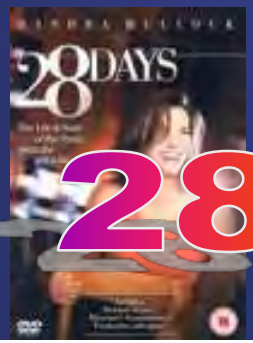
Results:

The increased inflammation with the Glass Ionomers and VLC Dycal may have retarded hard tissue bridge formation

- Hard Bridge Formation

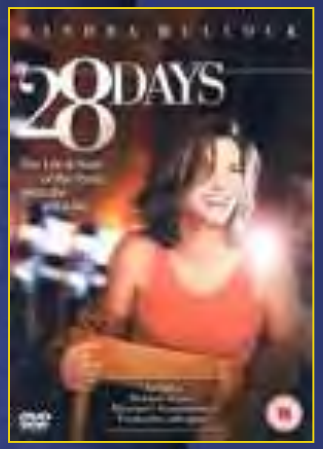


28 Days

Hard Tissue Bridge	TheraCal	Portland	Glass Ionomer	VLC Dycal
Yes	11	12	4	4
No	1	0	8	8

Results:

- Hard Bridge Formation

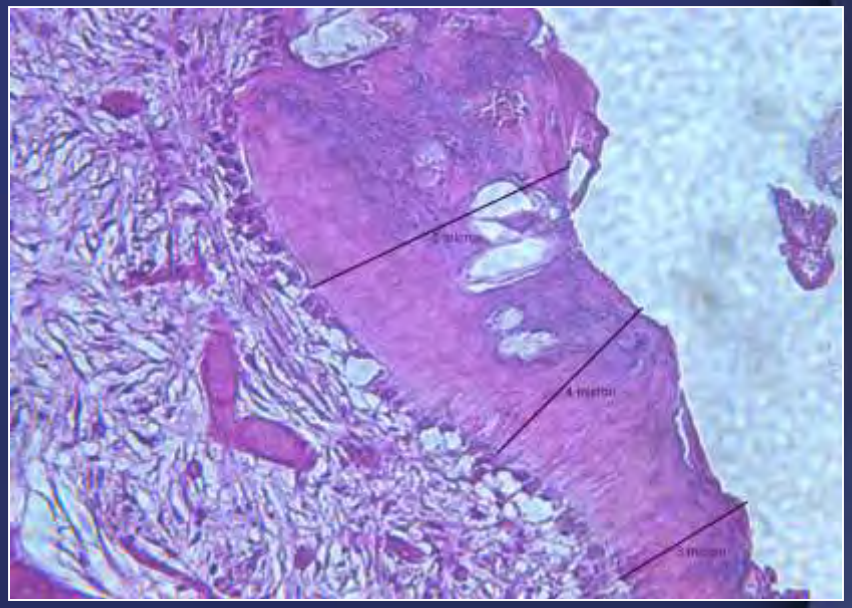


Phase Contrast Microscope

Results:

28 Days

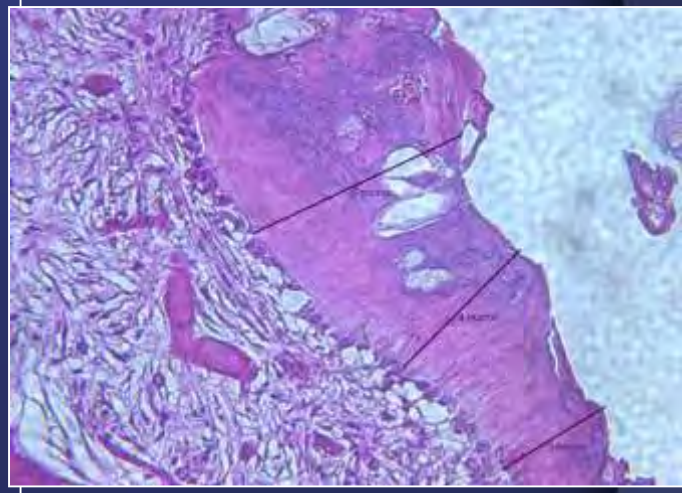
- Hard Tissue Bridge Thickness
  - TheraCal and Portland average the same thickness
  - Glass Ionomer and VLC Dycal average less than a fifth as thick as TheraCal



Material	TheraCal	GIC	PC	Dycal
Average	50.27µ	10.72µ	60.72µ	10.90µ

Statistical Analysis

Measured thickness of the hard tissue bridges with the pure Portland and TheraCal groups **statistically greater** than that of the other two groups (H= 15.849 with 3 degrees of freedom, P=0.002).



3 sections measured at 3 different areas

Results:

- MicroCT
- Light cured

Primate Pulpal Healing after Exposure and TheraCal Application

Cannon M*/ Gerodias N**/ Vieira A***/ Percinoto C****/ Jurado R*****

Aim: The purpose of this in vivo study was to compare the effectiveness of a new light cured resin based dicalcium/tricalcium silicate pulp capping material (TheraCal LC, Bisco), pure Portland cement, resin based calcium hydroxide or glass ionomer in the healing of bacterially contaminated primate pulps. Study design: The experiment required four primates each having 12 teeth prepared with buccal penetrations into the pulpal tissues with an exposure of approximately 1.0 mm. The exposed pulps of the primate teeth were covered with cotton pellets soaked in a bacterial mixture consisting of microorganisms normally found in human pulpal abscesses. After removal of the pellet, hemostasis was obtained and the pulp capping agents applied. The light cured resin based pulp capping material (TheraCal LC) was applied to the pulpal tissue of twelve teeth with a needle tip syringe and light cured for 15 seconds. Pure Portland cement mixed with a 2% Chlorhexidine solution was placed on the exposed pulpal tissues of another twelve teeth. Twelve additional teeth had a base of GIC applied (Triage, Fuji VII GC America) and another twelve had a pulp cap with VLC DYCAL (Dentsply), a light cured calcium hydroxide resin based material. The pulp capping bases were then covered with a RMGI (Fuji II LC GC America). The tissue samples were collected at 4 weeks. The samples were demineralized, sectioned, stained and histologically graded. Results: There were no statistically significant differences between the groups in regard to pulpal inflammation (H= 0.679, P=1.00). However, both the Portland cement and light cured TheraCal LC groups had significantly more frequent hard tissue bridge formation at 28 days than the GIC and VLC Dycal groups (H= 11.989, P=0.009). The measured thickness of the hard tissue bridges with the pure Portland and light cured TheraCal LC groups were statistically greater than that of the other two groups (H= 15.849, P=0.002). In addition, the occurrence of pulpal necrosis was greater with the GIC group than the others. Four premolars, one each treated according to the protocols were analyzed with a microCT machine. The premolar treated with the light cured TheraCal LC demonstrated a complete hard tissue bridge. The premolar treated with the GIC did not show a complete hard tissue bridge while the premolar treated with VLC Dycal had an incomplete bridge. The pure Portland with Chlorhexidine mixture created extensive hard tissue bridging.

Conclusion: TheraCal LC applied to primate pulps created dentin bridges and mild inflammation acceptable for pulp capping.

Key words: pulp exposures, pulp response, bacteria, primate

The Journal of Clinical Pediatric Dentistry Volume 38, Number 4/2014

Bridge

Bioactivity and Dental Materials

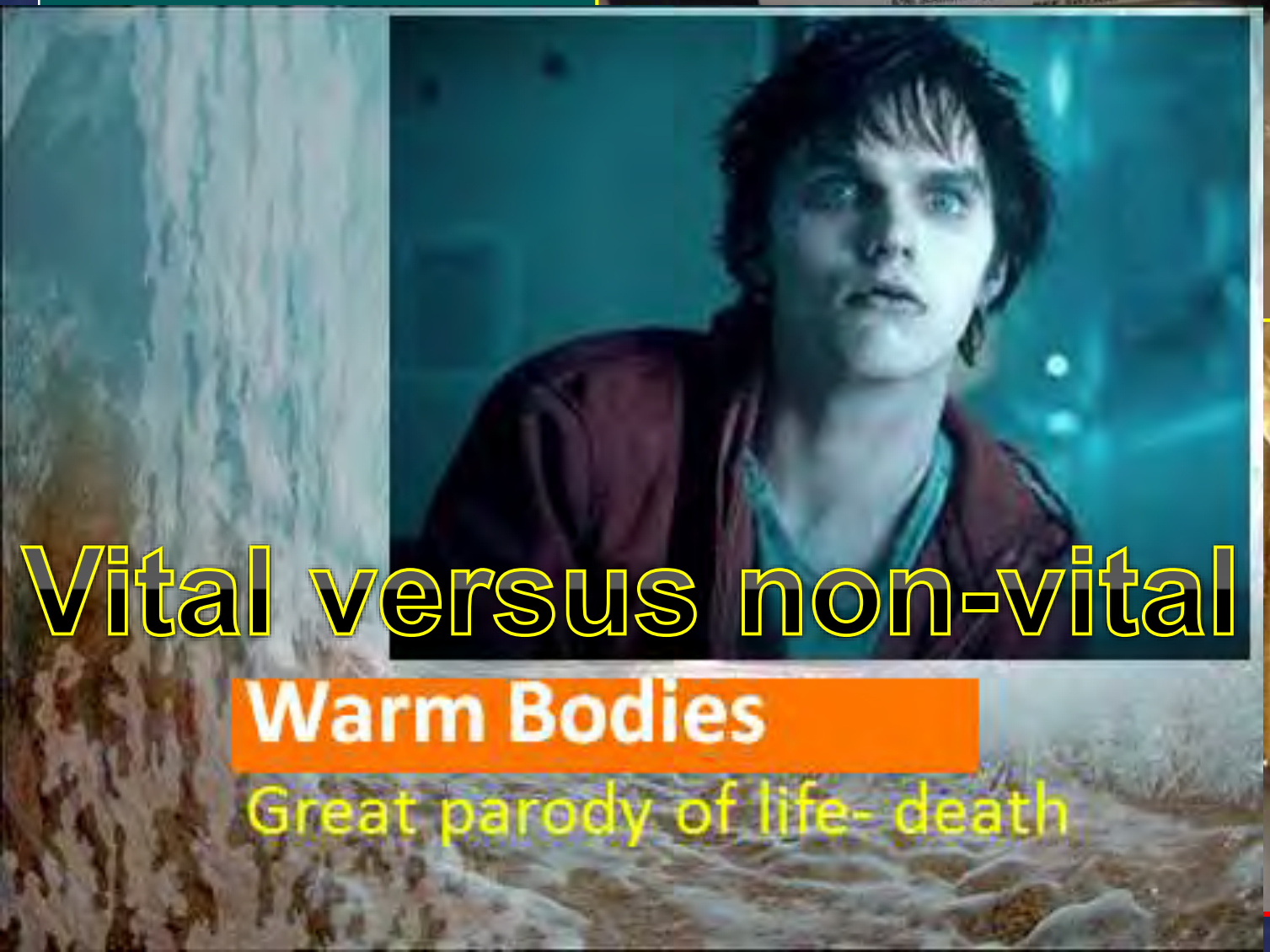
-History of severe dental apprehension
-Mother wants only natural products

Bioactivity and Dental Materials

Pulpally involved, pulp extirpated from chamber
Ferric sulfate placed for hemostasis

Bioact


Dental Products
Sodium Hypochlorite
6% Sodium Hypochlorite Solution


Vital versus non-vital
Warm Bodies
Great parody of life- death

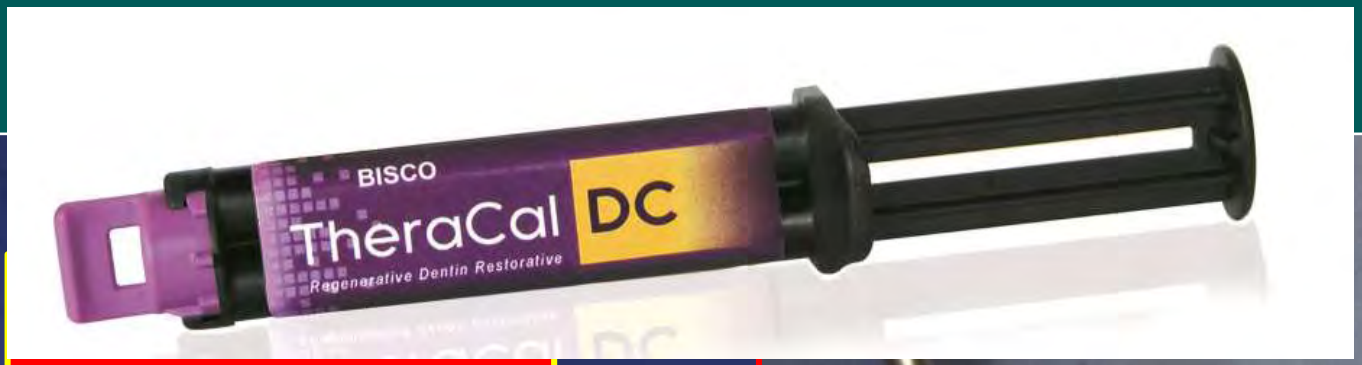
Bioactivity and Dental Materials

Remove excess sodium hypochlorite
If concentrated but water may contaminate chamber
PROBLEMATIC

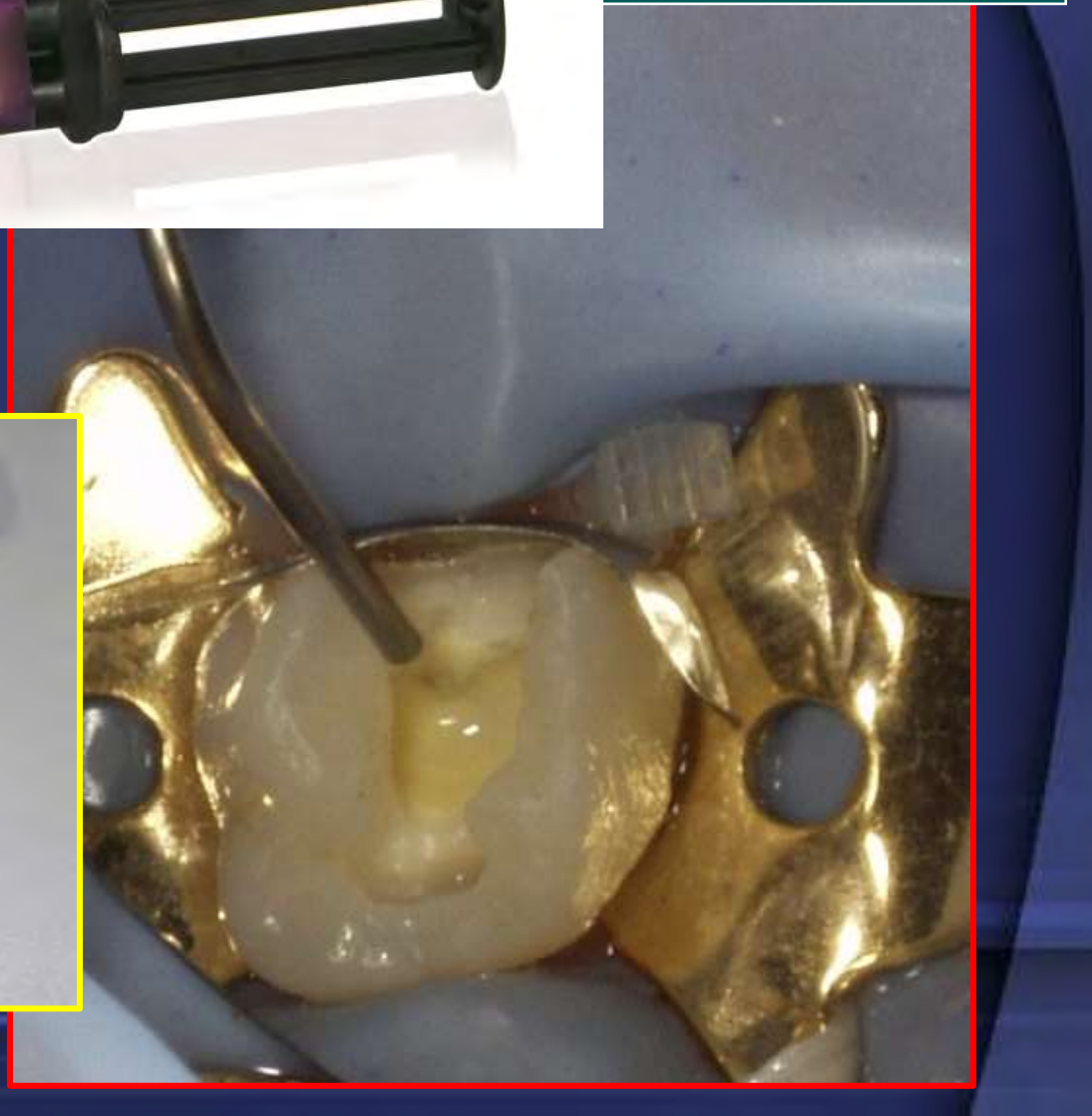
Bioactivity and Dental Materials

Hemostasis obtained, all pulp contents removed, essential for pulpal therapy success

Bioactivity and Dental



dressing-
TheraCal DC



Bioactivity and Dental Materials

Light cure to initiate polymerization but will dual cure completely due to proprietary technology

