Updates in Restorative Dentistry

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DISCLAIMER

- As a Catapult Group member we participate in multiple product reviews each year in order to stay at the fore front of the latest materials, techniques and services available, ensuring that the message we are delivering is current and relevant to today's continuing education needs.
- Some of these products & services I will be sharing with you today.
- Today I am supported in part by:
  - Voco, Air Techniques, Dexis, My Buddy Ron

What's YOUR WHY?

Most people and companies think outside in

Why
What is the purpose?

How
They run their company

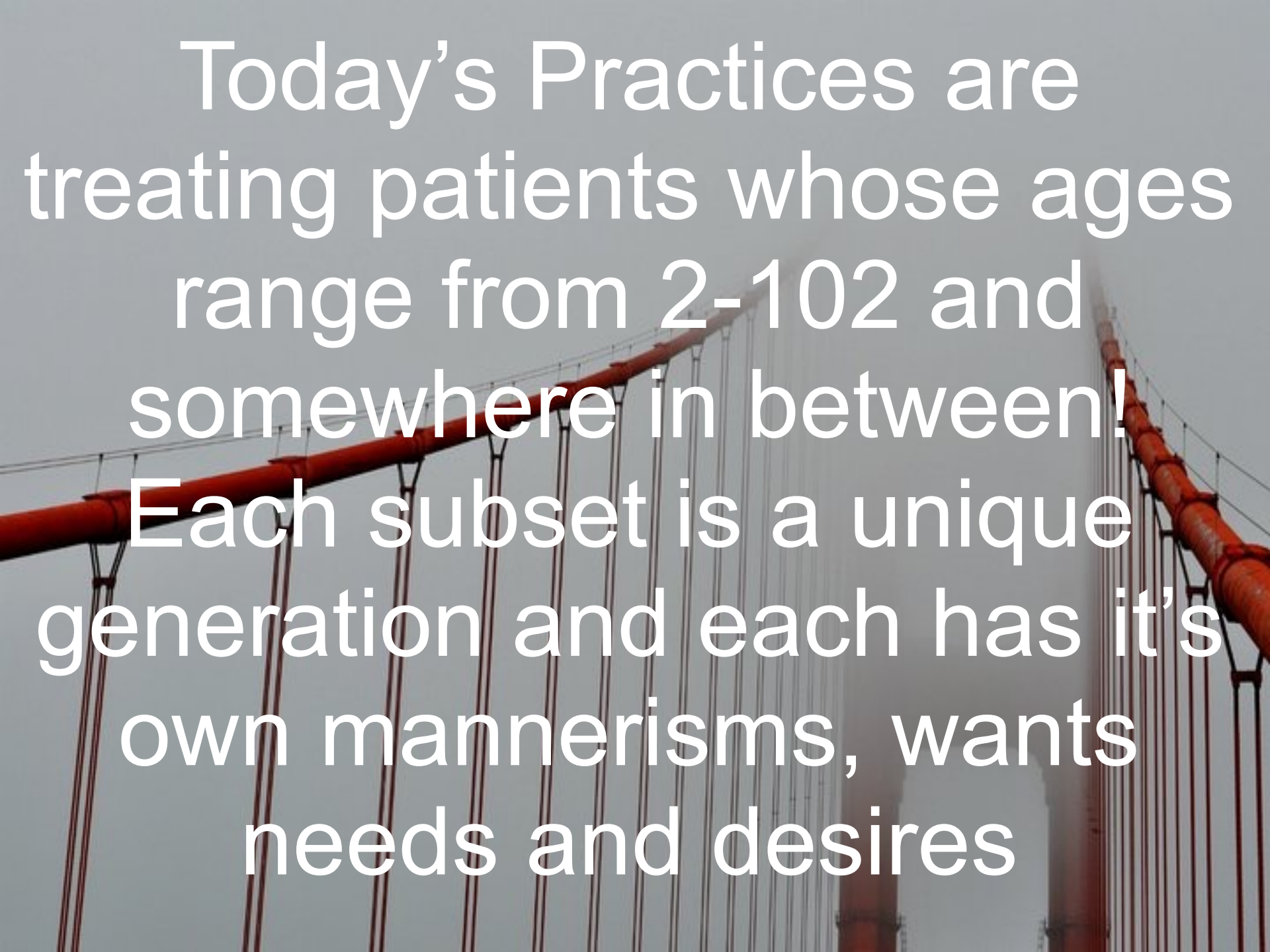
What
Every company knows what they do

People do not buy what you do
They buy why you do it

My fundamental philosophy

"MY WHY"

Getting Teeth to their 85th Birthday and then Beyond


Today's Practices are treating patients whose ages range from 2-102 and somewhere in between! Each subset is a unique generation and each has it's own mannerisms, wants needs and desires

E Prognosis.com

Men

If you are in the top 25th % health-wise at 70 you have a predicted life span of 18 years but if you're in the bottom 25th% only 6.7 years

At 80, if you are in the top 25th% you have a predicted lifespan of 10.8 years versus 1.5!

Women

21.3 years for the top 25th% at 70 and 9.5 for bottom 25%

13 years for the top 25th% at 80 and 4.6 for the bottom 25%

“Changing Times” Diagnostics

The "Old Days"…

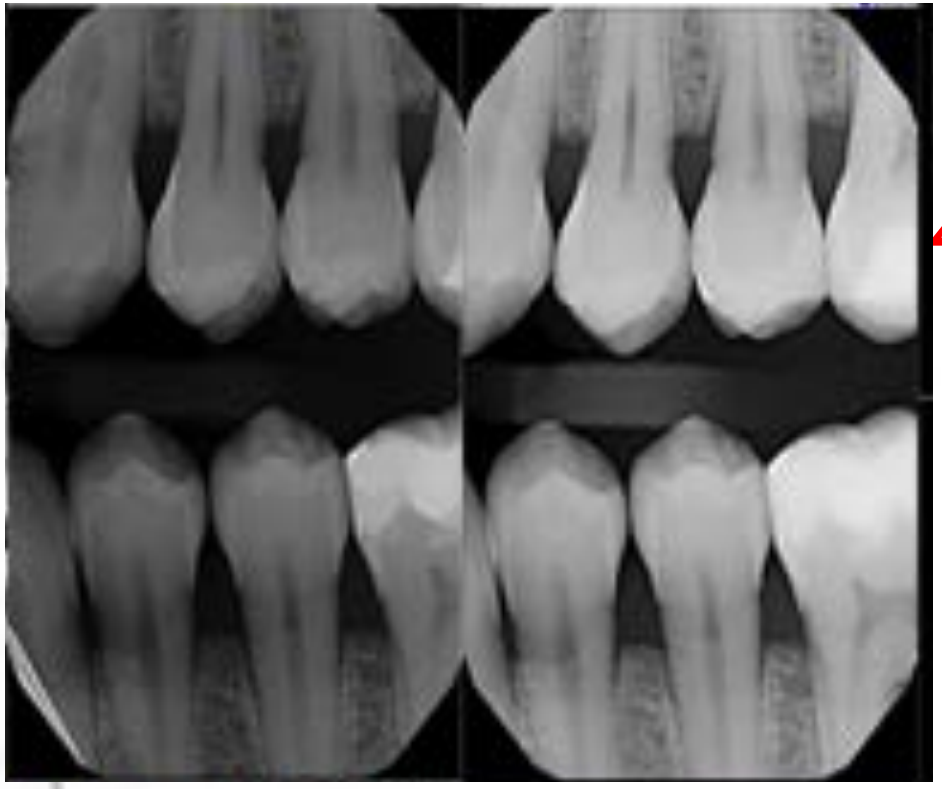
An explorer….
A probe….
Traditional x-rays

How accurate is a new explorer?
How accurate is your explorer?

Is it time to say **Bye** to the
"old" standard….
The explorer?


For years, the research has told us…
Imagine flipping a coin to decide if it's a cavity or not!
52% sensitivity / low reliability
That's like using an explorer
Loesche et al, J Dent Res 1979
Hujoel et al, Caries Res 1995
False positives & false negatives
today
Lussi, Caries Res 1991

