Common Crown & Bridge Challenges:
When Optimal is NOT an Option

Timothy M. Bizga, DDS, FAGD

First Name

First Name

ABOUT ME

THE DENTAL ADVISOR
CLINICAL CONSULTANT

SCHOOL OF DENTISTRY
UNIVERSITY OF MICHIGAN

JOHN MAXWELL Team CERTIFIED

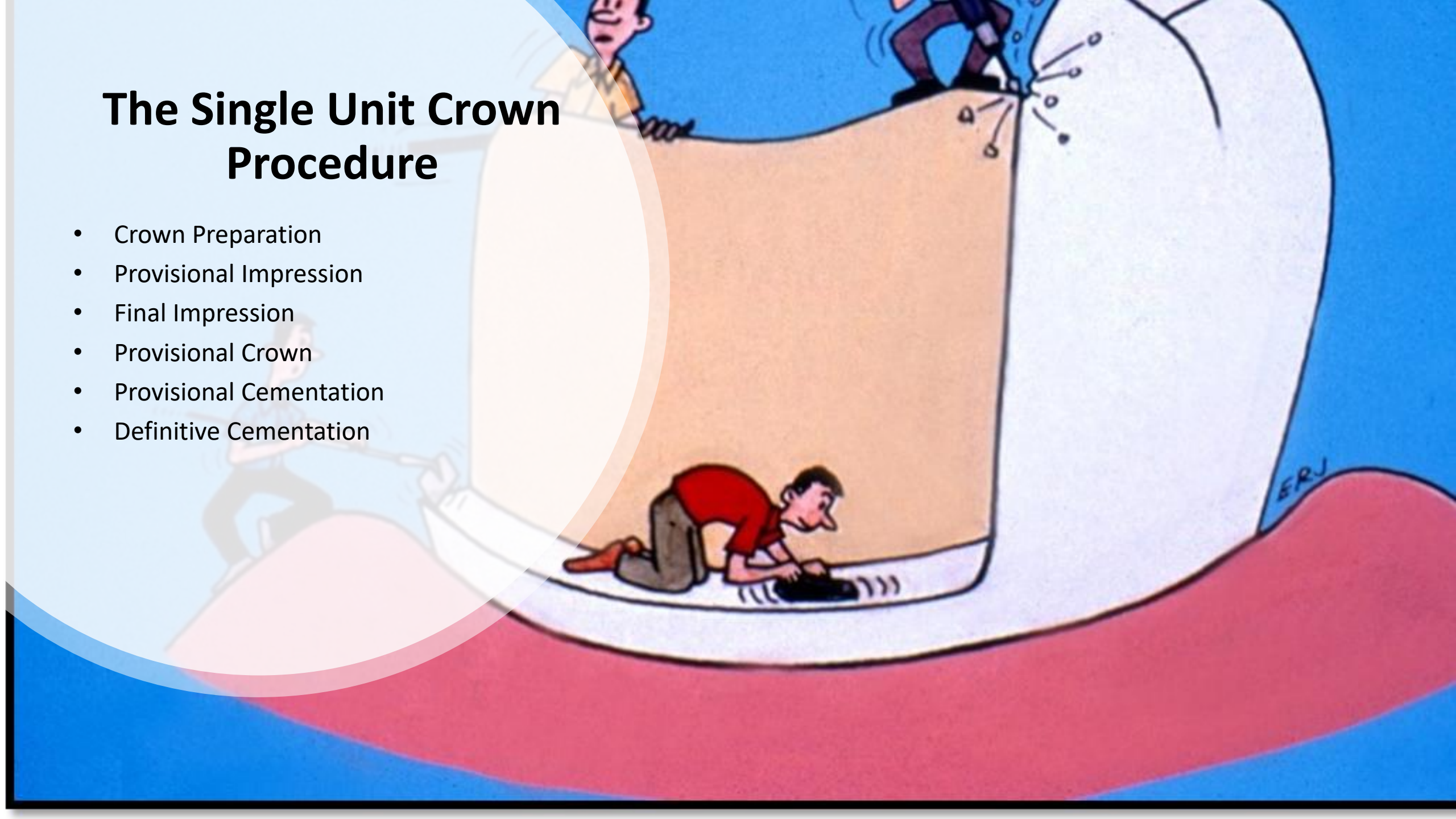
OUTGOING
TASK ORIENTED
PEOPLE ORIENTED
RESERVED
D DOMINANT
I INFLUENCING
C COMPLIANT
S STEADY
The MAXWELL DISC METHOD