Bioactivity and Dental Materials

Etch enamel for 30 seconds with Uni Etch BAC
Rinse with copious water flow

Bioactivity and Dental Materials

Cured adhesive and TheraCal DC obturation of chamber

Bioactivity and Dental Materials

Inject dual cure Activa restorative into cavit prepa

Bioactivity and Dental Materials

Explorer tine to evenly spread Activa with out void incorporation "Pulse" cure

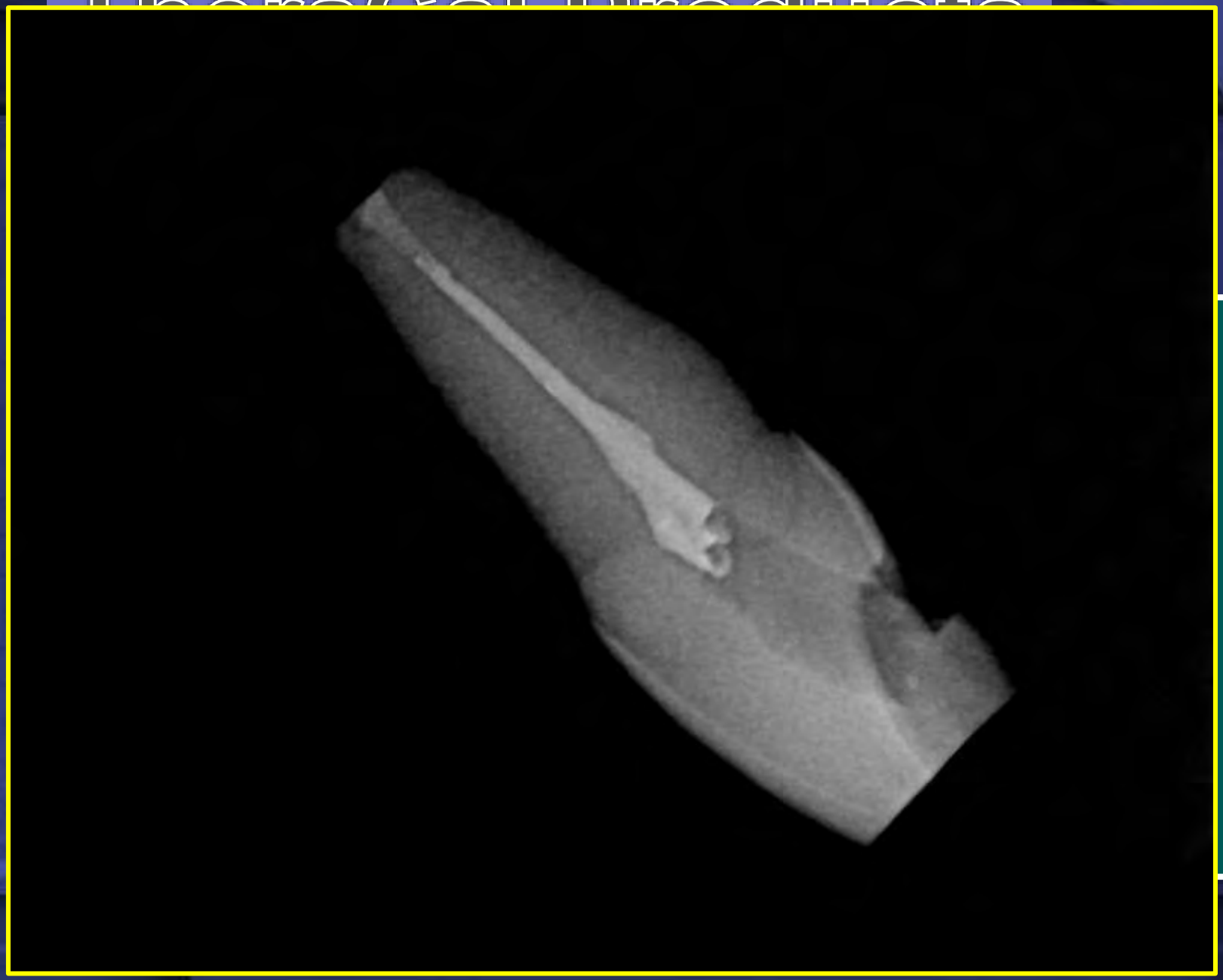
Bioactivity and Dental Materials

Matrix and wedge removed
Note gross anatomy

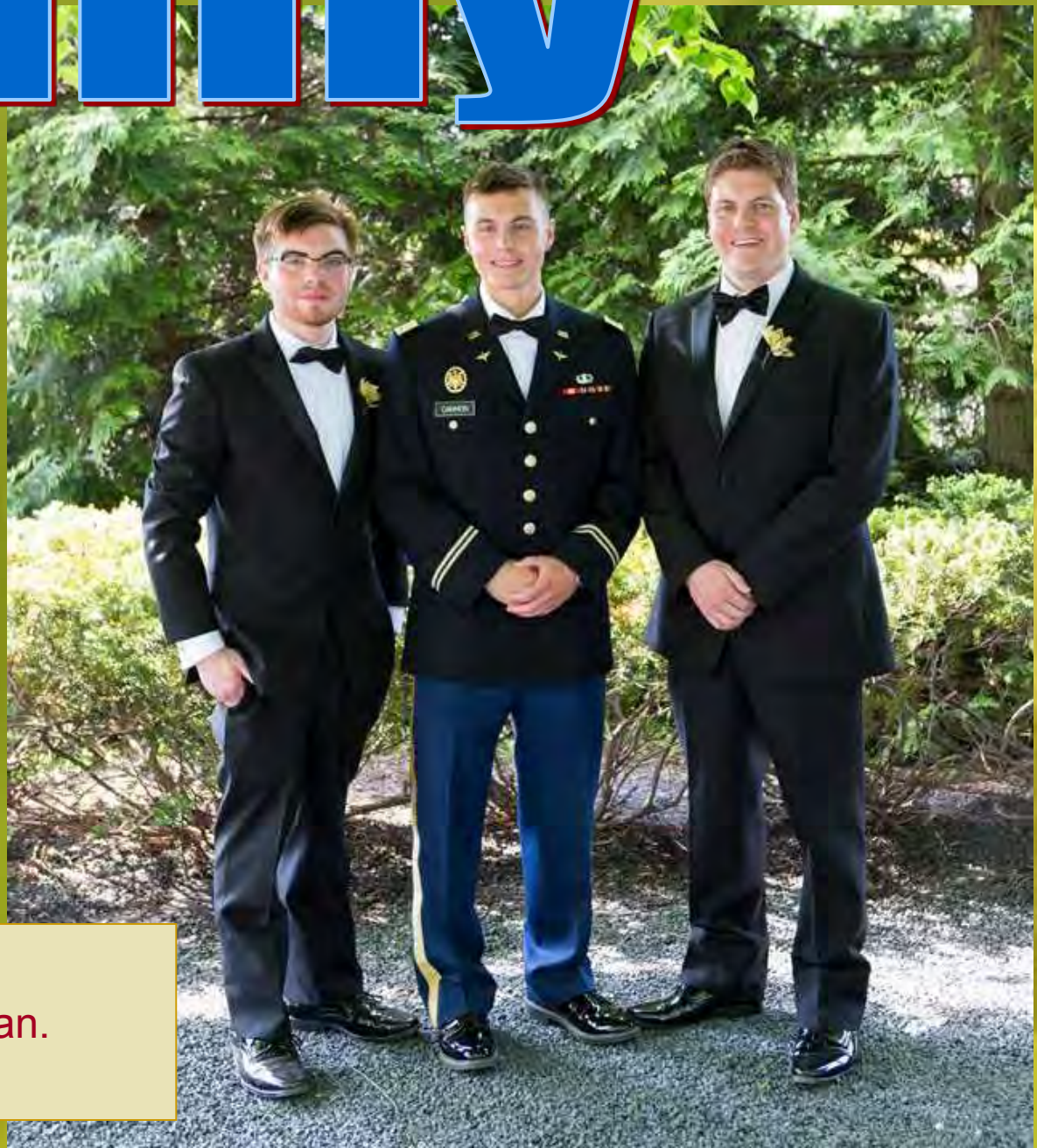
Bioactivity and Dental Materials

Post operative visit

TheraCal Products



Family

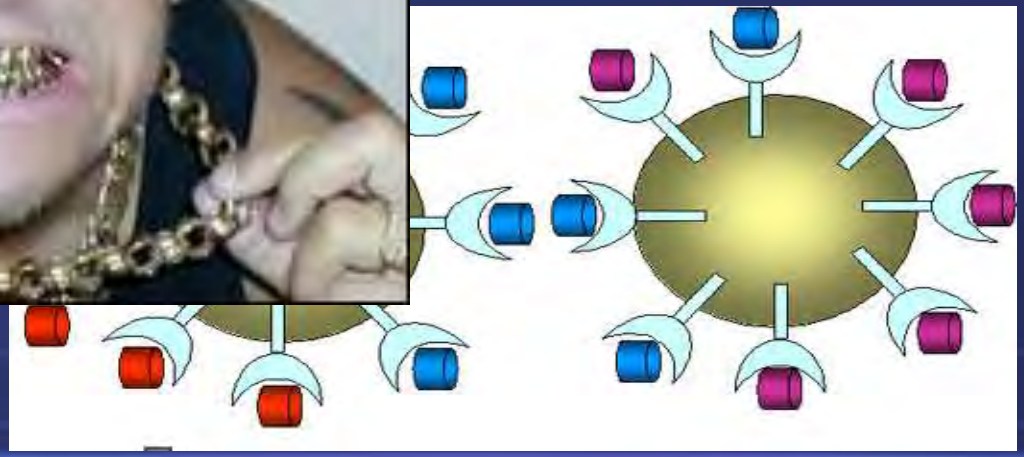


Keith, Christopher, and Ryan.

Bioactive Materials for Proactive Dentistry

Most dental materials are designed to be **"passive"** and to have a relatively **"neutral"** existence in the mouth so that they will be biocompatible and cause neither harm nor injury.*

neglects the possibility that positive with **"active"** materials that behave in e oral environment.*



* McCabe JF, et al. Smart materials in dentistry. School of Dental Sciences, Newcastle University, UK.

Bioactive Materials for Proactive Dentistry

Bioactive materials are considered to have "smart" behavior if:

1. They have the capacity to interact with living tissue or systems;* and
2. They can react to changes in the environment to bring about advantageous changes in properties, either within the material itself or in the material-tooth complex.**

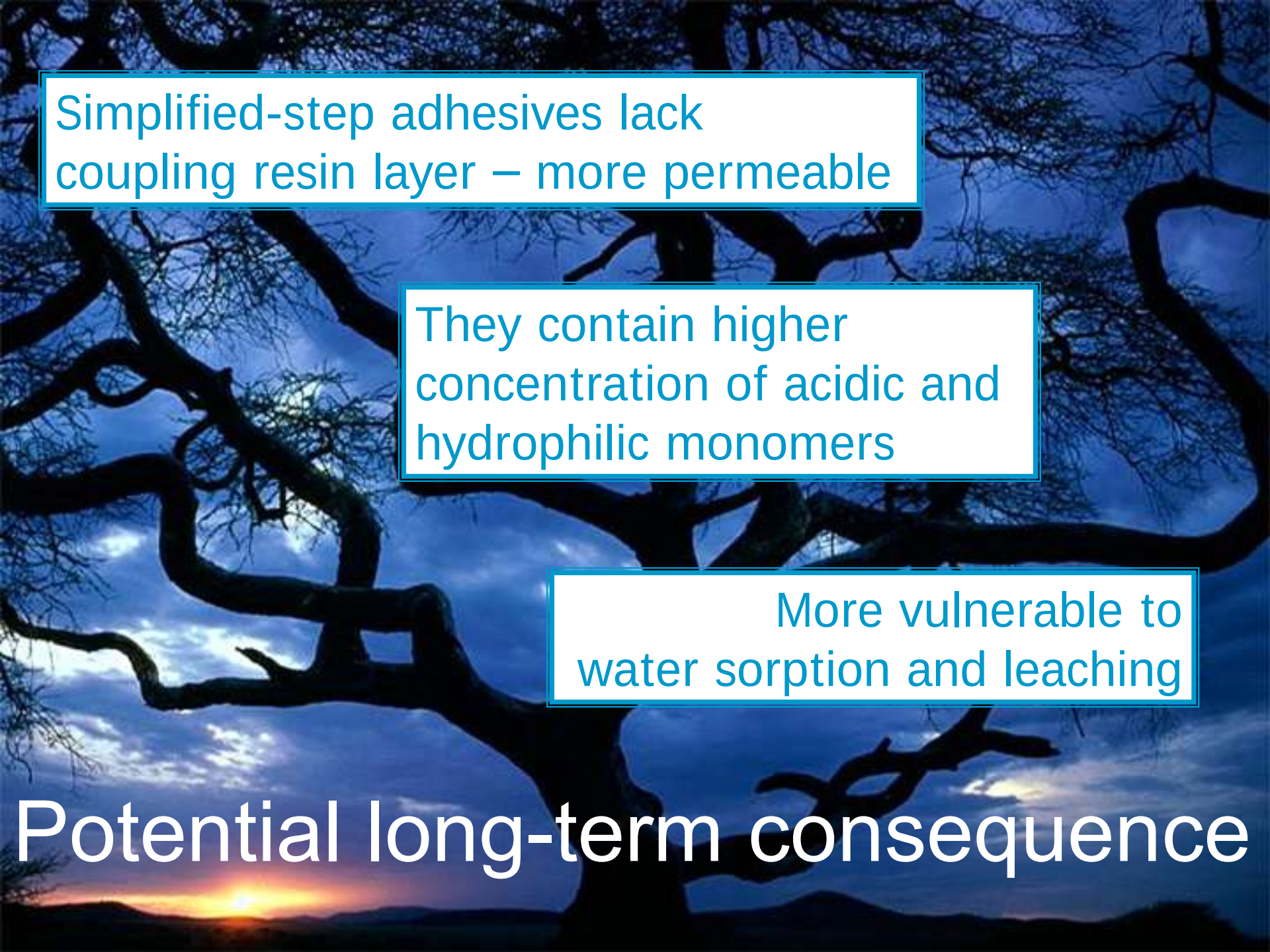
The development of bioactive materials is inspired by nature.

*Comisi JC. Using bioactive materials to achieve proactive dental care. Oral Health, December 2011:34-46.
** McCabe JF, et al. Smart materials in dentistry. School of Dental Sciences, Newcastle University, UK.

Can you say Micro-Leakage?

Sometimes… however…

The simpler does not deliver the best!


Simplified-step adhesives lack coupling resin layer – more permeable
They contain higher concentration of acidic and hydrophilic monomers
More vulnerable to water sorption and leaching
Potential long-term consequence

Current evidence confirms that Etch&R
are not capable of fully infiltra
demineralized dentin. (Wang & Spe

What is the fate of the ex
unprotected collagen fi

Courtesy: Dr. Nakajima, TMDU

Exposed Collagen by Acid Etching And activation of MMPs

MMP 1 2 8 9

J Dent Res. 2003 Feb;82(2):136-40.

Four-year water degradation of total-etch adhesives bonded to dentin.

De Munck J, Van Meerbeek B, Yoshida Y, Inoue S, Vargas M, Suzuki K, Lambrechts P, Vanherle G.

Leuven BIOMAT Research Cluster, Department of Conservative Dentistry, School of Dentistry, Oral Pathology and Maxillo-Facial Surgery, Catholic University of Leuven, Kapucijnenvoer 7, B-3000 Leuven, Belgium.

Abstract

Resin-dentin bonds degrade over time. The objective of this study was to evaluate the influence of variables like hybridization effectiveness and diffusion/elution of interface components on degradation. Hypotheses tested were: (1) There is no difference in degradation over time between two- and three-step total-etch adhesives; and (2) a composite-enamel bond protects the adjacent composite-dentin bond against degradation. The micro-tensile bond strength (microTBS) to dentin of 2 three-step total-etch adhesives was compared with that of 2 two-step total-etch adhesives after 4 years of storage in water. Quantitative and qualitative failure analyses were conducted correlating Fe-SEM and TEM. Indirect exposure to water did not significantly reduce the microTBS of any adhesive, while direct exposure resulted in a significantly reduced microTBS of both two-step adhesives. It is concluded that resin bonded to enamel protected the resin-dentin bond against degradation, while direct exposure to water for 4 years affected bonds produced by two-step total-etch adhesives.