Radiograph Limitations



40-60% Demineralization

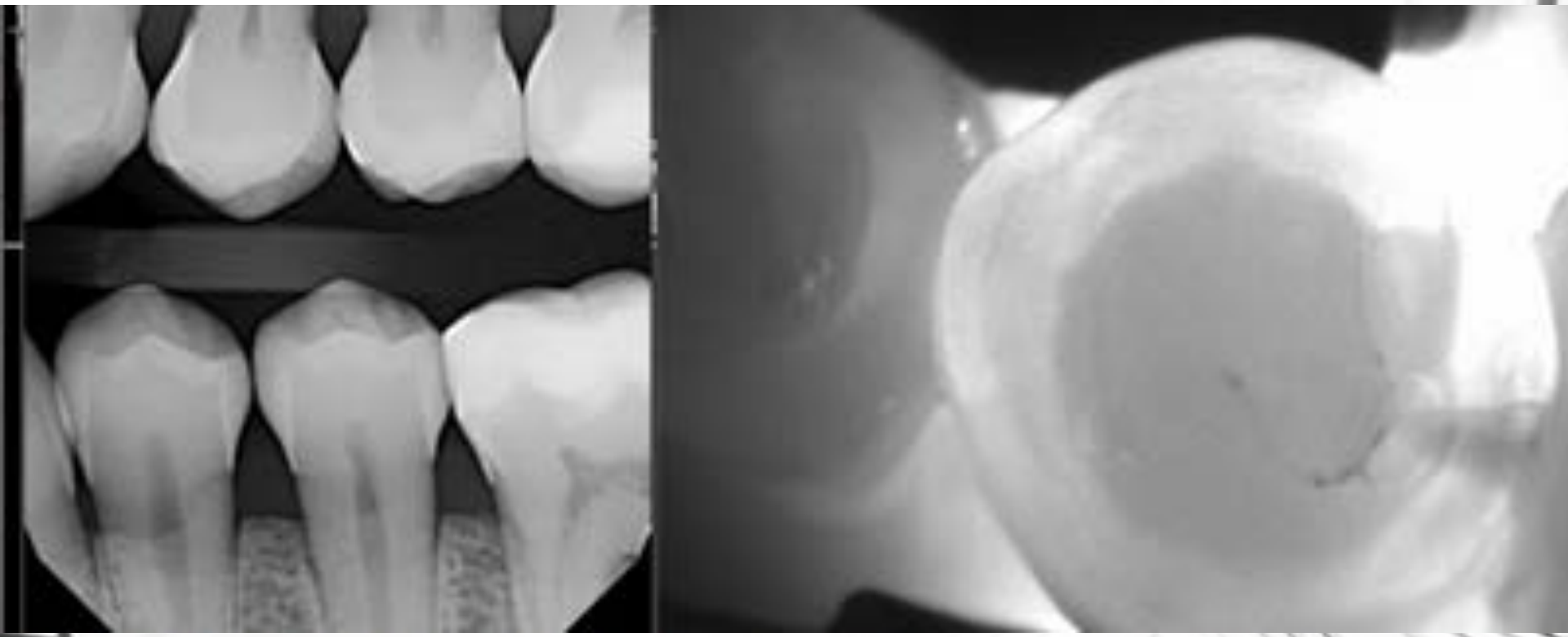
Low sensitivity

39% occlusal

50% interproximal

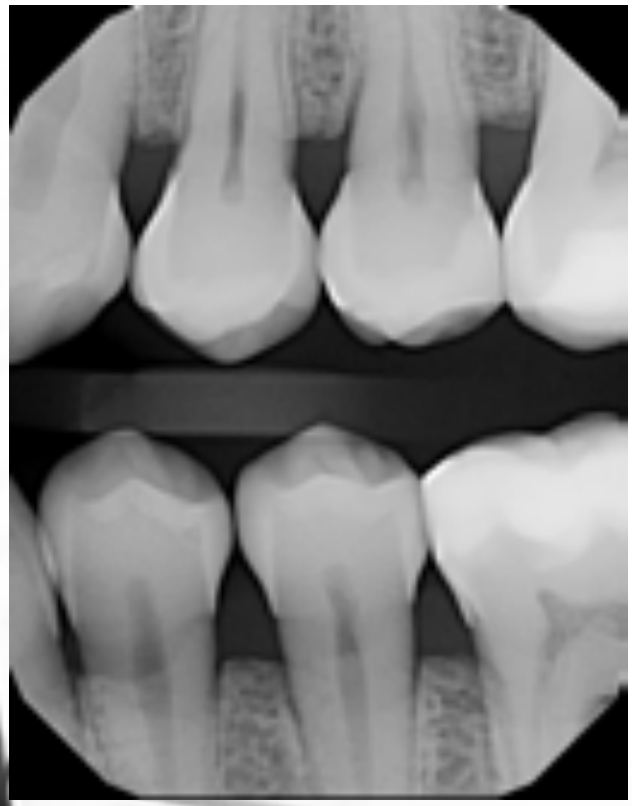
The Same lesion on Carivu

Digital 2D versus Transillumination

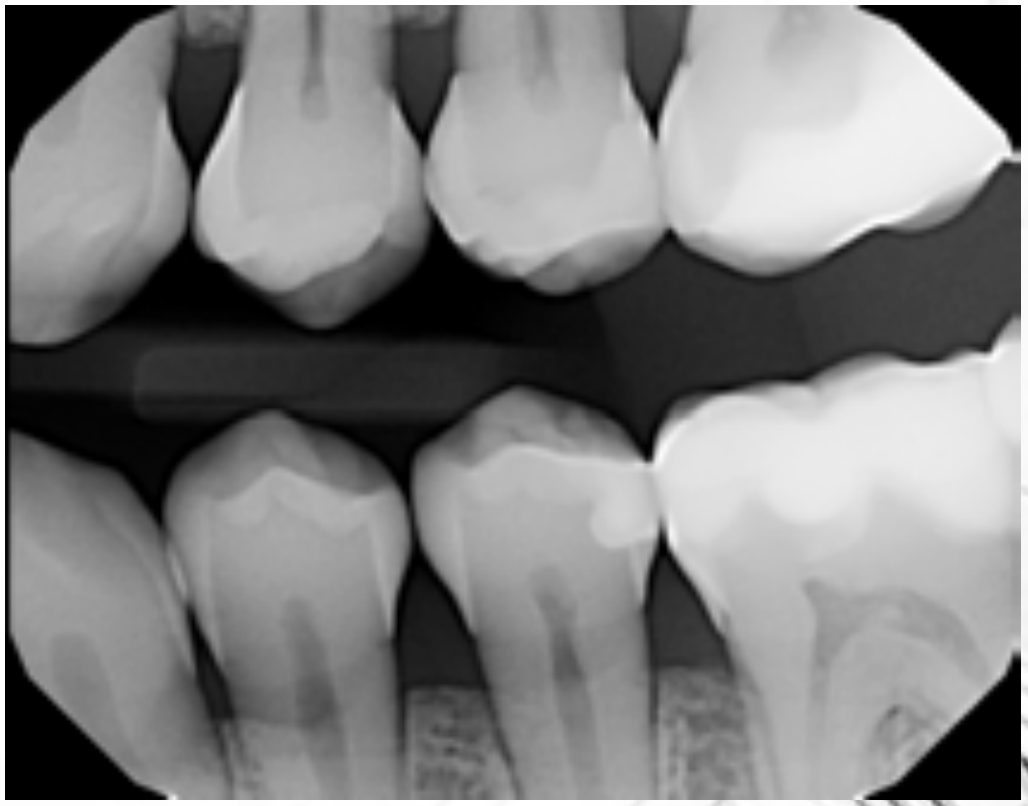


Hygiene Recall
6 month later…

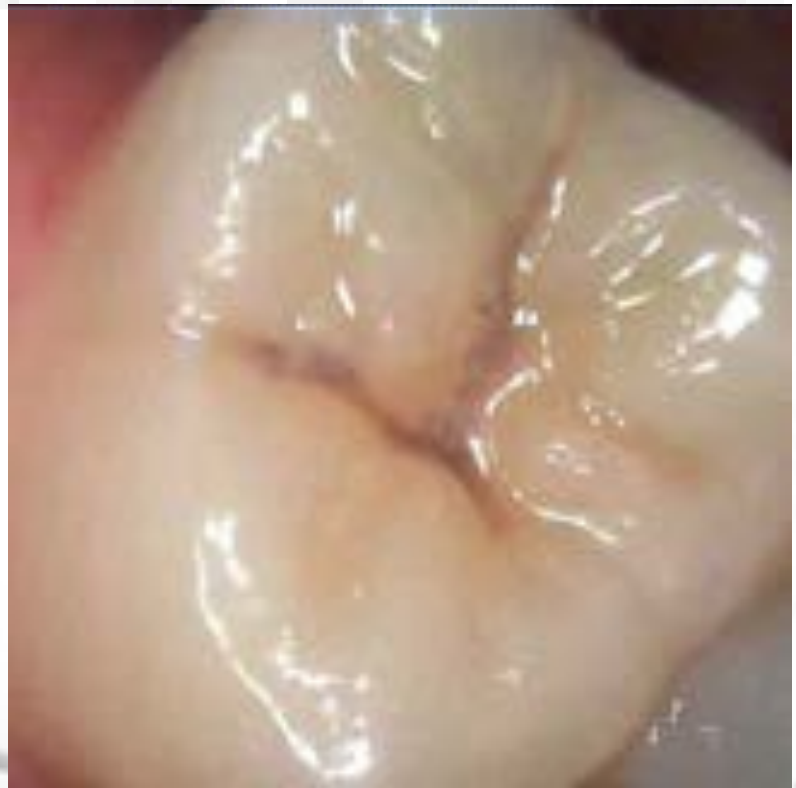
Could you have missed this?



Note the Depth:
Would you have not treated this?



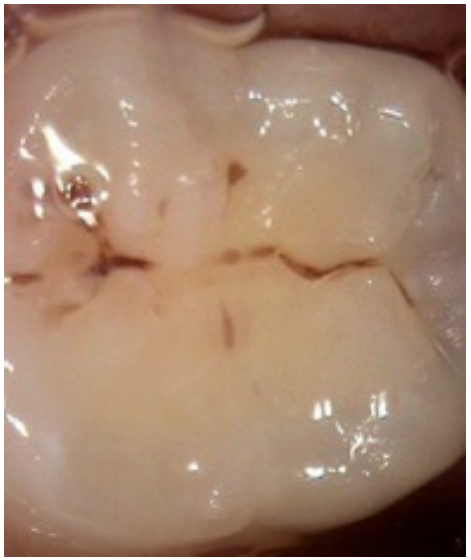
So you have NOTHING on the X-ray NO Stick….Do you just Guess and Watch?



The article reviewed 20 months of follow up of occlusal caries deemed “questionable” at baseline

This study evaluated 1341 lesions that were described as:

- Having roughness
- Surface opacity
- Not detectable on x-ray
- No cavitation
- Staining



Their findings…, yes a conservative way but in my eyes this is a guide to a lot of "watching" but we need far more to guide our diagnostics

The study concluded:

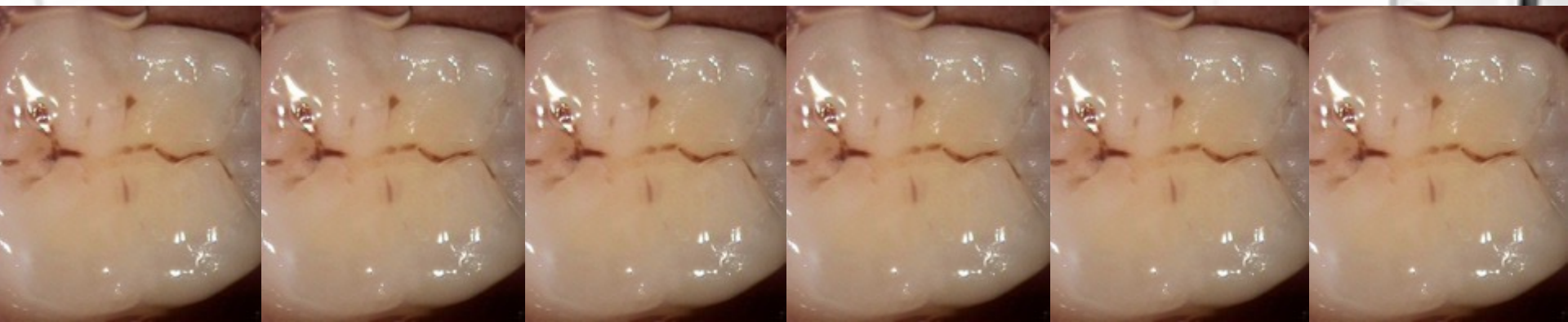
For questionable lesions the recommended course of action was simple follow up.


