
BETTER
FASTER
STRONGER
tips to up your game in direct restorative techniques
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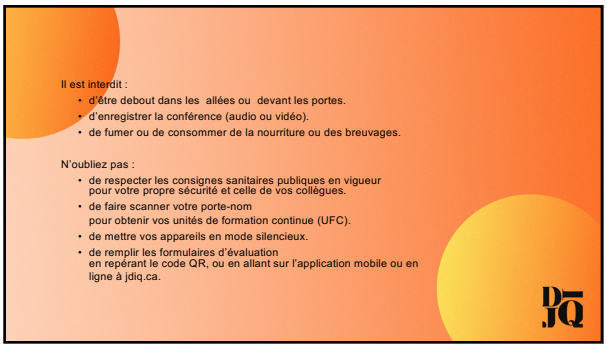
WITH
THANKS
VOCO
THE DENTALISTS
PULPDENT
PAPERPLANE
THERAPEUTICS
curion

2


55e CONGRÈS
55TH CONGRESS
L'ART DE BRILLER
THE ART OF SHINING
ORGANISÉ PAR
Conseils de sécurité | Safety instructions

3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• de fumer ou de consommer de la nourriture ou des breuvages.
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• de respecter les consignes sanitaires publiques en vigueur pour votre propre sécurité et celle de vos collègues.
• de faire scanner votre porte-nom pour obtenir vos unités de formation continue (UFC).
• de mettre vos appareils en mode silencieux.
• de remplir les formulaires d'évaluation en repérant le code QR, ou en allant sur l'application mobile ou en ligne à jdiq.ca.

4

Do not:
- Stand in the hallways or doorways.
- Record the lecture (audio or video).
- Smoke, eat or drink in the room.

Don't forget:
- To respect health regulations in force for your own safety and that of your colleagues
- To have your badge scanned to obtain Continuing Education Units (CEU).
- Put your devices in silent mode.
- To complete the lecture evaluation by scanning the QR code or on the mobile app or online at jdiq.ca.

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Pour obtenir la traduction par l'IA, balayez le code QR de Wordly
For AI translation, scan the Wordly QR code

6

Hello, Matt!

pain on biting

isolated to tooth #19

has seen three dental professionals in 4 months

Matt's diagnosis:
reversible pulpitis (RP)

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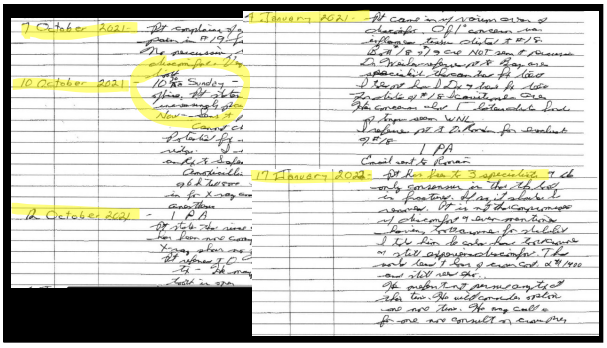

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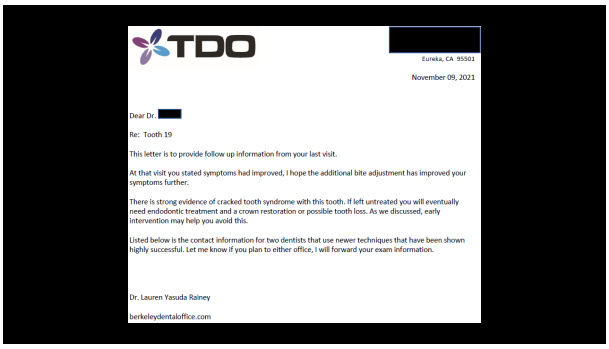
TDO

[redacted]
Eureka, CA 95501

November 09, 2021

Dear Dr. [redacted]

Re: Tooth 19

This letter is to provide follow up information from your last visit.

At that visit you stated symptoms had improved, I hope the additional bite adjustment has improved your symptoms further.

There is strong evidence of cracked tooth syndrome with this tooth. If left untreated you will eventually need endodontic treatment and a crown restoration or possible tooth loss. As we discussed, early intervention may help you avoid this.

Listed below is the contact information for two dentists that use newer techniques that have been shown highly successful. Let me know if you plan to either office, I will forward your exam information.

Dr. Lauren Yasuda Rainey

berkeleydentaloffice.com

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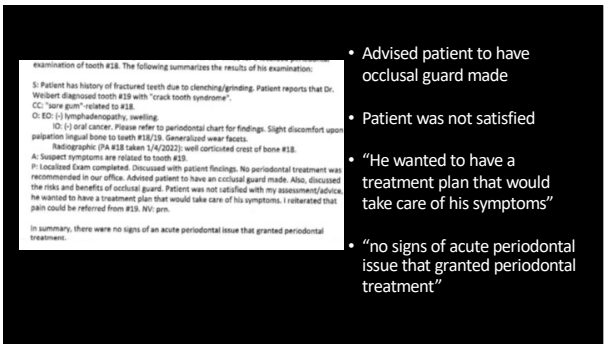
examination of tooth #18. The following summarizes the results of his examination:

S: Patient has history of fractured teeth due to clenching/grinding. Patient reports that Dr. Weibert diagnosed tooth #19 with "crack tooth syndrome".
CC: "sore gum"-related to #18.
O: EO: (-) lymphadenopathy, swelling.
IO: (-) oral cancer. Please refer to periodontal chart for findings. Slight discomfort upon palpation lingual bone to teeth #18/19. Generalized wear facets.
Radiographic (PA #18 taken 1/4/2022): well corticated crest of bone #18.
A: Suspect symptoms are related to tooth #19.
P: Localized Exam completed. Discussed with patient findings. No periodontal treatment was recommended in our office. Advised patient to have an occlusal guard made. Also, discussed the risks and benefits of occlusal guard. Patient was not satisfied with my assessment/advice, he wanted to have a treatment plan that would take care of his symptoms. I reiterated that pain could be referred from #19. NV: prn.

In summary, there were no signs of an acute periodontal issue that granted periodontal treatment.

- Advised patient to have occlusal guard made
- Patient was not satisfied
- "He wanted to have a treatment plan that would take care of his symptoms"
- "no signs of acute periodontal issue that granted periodontal treatment"

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The vendors have paid me an honorarium to present this educational program to you.

The techniques, opinions and materials presented today are those of the speaker solely, and do not represent the opinions of JDIQ, the Ordre des dentists du Quebec, or the vendors present.

While I utilize the materials presented in this program, I recognize that similar results may be accomplished with a variety of products.

I do not own stock or have a financial interest in the vendors represented, who have provided honorarium support today.