H-layer disappeared completely in 4 yrs (De Munck et al., 2003)

Multi
vs. re

Enan

Hydr
vs. h

Van Meerbeek

Clinical effectiveness of contemporary adhesives: A systematic review of current clinical trials

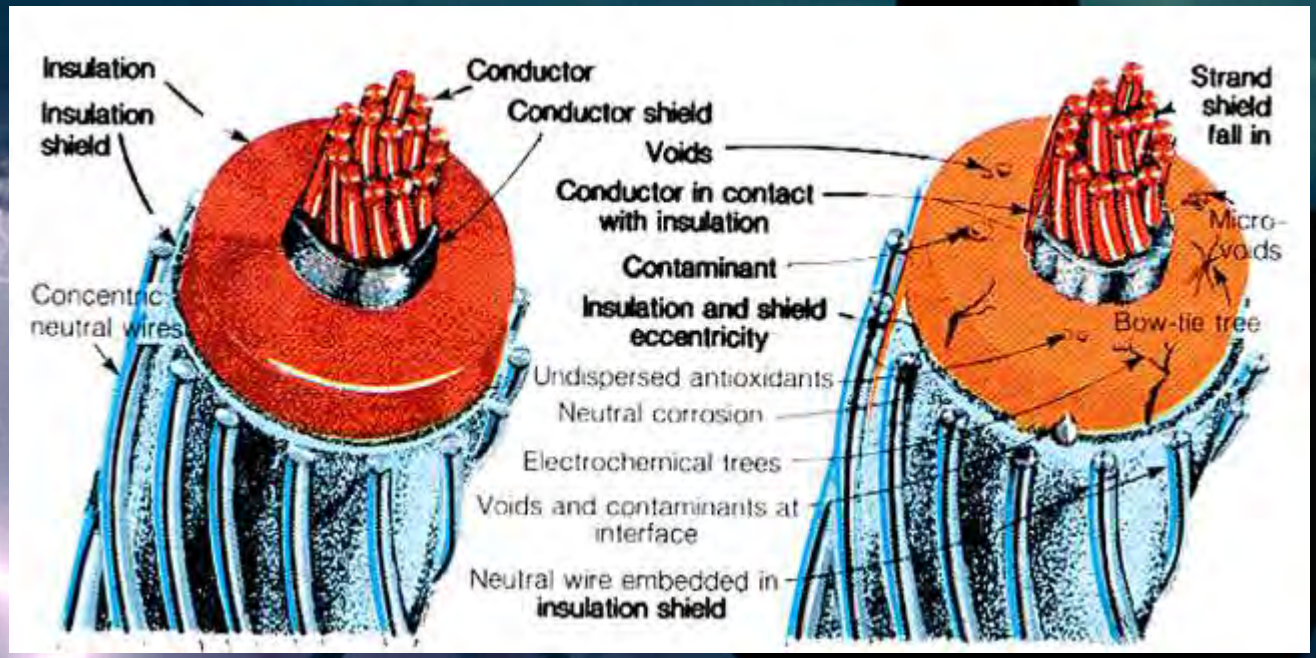
M. Peumans*, P. Kanumilli, J. De Munck, K. Van Landuyt, P. Lambrechts, B. Van Meerbeek

Three-step total-etch adhesives showed the most reliable clinical performance

Simplified versions were outperformed by the multi-step versions of adhesives

"Deterioration of water-immersed polyethylene coated wire by treeing"

Miyashita (1969)



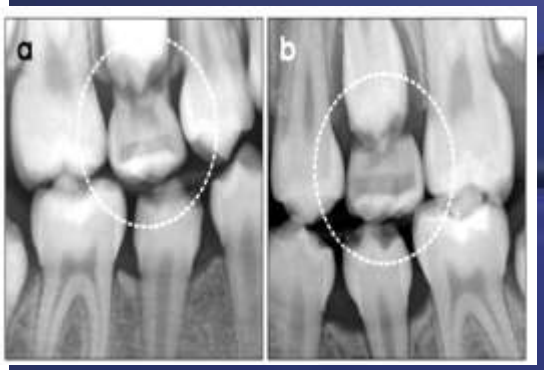
1969 IEEE-NEMA

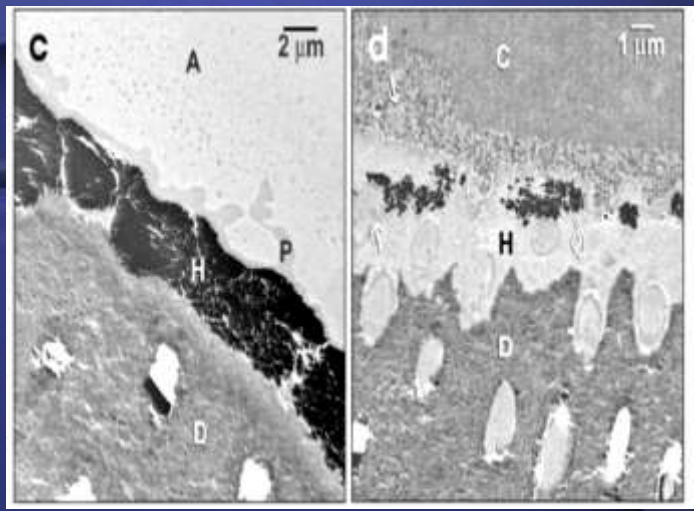
Electrical Insulation Conference Proceedings, Boston, 131-135

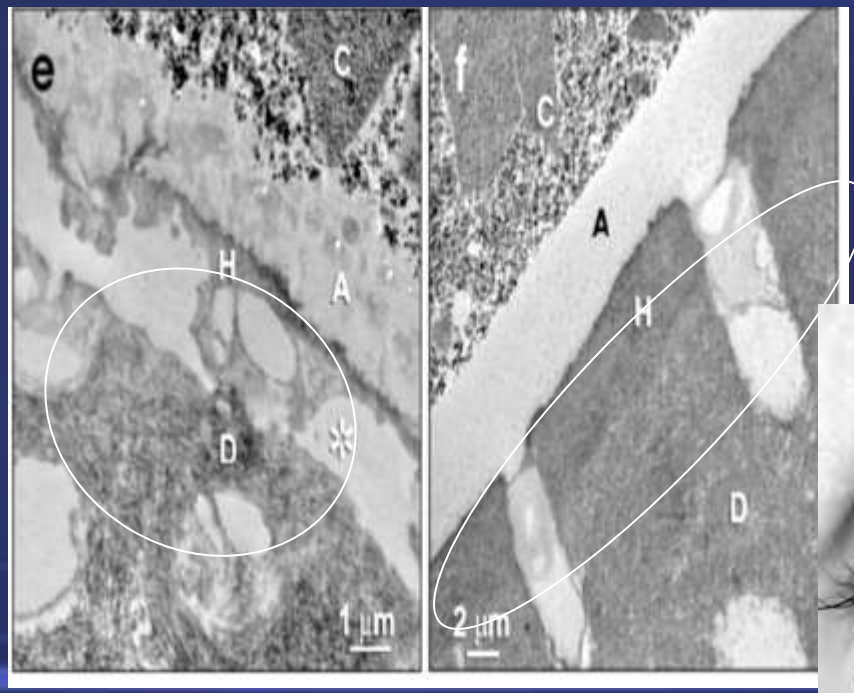
Chlorhexidine Arrests Subclinical Degradation of Dentin Hybrid Layers *in vivo*

J. Hebling[1], D.H. Pashley[2], L. Tjäderhane[3], and F.R. Tay[2,4]*

J Dent Res 84(8):741-746, 2005







6 months...

control

CXH 2%

Rolando Nunez technique

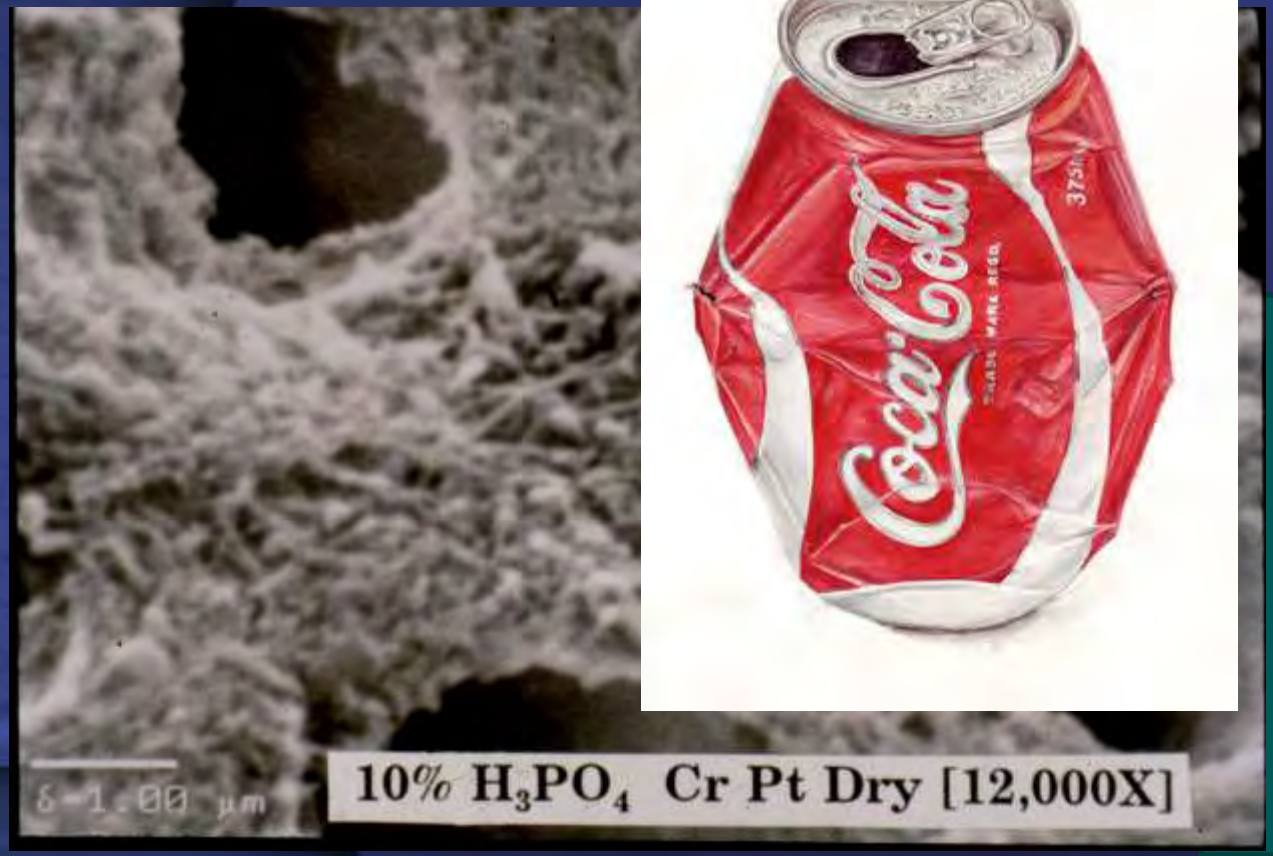
Apply 5th Generation to etched dentin (3-5 secs)

OR

use 6th or 7th generation to un-etched dentin

Critical Dry Point

Dentin easily etched

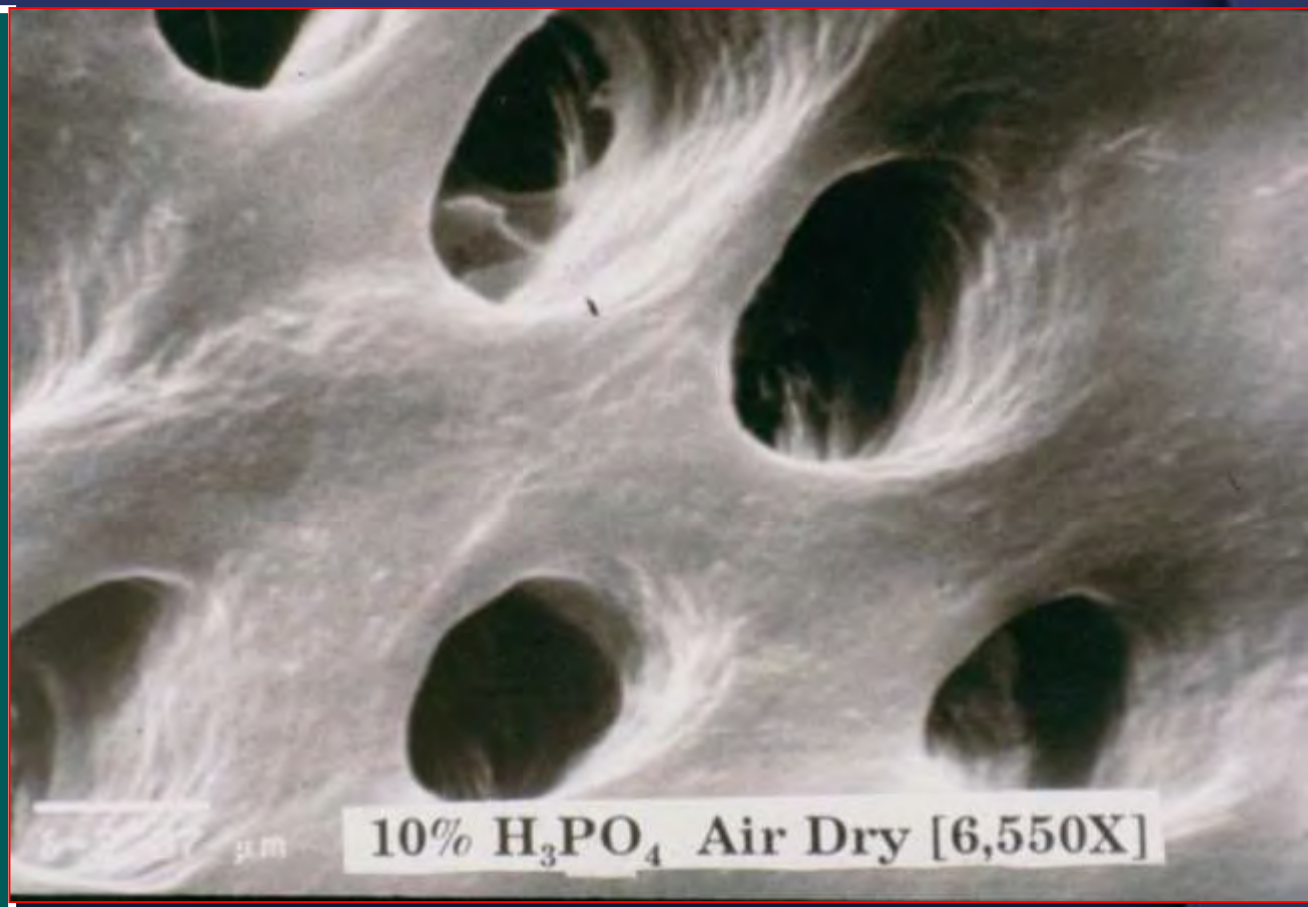


Collagen fibrils exposed

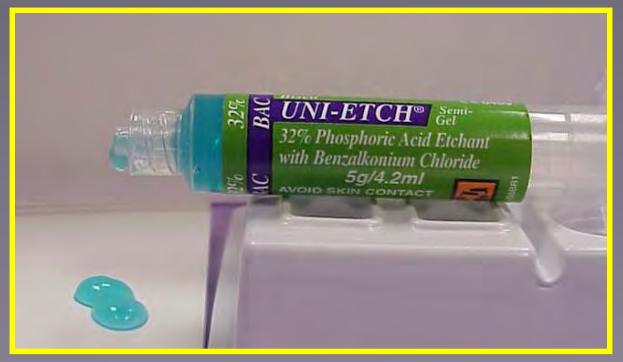
Easily infiltrated by water chasing primers

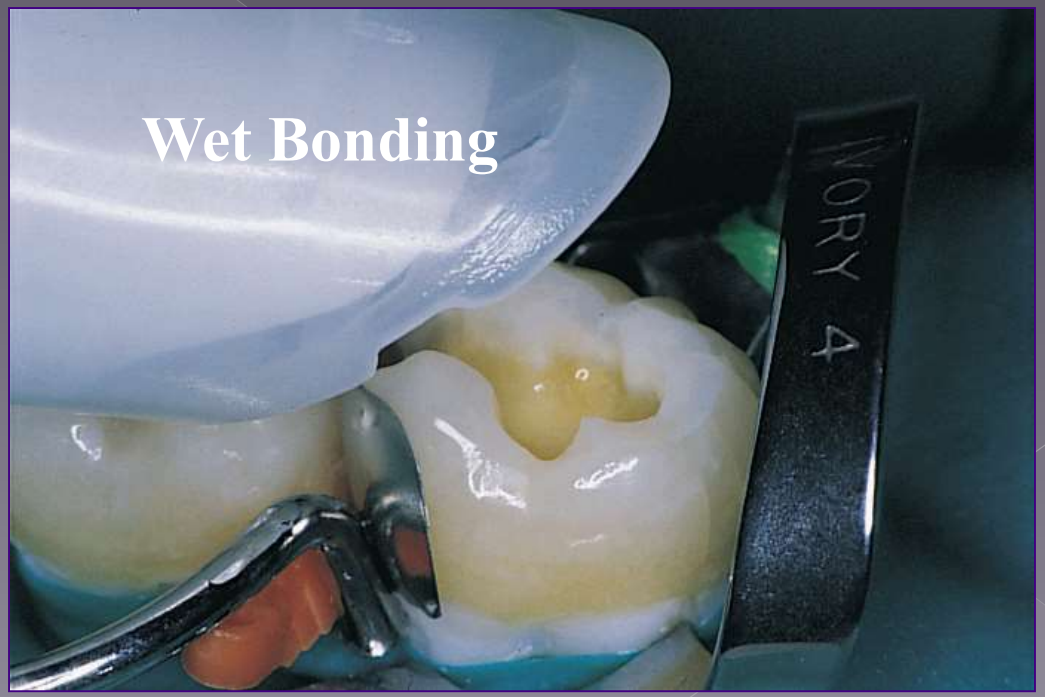
Dentin

- Air dried dentin
- Collage collapses into amorphous surface
- Not easily penetrated by water chasing primers



Uni-Etch with Benzylkonium Chloride





Hybrid Layer Preservation What is the?

