Let’s Stick it Together

Let’s Stick it Together:

1. Let’s Grow Tooth
2. Cementation Sanity
3. Most Durable Aesthetic Indirects EVER
4. Regenerative Aesthetics
5. Efficiency Goodies

Let’s Grow Some Tooth…

Bioactive [bi″o-ak′tiv] having an effect on or eliciting a response from living tissue.

Regenerative
To provide an environment that promotes dentin repair

Let’s Grow Some Tooth…

Optimal pH
Bacteria inhibition
Void free
Moisture tolerant
Bio-friendly
Well sealed
Tooth-like physicality

To provide an environment that promotes dentin repair

“regenerative” materials:

TheraCal LC (Bisco) – a liner
Activa (Pulpdent) – a base/restorative
Ceramir (Doxa) – a cement
Giomers (Shofu) – a class of restorative materials
“A resin inomer that release and recharges calcium phosphate and fluoride…”
A bioactive resin matrix and bioactive glass filler.

TheraCal LC (Bisco)

What it is
A Resin Modified Calcium Silicate (RMCS)
Stimulates apatite formation and 2nd dentin
MTA (Mineral Trioxide Aggregate) chemistry
Early high alkalinity (high pH = 11)
Neutralizes over weeks
Self-sealing minor bond to dentin
Anti-microbial

Clinical use
Liner to protect pulp
Place on moist dentin prior to DBA
Keep 1mm deep or less
Opacity prevents deep cure
Direct pulp cap possible
Keep 1mm from enamel
May show through less opaque composite

Giomer ion release by S-PRG:
A stable glass inomer which allows ion release and recharge.
The surface layer is protected giving great physical properties.
The glass core is protected from moisture.

Remin Pro (Voco)
Fluoride
Hydroxyapatite
Xylitol

MI Paste (GC)
Fluoride
Ca phosphate
Xylitol

Enamelon
Brush 2X/Day
Tray 2X/Week

Problems with posterior composites?
Contacts
Shrinkage
Depth of cure
Sensitivity
Longevity
Time

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Best polishers
Disposable
Super Snap Singles
One Gloss (Shofu)

Can’t afford to re-use burs
Microcopy

Fl & Glomers
slow release
re-charge
re-release

Regenerative Dentistry...
Providing an environment where tissues can heal

TheraCal
Resin-Modified Calcium Silicate
Protectant/liner

Liner
Moist Dentin
Light cure
Etch
DEA
Restore

Sources of reparative ions
Alkaline environment
Bacteriostatic
Dentin tubule sealant
Thermal insulation

= apatite

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No direct pulp capping if...

- Spontaneous pain
- Throbbing
- PA problem
- Bleeding hard to control

"Universal" DBA's:
- Very tolerant
  - wet
  - dry
  - moist
- Very versatile
  - etch
  - no etch
  - selective etch
- Very good bond
  - enamel
  - dentin
  - ceramics
  - zirconia – metal
  - composite

Practice building 101...
- Aging population
- Recession
- Abfraction
- Repeatable success

Anesthetic?
- Enamel
- Bond
- Sand
- Silicrutz
- Univ DBA
- Girmer
- Flowable
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Advantages...
Decrease sensitivity
Non-invasive
Esthetic
Root seal
Predictable
Profitable

Isolation is critical
Dam
Isolite
DentaPop/DriTip
Cotton rolls
Gauze
Damphobia?

Matrix metalloproteinases = MMP’s
enzymes that may break down the hybrid layer between dentin and resin

Does killing bugs matter?

www.isolitesystems.com
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Results From A 13 Year Recall Study
University of Florida – Published in JADA in 2014

- 41 of 61 restorations examined at 13 years.
- 19 of 30 Class I, and 22 of 35 restorations were observed. 41 out of 61.
  - 27% failure at 13 years
  - 52% scored as excellent
  - 3.2% had secondary decay

“Where it matters most”

Margins Dentin

Where our technique is most critical

Regenerative environment

Trans-enamel curing
20 seconds each after

Beautiful Bulk
Shofu

4mm depth
Somewhat clearish
Good color
Low shrinkage
Good strength
Easy to form contacts
Giomer bulk fill
Fluoride release
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Does the LED light hurt your retina?

- Potentially YES!
  - Half power.
  - Look up often
  - Remove when not needed

Cementation Sanity
The most durable aesthetic materials EVER!

Lowering the stress:
Profitable practice
Reasonable pace
Quality work
Clinical success
Proper staffing

Cementation Sanity
The most durable aesthetic restorations EVER.
(and how to stick ’em in)
“Doc, that tooth never hurt until you FIXED it!”

New burs
Water
Isolation
Selective etch
Universal DBA
Air thin wall
Regenerative
Flowable 0.5mm cure
Dentin replacement
Max polymerization
Polish well

mon·o·lith·ic [mon-uh-lith-ik]
Adjective
NO layering porcelain!

What changed?
E.max changed everything.
Zirconia added security.
Better adhesion made it more efficient.