What about Stains?

Stains in Fissures

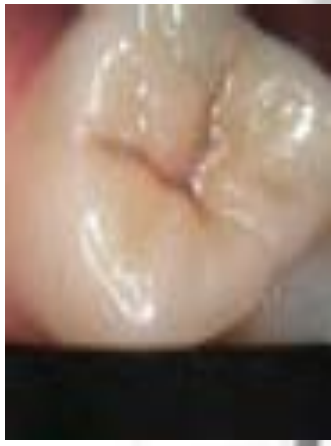
Francescut and Lussi found that with **brown** or **black** stains in fissures were **NOT** a good indication to drill because 57% of these lesions exhibited no caries or caries limited to the outer enamel

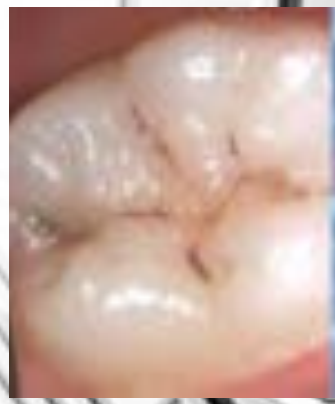
So what about the other 43%?



Stains in Fissures

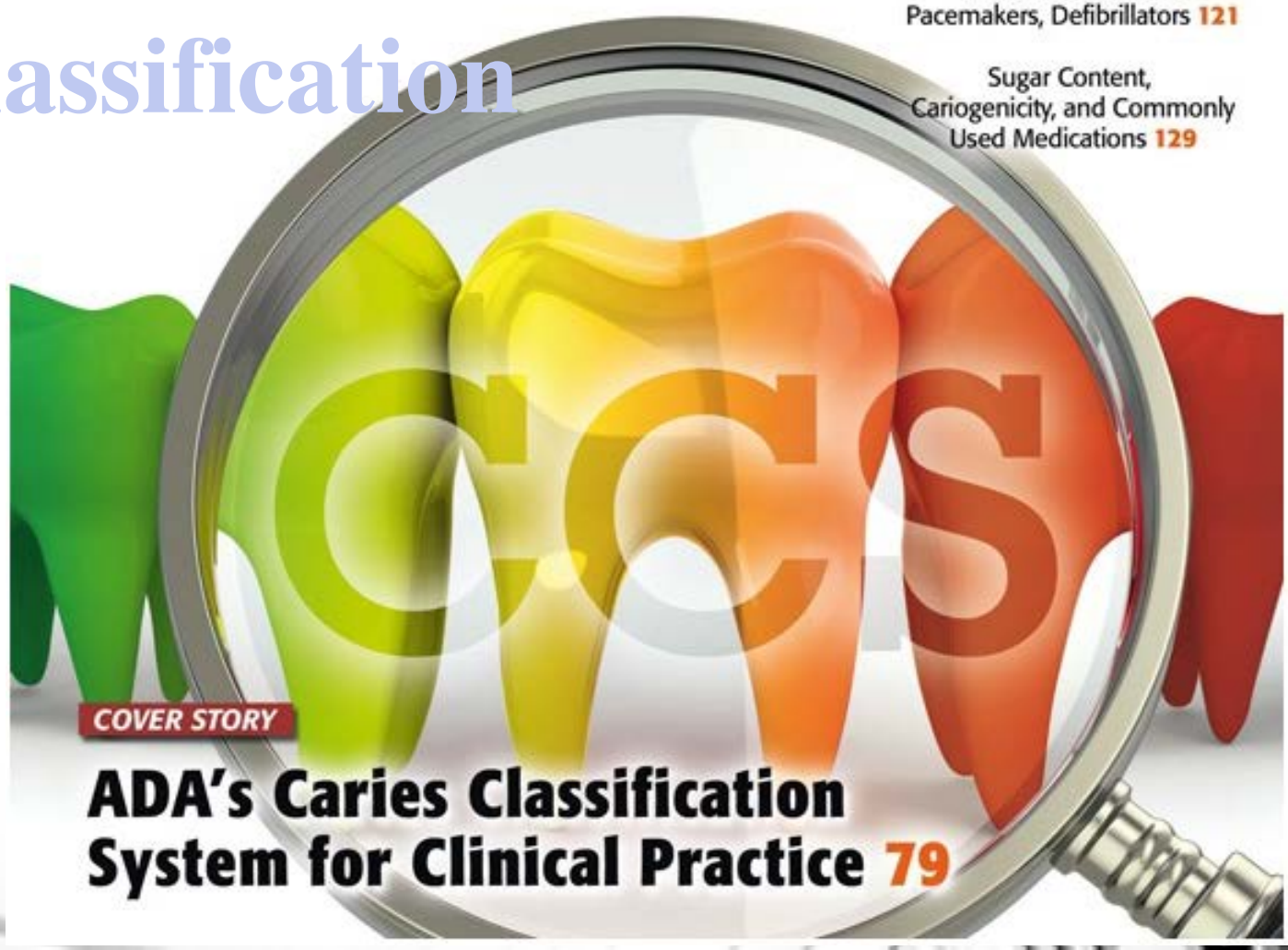
Steiner and colleagues (1998)found the **dark brown** and **black** stains to have the highest incidence of caries into dentin and concluded there were no clear guidelines as to management