MMPs = Matrix Metalloproteinases

Collagen eating enzymes- "collagenase" MMPs 1and 8

- activated by acid on dentin

Synthetic MMPs inhibitors

- Sy hich
  bin y.
  Do ctivity,
  an his
  pu ns. It is
  use d is
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  sol
  Co c, has
  als
  util
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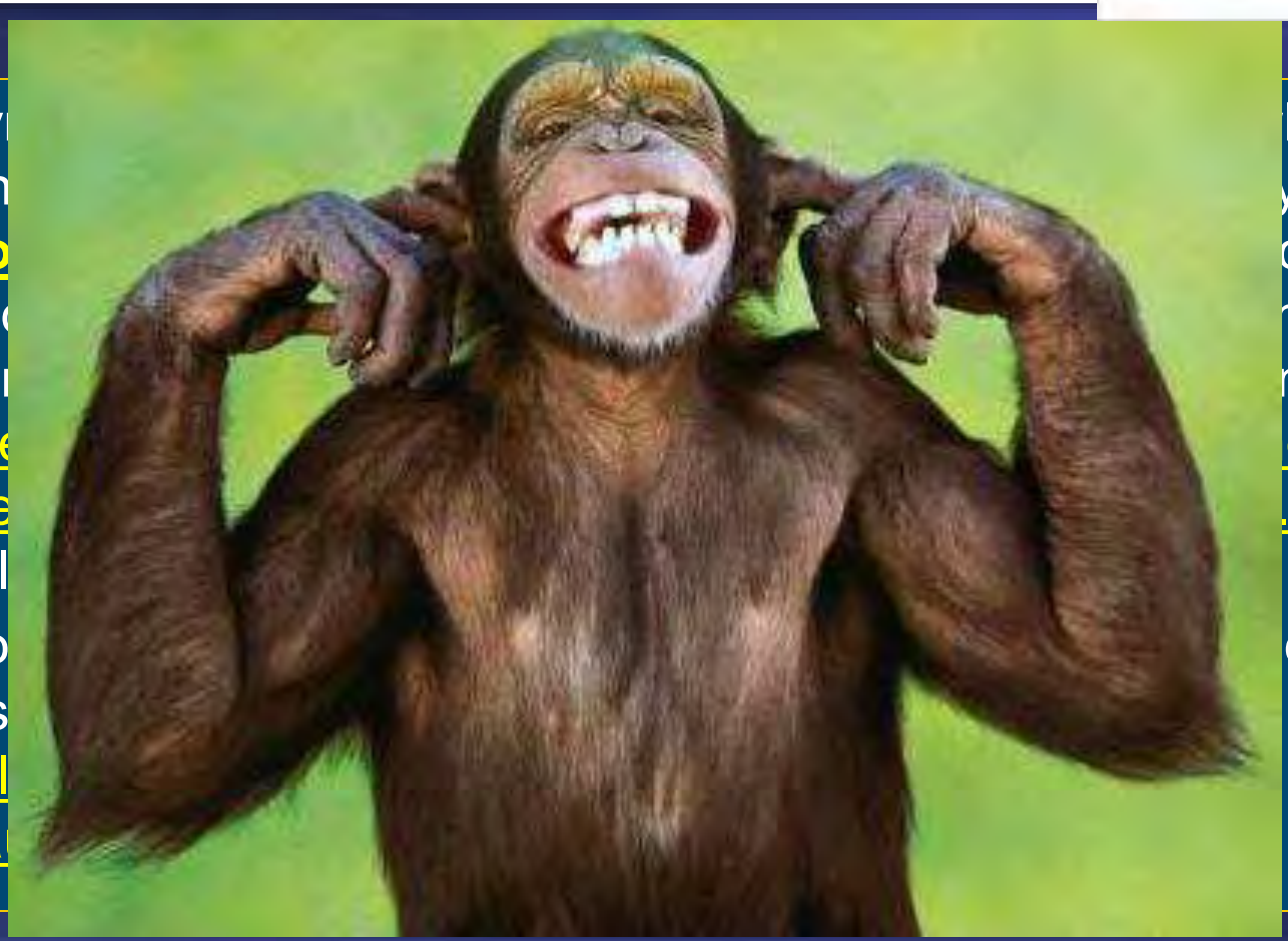


Animal studies

MMPs inhibition by Chlorhexidine

- **Chlorh** …een re… inhibit … a resu… finding, …o dent… proced… part fro… commonly known disinfecta… chlorhexidine also functions… MMP inhibitor (Gendron *et*

MMPs inhibition by BAC

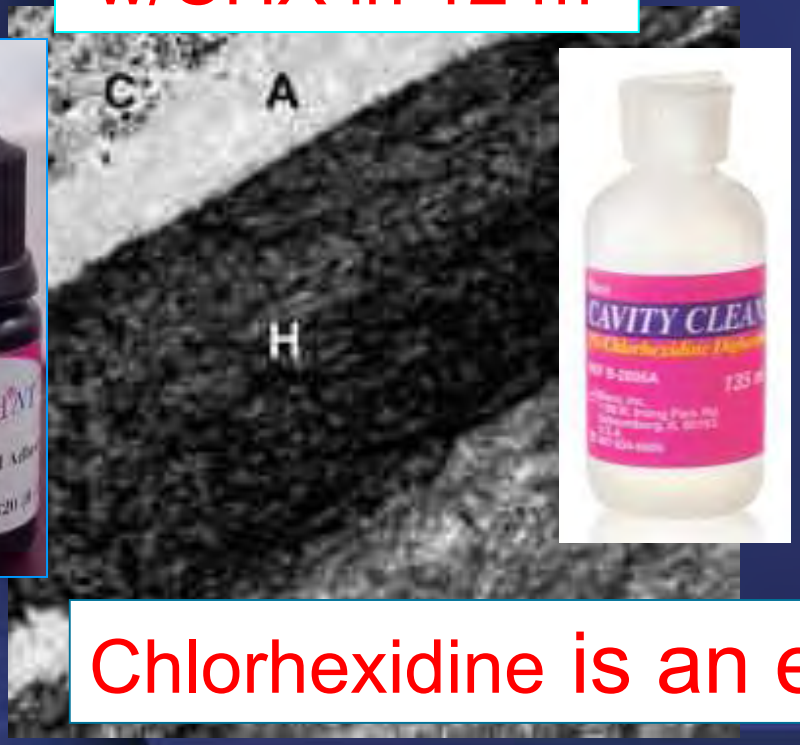
- **Benzalkonium chloride**, also known as alkyldimethylbenzylammonium chloride and ADBAC, is a mixture of alkylbenzyldimethylammonium chlorides of various even-numbered alkyl chain lengths. This product is a nitrogenous cationic surface-acting agent belonging to the quaternary ammonium group.

The mechanism of bactericidal/microbicidal action is thought to be due to disruption of intermolecular interactions. This can cause dissociation of cellular membrane lipid bilayers, which compromises cellular permeability controls and induces leakage of cellular contents. Other biomolecular complexes within the bacterial cell can also undergo dissociation. Enzymes, which finely control a wide range of respiratory and metabolic cellular activities, are particularly susceptible to deactivation.

CHX - MMP Inhibitor

Suggested to use CHX *in-vivo*. (JDR 2004; 83;216)

w/CHX in 12 m



w/o CHX in 12 m

Chlorhexidine is an effective MMP inhibitor

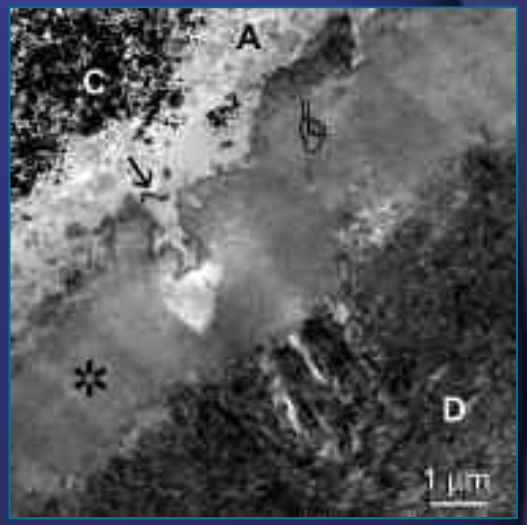
Brackett et al. *in-vivo (12 m)* Prime & Bond NT (Acetone), CHX preserves H-layer (Oper Dent 2009; 34(4):381-5)

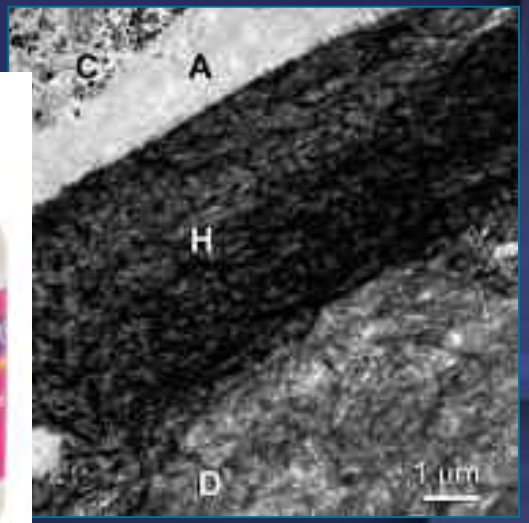
Bond Strengths (14 m in-vivo)

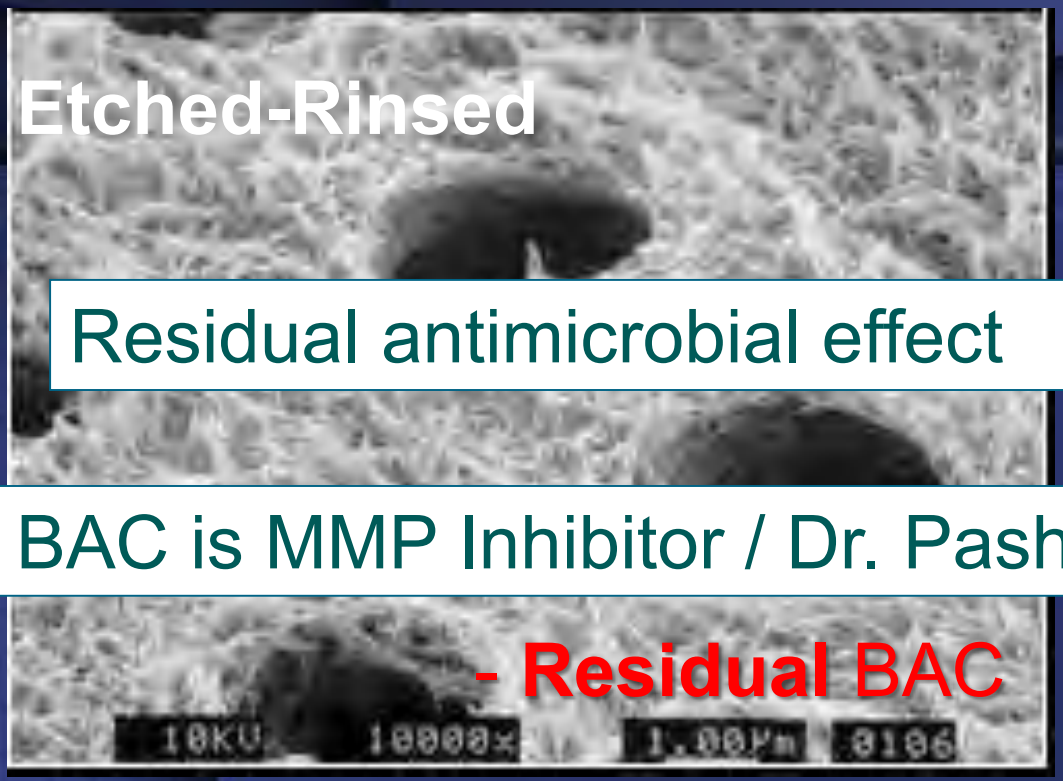
CHX preserves Hybrid layer & bond strength!

	24 h (MPa)	14m (MPa)
Control	29.3 (9.2)	19.0 (5.2)
With CHX	32.7 (7.6)	32.2 (7.2)

Carrilho et al., JDR 2007; 86; 529





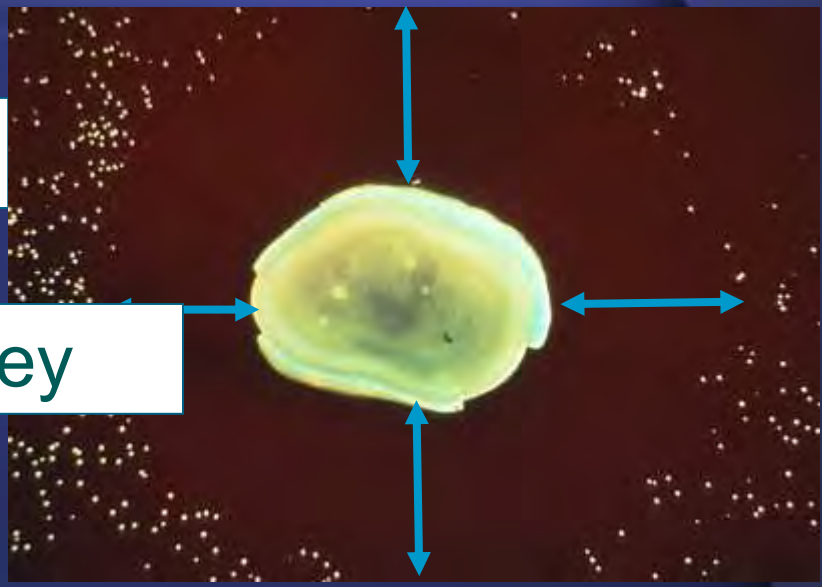


Residual antimicrobial effect

BAC is MMP Inhibitor / Dr. Pashley

- Residual BAC

Zone of inhibition



Bisco Etchant with BAC

US Pat.5,385,728 (1995)

Journal of Dentistry 39 (2011) 57 - 64

xxx (2010) xxx–xxx

available at www.sciencedirect.com

ScienceDirect

journal homepage: www.intl.elsevierhealth.com/journals/jden

The anti-MMP activity of benzalkonium chloride

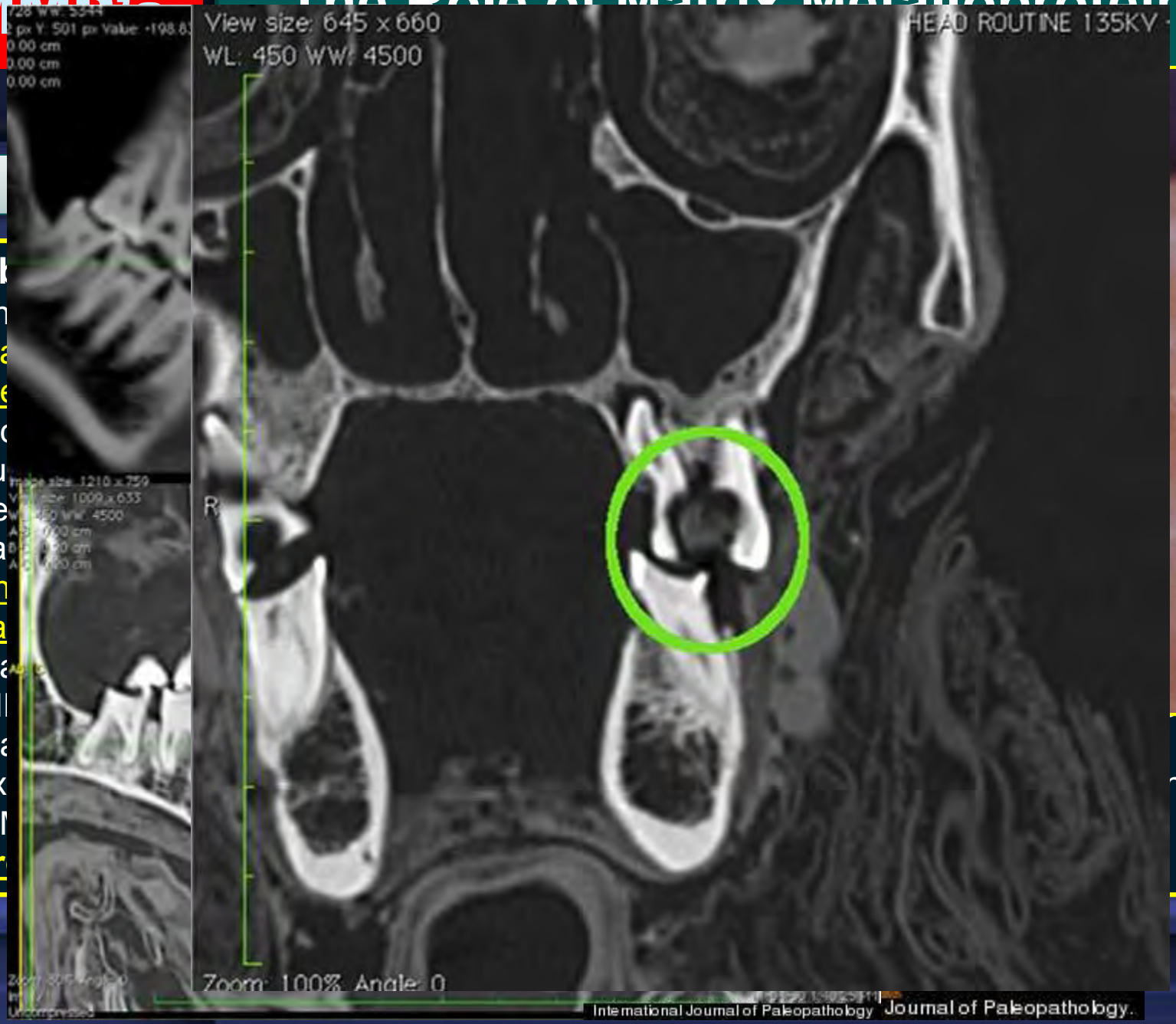
Arzu Tezvergil-Mutluay[a], *M. Murat Mutluay*[a], *Li-sha Gu*[b], *Kai Zhang*[b], *Kelli A. Agee*[c], *Ricardo M. Carvalho*[d], *Adriana Manso*[e], *Marcela Carrilho*[f,g], *Franklin R. Tay*[h], *Lorenzo Breschi*[i,j], *Byoung-In Suh*[e], *David H. Pashley*[c,*]

[a] *Department of Prosthodontics, School of Dentistry, University of Turku, Turku, Finland*
[b] *Department of Operative Dentistry and Endodontics, Guanghua School of Stomatology, Sun Yat-sen University, Guangzhou, China*
[c] *Department of Oral Biology, Medical College of Georgia, School of Dentistry, Augusta 30912-1129, GA, USA*
[d] *Department of Prosthetic Dentistry, Bauru School of Dentistry, University of Sao Paulo, Bauru, SP, Brazil*
[e] *Department of Operative Dentistry, College of Georgia, University of Florida, Gainesville, FL, USA*
[f] *GEO/UNIBAN, Health Institute, Bandeirante University of São Paulo, São Paulo, Brazil*
[g] *Piracicaba Dental School, State University of Campinas, Piracicaba, Brazil*
[h] *Department of Endodontics, Medical College of Georgia, School of Dentistry, Augusta, GA, USA*
[i] *Department of Biomedicine, University of Trieste + IGM-CNR, Unit of Bologna, c/o IOR, Bologna, Italy*
[j] [illegible]

Conclusions: BAC is effective at inhibiting both soluble recombinant MMPs and matrix-bound dentin MMPs .

