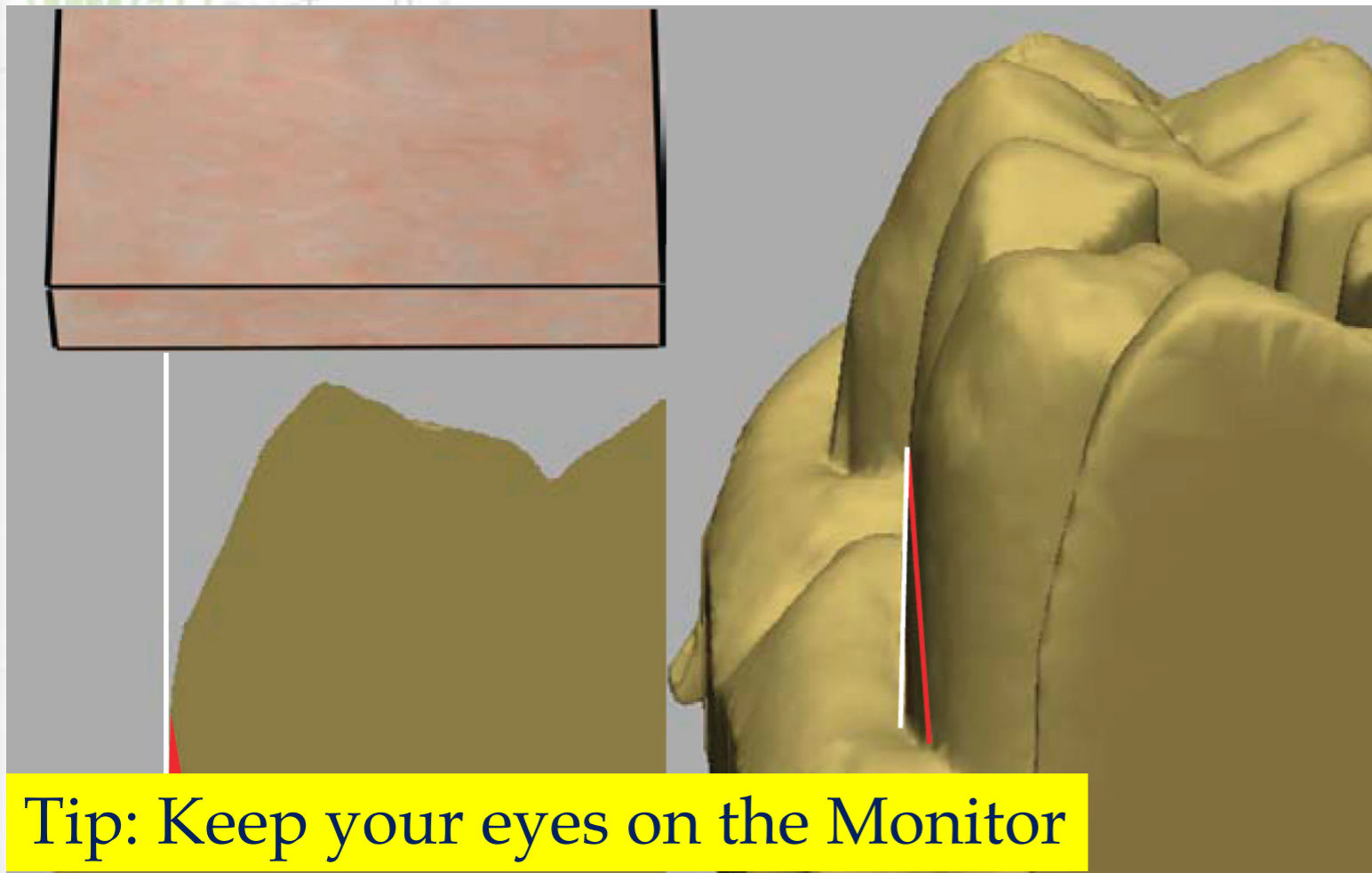
53mi

**Tip: Keep your eyes on the Monitor**



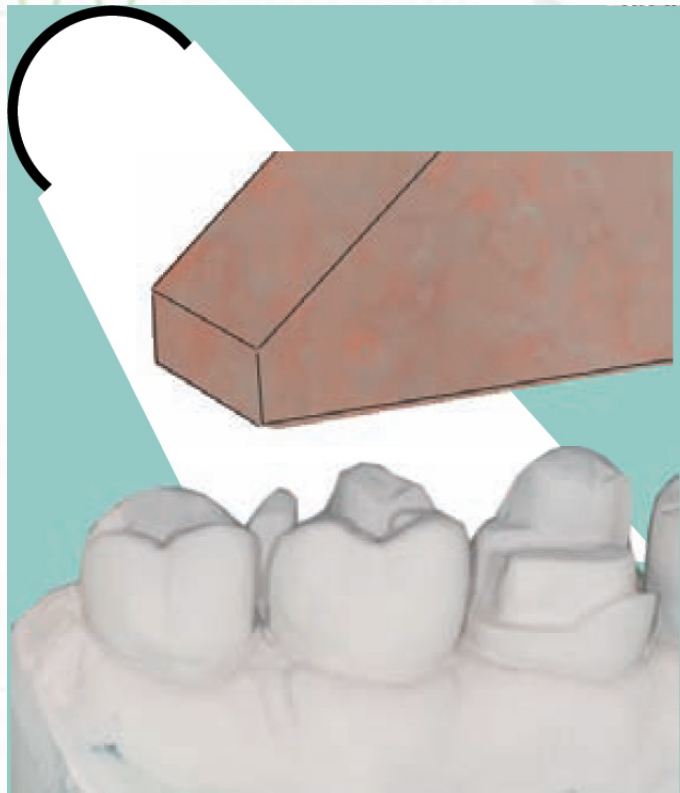