THE TRIPLE THREAT

Smile Source

The Single Unit Crown Procedure

- Crown Preparation
- Provisional Impression
- Final Impression
- Provisional Crown
- Provisional Cementation
- Definitive Cementation



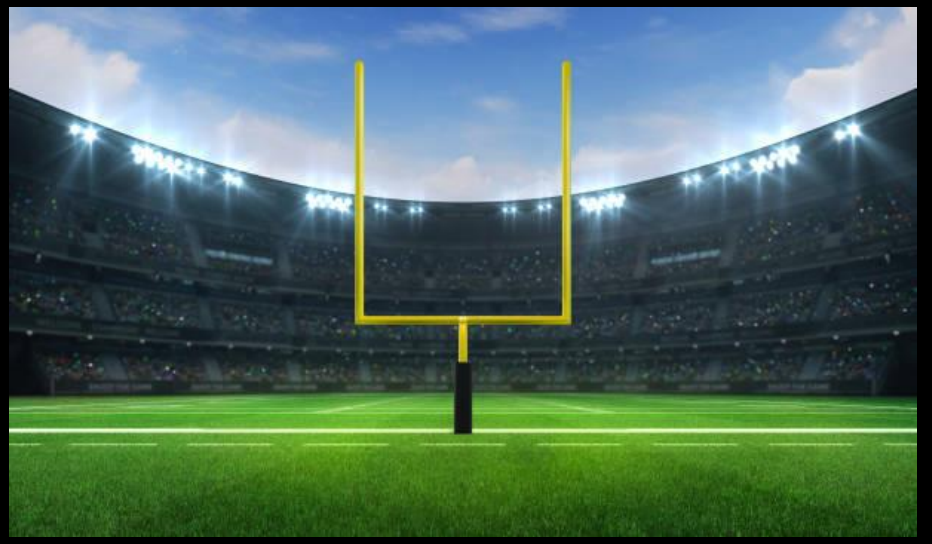
Prep Design

The PREP

- Consider Prep Height
- Consider Convergence of Paralleling Walls

Optimal?

Still Optimal?



Less than Optimal?

What Is An Appropriate Minimal OC Dimension (Prep Height)?

- **3 mm** on all teeth except molars
- **4 mm or more** on molars

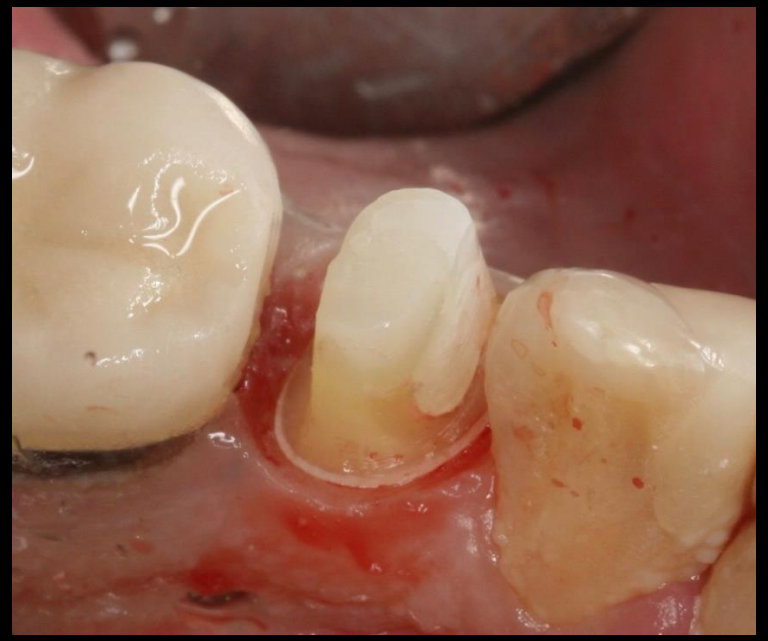
- These guidelines are only adequate when the TOC is minimal