2015...most popular aesthetic restorations:
Lithium Disilicate (IPS e.max)
- Particle filled silica glass
- 360-400 MPa flexural strength
- Adhesive cementation best
- Strong enough to handle cementation
- Traditional porcelain bonding
Zirconium Oxide (Bruxzir, Lava...)
- Polycrystalline metallic type
- 1000 MPa flexural strength
- NO silica so not etchable
- Cement or bond in place

Use the strongest material that meets the minimum cosmetic need of the patient.
e.max
PFM gold
zirconia

Monolithic zirconia...
- Very durable
- Prep similar to gold
- CAD/CAM made
- Digital impression perfect for it
- Cement or Bond
- Fast turn around from lab
- Total PFM replacement?
- Inexpensive

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Monolithic zirconia...

- Treat as a metal
- Meets aesthetic demands of 80-90% of molar crowns
- Wear similar to enamel and less than feldspathic porcelain if polished well
- ADJUST: Fine diamond, concentric burs, light pressure, water, polish

Great bonding CANNOT overcome a poor prep!

Cementation Sanity


Cementation sanity

Non-Adhesive GOOD
1. Resin Modified GI most popular
   - RelyX Luting (3M ESPE)
   - Fuji Plus (GC)
   - Nexus RMGI (Kerr)
2. Easy mix, easy clean up
3. Low sensitivity
4. Does not strengthen restoration
5. Good if retentive prep

Self-Adhesive BETTER
1. Dual cure resin cement with primer/sealer inside
   - RelyX Unicem (3M ESPE)
   - Maxcem (Kerr)
   - SpeedCEM (Ivoclar)
   - SmartCem (Dentsply)
   - BeautiCem (Shofu)
2. Moderate bond to dentin
3. Strengthens restoration moderately

DBA + Dual Cure Resin BEST
1. Universal DBA
   - All Bond Universal (Bisco)
   - Scotchbond Universal (3M)
   - MultiLink Primer A&B (Ivoclar)
2. Dual cure resin cement
   - DuoLink Universal (Bisco)
   - Rely X Ultimate (3M)
   - MultiLink (Ivoclar)
3. Highest bond to dentin
4. Highest restoration strengthening
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**Conventional Cements**

- High Bond Strength
- High Flexural Strength
- More # of Steps
- Critical Retentive Prep Design
- GI plus calcium aluminate...
  - Bioactive cement – apatite formation
  - Easiest clean up ever
  - Least sensitivity of any cement tested
  - NO RESIN
  - Alkaline pH
  - Hydrophilic
  - No silane, no primer, no bonding agents
  - Awesome for metal, zirconia, implants
  - No bad taste!

**Self-Adhesive Cements**

- Low Bond Strength
- Low Flexural Strength
- Less # of Steps
- Less Critical Retentive Prep Design
- Rely X Luting
- Rely X Unicem
- Fuji GI
- Ceramir
- ProRoot MTA

**Adhesive Cements**

- Rely X Luting
- Rely X Unicem
- Fuji GI
- Ceramir
- ProRoot MTA

**Compare margin sealing:**

- Rely X Luting
- Rely X Unicem
- Fuji GI
- Ceramir
- ProRoot MTA

**Material**

- Cement
- Bond

**Retention**

- Aesthetics
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**Z-PRIME PLUS**
- Single bottle
- Metal primer
- Sand blast
- Apply then air thin
- NO bonding on crown
- Highest bond to zirconia
- Works with dual cure, self cure, or light cure resin cements

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**Remove zirconia?**

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**Monolithic lithium disilicate**
- Very durable, versatile
- 1.5-2.0 mm clearance
- Monolithic esthetics good for 95% of posterior restorations
- Cementation good if prepped well
- Adhesive cementation may result in higher ceramic strength
- Slightly better esthetics than zirconia, more translucency

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**Aesthetic posts**
- No sandblasting
- 5% HFI 20 secs
- Rinse well
- Silane
- Dry
- Frosty
- Not chalky

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**e.max**
- Monolithic lithium disilicate prep... prep between gold and PFM

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Matrix metalloproteinases = MMP's enzymes that may break down the hybrid layer between dentin and resin.

Porcelain prep
4-5% HF
20 seconds
Dry
Utilene
Brush in
60 seconds
Dry
Frosty

Zirconia:
Good prep: Anything is good
Cements – Ceramit, RMDI
Self Adhesive – BeautiCem
Adhesive – DuoLink/UABU
Less than ideal prep: Need adhesion
Zirconia primer – Z Prime Plus
Self Adhesive – BeautiCem, SpeedCem
Adhesive – DuoLink/UABU

Lithium Disilicate:
Good prep: Anything is good
No esthetic concern: Cements – Ceramic, RMDI
High esthetics
Self Adhesive – BeautiCem
Adhesive – DuoLink/UABU
Less than ideal prep: Need adhesion
Self Adhesive – BeautiCem
Adhesive – DuoLink/UABU

Ivoclean
How effective is its performance?

Cementation sanity
Air or electric?