DISCLOSURES and THANK YOU

JDIQ Journées Dentaires Internationales Québec — Ordre des dentistes du Québec

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BETTER

- Visualization:
  - tissue management
  - magnification
- Patient experience:
  - Make it less "bad"
    - Improved caries intervention, adjunctive comfort items, home care aids to aid compliance

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FASTER

- clear anatomic mylar
- bulk fill restoratives

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- Curing lights
- Improved marginal adaptation

STRONGER

15

BETTER

- Visualization:
  - tissue management
  - magnification
- Patient experience:
  - Make it less "bad"
    - Improved caries intervention, adjunctive comfort items, home care aids to aid compliance

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TISSUE MANAGEMENT

- the science
- re-evaluate preparation design & prepping *FOR* your materials
- review of real-life clinical scenarios with suggested armamentarium

BETTER FASTER STRONGER

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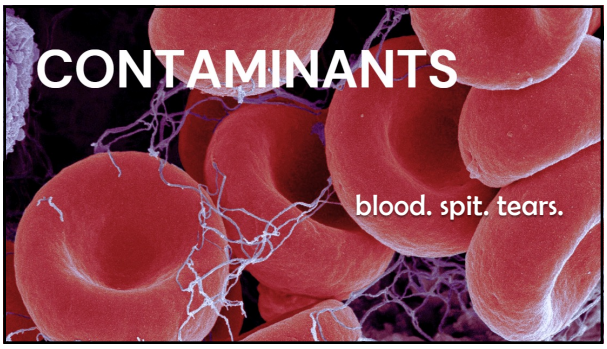

18

BLOOD

physical barrier
- visualization
- adhesion

high protein content
- fibrinogen
- platelets

SALIVA

99% water, but also includes proteins & salts

Acts as a carrier for buccal cells, bacteria, food debris

Eur J Dent. 2010 Jul; 4(3): 280–286 Influence of Blood Contamination on Bond Strength of a Self-Etching System

19

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Eur J Dent. 2010 Jul; 4(3): 280–286 Influence of Blood Contamination on Bond Strength of a Self-Etching System

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ANATOMIC REVIEW: OUR FIELD OF VIEW

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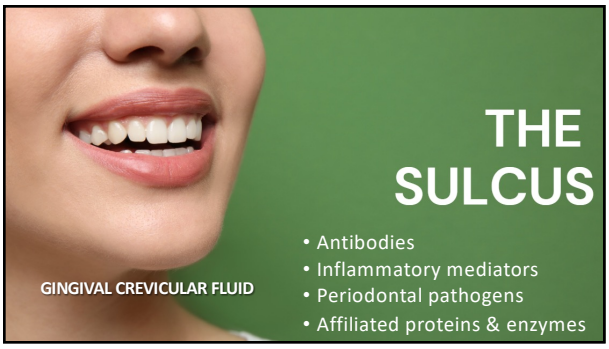

THE SULCUS

- Antibodies
- Inflammatory mediators
- Periodontal pathogens
- Affiliated proteins & enzymes

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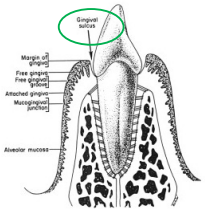

Image: Applied Oral Physiology, Second Edition

- Atraumatic approach
- Provide a dry field for visualization & restoration
- Maintain the attachment

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armamentarium
isolation &
retraction resources

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ISOLATION

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ISOLATION

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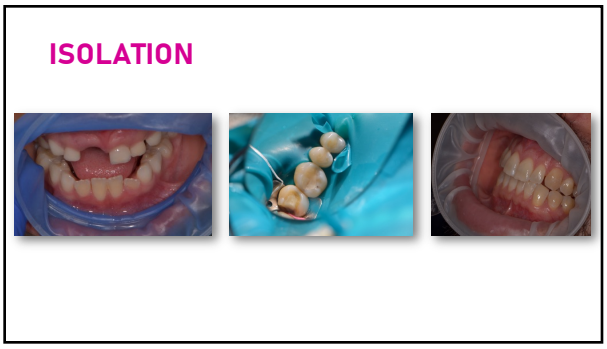
ISOLATION

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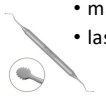
TOOTH-LEVEL RETRACTION

MECHANICAL

- retraction cord
- instruments
- matrix bands
- laser/surgical removal



CHEMICAL

- astringents
- hemostatic agents

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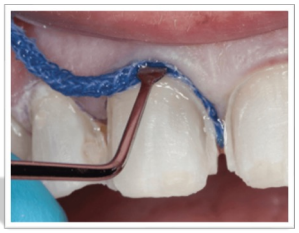

- below the gumline
- into the **gingival sulcus**
- *gently push the soft, gingival tissue away from the hard tooth structure*

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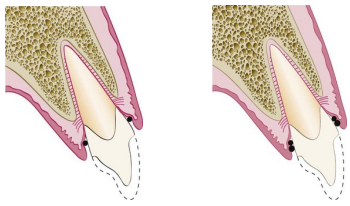
SINGLE CORD **DOUBLE CORD**



Placement of cords cause ***pressure on gingival tissues***

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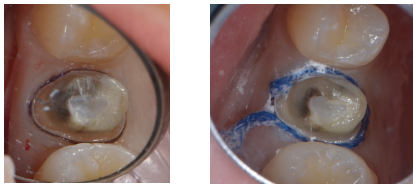
FIRST CORD **SECOND CORD**



Placement of cords cause ***pressure on gingival tissues***

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DOUBLE CORD

Placement of cords cause *pressure on gingival tissues*

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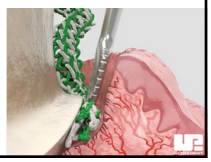
- Knitted cords have loops
- Loops open
- Outward force is exerted



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MATRIX
as retraction

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SOFT TISSUE LASER

Courtesy of Dr. Christina Do

Hemostasis *and* Tissue Troughing

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HEMOSTATIC AGENTS

- ***Hemostatic agents*** *– arrest bleeding from cut capillaries and arterioles via vasoconstriction*

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CHEMICAL

- ***Hemostatic agents*** *– arrest bleeding from cut capillaries and arterioles via vasoconstriction*
- ***Astringents*** *– Cause proteins to precipitate in tissue causing vascular occlusion, which leads to hemostasis*

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Three common chemistries used:

1. ***Buffered Aluminum Chloride (25%)***
2. *Ferric Sulfate (15.5%)*
3. *Aluminum Sulfate (25%)*

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Table 1

List of common hemostatic agents, their compositions and their mechanisms of action