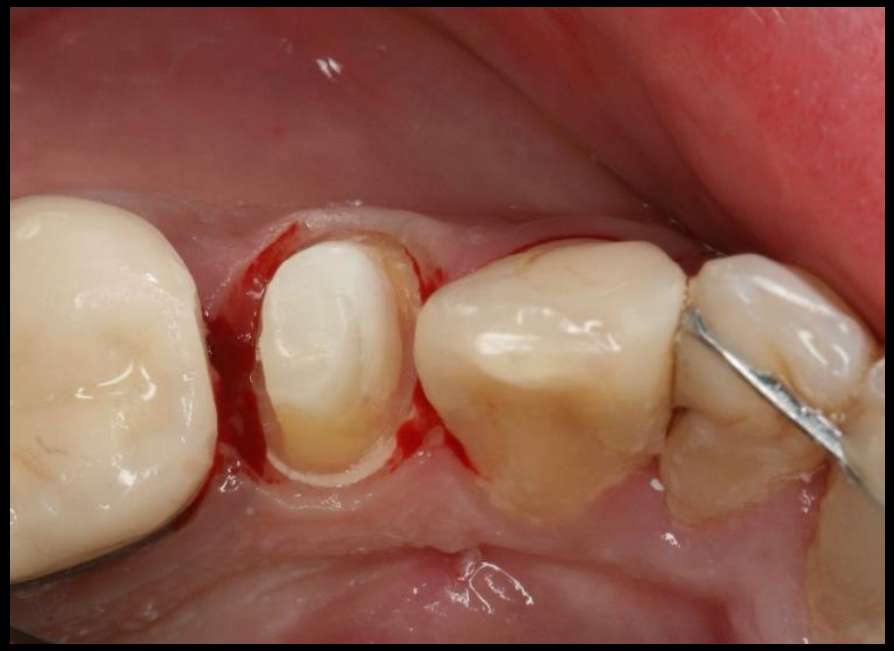
How Can Resistance Form Be Increased When There Is Excessive TOC?

- Reducing the TOC from 20° to 8° in the **cervical 1.5 mm of the axial walls** significantly increased the resistance form