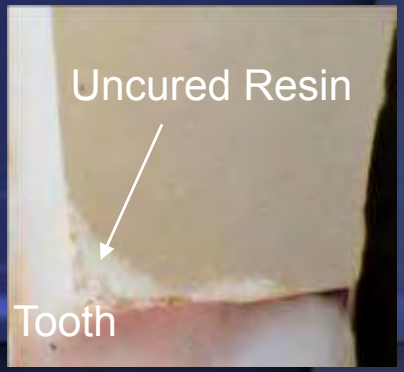
MMPs

The Role of Matrix Metalloproteinases



Under-cured Resin Composite

- Is linked to post-operative sensitivity
- Results in:
  - Increased wear & fracture
  - Reduced bond strengths
  - Secondary caries
  - Increased bacterial colonization
  - Color changes in resin
  - Increased leachates (cytotoxicity)
  - FAILURE



Four COR

Curing Li

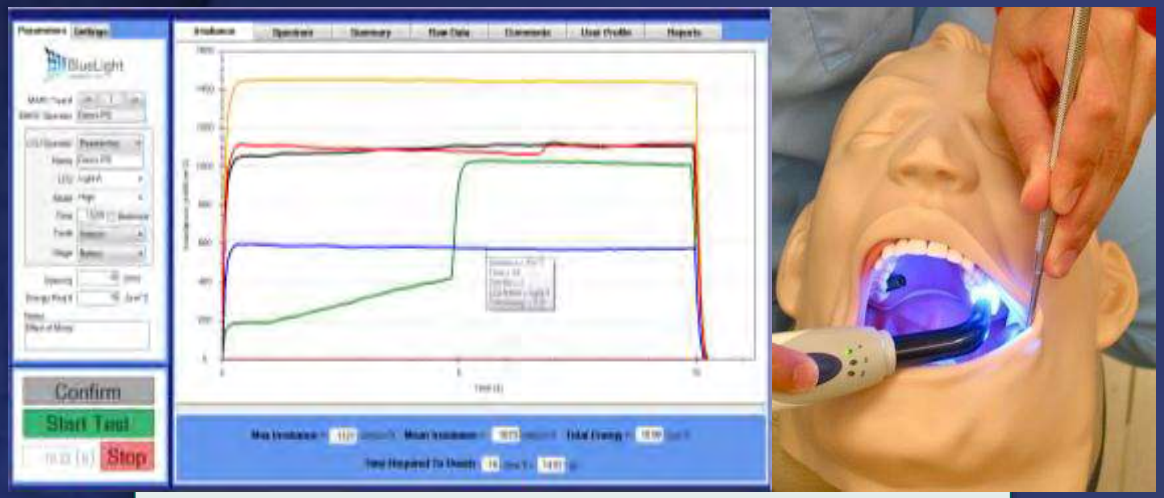
Buy It Now or Best Offer
$28.87
Free Shipping Time left: Time left:

equirement

Demi Plus Led Curing Light In B...
$995.00 - eBay
Find great deals on eBay!

Evaluate Energy Delivery

MARC™ Patient Simulator
quantifies energy delivery to resin



Scientifically accurate,
clinically relevant
& easy-to-use

Consistent calibration enables **apples:apples** comparisons

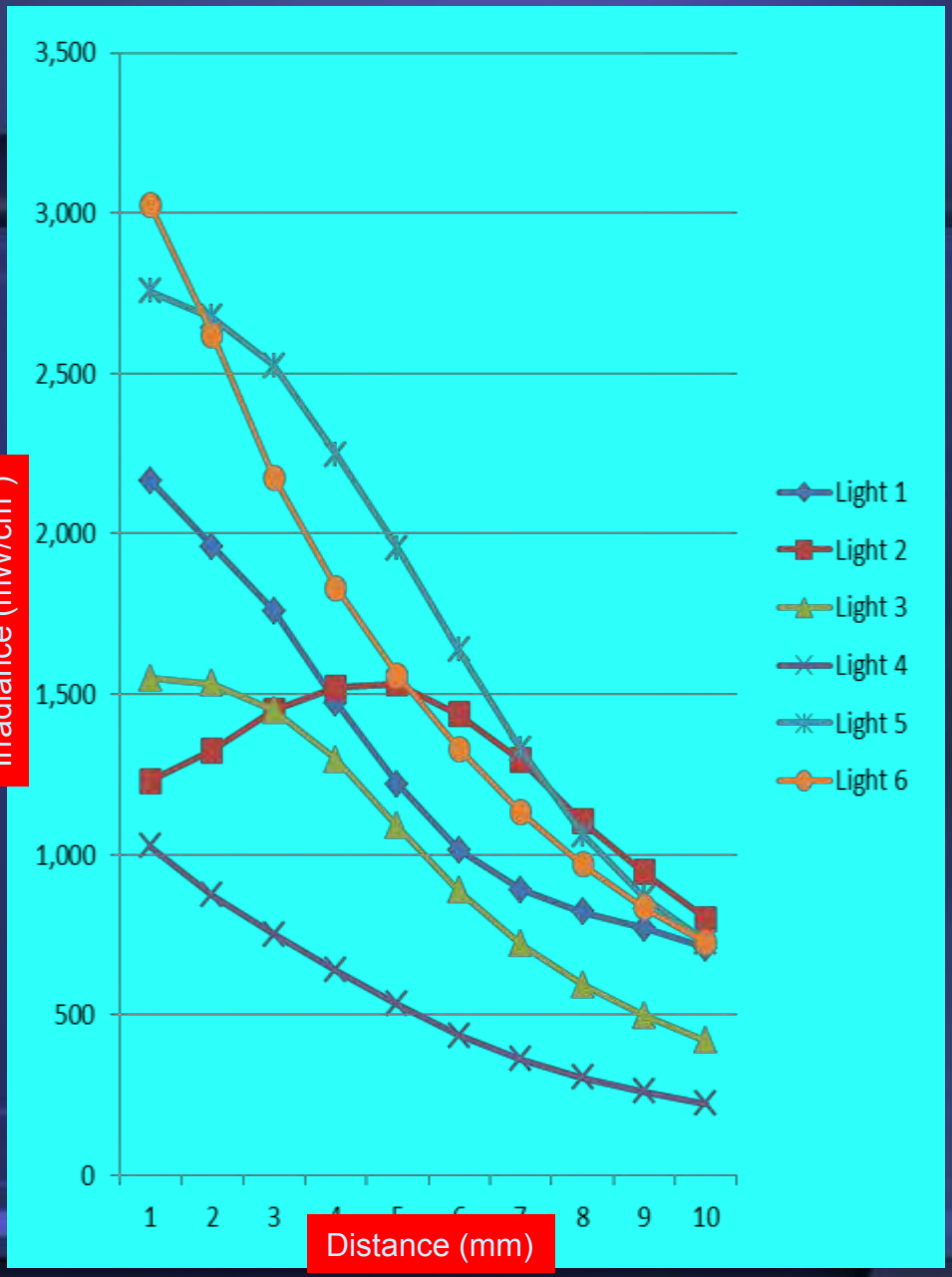
There are Lots of Different Curing Lights

…and their CLINICAL PERFORMANCE is VERY different!

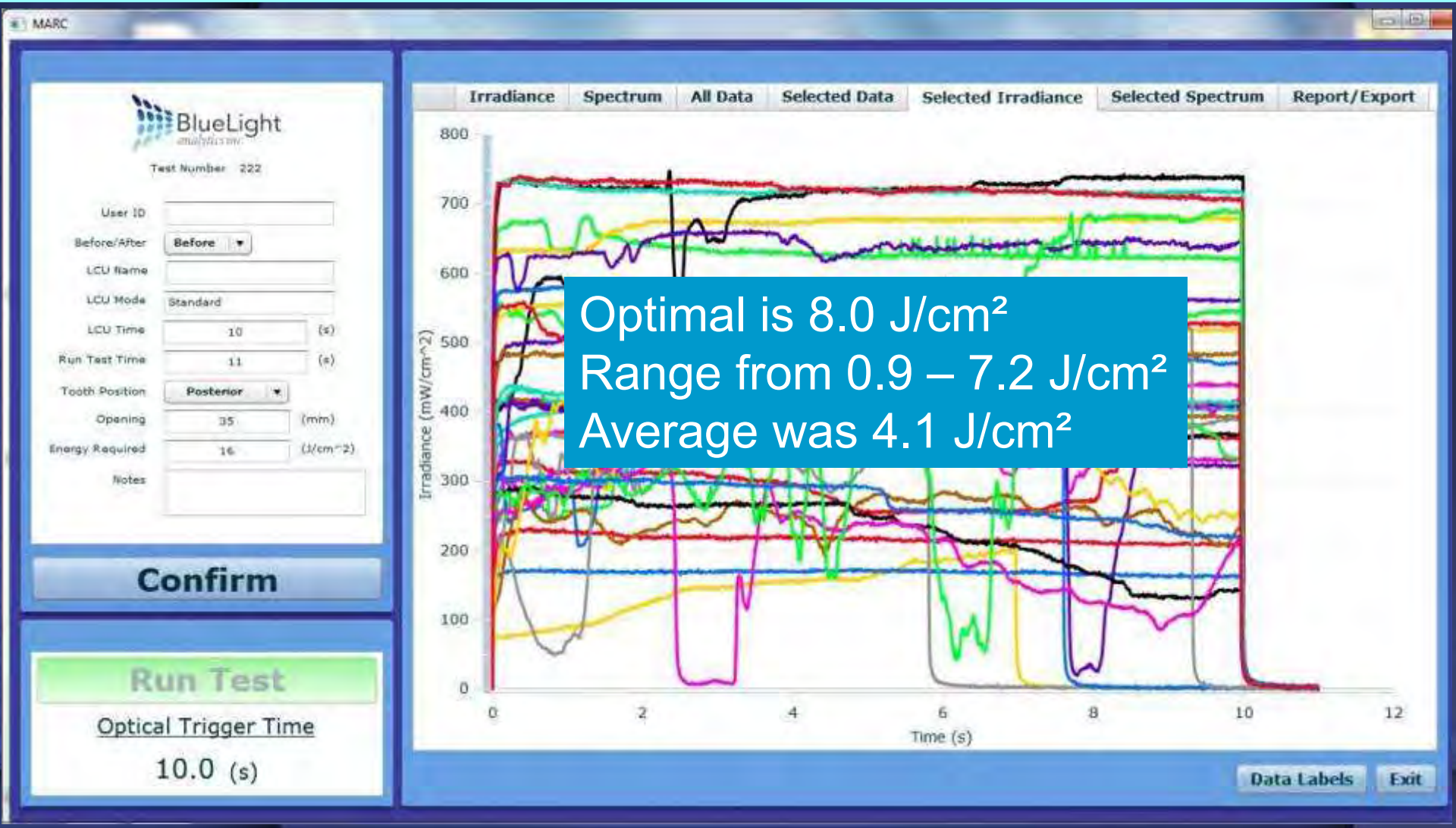
CLINICAL Irradiance

There's no one number

- **Beam profile and distance can have a very large effect.**
- **Irradiance commonly declines by 60 – 80% over clinically relevant distances**



37 Operators
Same Light, Same Tooth, Same Time



Energy Requirements

- Each shade requires a different amount of time as determined by the manufacturer

Esthet·X flow
liquid micro hybrid

SHADE	SECONDS
A2-O	20
BW	10
A1	10
A2	10
A3	10
A3.5	10
A4	15
B1	5
C4	20
U/LYG	10

TPH³ Flow
LIQUID MICRO HYBRID

SHADE	SECONDS
A1	15
A2	15
A3	15
A3.5	15
B1	15
B2	15
BW	15
C2	15
C4	35
C2-O	35

Dyract eXTRA
UNIVERSAL COMPOMER RESTORATIVE

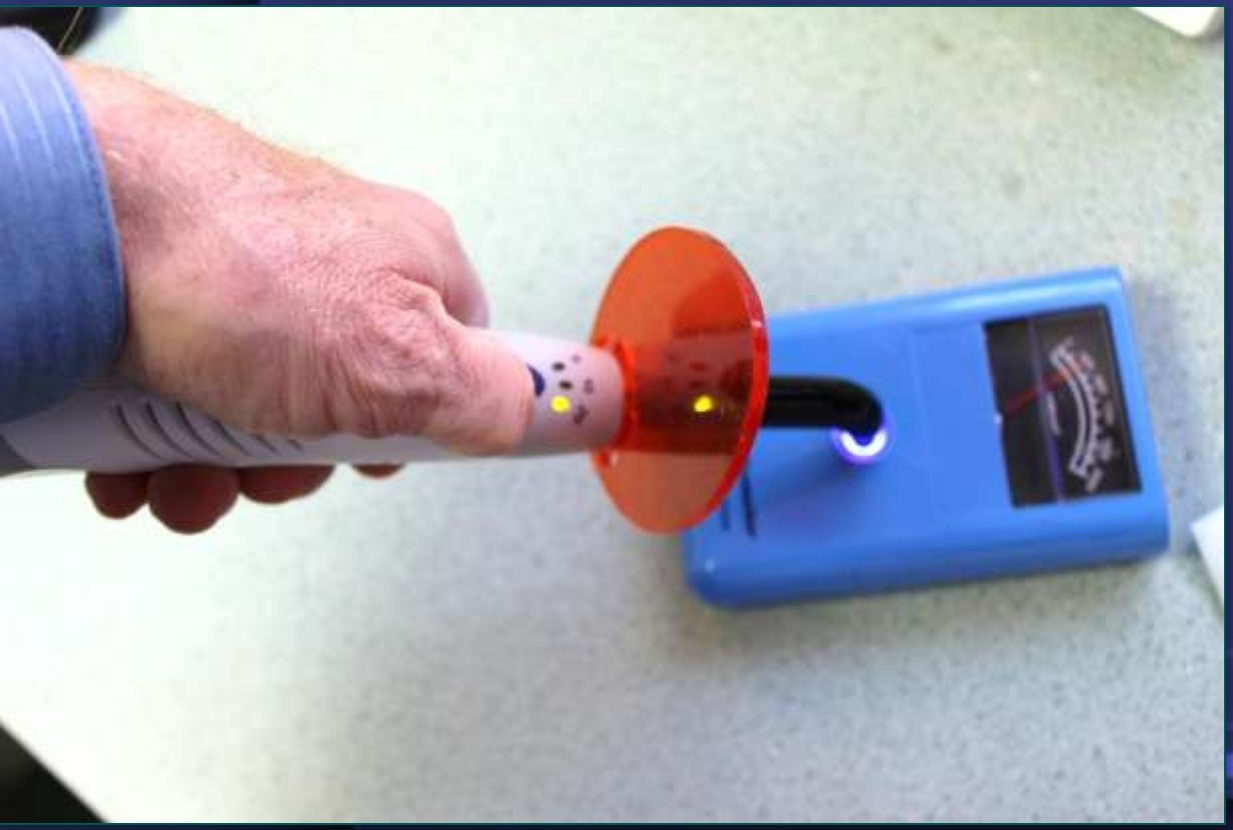
SHADE	SECONDS
A2	10
A3	10
A3.5	15
A4	15
B1	10
B3	15
C2	10
C3	10
XL	10

ceram·x mono

SHADE	SECONDS
M1	10
M2	10
M3	10
M4	15
M5	15
M6	15
M7	15

Energy Requirements

DEMI- Demetron
995.00$



Less than 400 milliwatts “might be good for orthodontic brackets or sealants”