Brand name	Constituent %	Action	Available as
Gel cord/gel cord clear (Pascal)	25 $Al_2(SO_4)_3$ gel	Biologic fluid-coagulant	Cartridge - 0.32 g Syringe - 0.75 g Jar - 30 g
Stat gel FS (Pascal)	15.5 $Fe_2(SO_4)_3$	Styptics	Syringe
Rashingent (Pascal)	25 $Al_2(SO_4)_3$	Biologic fluid-coagulant	Solution in bottle
Hemostatic gel (Pro-option)	20 $Fe_2(SO_4)_3$	Styptics	Syringe
Hemostatic solution (Pro-option)	15.5 $Fe_2(SO_4)_3$	Styptics	Syringe
Clear hemostatic gel (Pro-option)	25 $AlCl_3$	Biologic fluid-coagulant	Syringe
Traxodent/hemodent (Premier dental products)	15 $AlCl_3$	Biologic fluid-coagulant	Syringe
Hemostasyl gel (Kerr)	15 $AlCl_3$	Biologic fluid-coagulant	Syringe
Expasyl (Kerr)	15 $AlCl_3$, kaolin	Biologic fluid-coagulant	Paste-gun
ViscoStat/ViscoStatWintermint (Ultradent)	20 $Fe_2(SO_4)_3$	Styptics	Syringe
ViscoStat clear (Ultradent)	20 $AlCl_3$	Biologic fluid-coagulant	Syringe
Actringedent (Ultradent)	15.5 $Fe_2(SO_4)_3$ solution	Styptics	Bottle/syringe
Actringedent X (Ultradent)	12.7 iron solution of equivalent $Fe_2(SO_4)_3$ and subsulfate	Styptics	Bottle/syringe
Racegel hemostatic agent (Septodont)	25 $AlCl_3$	Biologic fluid-coagulant	Syringe
Racechrystine (Septodont)	25 $AlCl_3$, oxyquinol, hydroalcoholic	Biologic fluid-coagulant	Solution in bottle
QuickStat FS (Vista)	15.5 $Fe_2(SO_4)_3$ gel	Styptics	Syringe
Orbat sensitive (Lege Artis)	25 $Al_2(SO_4)_3$ solution	Biologic fluid-coagulant	Solution in bottle
Hemostat (Chema)	20 $AlCl_3$ gel	Biologic fluid-coagulant	Syringe

$Fe_2(SO_4)_3$: Ferric sulfate; $AlCl_3$: Aluminum chloride; $Al_2(SO_4)_3$: Aluminum sulfate

CONCLUSION: "Based on the existing information in the literature, among the widely used chemical agents for control of hemorrhage in restorative dentistry, the most common hemostatic agents are AlCl3 and Fe2(SO4)3 in 15-25% concentrations and 3-10 min application times. In order to achieve better outcomes during taking impression or using bonding agents, common hemostatic agents recommended before or during etching, should be rinsed off properly"

Dent Res J (Isfahan). 2014 Jul-Aug; 11(4): 423–428.
A review on common chemical hemostatic agents in restorative dentistry

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****SCRUB THE TOOTH WITH ETCH after using on tissue**

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PASTES

- *Chemical means for hemostasis in a **paste form** that holds its shape on the tissue*
- *Used in conjunction with comprecaps, gauze, cotton rolls*
- *As a **chemical**, requires thorough rinsing after use*

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	VOCO Retraction Paste	3M™ - Astringent Retraction Paste	Acteon® Expasyl™	Acteon® Expasyl™ Exact	Centrix® Access® Edge
Intra-oral tip diameter [mm]	1.0 – 1.4	1.0 – 1.2	1.6	1.6 – 1.95	1.6
Form of the intra-oral tip					

- Ease of use?
- Desired outcome?
- Consistent?

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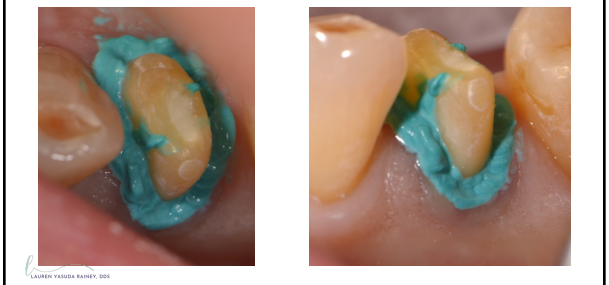

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GOOD
ISOLATION
GOES
HAND IN HAND
with

SOLID
ADHESION
PROTOCOLS

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ADHESION

systems are composed of monomers with both hydrophilic groups and hydrophobic groups

chemical reaction between multiple substrates

technique *and* material sensitive

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UNIVERSAL ADHESIVES

containing MDP

act as a mild acid

single bottle efficiency

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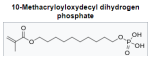
MDP & why it matters



MDP is a monomer in dental adhesives

promotes a chemical reaction with hydroxyapatite crystals

allows for the protection of collagens within the tooth

Sofan E, Sofan A, Palaia G, Tenore G, Romeo U and Migliau G. Classification review of dental adhesive systems: from the IV generation to the universal type. Ann Stomatol (Roma). 2017 Jan-Mar; 8(1): 1–17.

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"Adhesion…chemical reaction with dental substrates…is stable over time…a scrubbing technique must be used…"

Materials (Basel). 2019 Mar; 12(5): 790. PMCID: PMC6427605
Published online 2019 Mar 7. doi: 10.3390/ma12050790 PMID: 30866488

10-MDP Based Dental Adhesives: Adhesive Interface Characterization and Adhesive Stability—A Systematic Review

Eunice Carrilho, Miguel Cardoso, Manuel Marques Ferreira, Carlos Miguel Marto, Anabela Paiva and Ana Sofia Coelho

Abstract

The incorporation of functional monomers in dental adhesive systems promotes chemical interaction with dental substrates, resulting in higher adhesion forces when compared to micromechanical adhesion only. The 10-MDP monomer, whose chemical structure allows for a polar behavior which is favorable to adhesion, also promotes the protection of collagen fibers through the formation of MDP-calcium salts. This systematic review aimed to characterize the interface created by 10-MDP containing adhesive systems through an evaluation of the following parameters: Formation of nano-layered structures, capacity to produce an acid-base resistant zone, and adhesion stability. The research was conducted using PubMed, Cochrane Library, Web of Science and Embase, limited to English, Spanish, and Portuguese articles. The research was done according to the PICO strategy. The 10-MDP monomer has the capacity to produce an acid-base resistant zone on the adhesive interface, which increases the response to acid-base challenges. The adhesion established by these systems is stable over time. To have the best of these adhesive solutions, a scrubbing technique must be used to apply the adhesive system on dental substrates, in order to improve monomers infiltration and to create a stable bond. Time must be given for the solution to infiltrate, hybridize and form the MDP-Ca, improving adhesive stability.