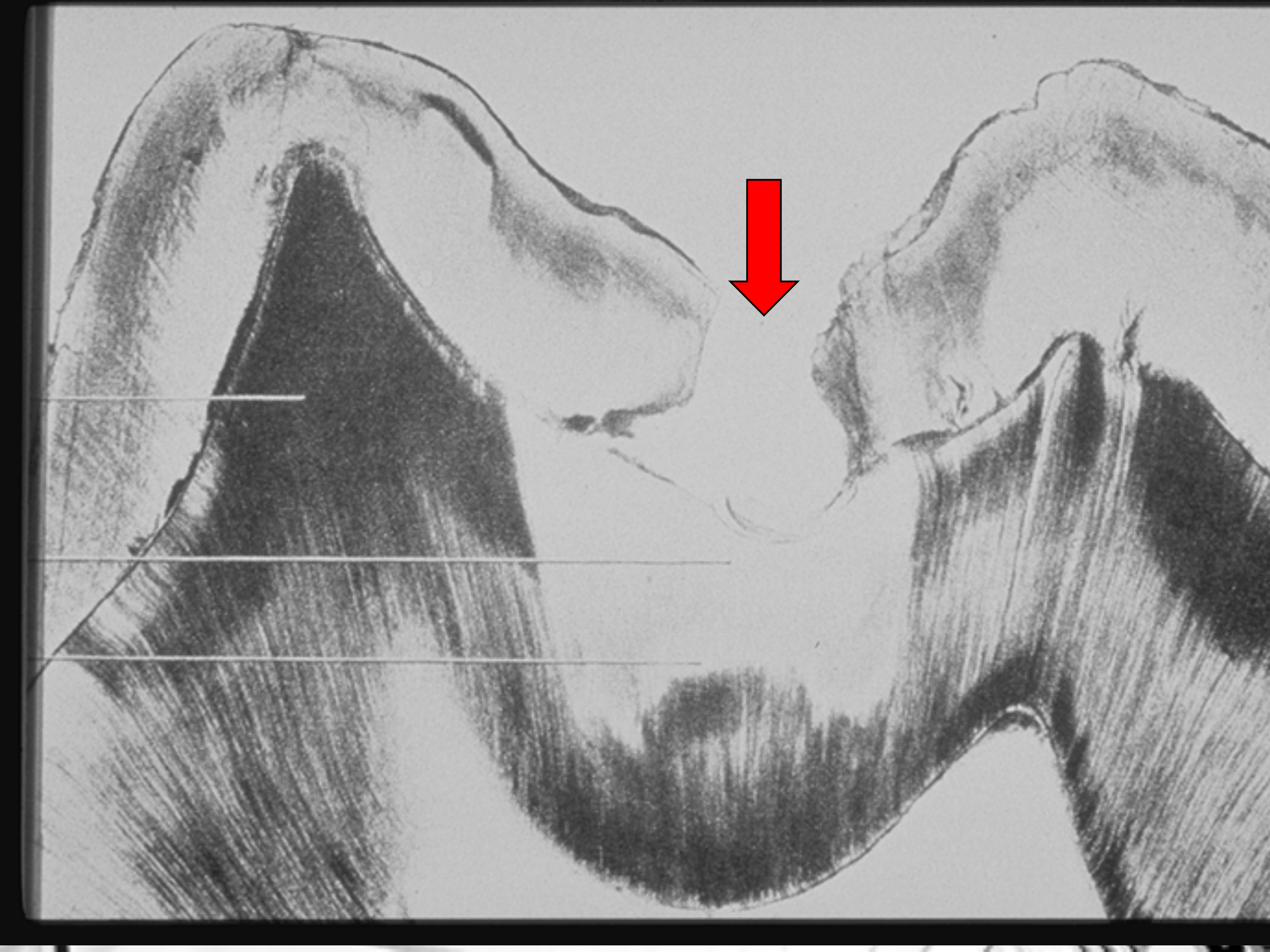
Caries

ging and classification



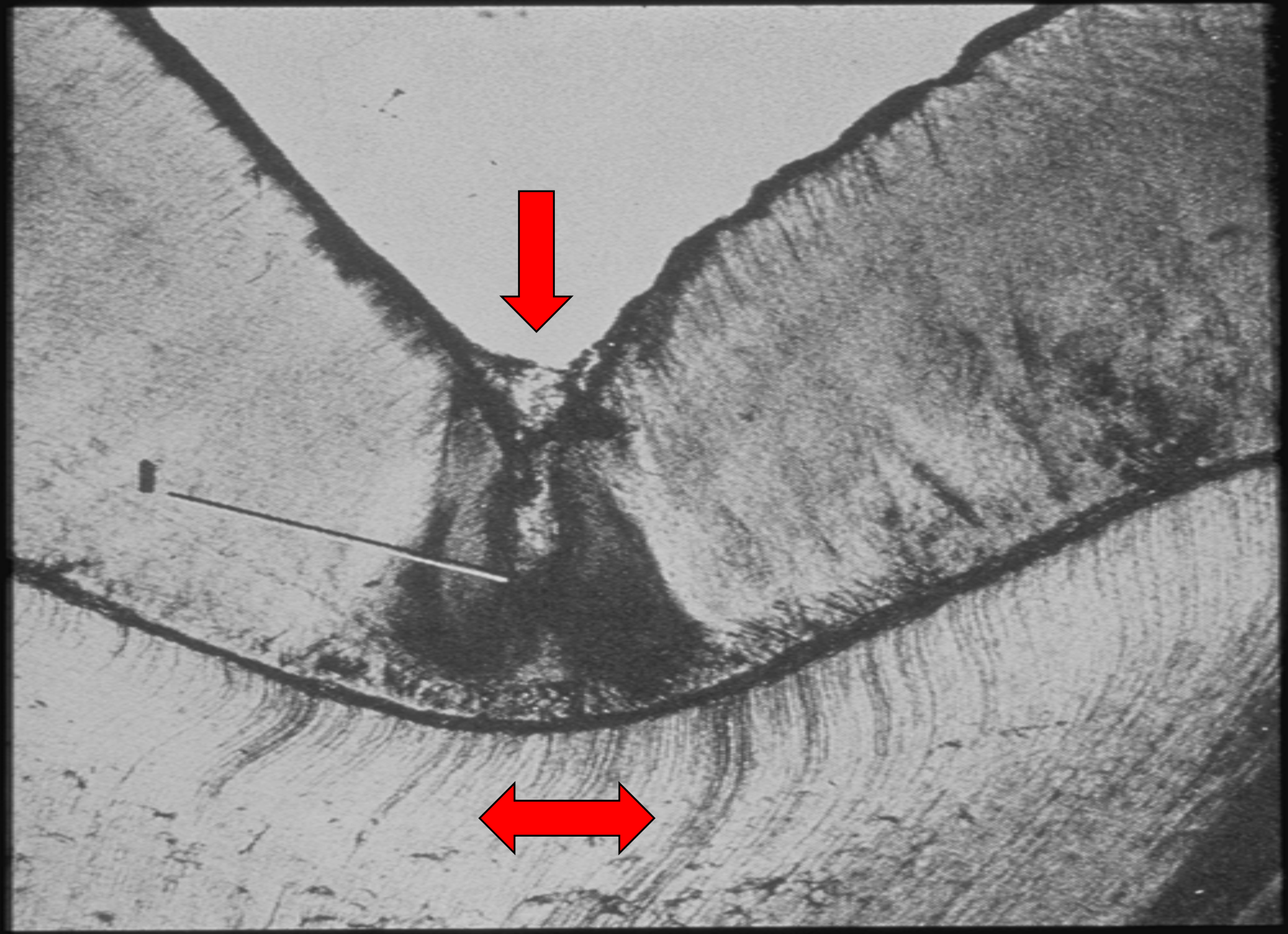
Traditional Decay Model

Caries attack begins in the enamel with demineralization and cavitation. Easily diagnosed visually, sharp explorer and radiographs.



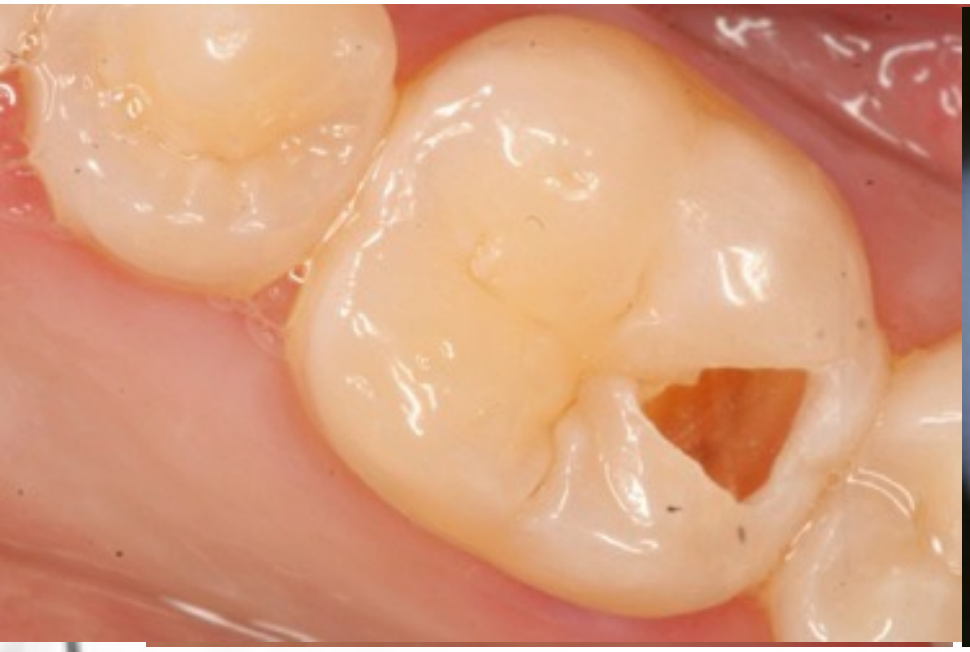
Current Model for Decay

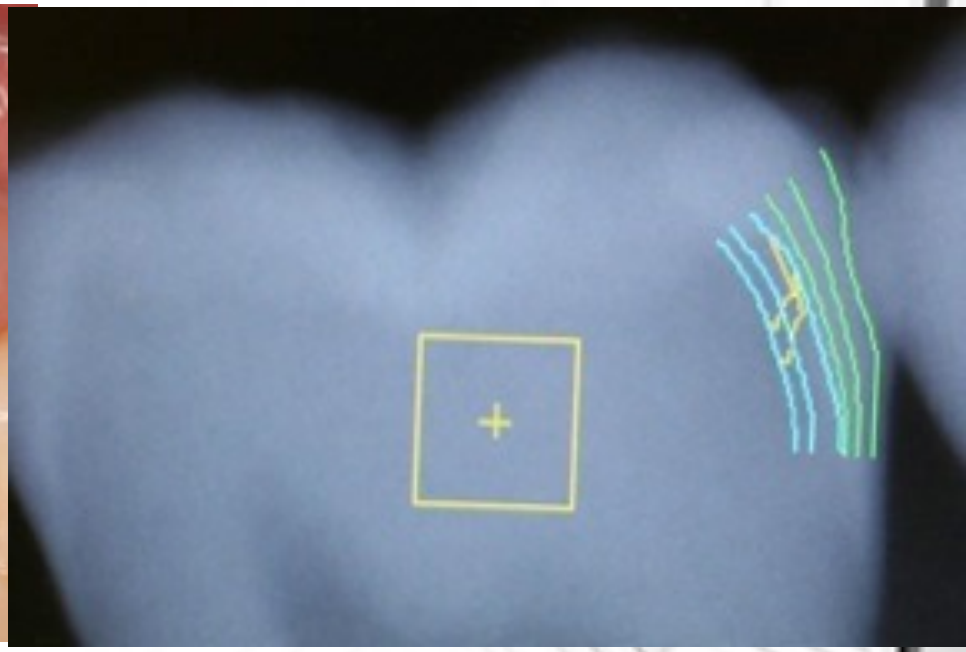
Enamel does not cavitate because of protection from fluoride. Caries begins in dentin through fissures, pits, fractures, and enamel pores. Difficult to diagnose with traditional methods.



Let's put this in another way

How many times have you gone into a class 1 and thought it was shallow and "BOOM" your bur just drops into a large cavity?



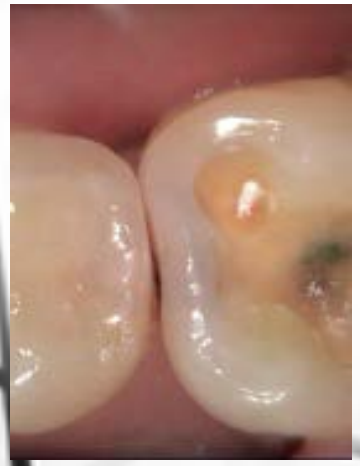


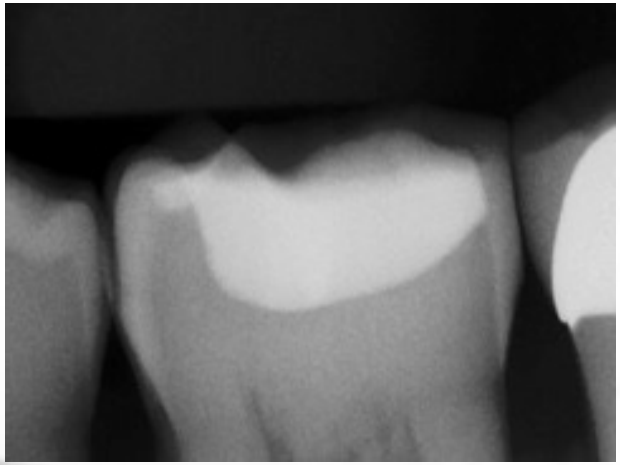
Lodgicon

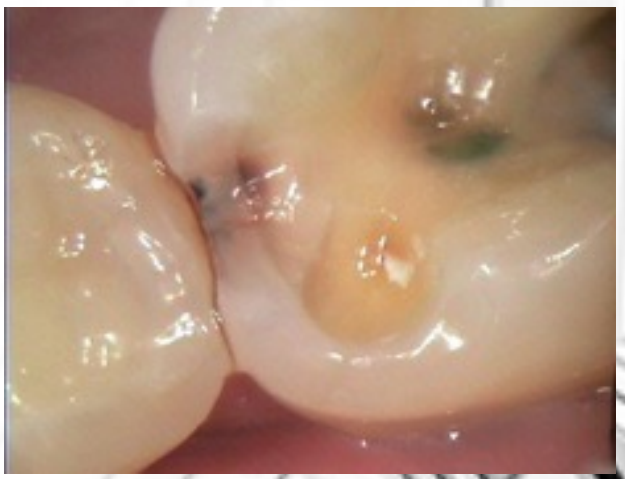
OR…

Another example, you are removing an alloy or a composite in a class 1 and you see "**Brown**" as you are approaching the interproximal?