Energy Requirements

LED China
24.83$ total
Fully programmable

More than 800 milliwatts!
FDA approved???
UL listed?
Hospital cases

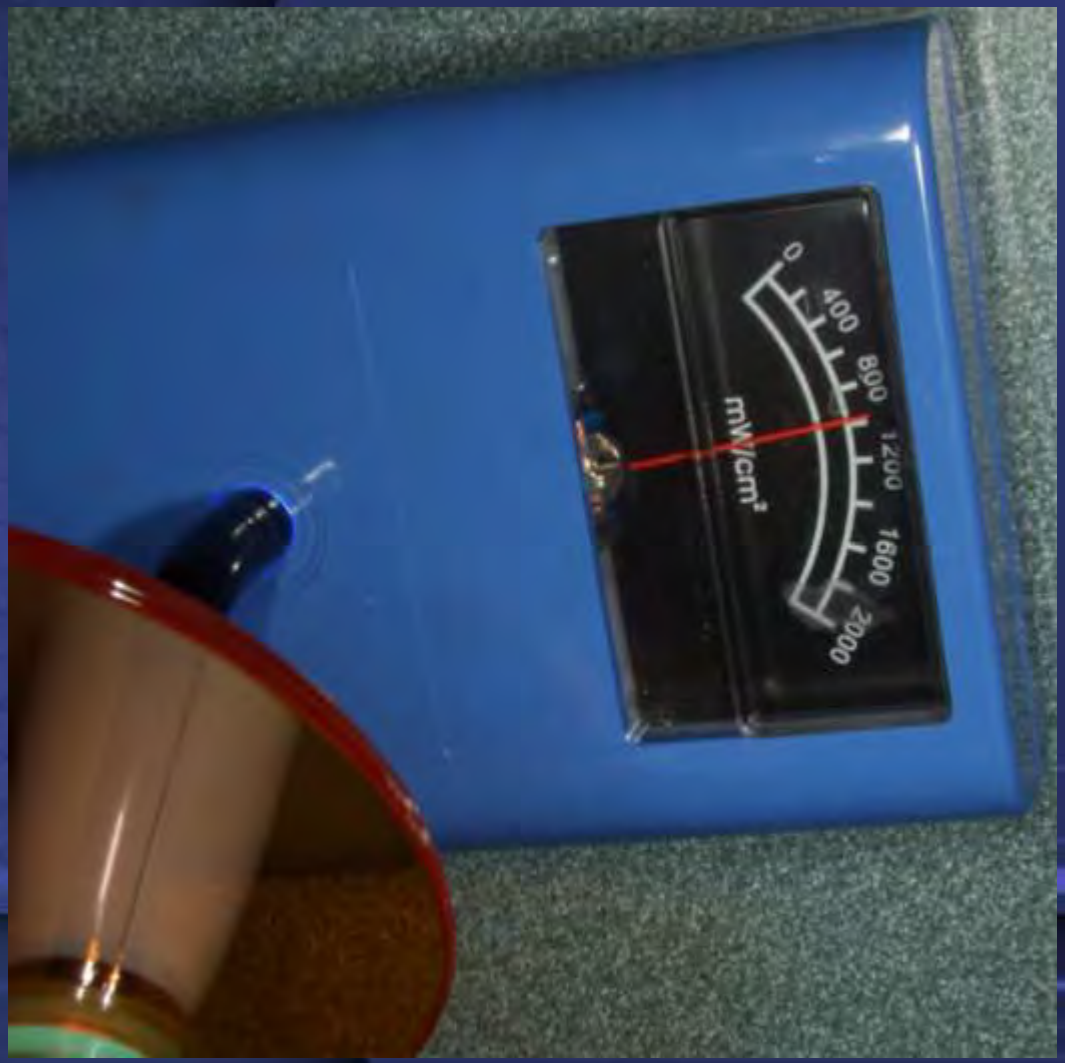
Energy Requirements

LED China
32.50$ total
Fully programmable

FDA approved
CE listed
Hospital cases

Energy Requirements

LED China
32.50$ total
Fully programmable



More than 1000 milliwatts!
FDA approved
UL listed?
Hospital case

Energy Requirements

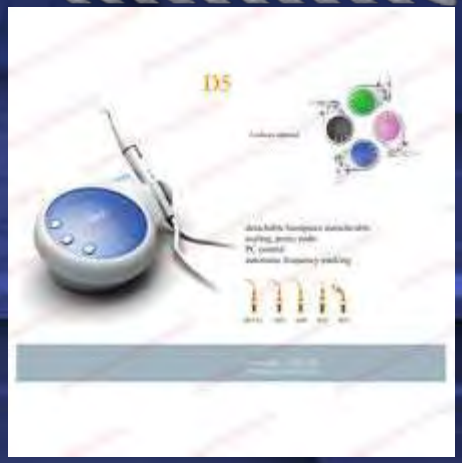
- Don’t take chances with these sweet little snot nosed bundles of joy.

Governmental Regulations are always beneficial and logical. REALLY???

du

Ultrasonic Point Preparation CVDentus

Minimally Invasive Dentistry



Ultrasonic Point Preparation CVDentUs

- CVDentUs
- Brazilian company that produces dental diamond points for ultrasonic preparations.
- Based on space technology

Ultrasonic Point Preparation CVDentUs

- Chemical Vapor Deposition- surface completely covered with diamonds

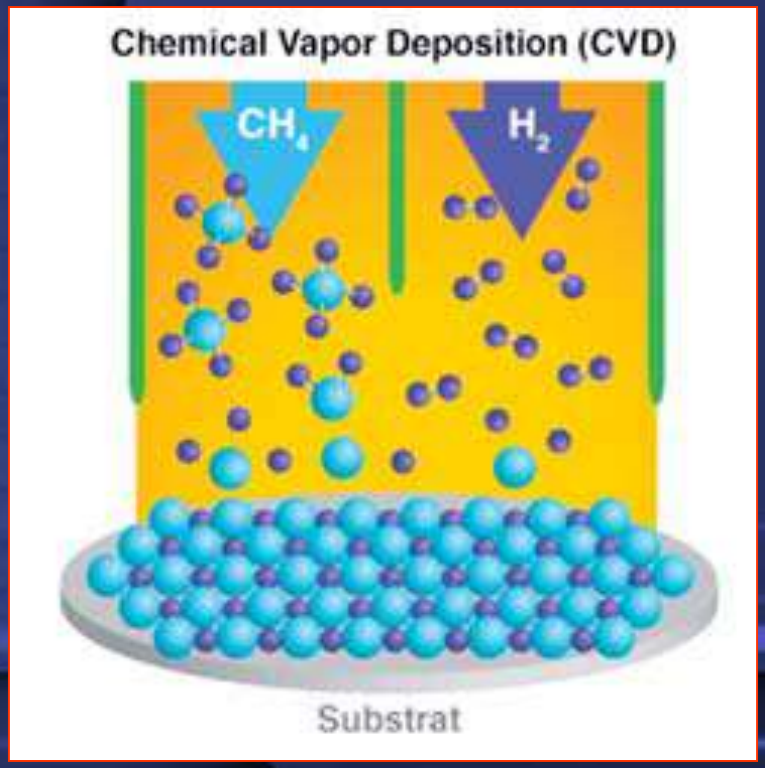


Figure 1 shows with details the party plaintiff of the CVDentus tip, formed for an only diamond rock with well commanded rugged surface and not suffering consuming with the use and, therefore, having long useful life.

Figure 2 shows with details the party plaintiff of a conventional tip, that possesss isolated diamond grains in a metallic matrix and that they are worn out quickly with the use, leaving metallic residues.

Fig.1 - Party plaintiff of the tip CVDentus

Fig.2 - Party plaintiff of a conventional tip

Ultrasonic Point Preparation CVDentus

- CVD adaptors allow use with existing ultrasonic equipment

CVDentus tips

Download Catalogs:

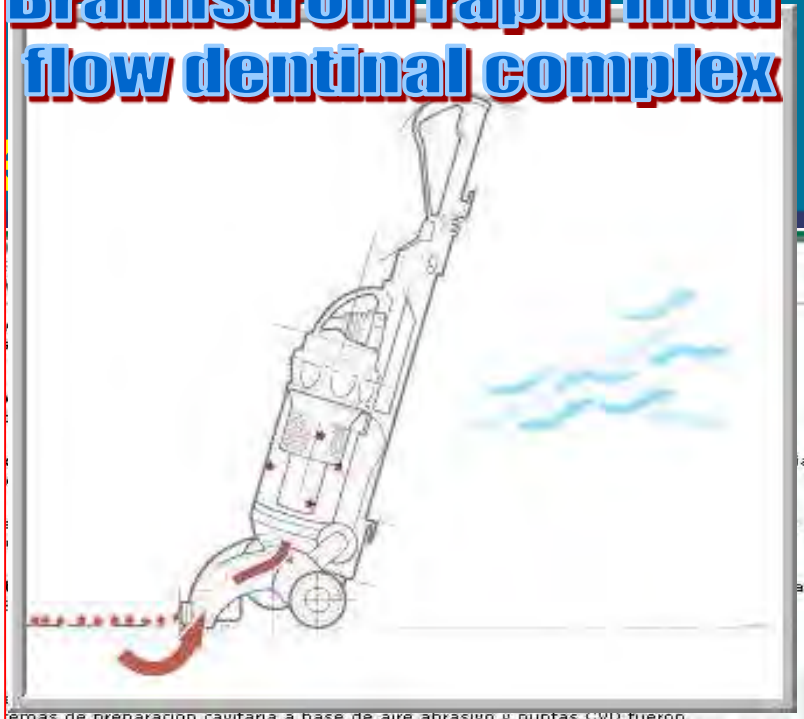
Português (365 KB)

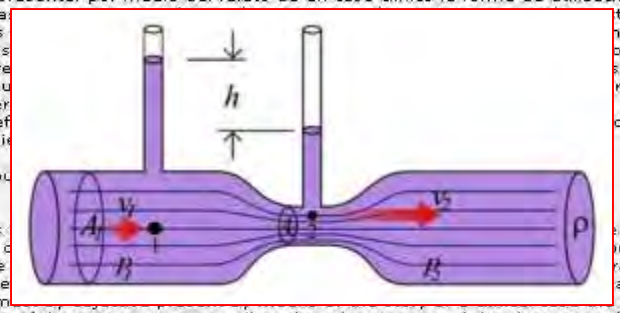
English (363 KB)

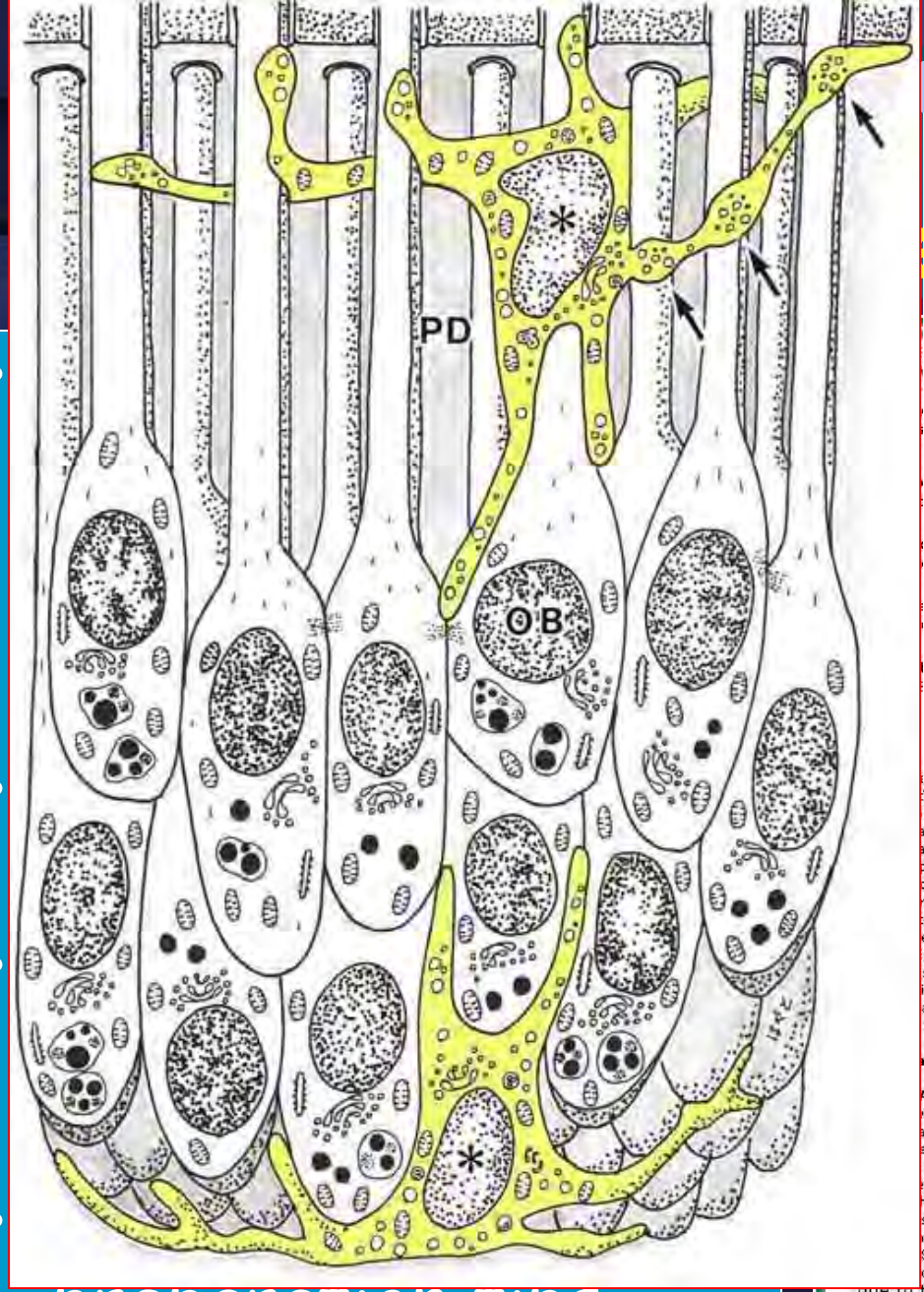
The biggest news in odontology also has the CVD technology.

It is the new CVDentus tips, adaptable tools in CVD-Diamond to equip existing ultrasound already in the dental doctor's offices. The great news is that these tools extend the use of the ultrasound equipment.

Brannstrom rapid fliud flow dentinal complex







preparation tips

Ultrasonic Point Preparation CVDentUs

- Small Table Top Piezo Electric Ultrasonic Unit

Ultrasonic Point Preparation CVDentUs

- Small Table Top Piezo Electric Ultrasonic Unit

Ultrasonic Point Preparation CVDentus

- Silver tips are for cutting
- Gold tips are for finishing

FINISHING TIPS

Φ	0.3	0.5	1.0	1.2	1.0	1.0	1.0
L	4.0	2.5	2.5	1.5	1.0	0.8	2.5
Code	6.1107	6.1114	6.2134	6.2142	6.3231	6.4131	6.2234

CUTTING TIPS (SILVER)

Φ	0.6	1.0	1.2	1.0	1.0	1.0
L	4.0	4.0	1.5	1.0	0.8	4.0
Code	8.1117	8.2137	8.2142	8.3231	8.4131	8.2237

Minimally Invasive Dentistry

Case Two- Primary Dentition
Infant Oral Care

Eighteen Month Old
Presents- with Enamel Defects of Molars and Incisors
Behavior- tentatively cooperative, short attention span, active
Oral Hygiene- greatly improved
Parental Attitude- very involved
Financial resources- large family, limited

CariScreen and Probiotics

Minimally Invasive Dentistry

Case Two- Primary Dentition
Infant Oral Care

Eighteen Month Old
Treatment- Fluoride Varnish, in office, MI Paste (Tooth Mousse), at home, applied by parent before nap and at bedtime (Repair)
ART with Fuji II LC (RMGI) and Triage (RRGI) while sitting on parent's lap

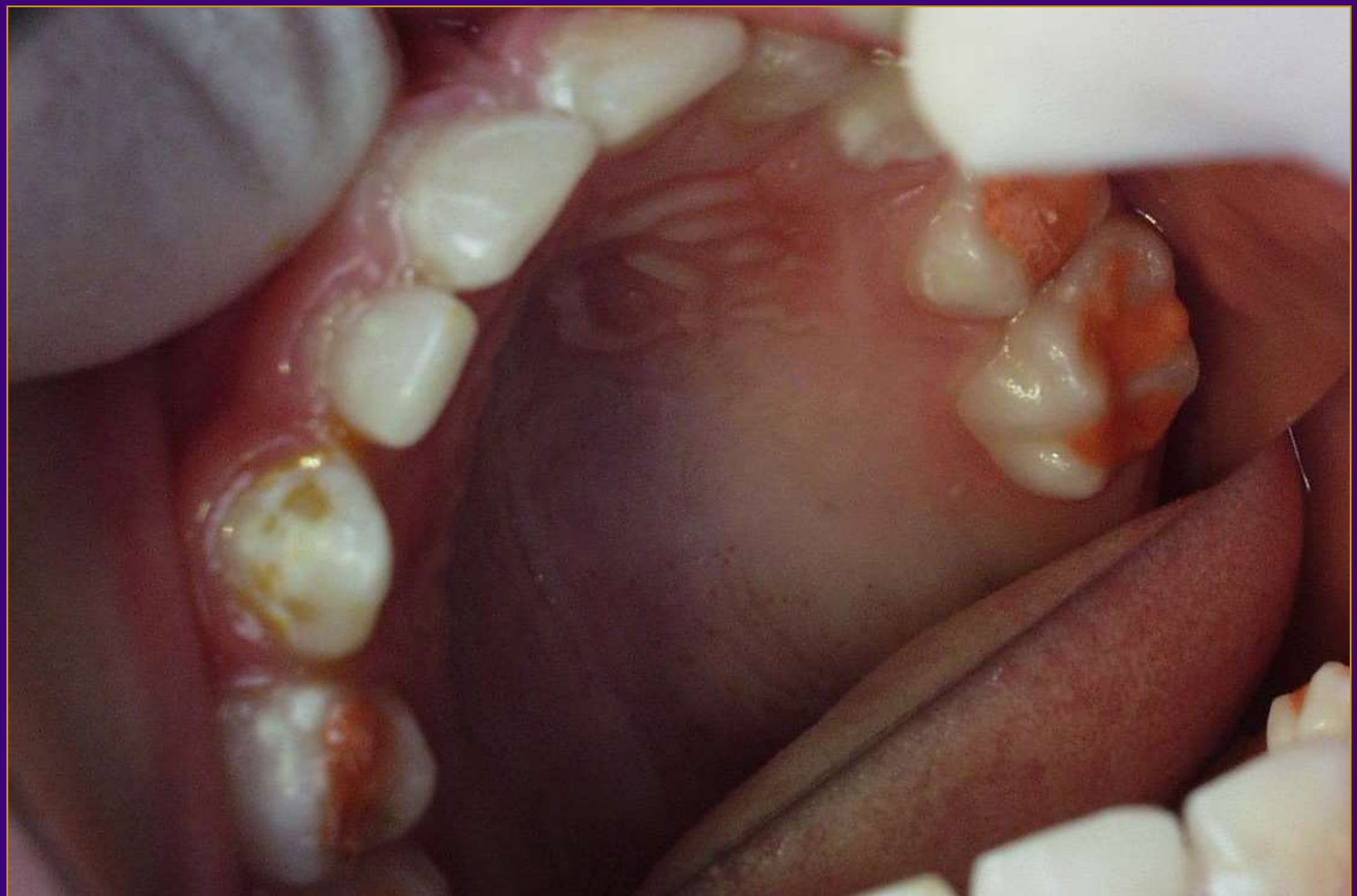
Alternative Restorative Treatment

- Duraphat on canines and occlusal Triage on posteriors
- Just over two years old