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CHOOSING an ADHESIVE – for me

- No refrigeration needed
- No additional activators
- Reliable surface thickness
- Radiographic compatibility
- Low water content → weaker acid

Strong acid on dentin can degrade the bond strength, lead to post-op sensitivity and/or debonding.

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BETTER VISUALIZATION ALSO COMES FROM…

GOOD MAGNIFICATION

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GOOD MAGNIFICATION

- microscopes
- well-fitting, well-adjusted loupes
- photographs & scans

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ERGONOMICS

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BETTER

- Visualization:
  - tissue management
  - magnification
- Patient experience:
  - Make it less "bad"
    - Improved caries intervention, adjunctive comfort items, home care aids to aid compliance

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WHY DO PEOPLE SEEK OUR CARE?

- Precipitating event:
  - Something hurts
  - Something looks bad
  - Somethings "coming up"
- Prevention
  - Caries
  - Periodontal disease
  - Occlusal disease

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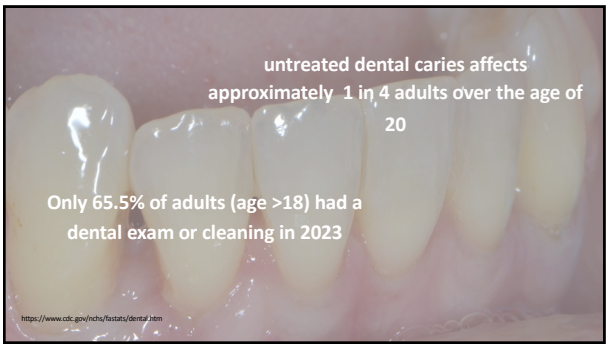
untreated dental caries affects approximately 1 in 4 adults over the age of 20
Only 65.5% of adults (age >18) had a dental exam or cleaning in 2023
https://www.cdc.gov/nchs/fastats/dental.htm

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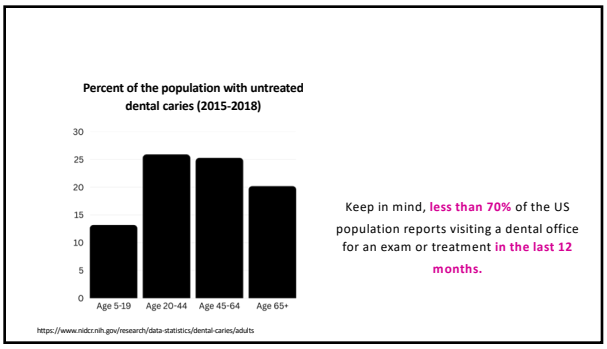
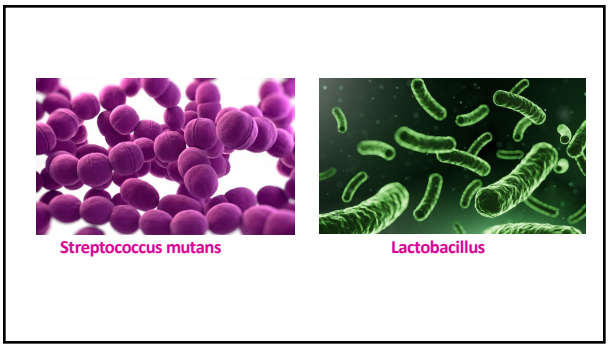
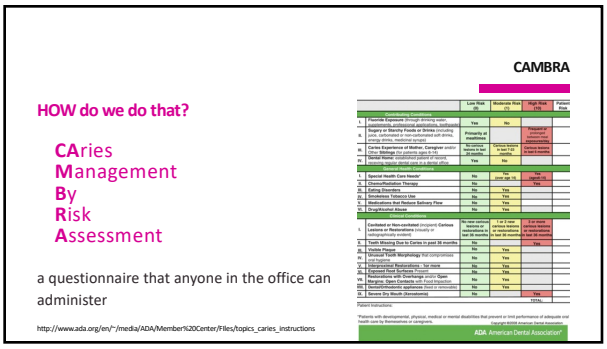

Percent of the population with untreated dental caries (2015-2018)
30
25
20
15
10
5
0
Age 5-19
Age 20-44
Age 45-64
Age 65+
Keep in mind, less than 70% of the US population reports visiting a dental office for an exam or treatment in the last 12 months.
https://www.nidcr.nih.gov/research/data-statistics/dental-caries/adults

70


Streptococcus mutans
Lactobacillus

71


HOW do we do that?
CAries
Management
By
Risk
Assessment
a questionnaire that anyone in the office can administer
http://www.ada.org/en/~/media/ADA/Member%20Center/Files/topics_caries_instructions
CAMBRA
ADA American Dental Association®

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"For practical caries management and prevention or reversal of dental caries, the **sum** of the preventive factors *must outweigh the pathological factors*."

-JD Featherstone

Featherstone JD. The science and practice of caries prevention. J Am Dent Assoc. 2000 Jul;131(7):887-99. doi: 10.14219/jada.archive.2000.0307. PMID: 10916327.

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"It is important to keep in mind research shows that placing dental restorations does little or nothing to manage the **caries disease process**. In addition to a comprehensive treatment plan, *each* patient should have a comprehensive caries management treatment plan."

Clinical Protocols for Caries Management by Risk Assessment, CDA Journal, October, 2007, Vol. 35, No. 10, pgs 714-723.

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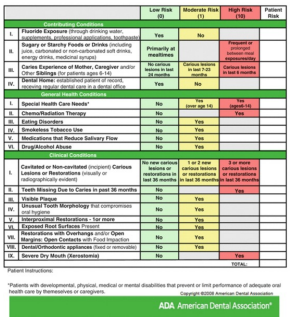
CARIES RISK ASSESSMENT

- Patients > age 6
- Color Coded for ease of use
- Any person in your office can administer