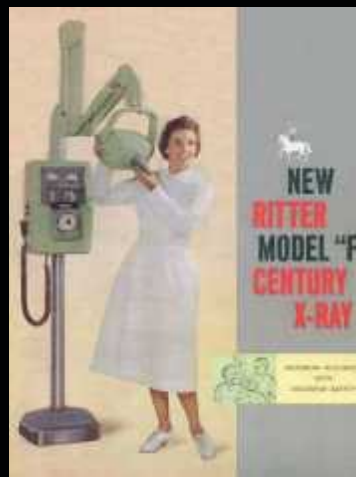
Yet NOTHING on the X-ray!!







If we can diagnose earlier,
or in fact simply…
"UP OUR GAME IN DIAGNOSTICS"
Can we Redefine
"OUR APROACH TO CARE"

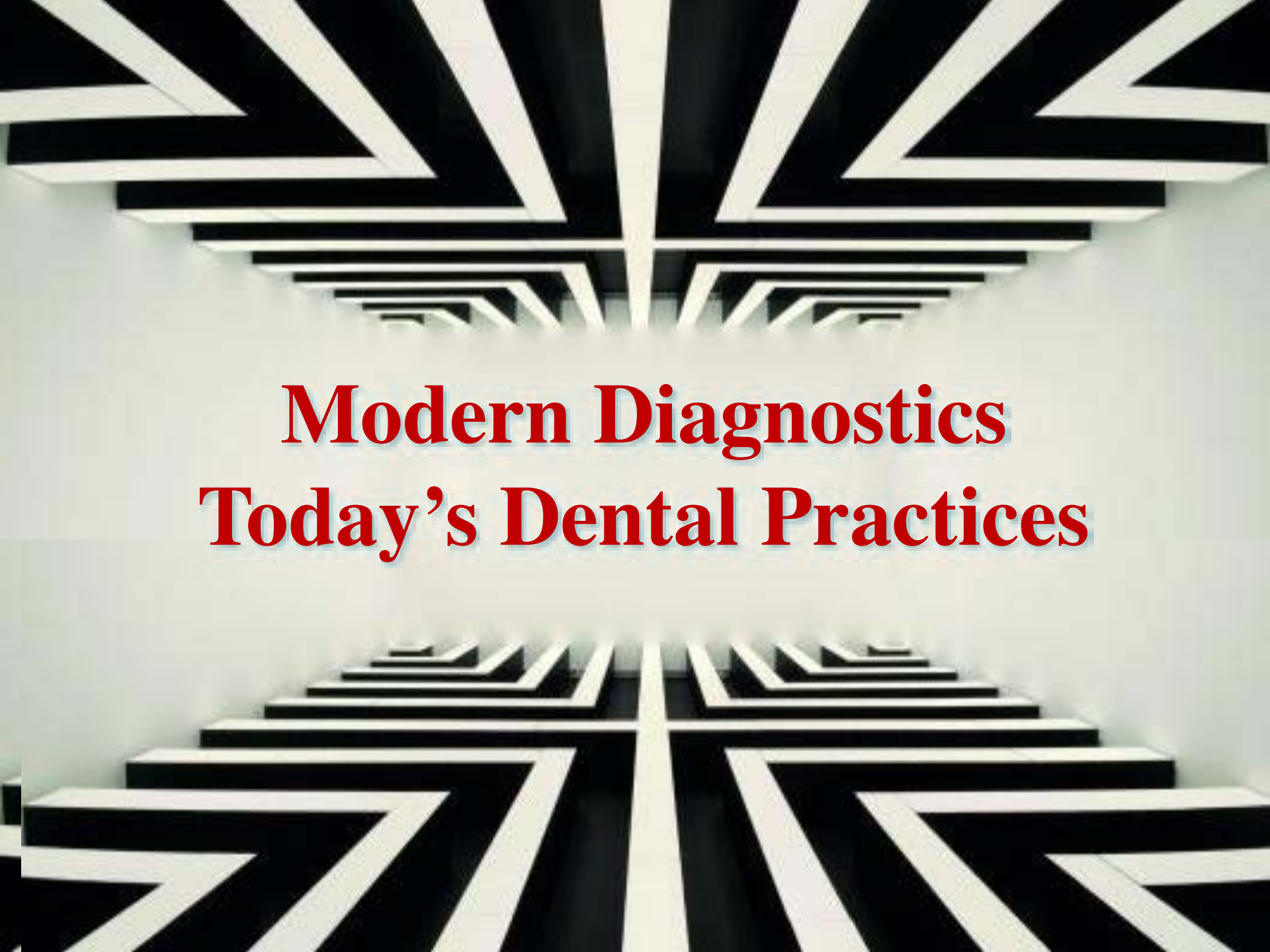


A core concept in our offices: Implementing today's technologies with your team

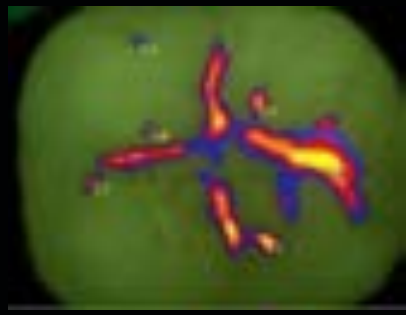
Contemporary management of dental caries includes identification of an individual's risk for caries progression, understanding of the disease process for that individual, and "active surveillance" to assess disease progression and manage with appropriate preventive services, supplemented by restorative therapy when indicated

American Academy of Pediatric Dentistry. Guideline on caries risk assessment and management for infants, children, and adolescents. Pediatr Dent 2014;36(special issue):127-34.

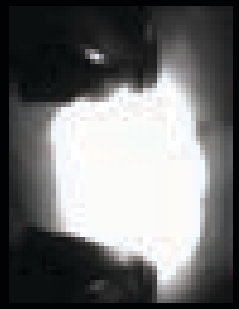
Diagnostics Today Can be Customized
To Each Office
To Each Office's Focus
Specific to Each Patient
All to the Betterment of our Patients
Performed by the Entire Clinical Team


Modern Diagnostics
Today's Dental Practices

Digital X-rays: decreased radiation than traditional x-rays, with far **more options for enhanced imaging and communication**



Fluoresence for enhanced Caries Detection for fissures and smooth surfaces. The upgrade was data storage and one can follow the lesion from recall visit to recall visit without radiation



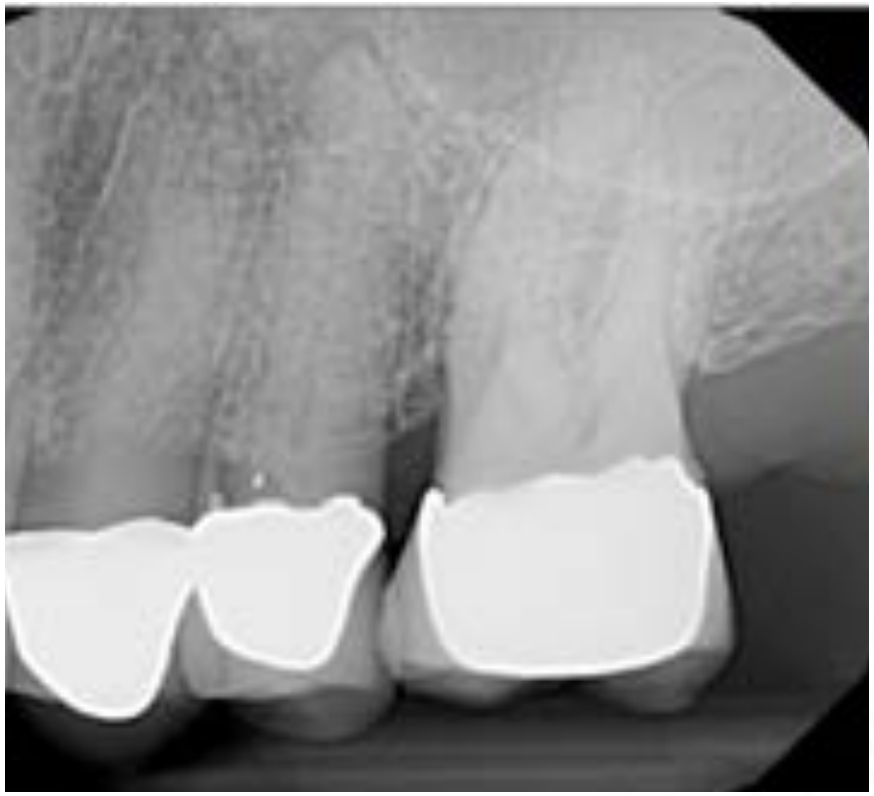
Transillumination the essential tool in my office for interproximal caries in the contact zone, craze line and crack line illumination, documentation for insurance, storage and following lesions from recall visit to recall visit without radiation

Cone Beams/Digital Pans expanding new directions in protocols and maximizing information never seen before in our practices and equally important…


The Next Big Technology
Within General Dentistry
CBCT
Everyday Diagnostics

“The Easiest Justification for a CBCT in my office Meet Diane”