Proussaefs, J Prosthet Dent 2004;91:33-41

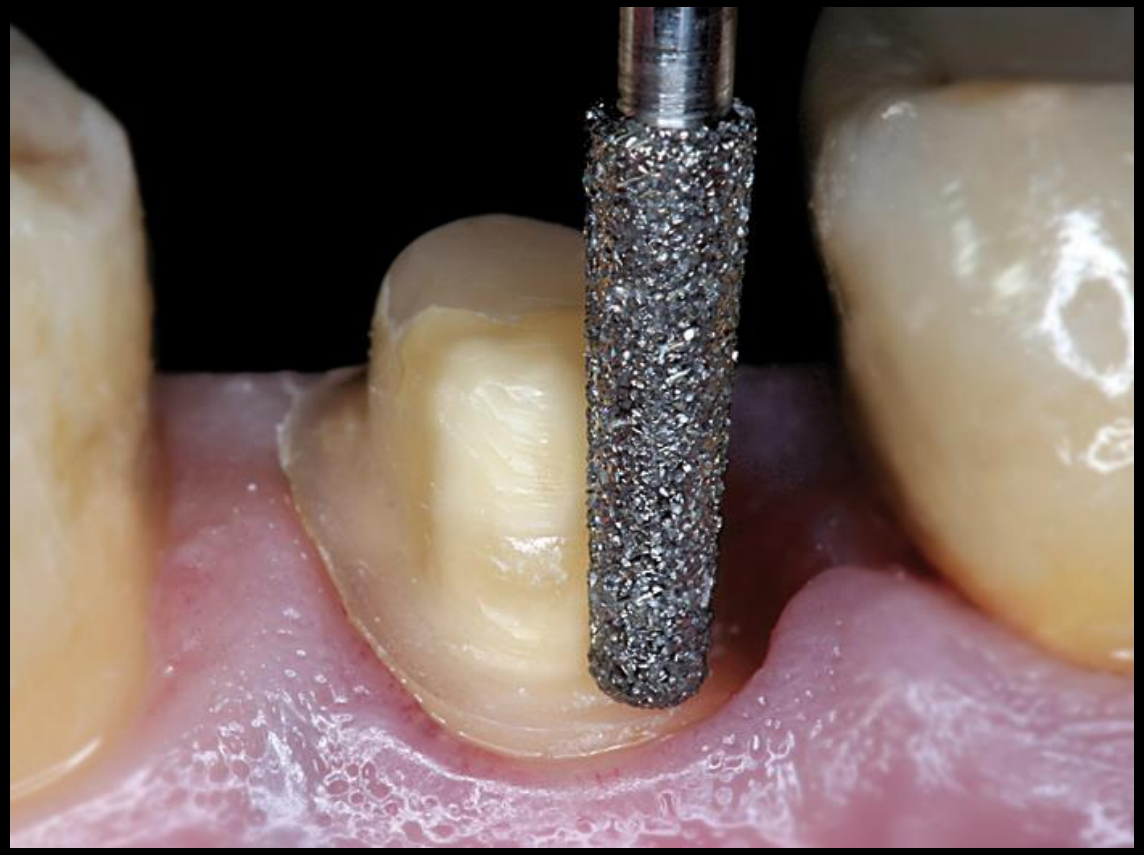
1. Buccal/Lingual Reduction





2. Break Contact
3. Reduce Occlusal
4. Add secondary Retention

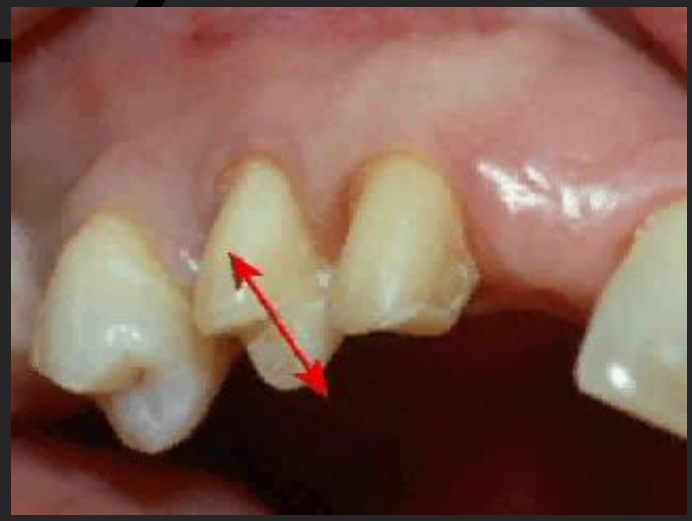
Turn water OFF to final crisp your margin detail



What **Really** Causes Crowns to Dislodge?

- Resistance to lateral forces (not retention) is the determining factor in dislodgement

  Wiskott, 1996



Less than Optimal?