		Low Risk (0)	Moderate Risk (1)	High Risk (10)	Patient Risk
Contributing Conditions					
I.	**Fluoride Exposure** (through drinking water, supplements, professional applications, toothpaste)	Yes	No		
II.	**Sugary or Starchy Foods or Drinks** (including juice, carbonated or non-carbonated soft drinks, energy drinks, medicinal syrups)	Primarily at mealtimes		Frequent or prolonged between meal exposure/day	
III.	**Caries Experience of Mother, Caregiver** and/or Other **Siblings** (for patients ages 6-14)	No carious lesions in last 24 months	Carious lesions in last 7-23 months	Carious lesions in last 6 months	
IV.	**Dental Home:** established patient of record, receiving regular dental care in a dental office	Yes	No		
General Health Conditions					
I.	**Special Health Care Needs***	No	Yes (over age 14)	Yes (aged 14)	
II.	**Chemo/Radiation Therapy**	No		Yes	
III.	**Eating Disorders**	No	Yes		
IV.	**Smokeless Tobacco Use**	No	Yes		
V.	**Medications that Reduce Salivary Flow**	No	Yes		
VI.	**Drug/Alcohol Abuse**	No	Yes		
Clinical Exam Conditions					
I.	**Cavitated or Non-cavitated** (incipient) **Carious Lesions or Restorations** (visually or radiographically evident)	No new carious lesions or restorations in last 36 months	1 or 2 new carious lesions or restorations in last 36 months	3 or more carious lesions or restorations in last 36 months	
II.	**Teeth Missing Due to Caries in past 36 months**	No		Yes	
III.	**Visible Plaque**	No	Yes		
IV.	**Unusual Tooth Morphology** that compromises oral hygiene	No	Yes		
V.	**Interproximal Restorations - 1or more**	No	Yes		
VI.	**Exposed Root Surfaces** Present	No	Yes		
VII.	**Restorations with Overhangs** and/or **Open Margins**; **Open Contacts** with Food Impaction	No	Yes		
VIII.	**Dental/Orthodontic appliances** (fixed or removable)	No	Yes		
IX.	**Severe Dry Mouth (Xerostomia)**	No		Yes	
				TOTAL:	

Patient Instructions:

*Patients with developmental, physical, medical or mental disabilities that prevent or limit performance of adequate oral health care by themselves or caregivers.

ADA American Dental Association®

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High/Extreme Risk

- RISK factors exist
- disease indicators exist
- biofilm challenge PRESENT

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High/Extreme Risk

- Includes SDF & fluoride varnish tx or Curodont at time of visit
  - **IF SDF**: 2 week follow up and SDF reapplication
- Comprehensive medical/social history review

Establish motivating factors for home care & pH neutralization strategies

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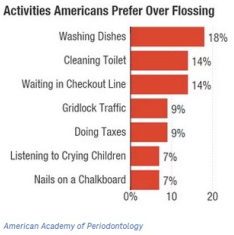
Let's talk about FLOSSING…

It's not glamorous

It's not necessarily intuitive

There are no immediate repercussions if you don't do it



78

IMPROVED INTERVENTIONS

- In office non-surgical techniques
  - SDF, Curodont
  - Papacarie duo
- At home aids
  - Rx strength dentrifices
  - pH neutralizing products
  - electric brushes & flossers!
  - The use of povidone iodine

79

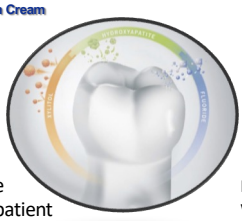
pH neutralizing products

- Cocoshine (COCOLAB, pH 8)
- Xylimelts (OraCoat)
- CariFree (Oral Biotech)
- AllDay Spray (Elevate Oral Care)
- ReminPro (VOCO, pH 7.0)

80

Remin Pro (USA Only)
Triple-Protective Tooth Cream

No milk protein allergy risk



61% More Fluoride (1,450 ppm) Than the Leading Brand

The take-home use product gives the patient agency in their own care

Increased benefit for white spot lesion treatment

Kani T, Kani M, Isozaki A, Kato H, Fukuoka Y, Ohashi T, Tokumoto T: The effect of apatite-containing dentifrices on artificial caries lesions. I Dent Health 38, 364–366 (1988).

Okashi T, Kani T, Isozaki A, Nishida A, Shintani H, Tokumoto T, Ishizu E, Kuwahara Y, Kani, M. Remineralization of artificial caries lesions by Hydroxyapatite. I Dent Health 41, 214 – 223 (1991).

81

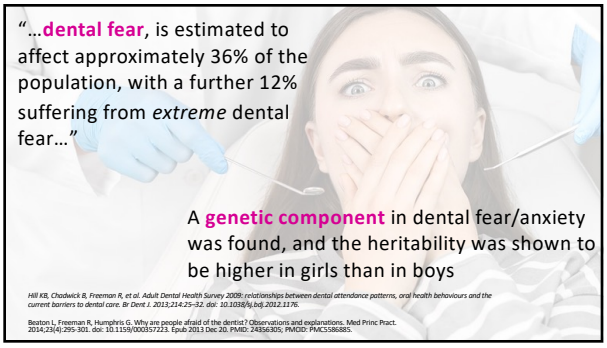
82

ADJUNCTIVE COMFORT ITEMS

VR for pain control

deep tissue stimulation

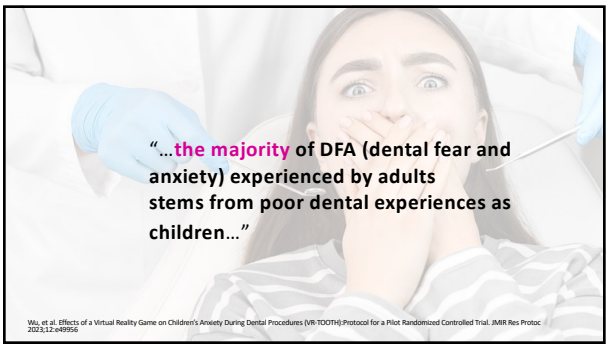
83



Hill KB, Chadwick B, Freeman R, et al. Adult Dental Health Survey 2009: relationships between dental attendance patterns, oral health behaviours and the current barriers to dental care. Br Dent J. 2013;214:25–32. doi: 10.1038/sj.bdj.2012.1176.

Beaton L, Freeman R, Humphris G. Why are people afraid of the dentist? Observations and explanations. Med Princ Pract. 2014;23(4):295-301. doi: 10.1159/000357223. Epub 2013 Dec 20. PMID: 24356305; PMCID: PMC5586885.

85



86

DEEP TISSUE STIMULATION

"deep pressure input alleviates feelings of anxiety and produces a calming effect through the influence of parasympathetic activity"

- stimulation via weighted blanket
- ↑ parasympathetic response
- ↓cortisol

@wallabycare

Chen, Hsin-Yung, et al. "Effect of deep pressure input on parasympathetic system in patients with wisdom tooth surgery." *Journal of the Formosan Medical Association* 115.10 (2016): 853-859.