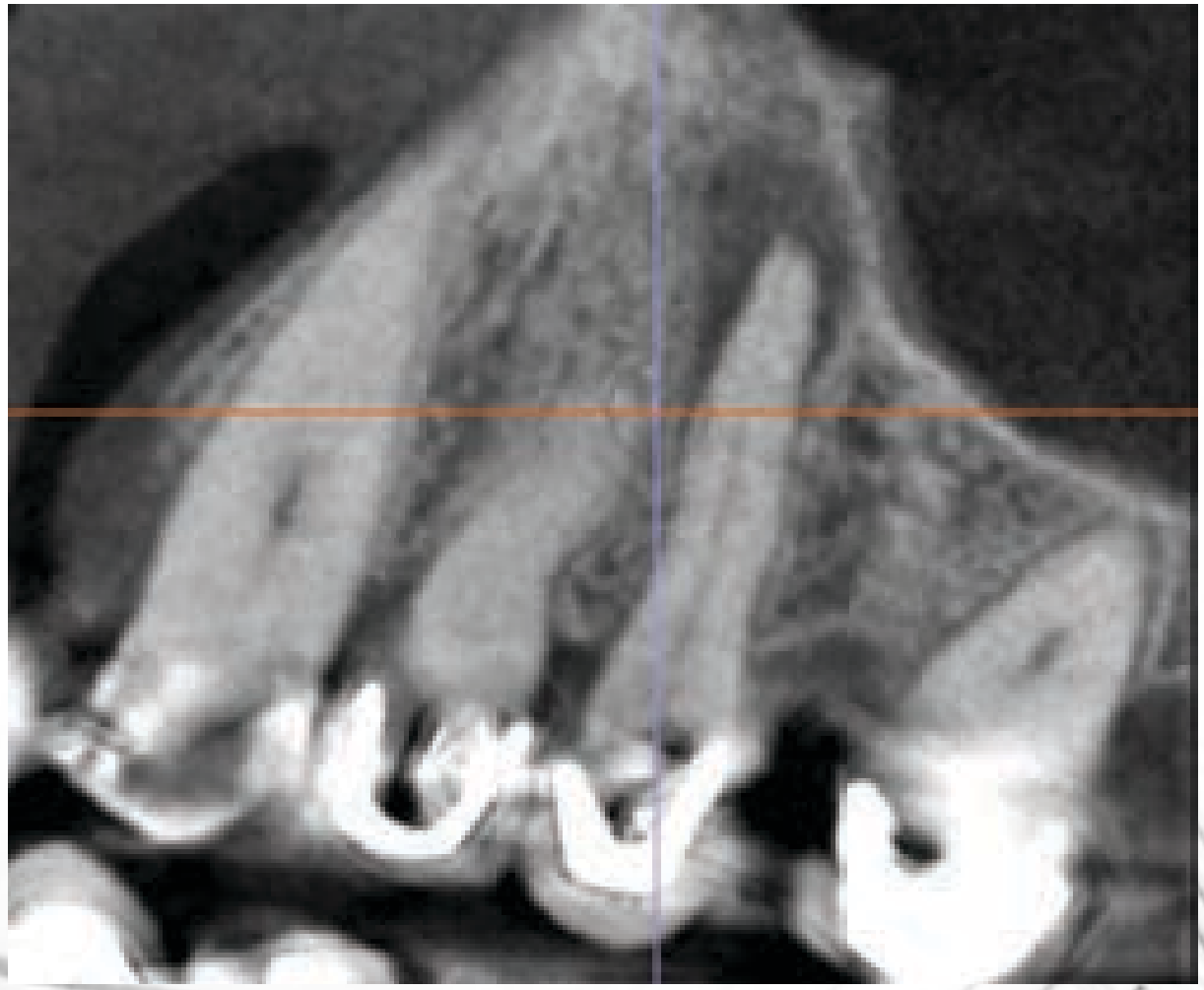
CC at a recall visit
"I had pain last month in my upper left area,
I was swollen and it went away after I took an antibiotic that I had"



My hygienist takes a periapical, taps, and finds no response, and then I walk in…

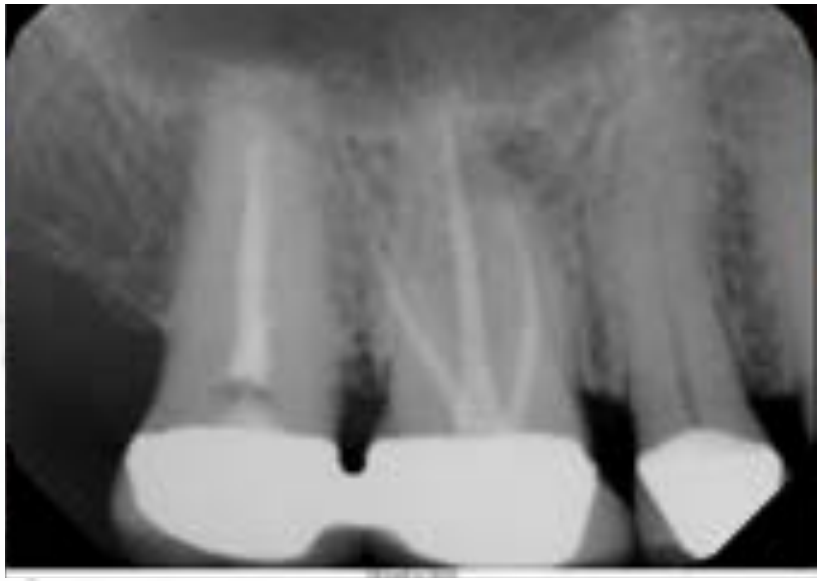
In the PAST, I would have waited if nothing was clear

With the limitation of 2D images
We have learned to scan such patients with similar stories that same day with 3D



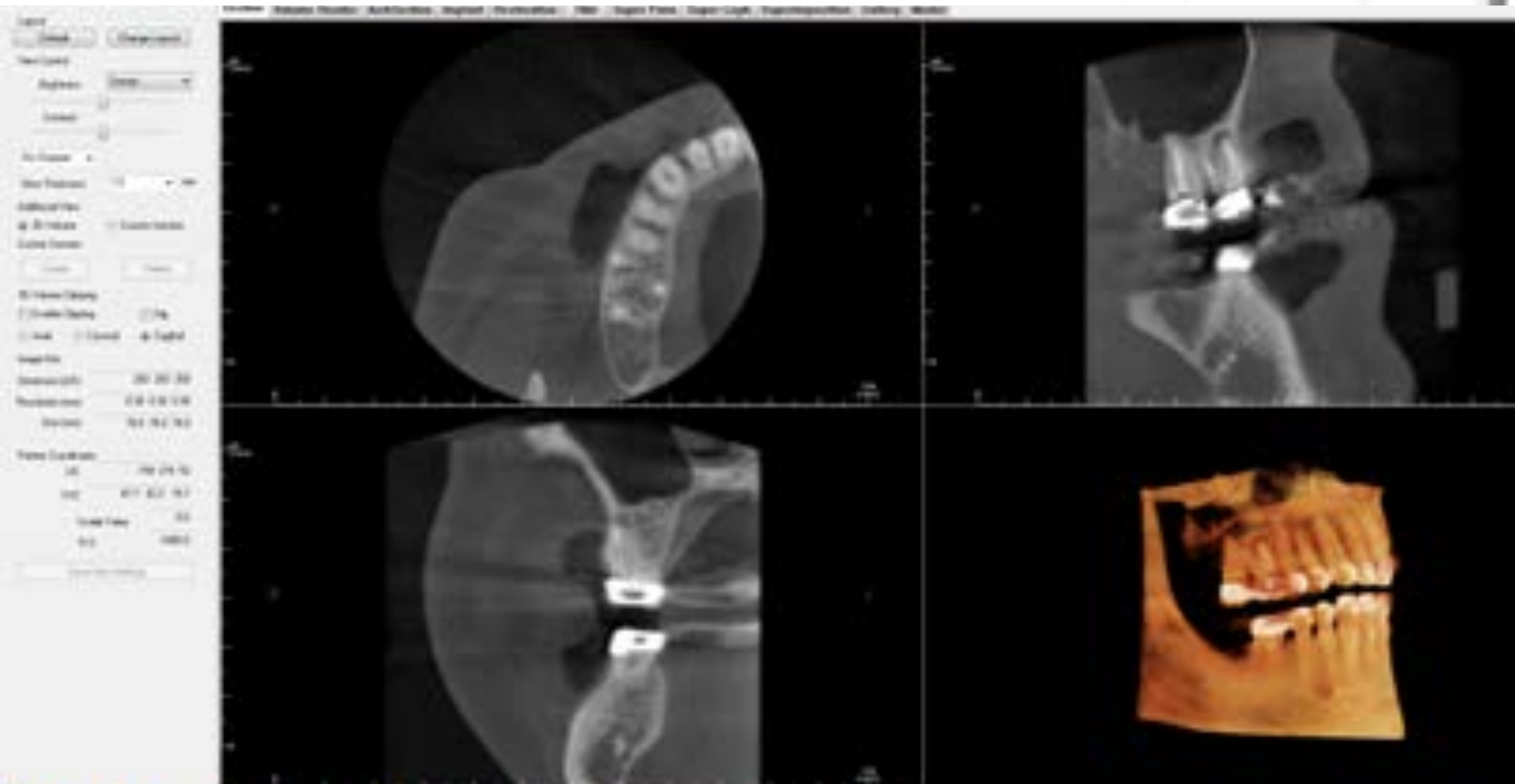
How Many Upper Molars like this case do you see yearly? Meet Dave”