## Roll camera as needed for additional details

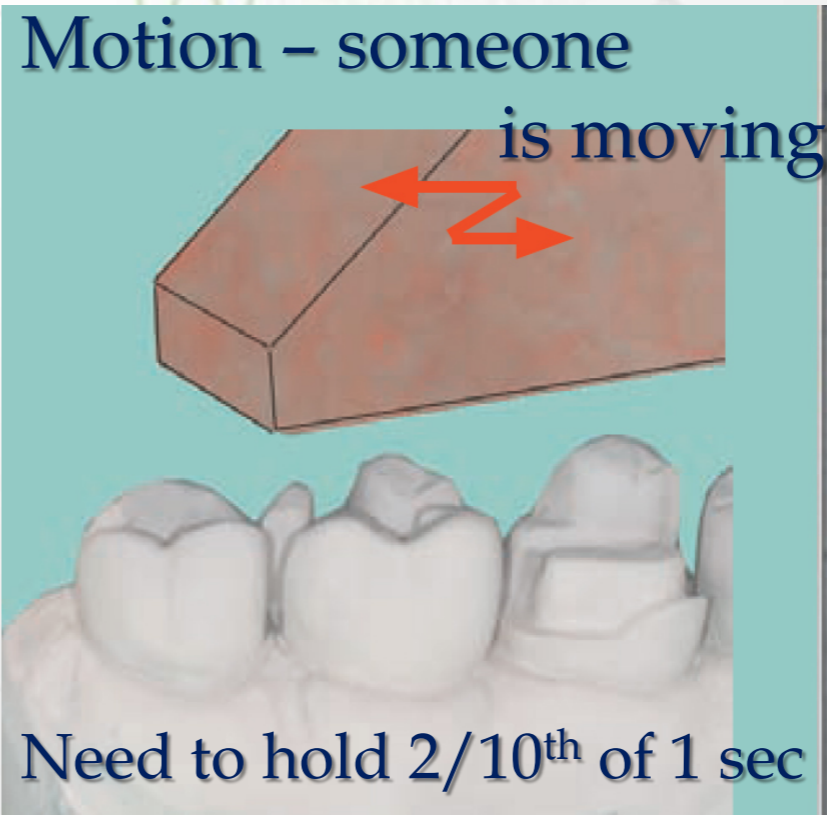
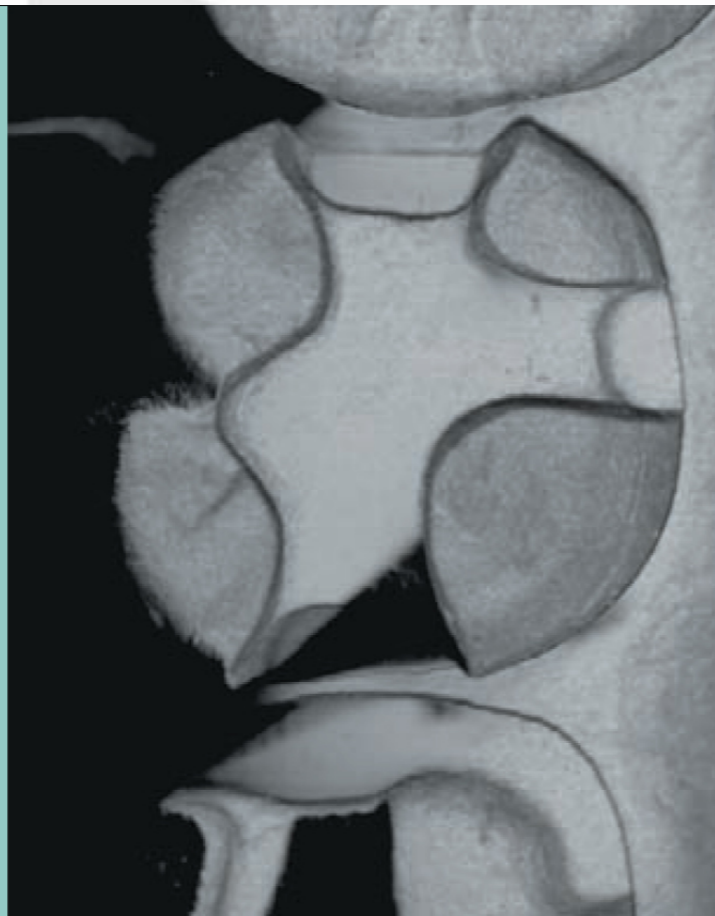