87

88

VIRTUAL REALITY

VR is:

an artificial environment that is experienced through sensory stimuli

In medicine, the use of VR has been shown to be helpful in:

- Cast removal
- Vaccinations
- Short procedures

Wu, et al. Effects of a Virtual Reality Game on Children's Anxiety During Dental Procedures (VR-TOOTH):Protocol for a Pilot Randomized Controlled Trial. JMIR Res Protoc 2023;12:e49956

89

VIRTUAL REALITY FOR PAIN MANAGEMENT

Most participants feared:

Loud, unfamiliar sounds

Strangers in close proximity

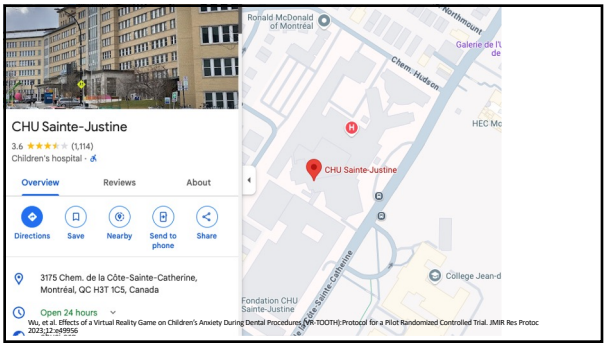
Anticipatory pain from injections

additionally…

Treating an anxious and fearful patient can create an environment of stress for the clinician and associated dental team

Wu, et al. Effects of a Virtual Reality Game on Children's Anxiety During Dental Procedures (VR-TOOTH):Protocol for a Pilot Randomized Controlled Trial. JMIR Res Protoc 2023;12:e49956

90



Wu, et al. Effects of a Virtual Reality Game on Children's Anxiety During Dental Procedures (VR-TOOTH):Protocol for a Pilot Randomized Controlled Trial. JMIR Res Protoc 2023;12:e49956

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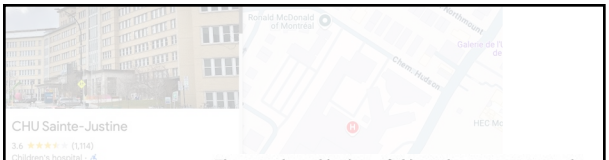

The secondary objectives of this study are to compare the following between the VR distraction group and the clinic's standard mounted TV showing cartoons: (1) physiological parameters (pulse and oxygen saturation), (2) the occurrence of side effects, (3) dental procedure length, (4) the number of retakes of dental procedures due to DFA, and (5) salivary amylase levels.

Wu, et al. Effects of a Virtual Reality Game on Children's Anxiety During Dental Procedures (VR-TOOTH):Protocol for a Pilot Randomized Controlled Trial. JMIR Res Protoc 2023;12:e49956

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Effect of Virtual Reality Distraction on Pain and Anxiety During Dental Treatment in 5 to 8 Year Old Children

Vabitha Shetty*/ Lekshmi R Suresh**/ Amitha M Hegde***

Objective: *This study was aimed at assessing the impact of Virtual Reality (VR) distraction technique on pain and anxiety in 5–8-year-old children, during short invasive dental procedures.* ***Study design:*** *120 children, aged 5–8 years, scoring less than 25 on the SCARED questionnaire, scheduled to undergo short invasive dental procedures, were randomly divided into a control (without VR distraction) and study group (with VR distraction) of 60 each. State anxiety levels were assessed in the children from both groups using revised version of Modified Child Dental Anxiety Scale, before and after dental treatment. Pain perceived during treatment was assessed using Wong Baker Faces pain rating scale at the end of treatment. Salivary cortisol levels were also assessed before, during and after the dental procedure, in all children.* ***Results:*** *We observed a significant reduction in pain perception and state anxiety in children, using VR distraction ($p<0.001$, $p=0.002$). The decrease in salivary cortisol levels was significantly greater in children using VR distraction ($p<0.001$).* ***Conclusion:*** *Virtual Reality distraction can be used as a successful behavior modification method in children undergoing short invasive dental treatments.*

Keywords: ***Pain perception, Salivary cortisol, anxiety, Virtual reality***

- Reduction in PAIN perception
- Reduction in cortisol levels
- Behavior modification via VR can be successful

93

FASTER

- clear anatomic mylar
- bulk fill restoratives

97

CLEAR ANATOMIC MYLAR

- Shaped like a tooth
- Specific to tooth type/location – premolar, molar, canine
- Visually helpful – clear to cure, clear to visualize

98

BULK FILLS

addresses issues with depth of cure, up to 4-5mm	'compromised' esthetics	decreased working time with *effective* curing lights

104

BULK FILLS

- nano-ORMOCER technology
- BPA free nanohybrid paste
- universal shade

- multiple shades
- flowable & pastes
- anti-bubble flowable tips

- bioactive
- ergonomic, flowable
- dual-cure with WetBond technology

105

pre-op

immediate post-op

106

BULK FILL – flowables

the use of BULK FILL FLOWABLES

107

Benefits include:

- Remineralization support
- Universal shade
- Ideal viscosity for hard-to-reach areas
- Dual-cure & self-leveling

108

Benefits include:

- Multiple shades
- Dual-cure: possibility to cure *toward* the tooth structure
- Ideal viscosity for hard-to-reach areas
- High surface polish

109

Bioactivity?

"…bioactive materials elicit a response from living tissues, organisms or cells inducing hydroxyapatite formation…"

In vitro elemental and micromorphological analysis of the resin-dentin interface of bioactive and bulk-fill composites

Ahmad Gamal Mohamed Raghip, BDS, MSc, John C. Comisi, DDS, Hamdi H. Hamama, BDS, MSD, PhD & Salah Hasab Mahmoud, BDS, MSD, DDS

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BIOACTIVITY

the ability to react with living cells & tissues

reduces the susceptibility to loss of minerals

recharge ions

forms an apatite-like material in the presence of saliva

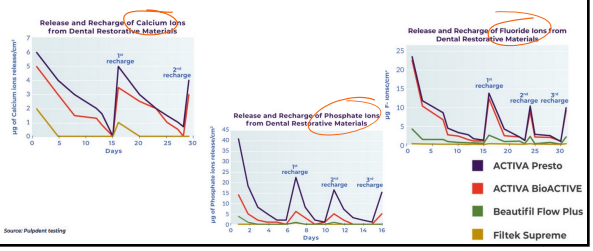
may* be placed in a damp environment

adapt to changes in oral pH

Spagnulo, B. Bioactive Dental Materials: The Current Status. Materials (Basel) 2022 Mar; 15(6): 2016.* Depending on the specific material, check the IFU

111

REMINERALIZATION SUPPORT



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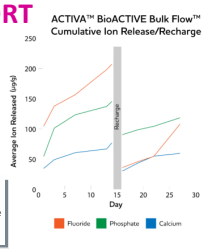
REMINERALIZATION SUPPORT

Microleakage defense through ion exchange



Bioactivity allows for ion exchange between saliva and tooth structure

Continous apatite formation through ion exchange may decrease microleakage

Source: Pulpdent testing

113

"Benzalkonium chloride has been shown to prevent the regrowth of *S. mutans* in clinical studies…"

Merchel Piovesan Pereira B, Tagkopoulos I. Benzalkonium Chlorides: Uses, Regulatory Status, and Microbial Resistance. Appl Environ Microbiol. 2019 Jun 17;85(13):e00377-19. doi: 10.1128/AEM.00377-19. PMID: 31028024; PMCID: PMC6581159.