Fuji II
LC
SCs

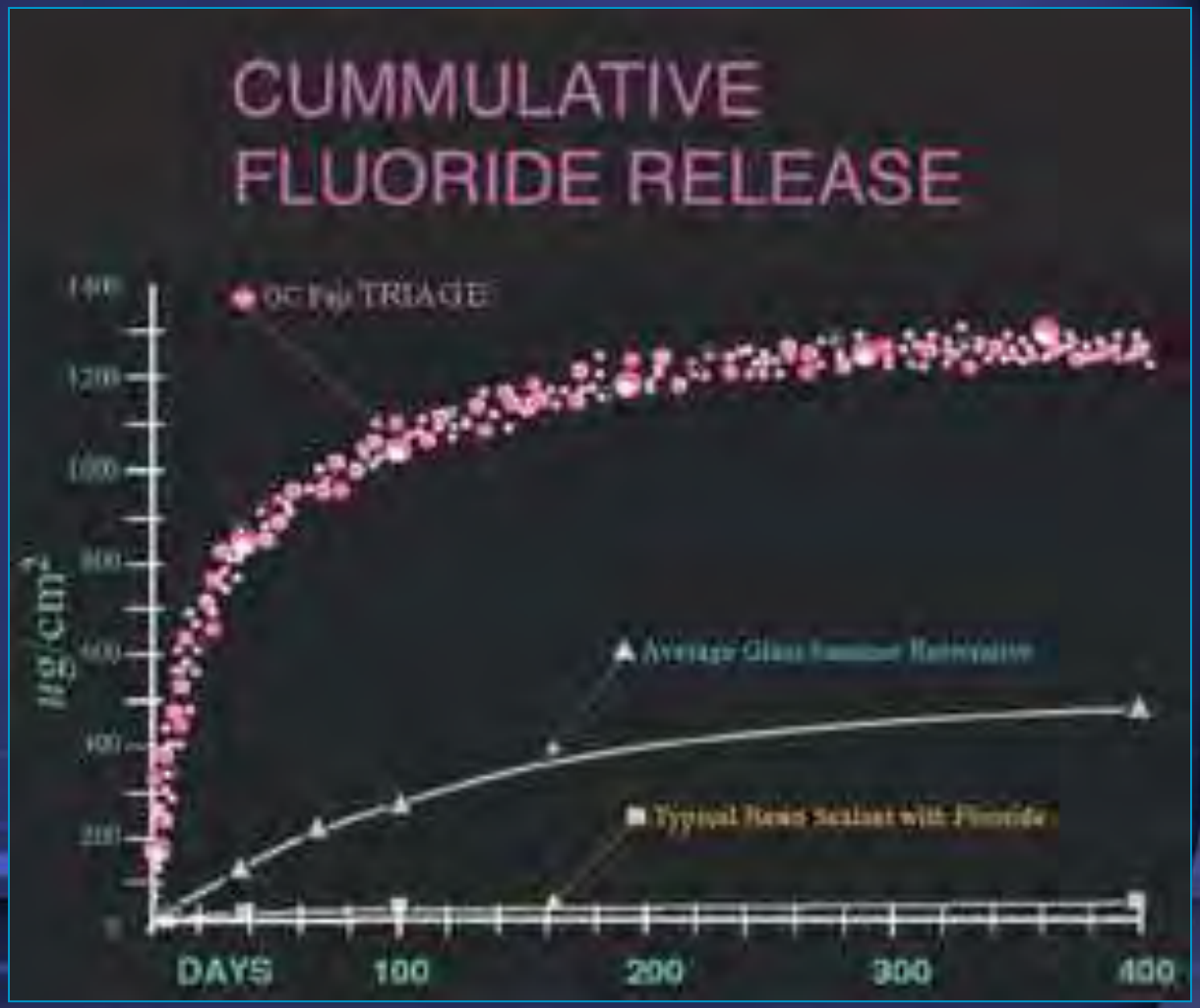
Alternative Restorative Treatment

- Many hypocalcific defects restored with Triage



Infant Oral Health- *ART*

- Must have a “clinically relevant” level of fluoride to be worthwhile



Preventive Dentistry:

Beyond First Do No Harm: Principles of Atraumatic Care

Donna L. Wong, PhD, RN, PNP, CPN, FAAN

Definition of Atraumatic Care

Atraumatic care - is the provision of therapeutic care in settings, by personnel, and through the use of interventions that eliminates or minimizes the psychologic and physical distress experienced by children and their families in the health care system (Wong, 1989).

Therapeutic care - prevention, diagnosis, treatment, or palliation of chronic or acute conditions

Setting - any place care is given

Personnel - anyone involved in providing therapeutic care

Interventions - strategies aimed at reducing distress

Psychologic distress - may include anxiety, fear, anger, disappointment, sadness, shame, guilt, embarrassment, loss control, helplessness, hopelessness

Physical distress - may range from sleeplessness and immobilization to disturbing sensory stimuli, e.g., pain, temperature extremes, loud noises, bright lights

Identification of Child and Family Stressors

Physical Stressors

Preventive
Alter
Restorative

Evidence-Based Dentistry (2005) **6**, 9. doi:10.1038/sj.ebd.6400

Atraumatic restorative techniques co
discomfort in children receiving den

Does the extent of discomfort differ between atraumatic restorative treatment of multisurface cavities in deciduous molars compared with use of rotary instruments?

Address for correspondence: MCM Schriks, Department of Cariology, Endodontology and Pedodontology, Academic Centre for Dentistry Amsterdam, Louwesweg 1, 1066 EA Amsterdam, The Netherlands. E-mail: m.schriks@acta.nl

Chris Deery[1]

[1]Paediatric Department, University of Edinburgh, Edinburgh Dental Institute, Edinburgh, UK

Schriks MCM, van Amerongen WE. *Atraumatic perspective of ART: psychological and physiological aspects of treatment with and without rotary instruments. Community Dent Oral Epidemiol 2003; 31:15-20*

ly
a
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"The atraumatic restorative

Do no harm — but first, do not hurt

Raymond D. Pitetti

Dr. Pitetti is an Assistant Professor of Pediatrics in the Division of Pediatric Emergency Medicine at the Children's Hospital of Pittsburgh, Pittsburgh, Penn.

Correspondence to: *Dr. Raymond D. Pitetti, Division of Pediatric Emergency Medicine, Children's Hospital of Pittsburgh, 3705 Fifth Ave., Pittsburgh PA 15213; fax 412 692-7464;* raymond.pitetti@chp.edu

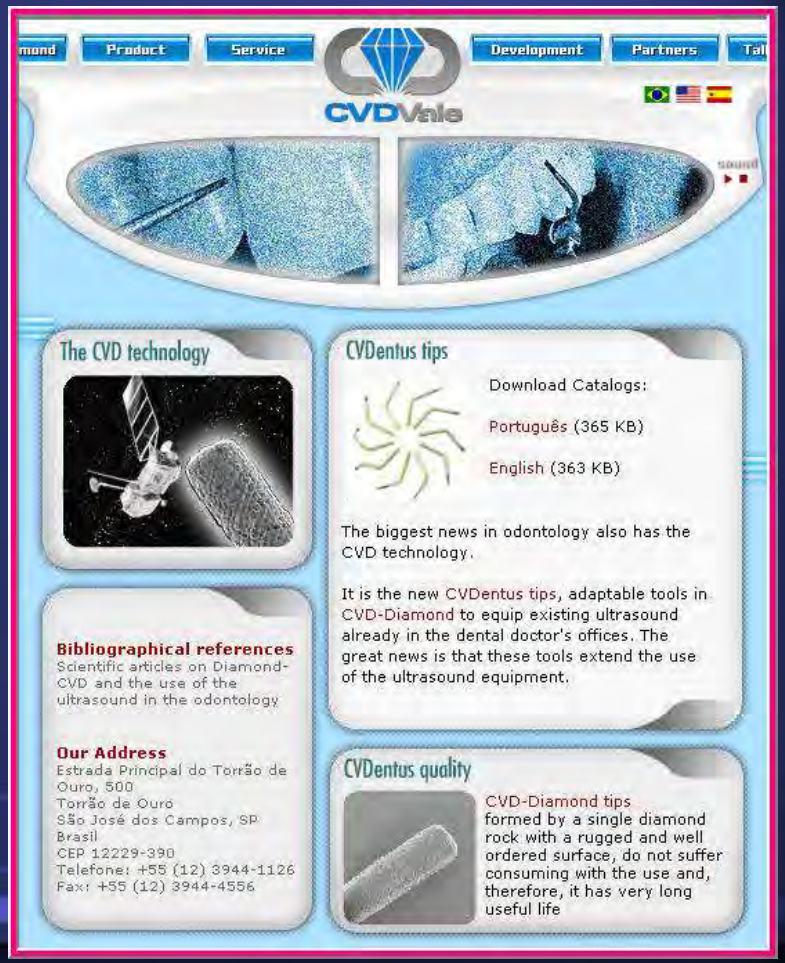
As recently as 20 years ago, many health care professionals believed that young children did not experience pain and that the use of opiates for pain control was contraindicated because of a substantial risk of addiction.[1] A related misunderstanding was the belief that even if children experienced pain, they would not remember it, and therefore they would sustain no lasting effects. Another commonly held belief was that a child's pain could not be measured accurately. As a result, many clinicians performed painful procedures, including intravenous cannulation, on children without regard for the pain the child was experiencing.

Thankfully, we no longer hold to such archaic ideas. Neuroanatomic studies have shown that by 29 weeks of gestation, pain pathways and the cortical and subcortical centres involved in the perception of pain are well developed, as are the neurologic systems for transmitting and modulating painful sensations. Therefore, even fetuses can perceive pain in ways similar to those of an older child.[2] In addition, studies have shown associated with painful procedures, can endure in the memory and result in, for example, disturbances to eating, sleeping and the stability of the stat can be assessed through physiologic indicators, systematic observation of behaviour, and reports by the children themselves. As a result, there has l to pain and pain management in children.

between ART and Amalgam restorations

Ultrasonic Point Preparation CVDentUs

- CVDentUs
- Brazilian company that produces dental diamond points for ultrasonic preparations.
- Based on space technology



Ultrasonic Point Preparation CVDentUs

- Small Table Top Piezo Electric Ultrasonic Unit

Ultrasonic Point Preparation CVDentUs

- Twenty four month old female with deep pit second primary molar
- “Sensitive to explorer probing”
- Partially erupted tooth with open contacts

Ultrasonic Point Preparation CVDentUs

- Pumice prophylaxis- plaque debridement

Ultrasonic Point Preparation CVDentUs

- Round tip ultrasonic point to access decay

Ultrasonic Point Preparation CVDentUs

- Round diamond point is approximately the estimated size of diseased tissue
- Conservative access

Ultrasonic Point Preparation CVDentUs

- Access is completed and the carious dentin (infected) removed with small sharp dental spoon excavator

Ultrasonic Point Preparation CVDentUs

- Very hard dentin surface
- Slight pink blush
- No report of discomfort at all
- Conservative treatment

Ultrasonic Point Preparation CVDentUs

- Preparation conditioned with total etch technique
- Fuji IX Extra mixed by assistant in RotoMix (Espe)
- Injected into preparation

Ultrasonic Point Preparation CVDentUs

- Resin impregnated brush used to smooth restoration prior to set
- Resin placed upon etched enamel surface

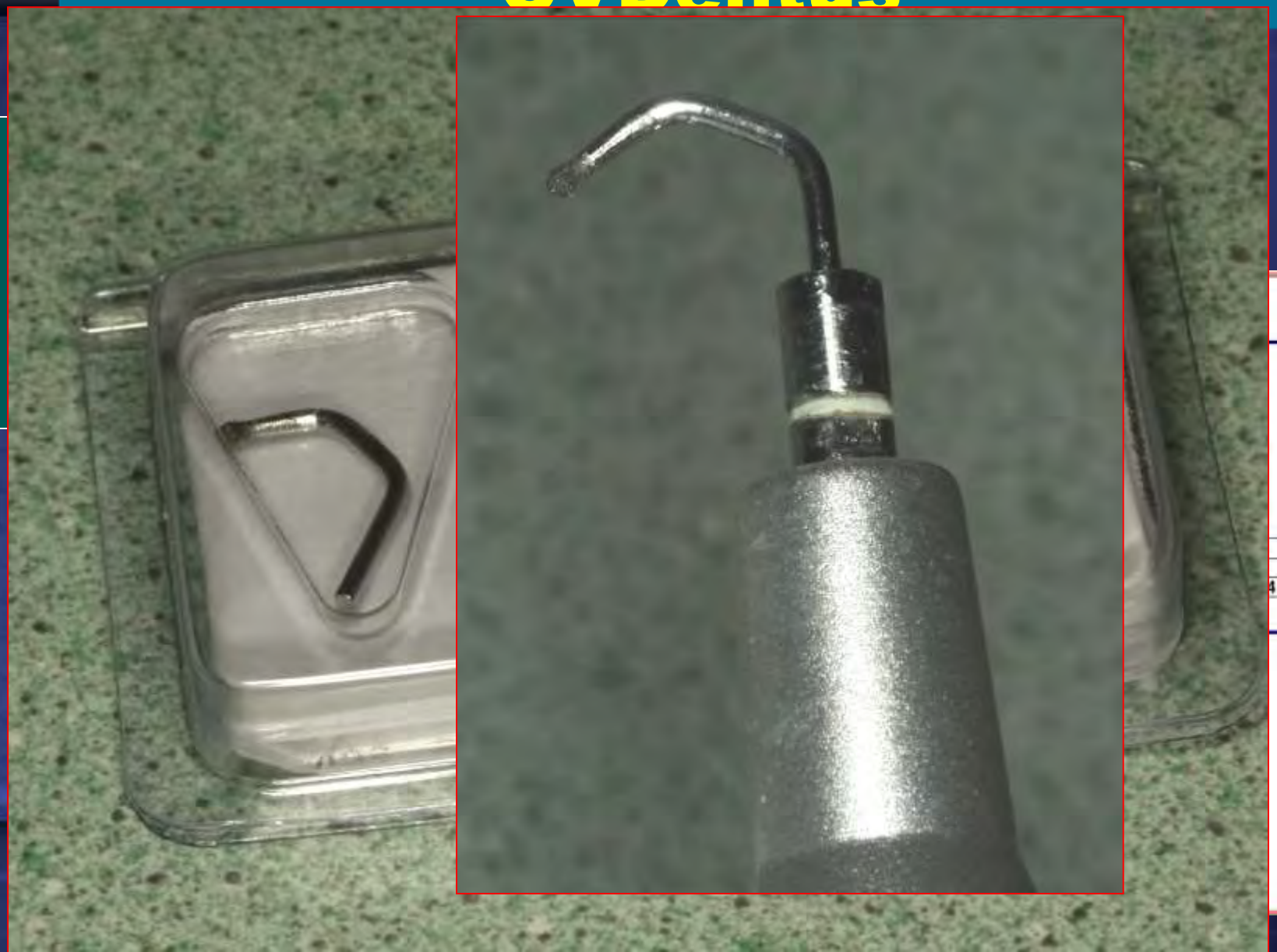
Ultrasonic Point Preparation CVDentUs

- Light curing of top resin layer
- Resin layer protects setting resin reinforced glass ionomer during the acid-base reaction