Tip: Keep your eyes on the Monitor

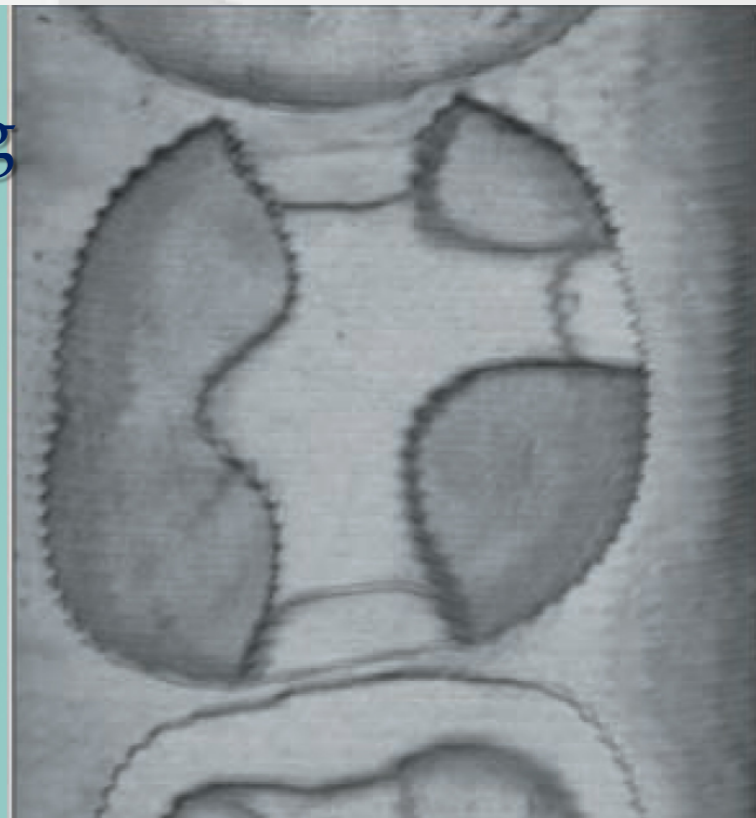
# Troubleshooting bad images



Operatory Light



Need to hold  $2/10^{\text{th}}$  of 1 sec



Tip: Keep your eyes on the Monitor



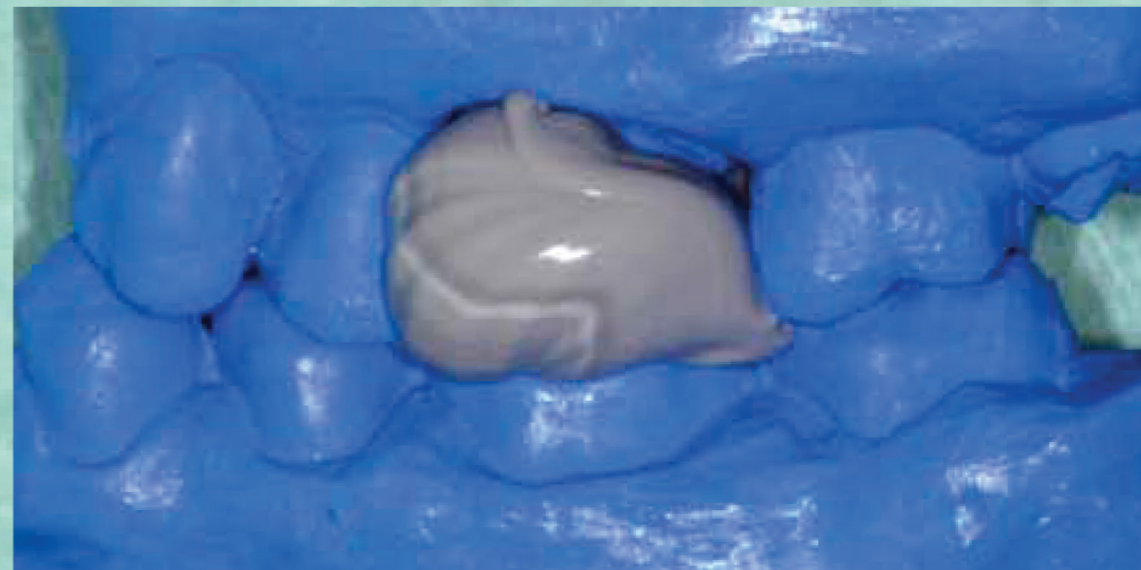
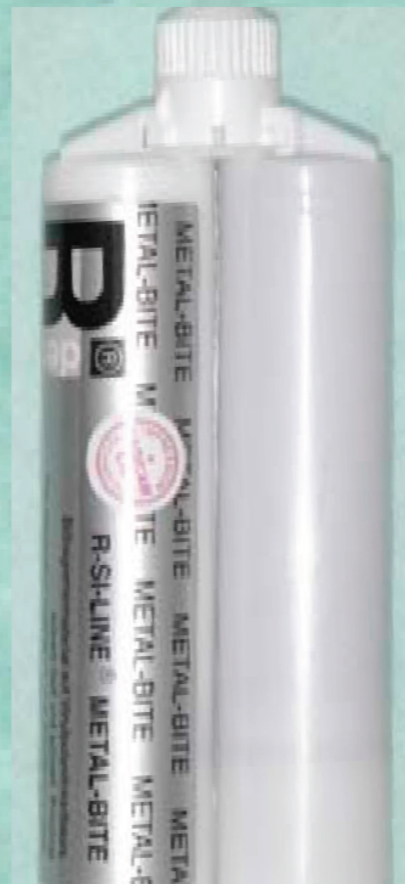