114

- Curing lights
- Improved marginal adaptation
  - benefits of warmed composite

STRONGER

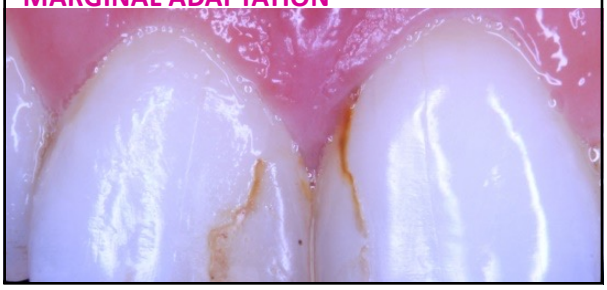
122

IMPROVING marginal adaptation

- Clean adhesive surface
- Cariostatic agents
- Ideally viscous material

131

MARGINAL ADAPTATION



133

BIOFILM

- organic
- difficult to see
- mechanical means are *necessary* to remove it

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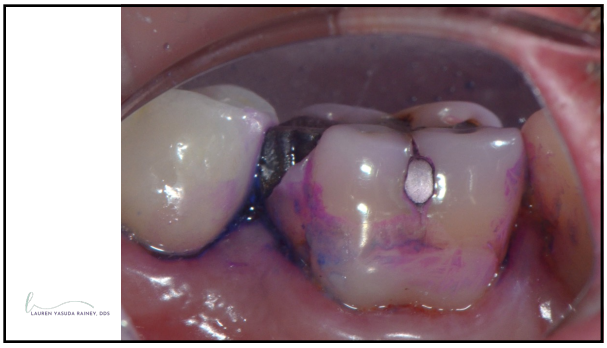

135

PHOSPHORIC ACID ETCH

BAC

Contains BAC

Available with benzalkonium chloride (BAC), an antimicrobial agent. In-vitro research shows it is effective against Streptococcus mutans[1,2].

Ideal for Selective-Etch

Select HV Etch's high viscosity offers precise placement, making it ideal for the selective-etch technique. However, it can be used for the total-etch and self-etch techniques as well.

High Viscosity

High viscosity, 35% phosphoric acid etchant that is ideal for enamel etching.

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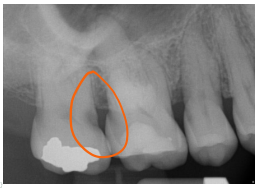
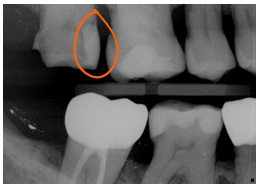
DEEP MARGIN ELEVATION





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IMPROVING marginal adaptation

- Clean adhesive surface
- Cariostatic agents
- **Ideally viscous material**

146

VISCOSITY

a measure of resistance to deformation at a given rate

147

Historically, to change the viscosity of our composites, the chemical formulation of our composites needed to change – by adding diluents such as TEGDMA.

triethylene glycol dimethacrylate (TEGDMA)

In doing so, this may result in higher volumetric shrinkage & shrinkage stress.

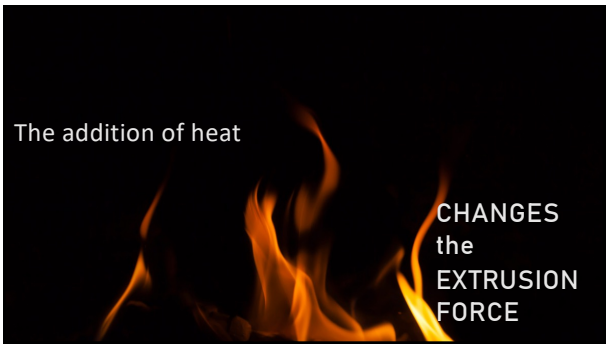
Ferracane JL, Antonucci JM, Stansbury, CN Bowman, Recent Advances and Developments in Composite Dental Restorative Materials, J Dent Res. 2011 Apr; 90(4) 406-416

148

One way to change the properties of composite…

HEAT IT UP

149



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- Capability for flowable and paste
- Composite can be preloaded
- Trap door between the flowable syringes for additional carpules
- 15 mins to heat, 7 mins for composite to warm
- Consistent 155°F/68.3°C temperature

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CAPS WARMER

Preheating device for composite caps

Operating Button	Indicator light (Left)	Temperature Setting
Press Once	Green	98°F (37C)
Press Twice	Orange	130°F (54C)
Press Three Times	Red	155°F (68C)

155

- Heating and application in one device
- Single carpule at a time
- FAST!
- Low profile

156

Warmed composite resin is **safe, effective & user-friendly**

- ✓ No Degradation of Physical Properties
- ✓ No Effect on Patient Safety or Product Performance
- ✓ Ability to Co-Cure Flowable and Paste
- ✓ May Improve Adaptation
- ✓ Faster Bulk Filling with No Increase in Sensitivity

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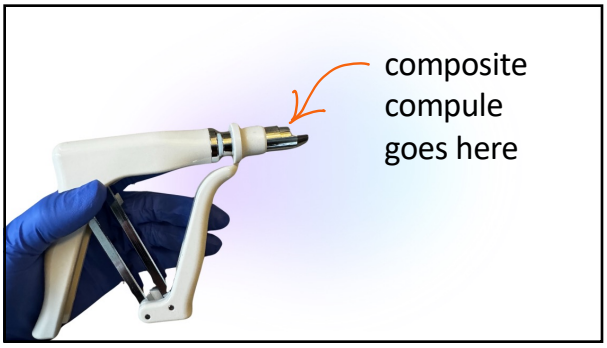
ADMIRA FUSION X-TRA

Bulk-fill All Ceramic-based Nano-ORMOCER® Restorative

- Pure Silicate Nano-ORMOCER® technology
- 100% BPA FREE
  - contains no classic monomers for new level of biocompatibility
- Reliable curing of 4mm layers
- Universal shade

161



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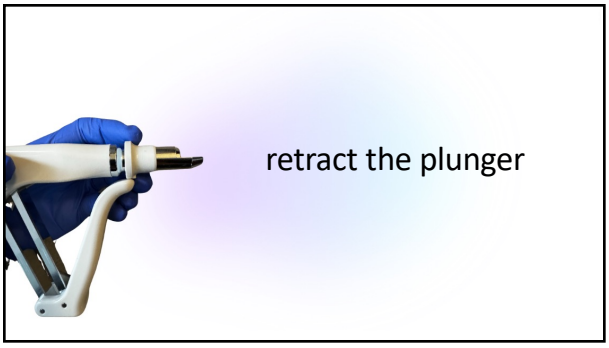