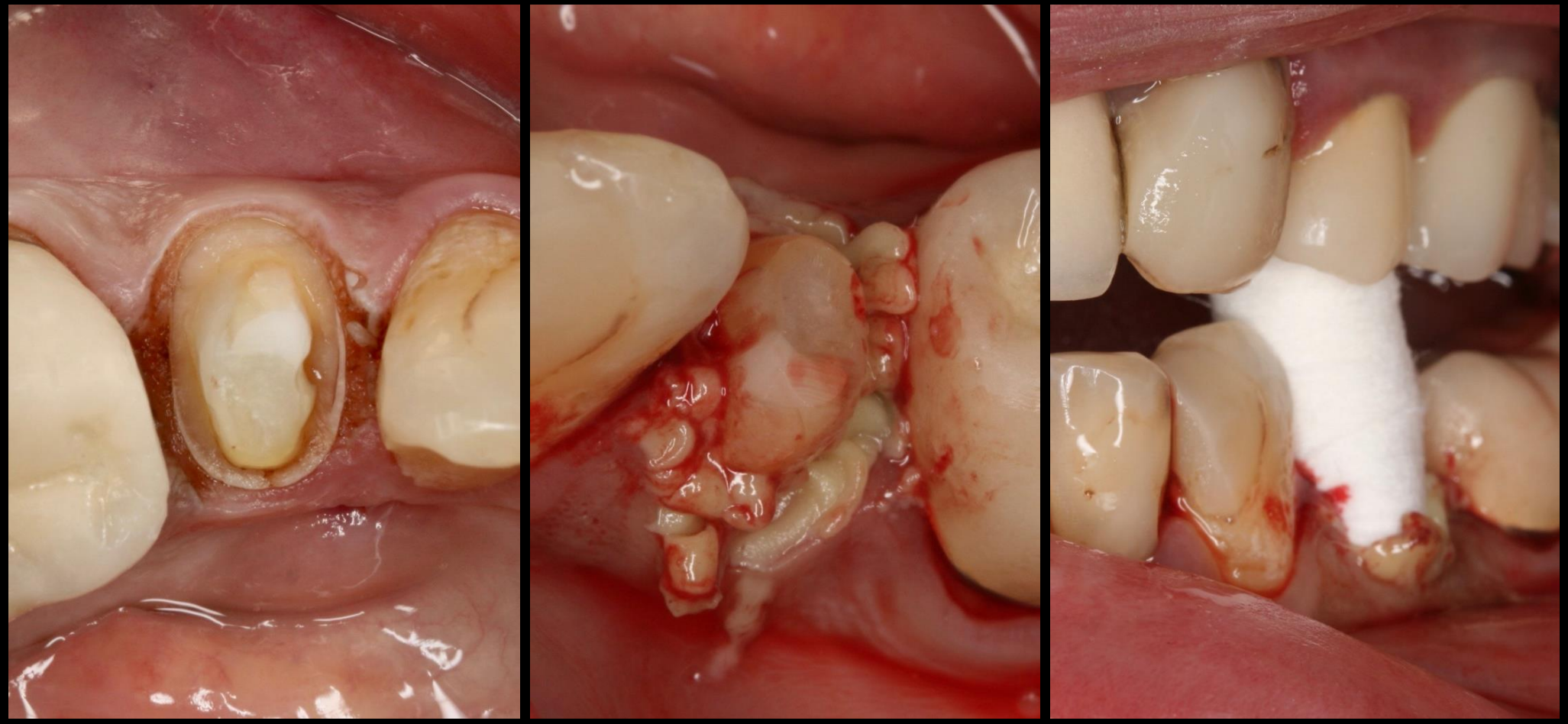
Location For Grooves

- **Lateral Forces of masticatory cycle and parafunctional habits dislodge crowns**
- Resistance to lateral forces is the determining factor in a crown's resistance to dislodgement

  Wiskott, 1996
- **Proximal grooves provide complete resistance to FL** forces whereas B or L grooves provide only partial resistance

  Woolsey, 1978

5. Retraction Paste



How do you control bleeding?

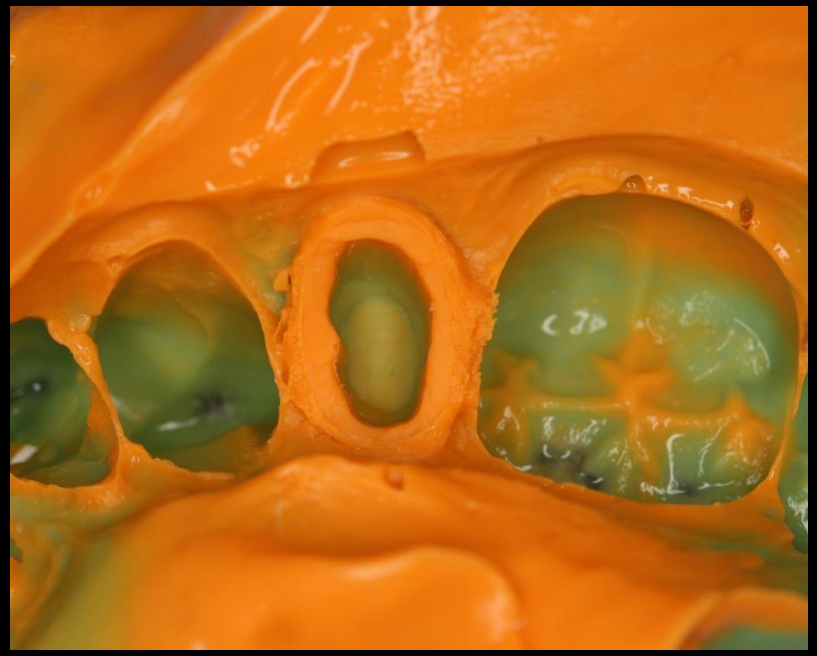
	Manufacturer	Hemostatic Agent	Comments
Expasyl	Kerr	Aluminum Chloride	Clay-based. Gray-green color. Place material into sulcus for 1-2 minutes, 30 seconds after rotary curettage. Remove material by rinsing with water. Dispensed in cartridges using Expasyl gun dispenser. Comes in Original and Strawberry flavor.
Traxodent	Premier	Aluminum Chloride	Clay-based. White color. Place in sulcus for 2 minutes, compress with cotton cap, and remove material by rinsing with water. Syringe dispensed.
Retraction Capsule	3M ESPE	Aluminum Chloride	Clay-based. Blue color. Extrude material into the sulcus with extra fine tip, let dwell for 2 minutes, remove by rinsing with water. Uses standard composite compule dispenser.
Magic Foam Cord	Coltene	None	Expanding vinyl polysiloxane material extruded from 50mL impression gun. Blue color. Place around prepared tooth, compress with cotton cap, remove from mouth in minimum 5 minutes, maximum 10 minutes.
Access Edge	Centrix	Aluminum Chloride	Clay-based. Light green color. Place in sulcus for 2 minutes, apply 2 minutes of compression using cotton caps, rinse with water to remove. Uses standard composite compule dispenser
GingiTrac	Centrix	Aluminum Sulfate	Vinyl polysiloxane material extruded from 50mL impression gun. Light green color. Intraoral setting time is 2 minutes. Apply pressure while setting with cotton compression cap. Also available in unit-dose MiniMix syringe without the need for 50mL impression gun.
Dryz	Parkell	Aluminum Chloride	Clay-based. Light green color. Place in sulcus for 2 minutes, apply 2 minutes of compression using cotton caps, and rinse with water to remove. Syringe dispensed.