Electric
- Better torque
- More power
- Slower
- More durable

Air
- Better tactile feel
- More speed
- Lighter
- Less durable

Wolf Black Label
- LED Light
- Smooth
- Concentric turbine
- Great torque
- 2 year warranty
- $499

www.dentalsavingsclub.com

Sad...
6 in 10 would not do dentistry again

1. Too much stress for $
2. Dislike insurance
3. Awful at business
4. Tedious
5. Hate patients

Neovo
- Very smooth
- Great longevity (so far)
- Light
- We have 2 sizes
- Excellent light

Evolve Series
- High-Performance Dental Handpiece

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SolutionReach
Practice Management Software

Patients can confirm their appointments by Email, Text message or Call to their land line.

Implant Crowns

Restoration success
Bio-friendly cements
Thorough clean up
Good retention
Soft tissue tolerance

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Air abrasion
Frosted
Supra G

Impression coping
Nobel “Snappy”
Closed tray
Panasil (Kettenbach)

5.0mm Nobel Biocare
Titanium abutment
Implant Direct

Anutra
Lidocaine
Buffered
Less discomfort
Intense
Block in 4-5 minutes

Zirconia and e.max polish
High speed
Light pressure
Water
Concentric turbine
Polish

Torque
Wait
Re-torque

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E.max
- Isolate
- Try in
- Ivoclean 20 seconds
- Silane
- BeautiCam
- Adjust
- Polish

Zirconia
- Isolate
- Try in
- Ivoclean 20 seconds
- BeautiCam
- Adjust
- Polish

Monolithic Bridges
- E.Max
  - Anterior only
  - 3 unit max
  - 3mmX3mm connectors
- Zirconia
  - Esthetics the limit
  - Length no matter
  - 3mmX3mm connectors

Goals
- Durable
- Esthetic
- Comfortable

Conservative success...
- Single path of insertion
- Breeze
- Maximize enamel
- Parallel to path of closure
- Zr primer
- Total etch
- Dual cure resin

You can’t fix what you can’t see.
- Good lighting and magnification a must
- 3 light sources: handpiece, headlight, op light
- All working well and bright

E.max
- Anterior only
- 3 unit max
- 3mmX3mm connectors

Zirconia
- Anterior only
- 3 unit max
- 3mmX3mm connectors

Monolithic Bridges

Zirconia

You can’t fix what you can’t see.

E.max

Zirconia

Conservative success...

The “Hybrid” bridge
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Graft Collagen tape

Zone Free (Dux)
Zinc oxide temp cement

Pumice 2% Chlx

The consult: spark an interest
Office introduction
Listen well
Look into eyes
Scrutinize while listening
Photos to make point
Dwell on the ugly
Explain simply
Sell yourself

E.max Finish diamond Smooth Rounded Reduction guide
Tooth reduction:

**Ceramist…** “Please give me more”
**Patient…** “Please take less”
**Dentist…** “I’m confused”

Before Temps
- Impressions
- Bite registration
- Kois Analyzer
- Prep shades
- Photos

Kois Dento-Facial Analyzer
- Panodent
  - Patient supine
  - Plastic tab touches facial of central incisors
  - Sit patient up to verify
  - Use assistant to inspect
  - Eyes are often not parallel
  - Reheat and smush tabs to redo
  - Take photo when correct
  - Only send in plastic tray (no metal to lab)

LiS2 veneer
- 0.3-0.5 mm margin
- Rounded shoulder or chamfer
- No sharp internal line angles
- No incisal “wrapping”
- Maintain facial curvature
- Smooth prep
- Bond to enamel best
LiS2 layered crown

1.0-1.5 mm margin
Rounded shoulder or chamfer
4-8 degrees taper
5-7mm axial wall height
No sharp internal line angles
Smooth prep
Bond to enamel best

Etch
Rinse
Moist
All Bond U
Agitate
Air thin
Choice 2
Critique
- Embrareses
- Gingival heights
- Axial inclination
- Contacts
- Width-height ratio
- Central dominance
- Teeth proportionality
- Grooves
- Texture
- Color
- Treatment choice

Treatment Summary
- LS2 press to zirconia bridge #9-14
- LS2 press to zirconia bridge #22-#27
- LS2 crowns #5-#8
- LS2 veneers #20, 21, 28, 29

Euginol free
No euginol in cement
These kill bugs and have HEMA

Euginol free
Zone Free (Dux)
Euginol free, zinc oxide temporary cement

Euginol free
Euginol has the POTENTIAL to interfere with dentin bonding

What is silane?
SiH4...silicone + hydrogen chloride then boiled with a metal halide to make silane
Connects silica glass fibers to resin matrix
Dental = Silane + ethanoic steric acid
Short shelf life because of water
20-40% increase in bond strength if fresh
Throw away if cloudy

Remember
If you used ferric sulfate
Superoxol … oxygenating cleaner and antimicrobial

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Wear Rehabilitation Zirconia E.max


Remove temps Pumice 2% chlx – Cavity Cleanser ViscoStat Clear

The porcelain: Visco Stat Clear Try in Rinse Ivoclean Rinse Silane

3 pillars of occlusion:
Simultaneous centric Anterior disclusion Cuspid rise

Today’s trip
Regenerative materials Burs, handpieces, light Massage, air thin Where is matters most Polish Monolithic Conservative Aesthetics Bond -vs- cement

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Thank you very much

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