David #3 on a routine recall visit and his specific FMX

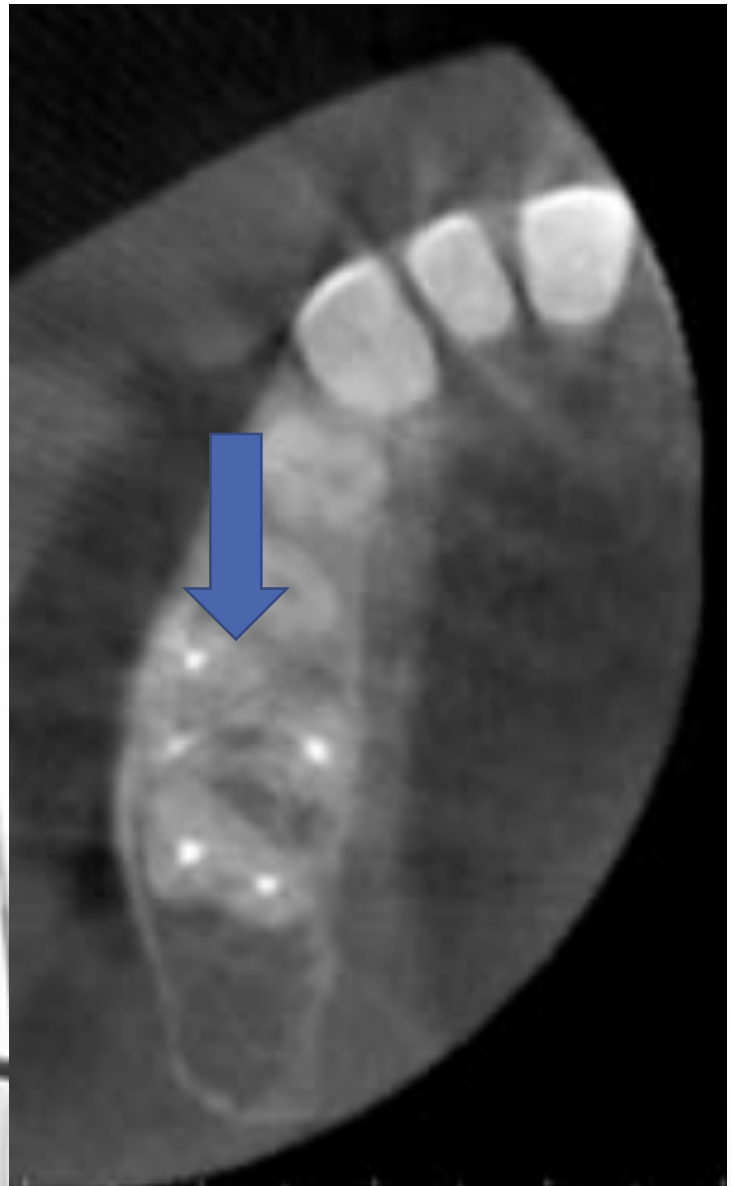


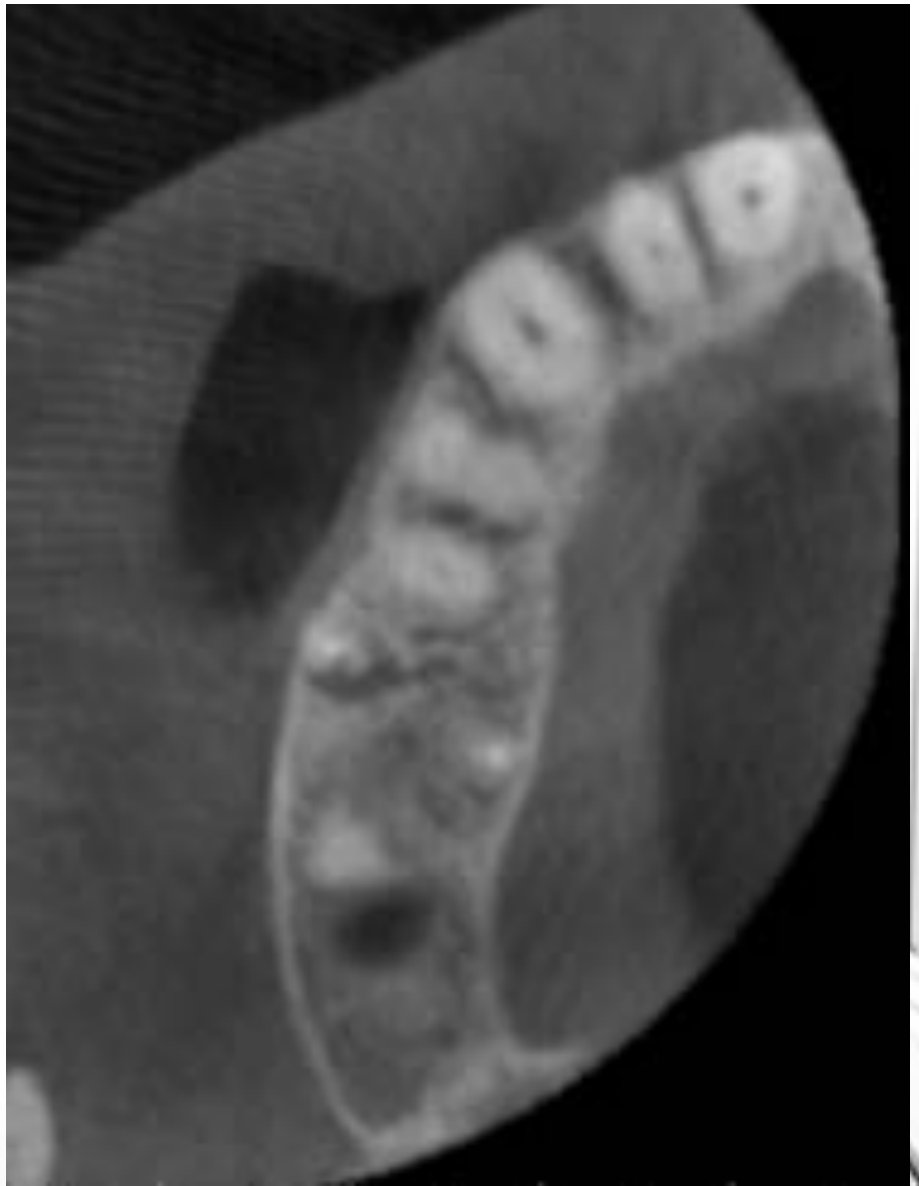
- RCT 20 years old
- Hx of on and off tenderness
- Yet no history of swelling and acute pain
- Periapical radiolucency evident

That same visit….a 5X5 FOV scan is taken at High Resolution



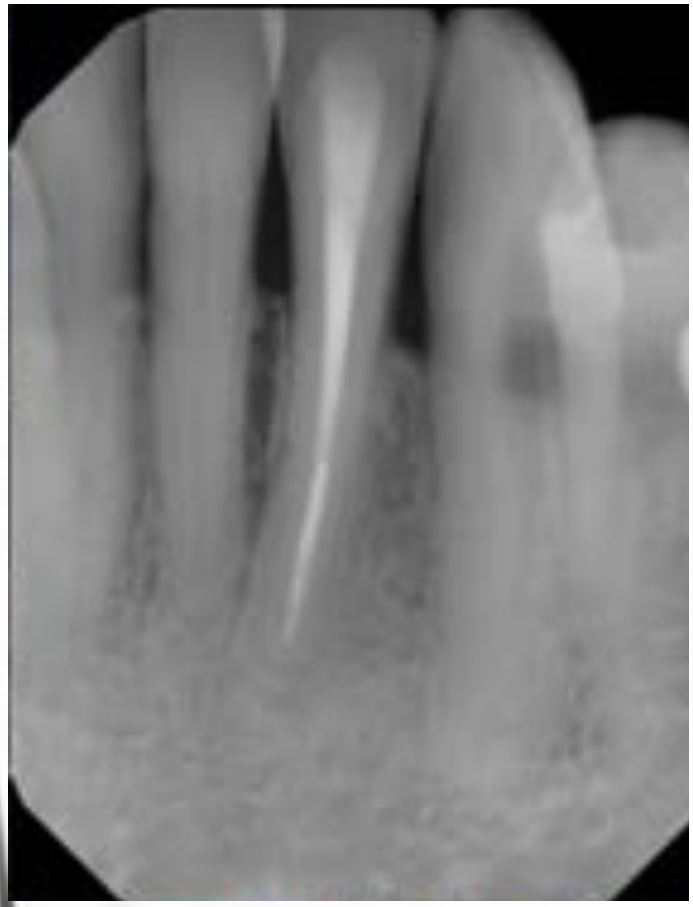
Given the lesion, and NO Mb2 canal for a first molar noted…The lesion is worth retreating



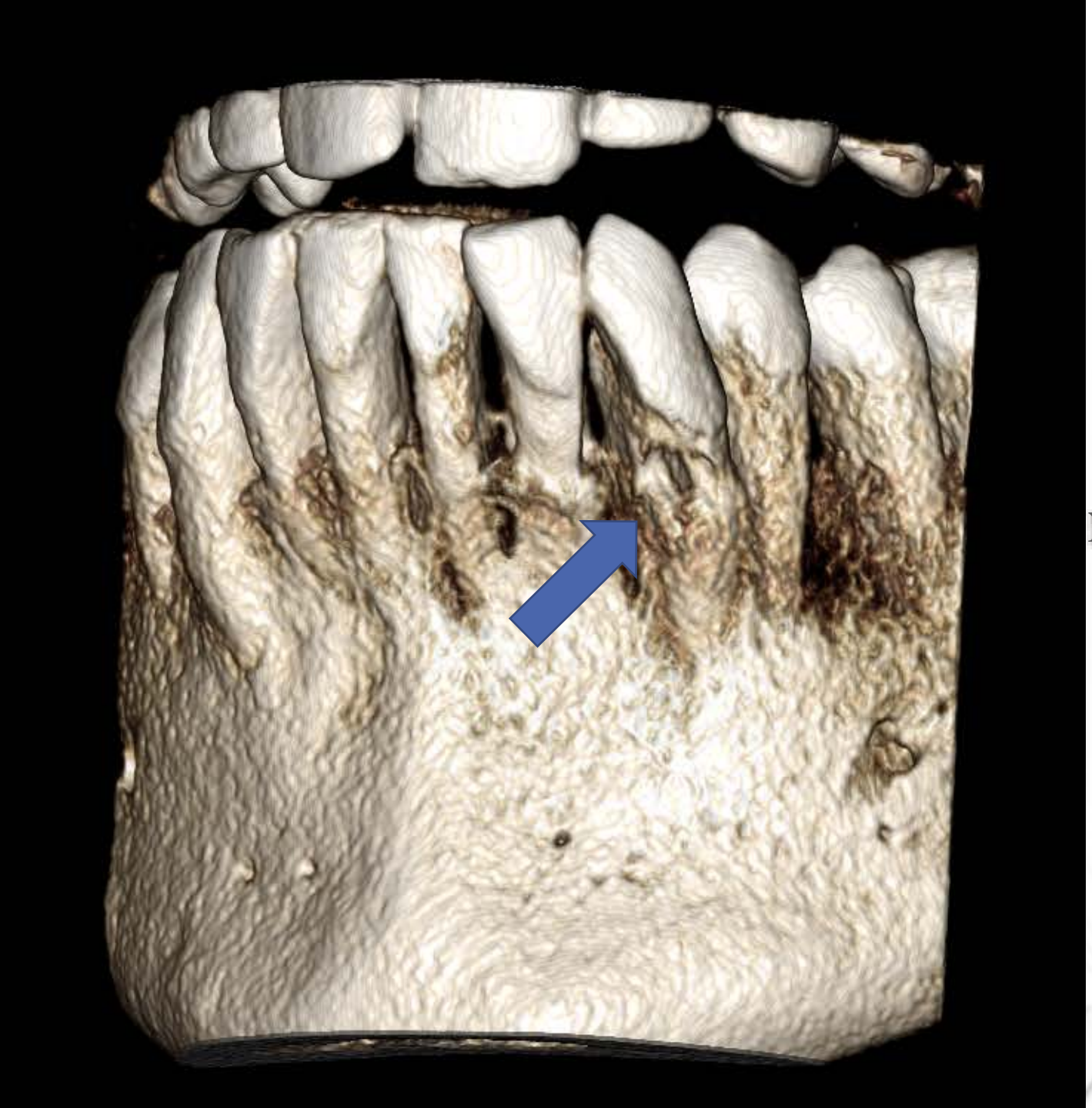


“The ever growing issue of RESORPTION”

On a routine hygiene visit: An asymptomatic lesion with a Class 5 “stick”