1 Hour Tooth

## Bite Registration

- Remember: Camera need to compare to stitch images together
- Place bite material on prep'd tooth ONLY
- Again, need to take a min. of 3 pictures

Tip: Do NOT look at your hand, LOOK at the Monitor







Tip: Keep your eyes on the Monitor





# Why 1hourtooth?

- Because right now, you will leave the operatory room and ...
  - Have a cup of coffee
  - Trade some stocks
  - Do some reading
  - See another patient
  - It's up to you, the restoration should be ready to cement within 20 minutes or so.





**Tip: Do NOT look at your hand,  
LOOK at the MONITOR**



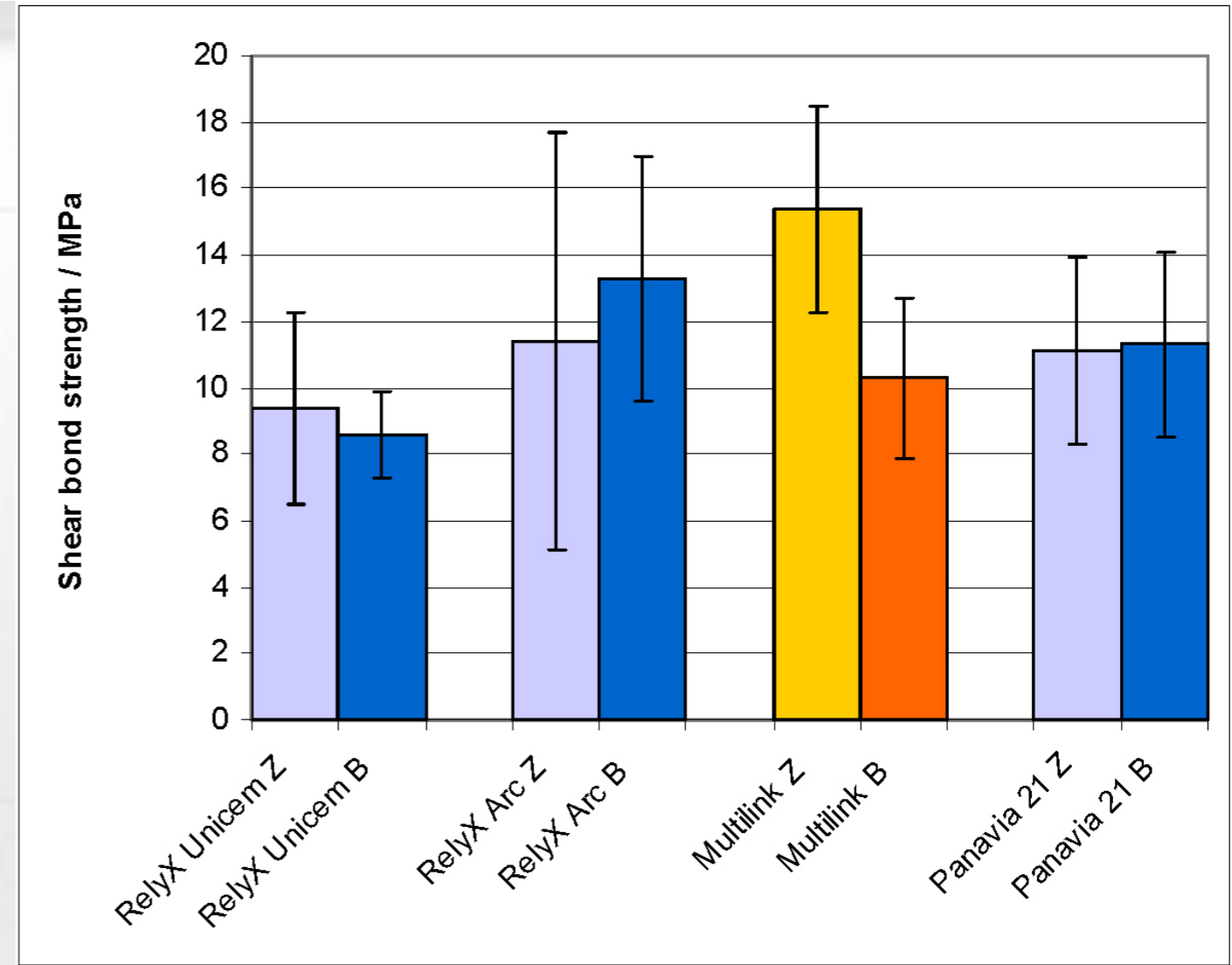
# The Finale - Cementation

- Remember we are Bonding CEREC
- Resin-modified Glassionomers ONLY

**NEVER** check occlusion until  
restoration is fully bonded  
**-it's an ALL ceramic restoration!!!**

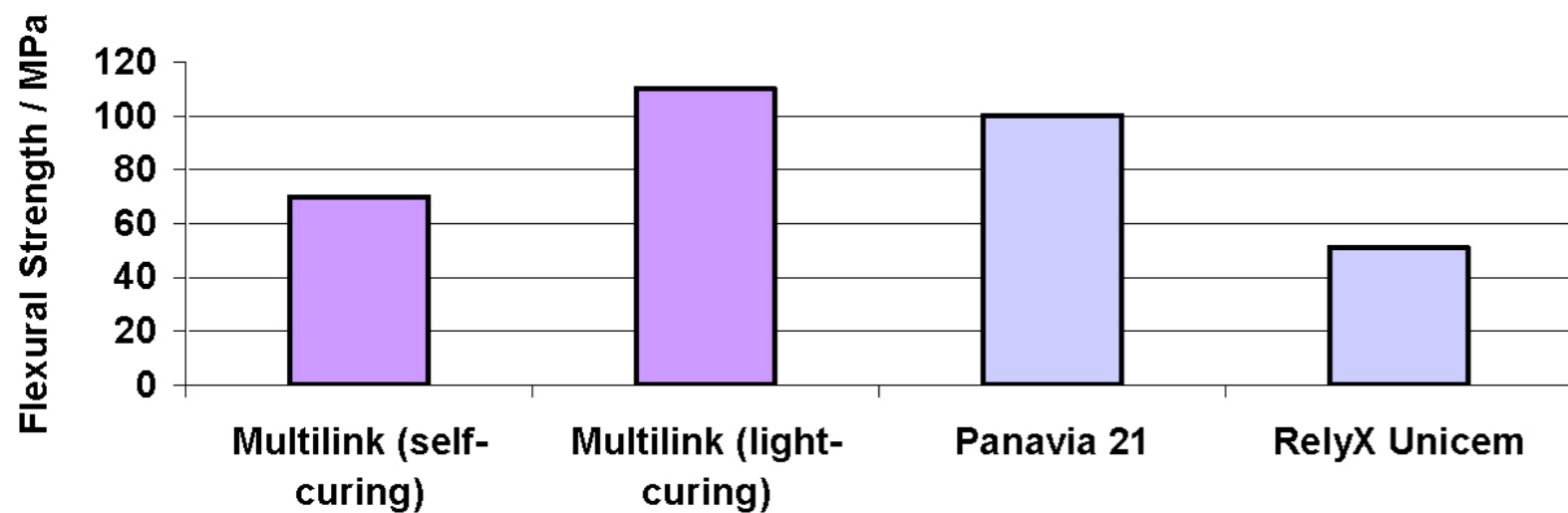
## Why Multilink?

- It's all about physical properties....