What is Traxodent?

An absorbent paste that provides hemostasis and/or retraction using 15% Aluminum Chloride (AlCl)

Bonus: Clay absorbs fluids & expands – helps dry the sulcus, enhances tissue displacement, and has an affinity to blood.

6. Final Impression
7. Temp



Function of Temps

- Maintain static contacts
- Calm state
- Maintain occlusion
- Trial OVD

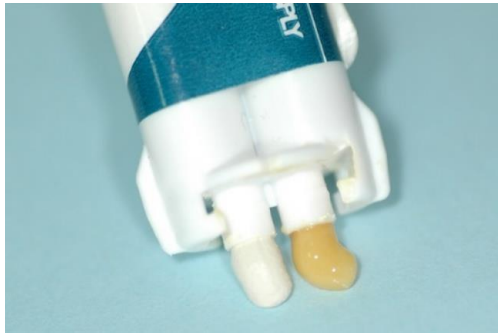
Minimal Inflammation

Types of Provisional Cements

- Resin-Based
  - NexTemp
  - TempBond Clear (Kerr)
- Zinc Oxide Eugenol
- Zinc Oxide Non-Eugenol
  - Temp Grip (Dentsply)
- Polycarboxylate
  - Durelon (3M ESPE)

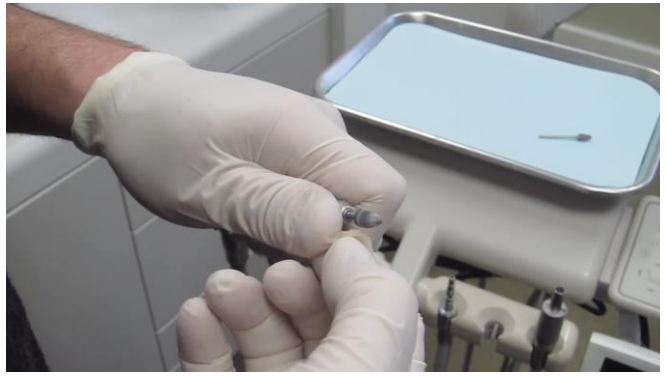
Value Added Clinical Benefits

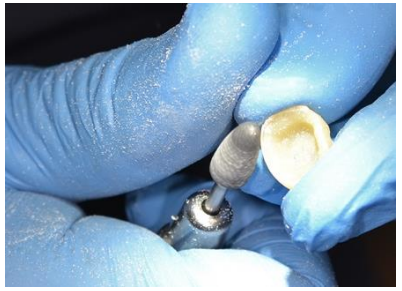
The amount of money it can cost a practice when a patient must return to have the provisional re-cemented (in lost production, time, materials)

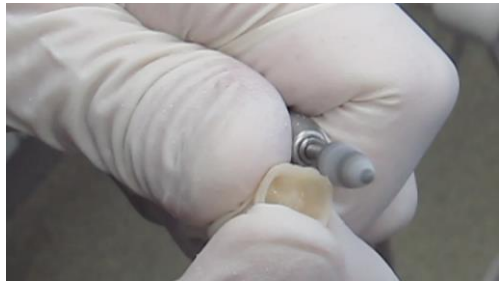


Universal Technique Tips

Bleed the syringe twice!

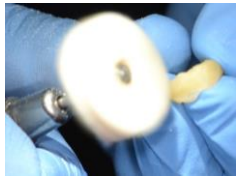






Trimming, Adjusting, Polishing

- Trimming:
  - Use a straight nose handpiece and acrylic burs
  - Palm-thumb grip



Trimming, Adjusting, Polishing

- Polishing:
  - Use a straight nose handpiece and brushes or rag wheels
  - Palm-thumb grip

NexTemp Technique Tips

- DO NOT desiccate the tooth before seating!
- DO NOT fill as you normally would, apply THIN LAYER
- Consider anti-microbials

My Crown thought process…..