Ultrasonic Point Preparation CVDentUs

- Finishe
- Adjacer
  fissure sealed with
  RRGI and resin coat

Ultrasonic Point Preparation CVDentus



Ultrasonic Point Preparation CVDentus

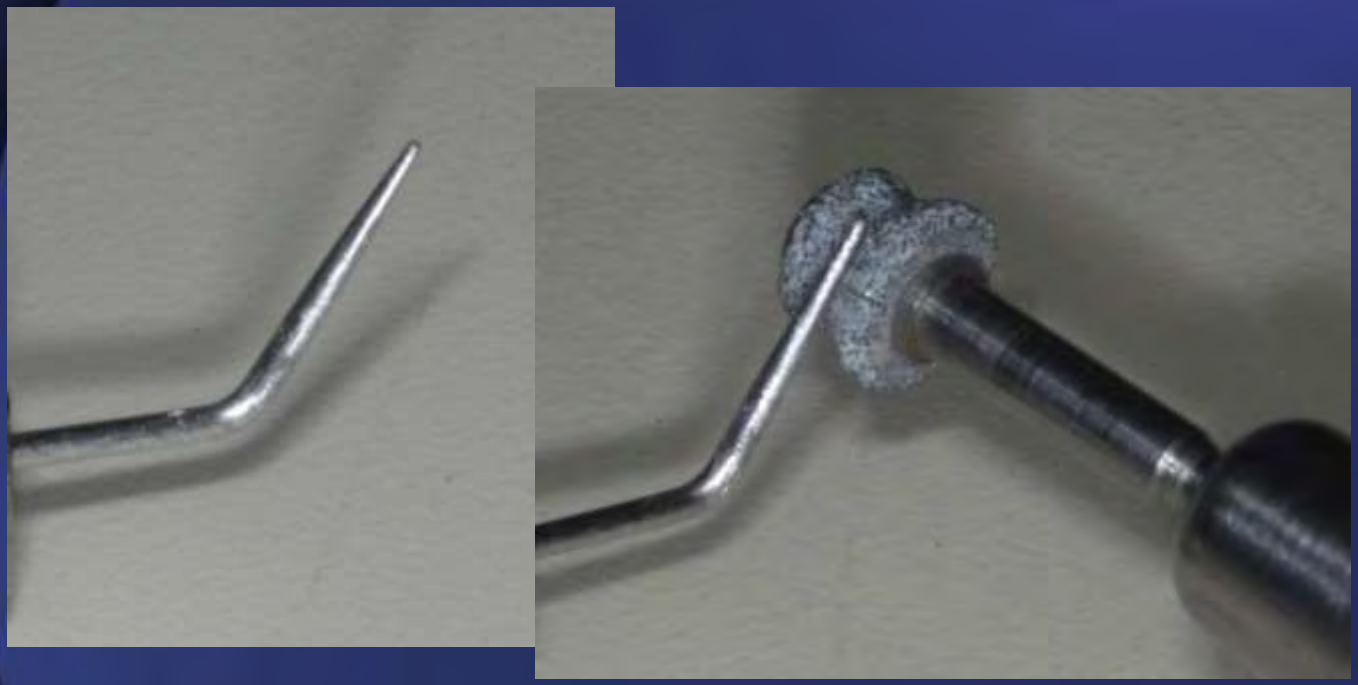
- Ultrasonic Dentistry
- Minimally Invasive Dentistry for Pediatric Dentists

eparation

try

for Pediatric

CVDentus for Pulpotomy



Using tapered point for Partial pulpectomy

Minimally Invasive Dentistry

Restorative Care

- "Open Sandwich"

Chicago-Style

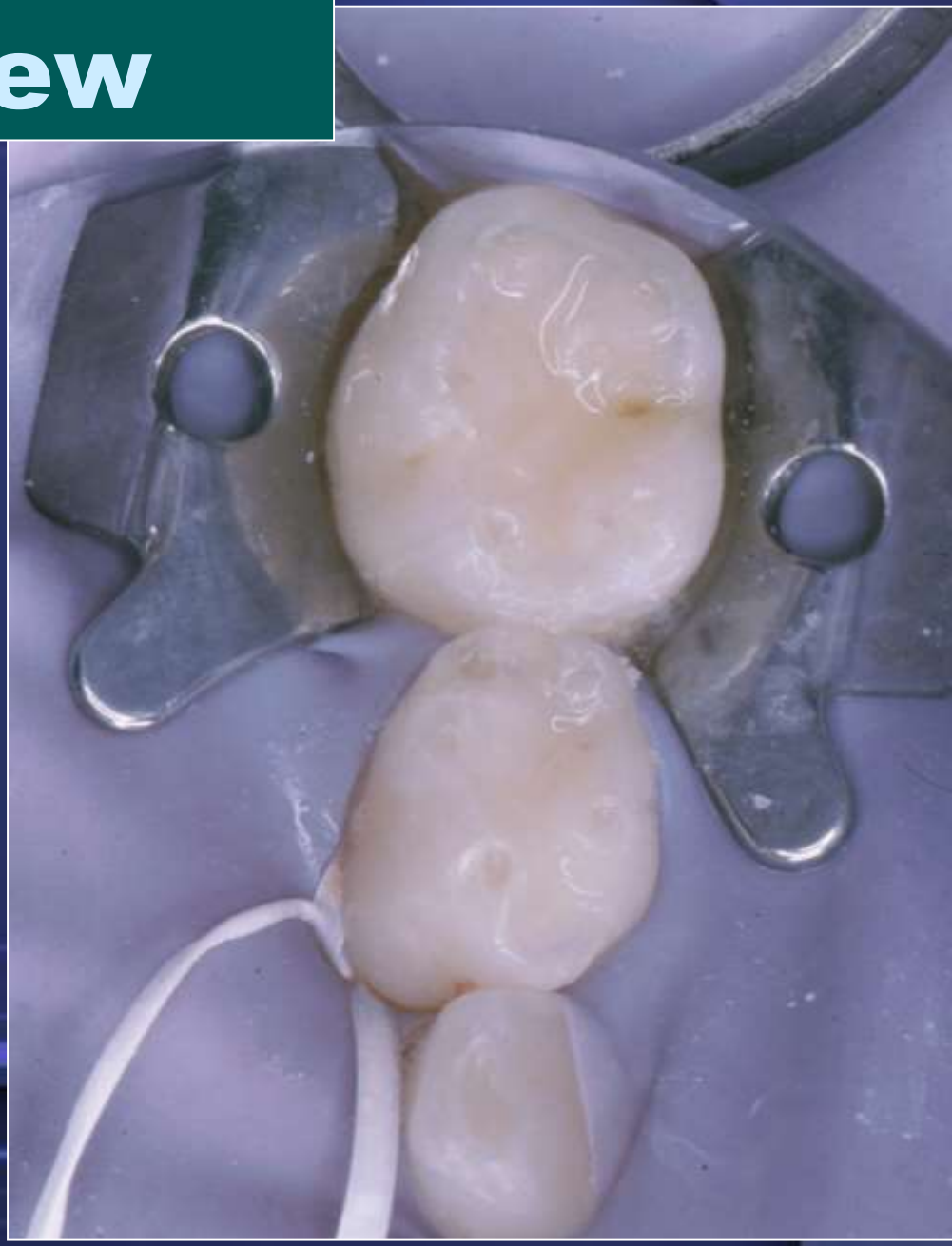
Minimally Invasive Dentistry

Sandwich Technique

- Open sandwich- exposed gingival component that releases fluoride, used in patients with higher caries incidence.
- Closed sandwich- fluoride releasing component not exposed to environment, used in deeper restorations.
  - Issues- degradation of dentin bond, water treeing

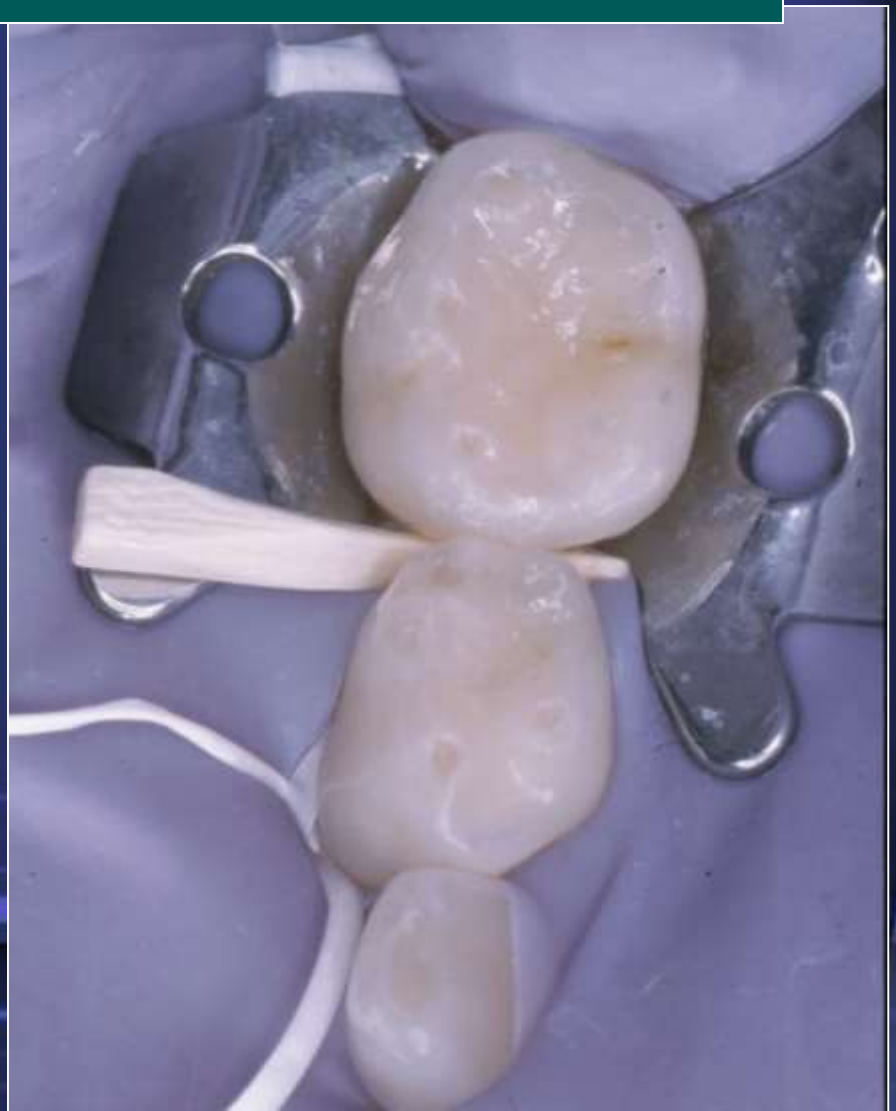
Clinical pre-operative view

- Distal lesion of first primary molar



Pre-wedge with wood wedge

- Wooden wedge pre-separates and protects dam/tissue



Preparation

- Rounded line angle

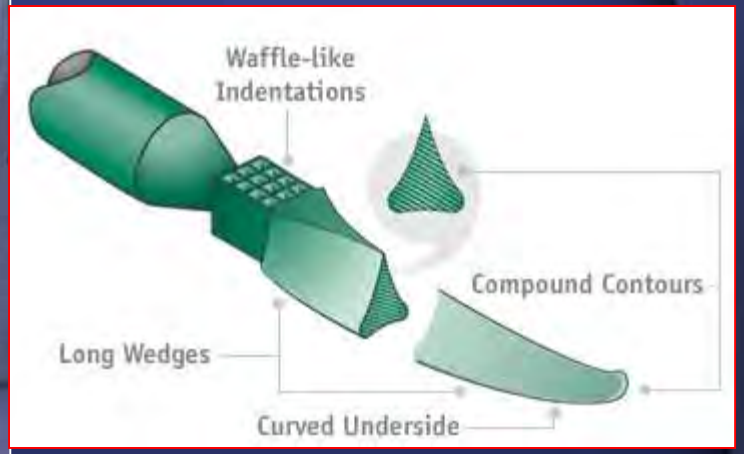
Facts do not cease to exist because they are ignored.
- Aldous Huxley

Sectional matrix and plastic wedge

- Proper placement requires:
- Sectional matrixes
- Plastics wedges- Five different sizes

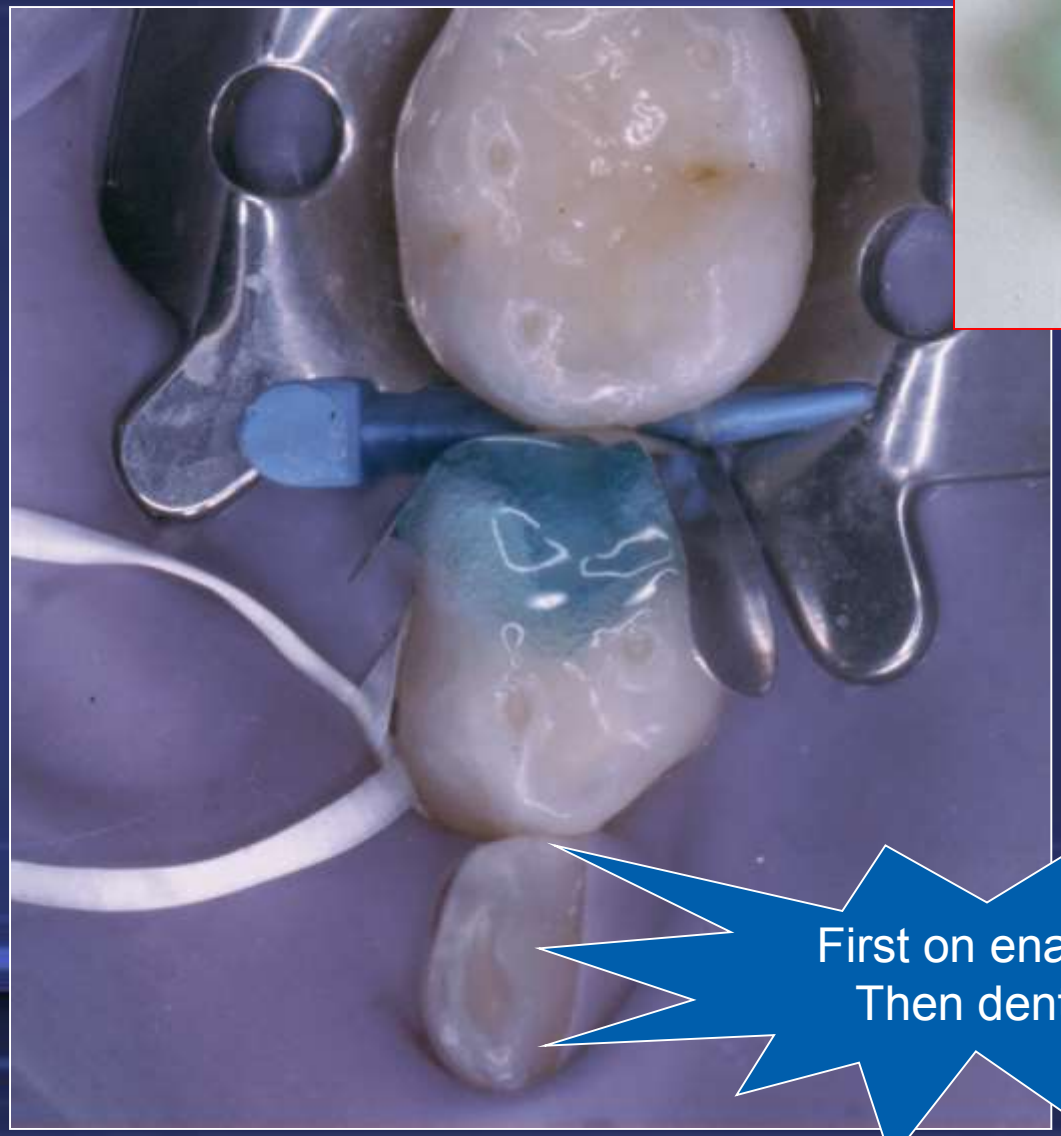
Sectional matrix and plastic wedge

- Matrix too long



Total etch

•32 % phosphoric acid semi-gel



First on enamel
Then dentin

Adhesion of Resin Modified Glass Ionomer Restorations

- **Pereira, P. N.**, *Adhesion of resin-modified glass ionomer cements using resin bonding systems*, J. Dent. Jul-Aug, 1998.
- **Bishara, S. E.**, *Effect of altering the type of enamel conditioner on the shear bond strength of a resin-modified glass ionomer adhesive*, Am J. Orthod. Dentofacial Orthop Sept, 2000.

Bond strength of RMGI to etched dentin

2641 Shear Bond Strength of Four Glass-Ionomer Restorative Materials to Dentin

R.S. ZADEH, J.O. BURGESS, and L.C. RAMP, UAB School of Dentistry, Birmingham, AL, USA

OBJECTIVES: The aim of this in vitro study was to compare the shear bond strength to dentin of three commercially available and one paste-paste experimental glass ionomer restorative mate

METHODS: The occlusal surface of forty extracted ... wet gr... h a se... of a...sive d... ending with 600 grit (Wehmer, Model 108, IL,USA) until a flat dentin su... e wa... d h... eeth w... domly ... groups. The dentin surfaces for three conventional groups (Fuji II LC A3.5, Fuji Filling LC A3 and F... A3) were treated with a conditioner for 10 seconds, rinsed for 10 seconds, and dried gently (for Fuji Filling LC, the conditioner was not rinsed, but gently dried). The glass-ionomers were mixed and applied following the manufacturers' instructions and used to fill plastic tubes with a 2 mm external diameter and 2 mm height. The experimental glass-ionomer was applied to non condi... e... r ... xing. The room ... pe... and hu... were ... d 50±5 % humidity during specimen fabricati... s... s... for... n incuba... fo... urs at 1... % hum... 7... were loaded in shear in a Universal test... ... d speed ...ster... d... 556... MA, USA ... The da... analyzed using ANOVA and Tukey/Kramer post hoc test (p=.05).

RESULTS: The mean shear bond strengths in MPa were: Experimental—3.2±1, Fuji IX--12±2, Fuji Filling LC--13.2±2, and Fuji II LC--19.7±3. Data were analyzed with ANOVEA and Scheffe tests. Fuji II LC had significantly (P<0.001) greater shear bond strength than all other glass-ionomers, the experimental material had significantly lower bond strength.

CONCLUSIONS: Bond strength of glass-ionomers is an important clinical selection criterion and should be weighted when selecting a material.

Fuji II LC-

SBS= 19.7 MPa

Similar to many self etch adhesives

Capsule mixer

- Activate capsule and mix during etching of preparation
- Ref: Ewoldsen and Covey