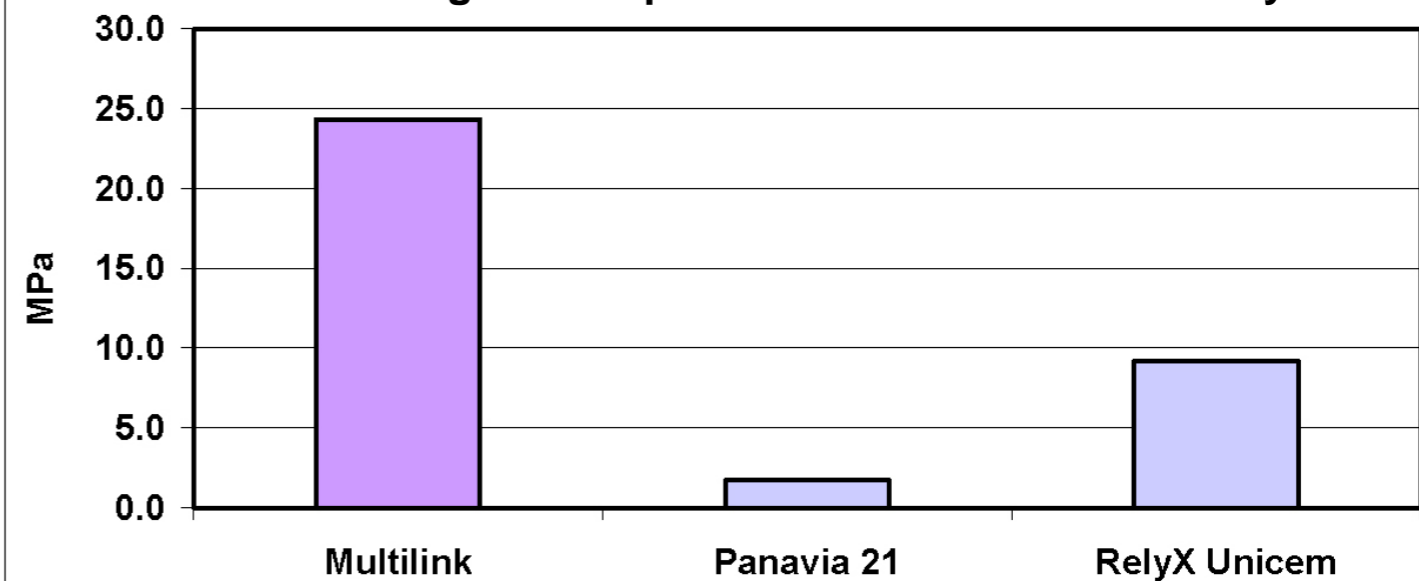


Shear bond strength after 1,500 thermocycles between 5°C and 55°C

### Flexural Strength of Self-Curing Luting Composites

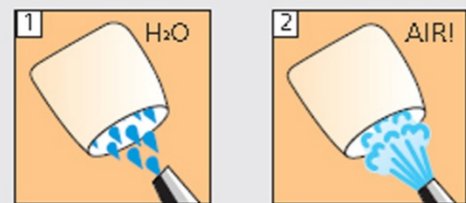


### Bond Strength to EmpressCAD after 1500 thermal cycles





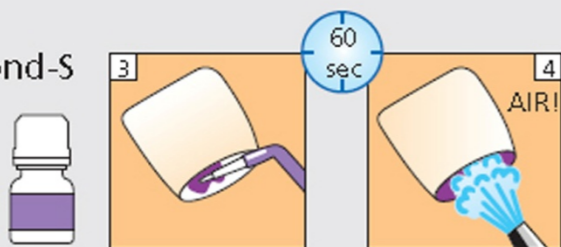
## Restoration



### Pre-treatment of ceramic restorations:

According to manufacturer's instructions.  
E.g. IPS Empress CAD: Etch for 60 sec  
with IPS Ceramic etching gel (hydrofluoric  
acid). Follow safety instructions.