1. Location of my Prep?
   - Anterior or Posterior?
   - Will isolation be a factor?
     - If YES…think conventional cementation and ensure your PREP is retentive in design
2. What Material Am I Using?
   - What is of more pressing value:
     - ✓ Strength- Gold or Full Contour Zirconia
     - ✓ Esthetics-LiSi, Emax, Glass Ceramics
     - ✓ Both?- PFM or PFZ or Esthetic Zirc
3. What is my prep design?
   - Is my prep retentive?
   - Is my prep deficient in any way?

Bond or cement?

Bond or cement?

Bond or cement?

Bond or cement?

Cements-Product Indications

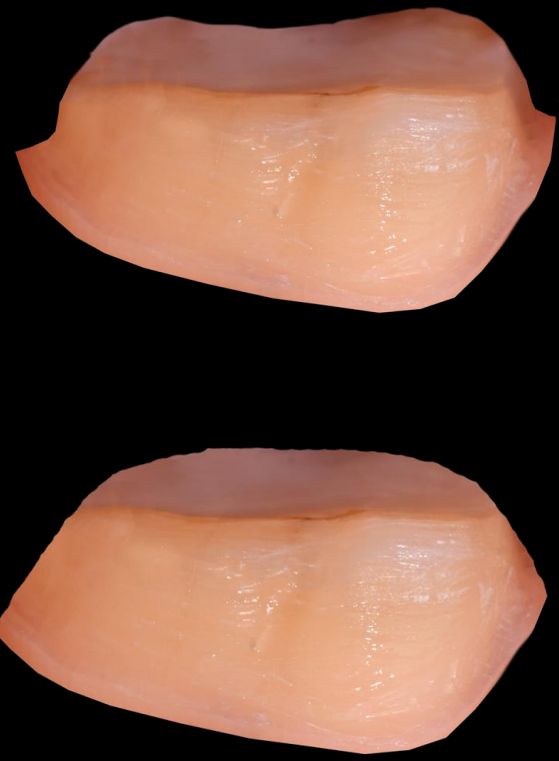
Cements/ Substrate	Glass Ionomer	Resin Modified GI	Self Adhesive Resin	Traditional Resin
Metal Crowns & Inlay/Onlay	Yes	Yes	Yes	Yes
PFM's	Yes	Yes	Yes	Yes
All Zirconia	Yes	Yes	Yes	Yes
Reinforced Core	Yes	Yes	Yes	Yes
All Ceramic	No	No	Yes	Yes
Ceramic Inlays and Onlays	No	No	Yes	Yes
Endodontic Posts	Yes	Yes	Yes	Yes
Bridges	Yes	Yes	Yes	Yes
Implants	Yes	Yes	Yes	No
Veneers	No	No	No	Yes

Restoration	Cement
Weak (veneer)	Strong
Not strong (eMax and Celtra)	Strong
Strong (PFM, Zr,Al)	Any Cement

*** RETENTIVE PREPARATION ***

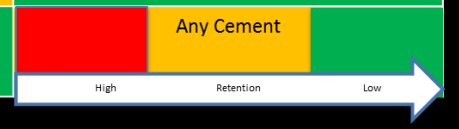
Cements- Product Indications

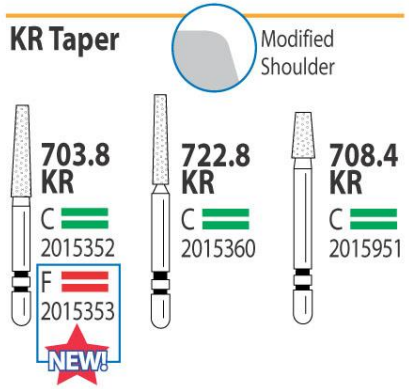
Cements/ Substrate	Glass Ionomer	Resin Modified GI	Self Adhesive Resin	Traditional Resin
Metal Crowns & inlay/Onlay	Yes	Yes	Yes	Yes
PFM's	Yes	Yes	Yes	Yes
All Zirconia	Yes	Yes	Yes	Yes
Reinforced Core	Yes	Yes	Yes	Yes
All Ceramic	No	No	No	Yes
Ceramic Inlays and Onlays	No	No	Yes	Yes
Endodontic Posts	Yes	Yes	Yes	Yes
Bridges	No	No	Yes	Yes
Implants	Yes	Yes	Yes	No
Veneers	No	No	No	Yes