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164

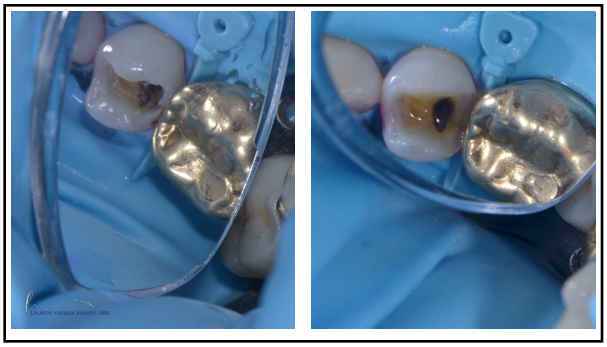
drop the entire applicator, instruments *and* extra caps into the heater

165

166

complete your preparation

167



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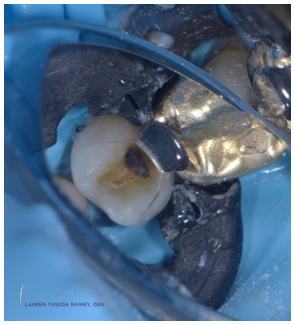

- Etch coloring gives a visual verification of gingival seal
- Placement of universal adhesive (scrub into dentin x 20+/- seconds)
- Cure adhesive on dentin
- Consider gingival increment/dentin sealing

169

you're ready to restore!

170

171

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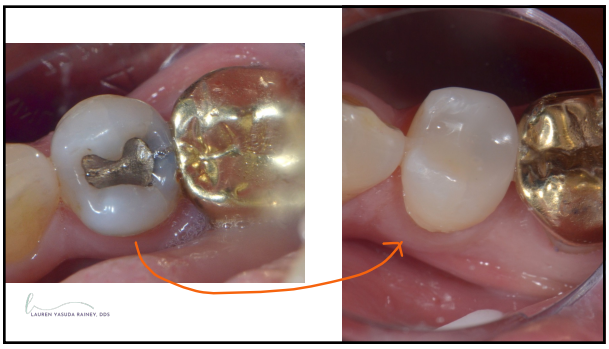

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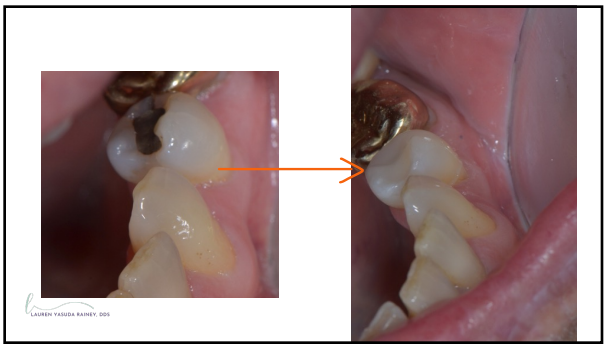

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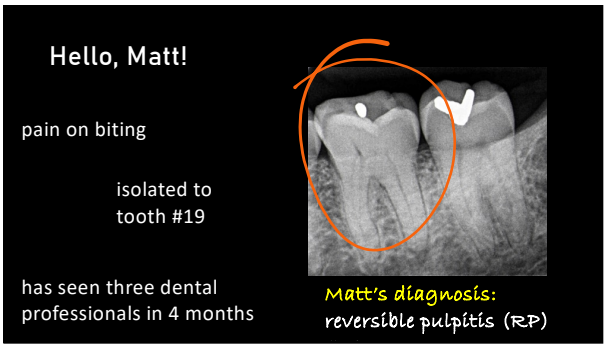

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Hello, Matt!

pain on biting

isolated to tooth #19

has seen three dental professionals in 4 months

Matt's diagnosis: reversible pulpitis (RP)

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Dec 2007

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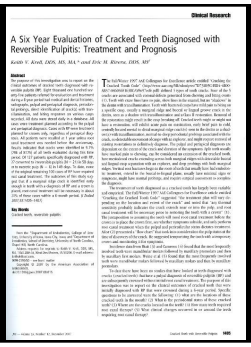
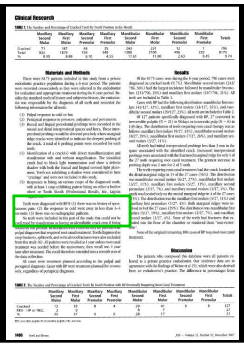


Krell performed a six- year study

- 127 teeth with RP were restored with crowns and *no endo*

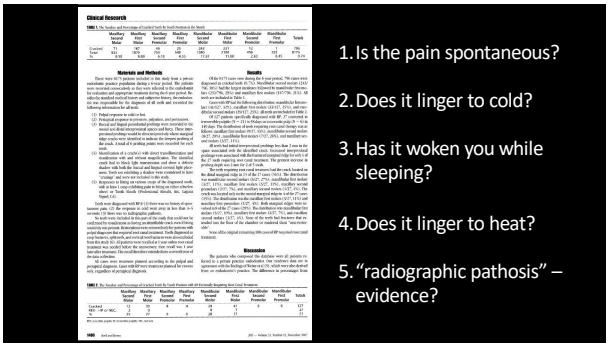
178



How do we define RP?

5 questions you ask

179



1. Is the pain spontaneous?
2. Does it linger to cold?
3. Has it woken you while sleeping?
4. Does it linger to heat?
5. "radiographic pathosis" – evidence?

180

How many teeth with RP needed endo?

20%

How many teeth with crowns need endo?

15-19%

From Krell's study, we can conclude:

there is an *80%* chance that the RP tooth *may not* need immediate endodontic therapy

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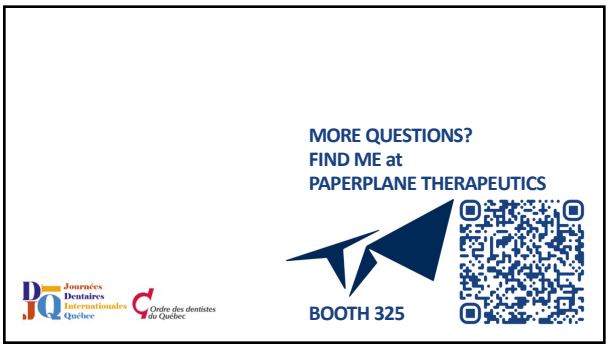
MORE QUESTIONS?
FIND ME at
PAPERPLANE THERAPEUTICS
BOOTH 325

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