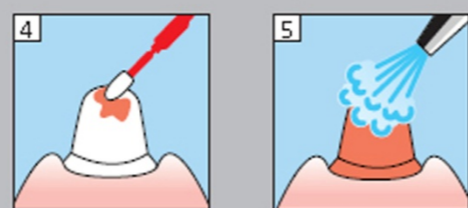
Monobond-S



## Dentin/Enamel

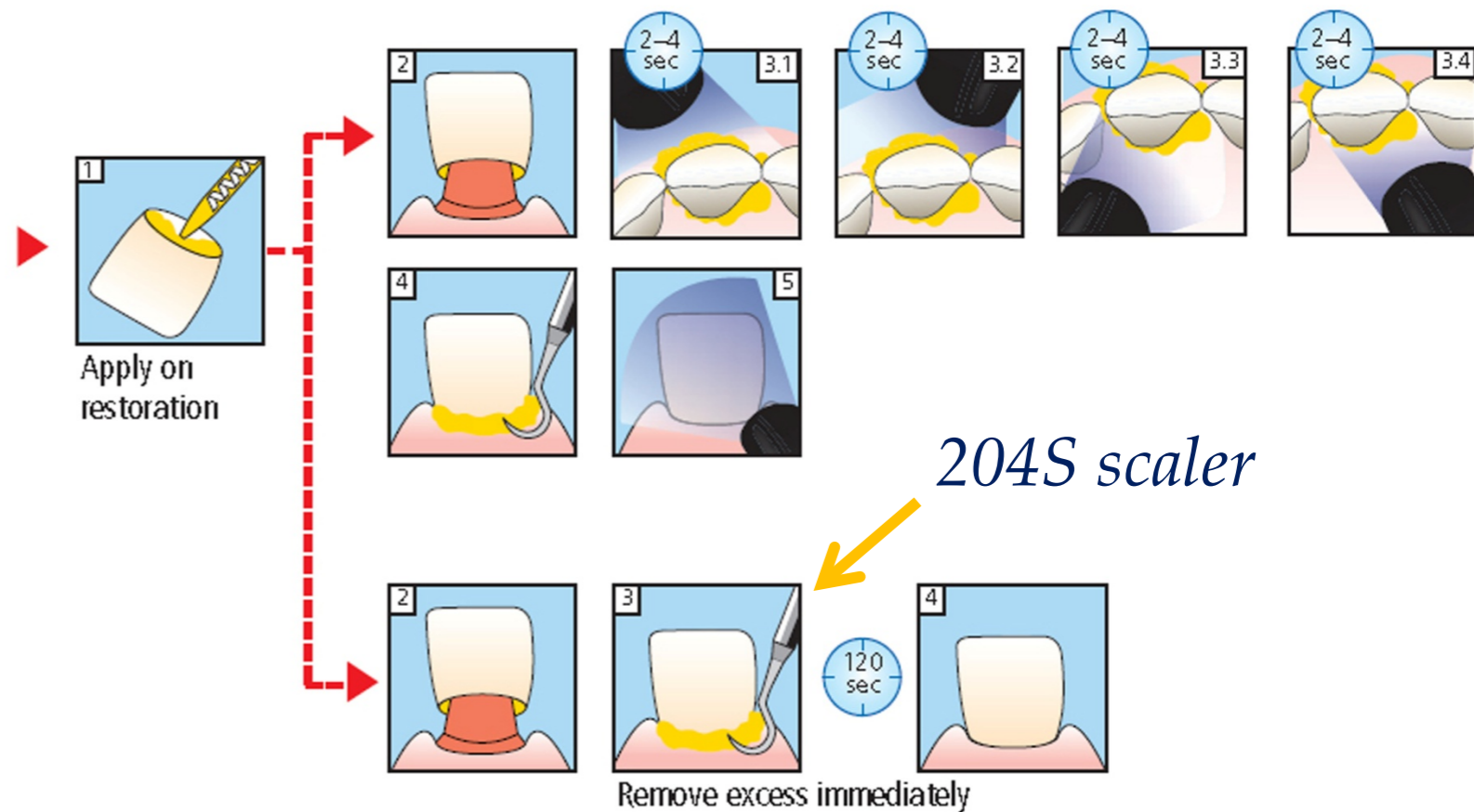


Mix Multilink  
Primer A+B 1:1



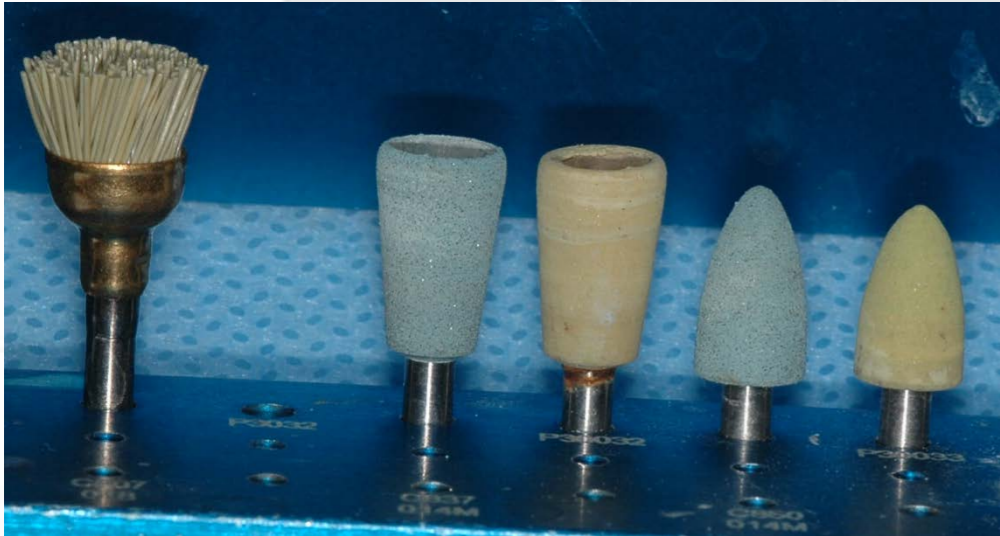
15 sec application

# Multilink step by step



# It's time to WOW your patient...

- Last 2 steps: -- cleanup
  - Check occlusion
  - Intra-oral polish if needed



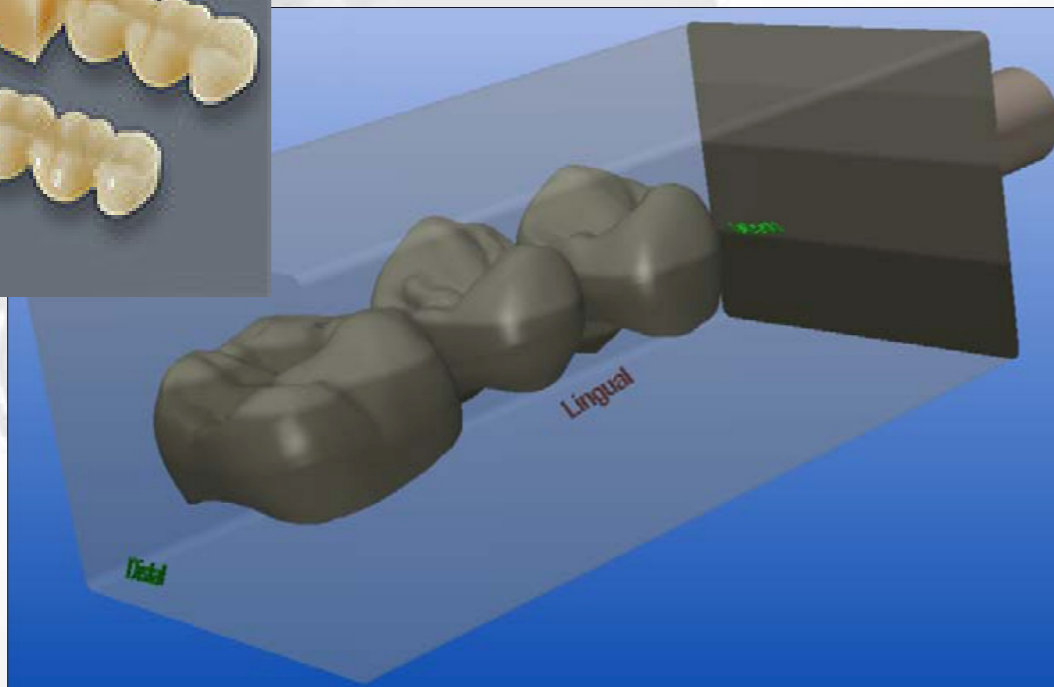
Recommend:  
CeraGlaze polishers by  
NTI/Axis







# What's next?

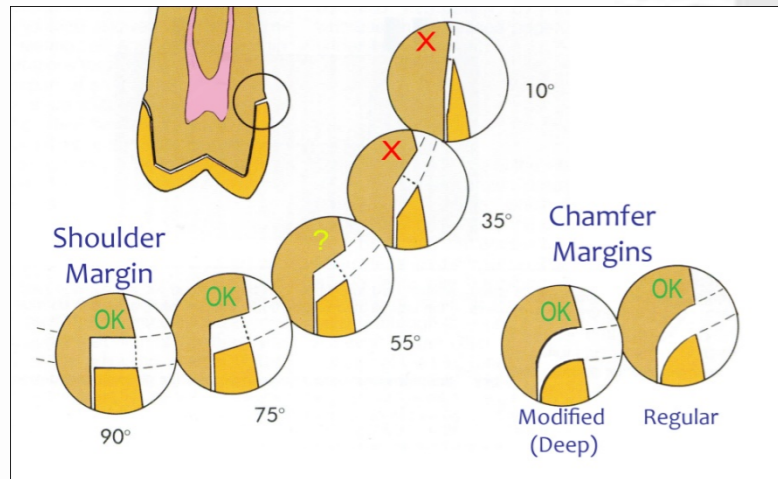
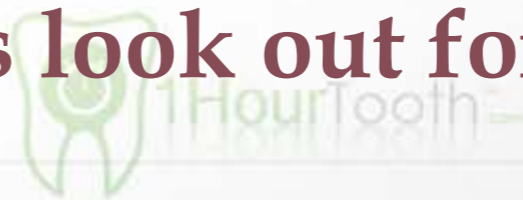


# Cheer + Celebrate

- Your patient will be as excited as you are
- Cheer + Celebrate with them will encourage word of mouth referrals
- This is what I called the WOW affect
- Start with simple cases and give yourself ample amount of time
- Then begin to challenge yourself
  
- Stay tune for Advance CE Classes



# Things to Remember... Always look out for the weakest link



➤ Garbage in = Garbage out!!

➤ House is only as strong as its foundation



# Have Fun!! and let's start an 1HourTooth Day!!





# Case discussions:

53mins

53mins







































Remember...

Our greatest weakness lies in giving up!

The most certain way to succeed is  
always to try just one more time...

- Thomas Edison



Why **1HourTooth**?!!

Integration = simply put  
with some help, should be  
painless