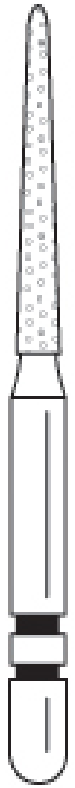


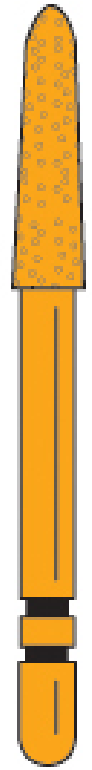
*** NON-RETENTIVE PREPARATION ***

Restoration	Cement
Weak (veneer)	Strong
Not strong (eMax and Celtra)	Strong
Strong (PFM, Zr,Al)	Any Cement

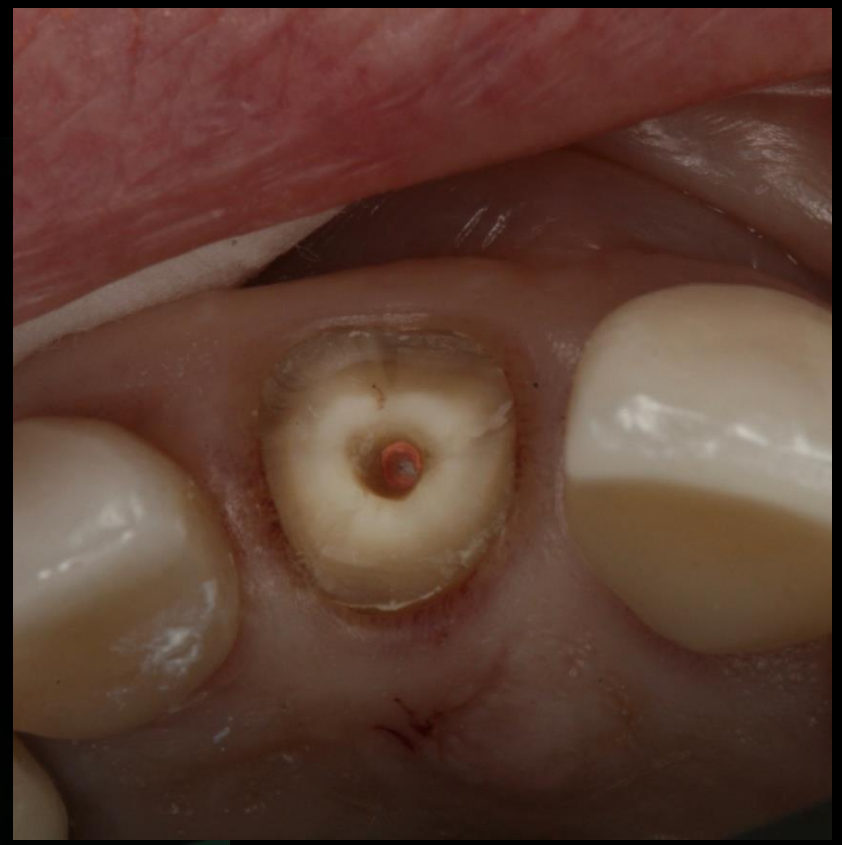








My feelings have changed…




premier
Premier Universal Primer
Zirconia and Glass Ceramics, Metal and Composite Primer
5ml REF 3001568
premier
ZR-Cem
Self-Adhesive Universal Resin Cement
REF 3001562 Translucent
SPLENDOR-SAP
Single Adjustable Post


Now Available in Unit-Dose!
ALL-BOND UNIVERSAL 0.20ml
SELF-ETCH
FULL COMPATIBILITY
TOTAL-ETCH
DIRECT
INDIRECT


SUMMARY

Final Pearls

1. 0.8mm margin (OR LESS…mind your axial reduction!!!!!)
2. Add mesial/distal boxes or slots for Resistance Form
3. Crisp margins, coupled with utilizing hemostasis agents
4. Belt and suspenders approach (prep & cement)

Dr. Tim Bizga

***Like* Dr. Tim Bizga on Facebook**

2thLectures.com

Email: 2thLectures@gmail.com

www.personalityservice.com/portal/TJCW/store