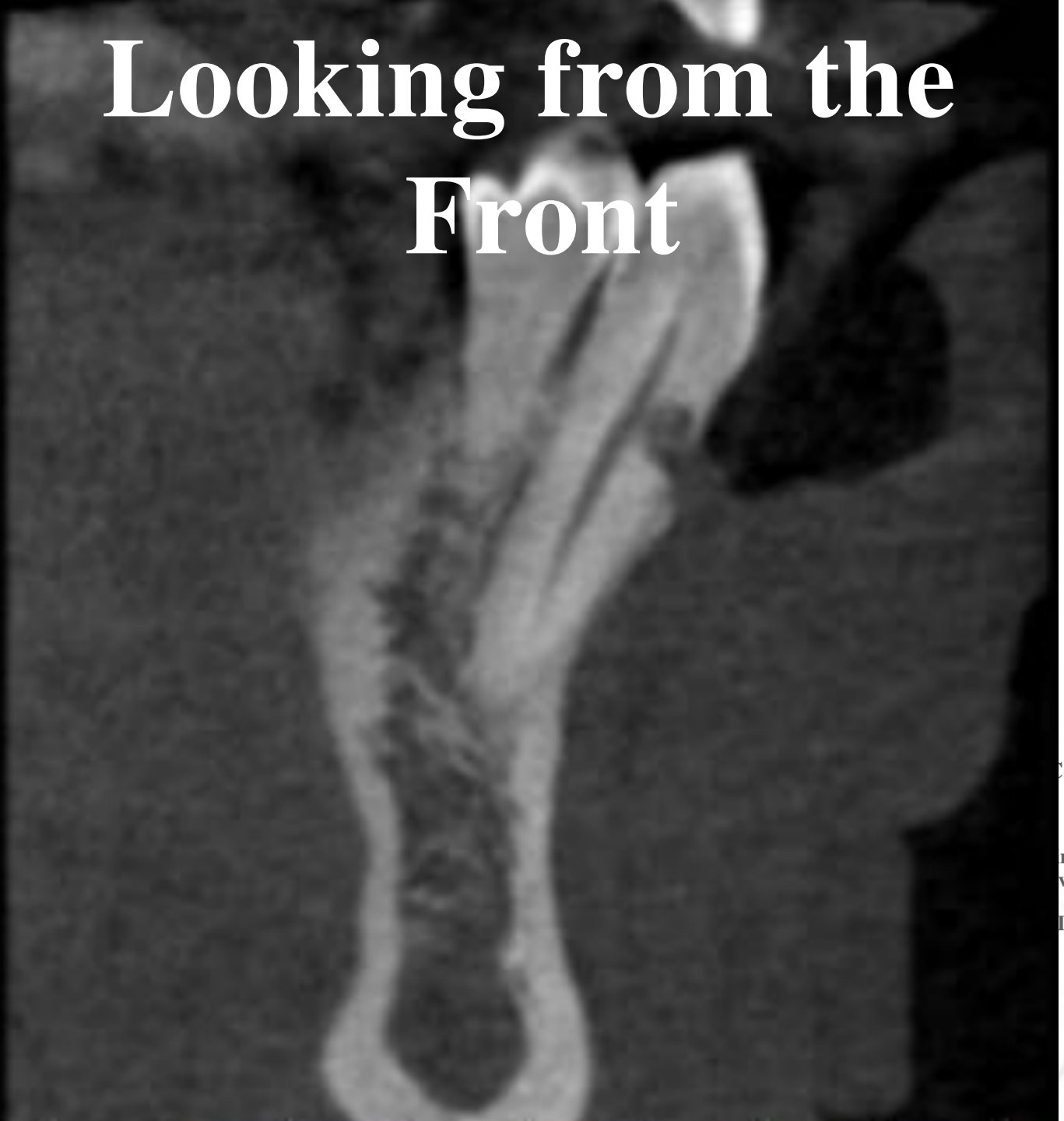


- History #23 turned yellow and then endo was done on non vital tooth years ago
- History #22, No history on this tooth beyond orthodontics in high school 42 years ago
- No probing
- Stick on the coronal aspect



Under Volume
Render
Note the Location of
Resorption

Looking from the Front



Coronal View Showing proximity to the nerve

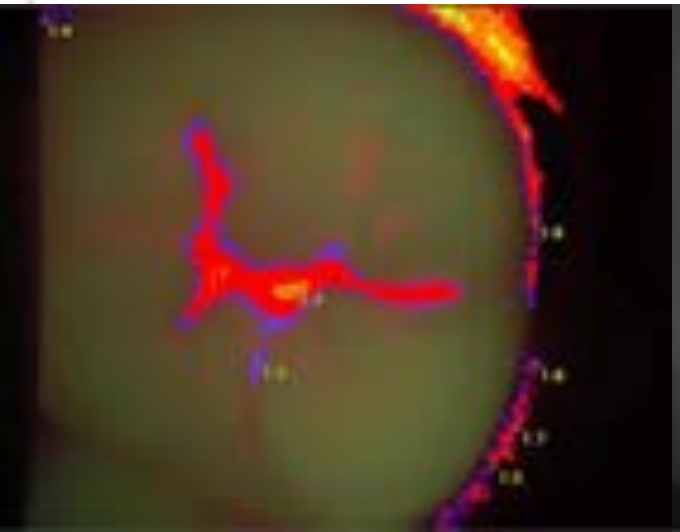
This view is the
"money view"
in this case because we knew that endodontics
was involved. We then pulp tested and it was
negative
The lesion extended slightly below the osseous
crest

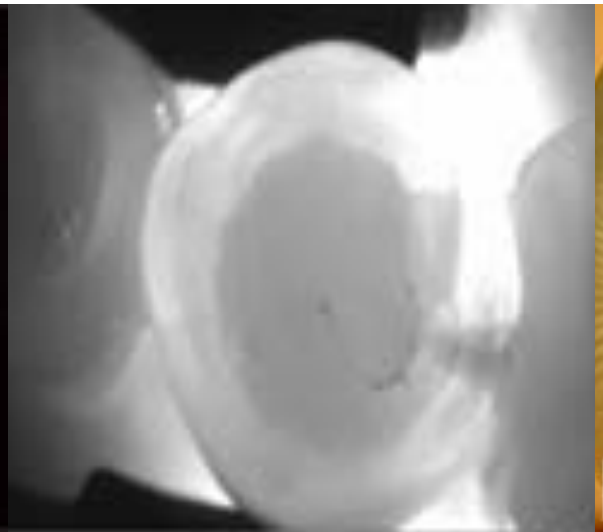
Today as we continue forward…
With the limitations
of explorers and traditional
x-rays…
How do we compliment these technologies and further our diagnostics in our offices in regards to the caries process?

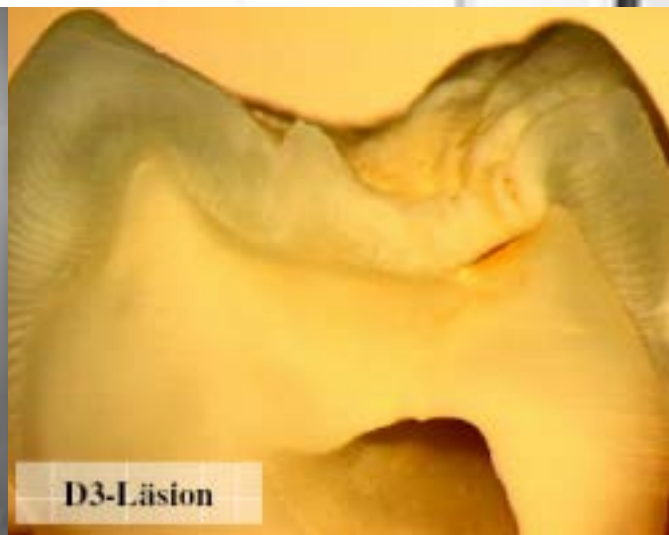
When Do You Drill? How do you best decide?

Schools across the country
teach different
methods of treating cariology

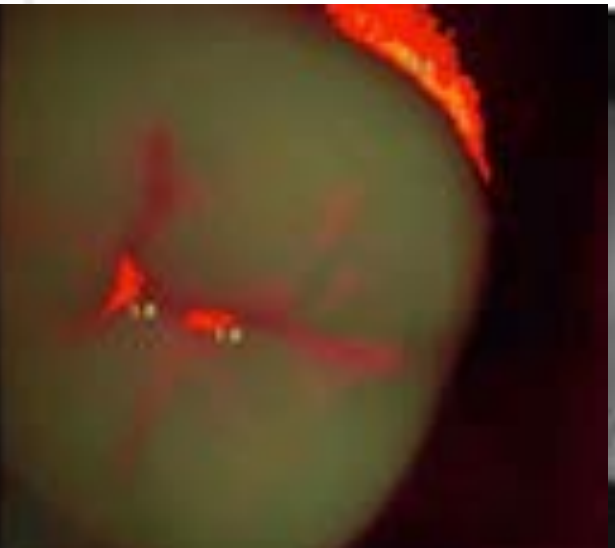
About 2/3rds advocate surgical treatment once the dentin has reached the outer dentin 1/3rd (D1) and with the aid of an x-ray and or explorer (Low Sensitivity)

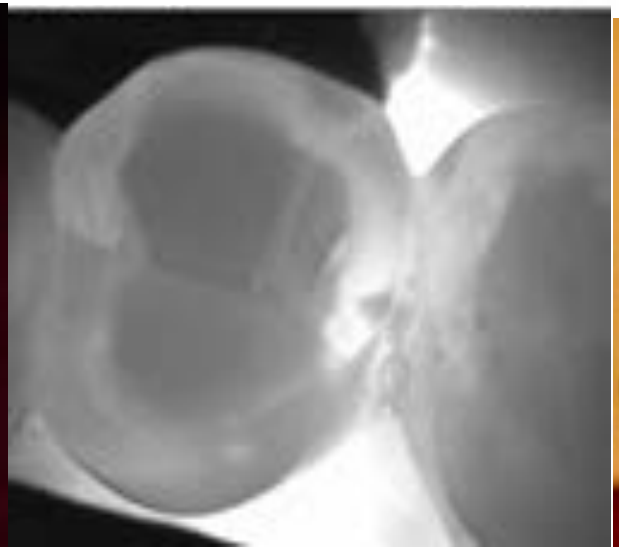




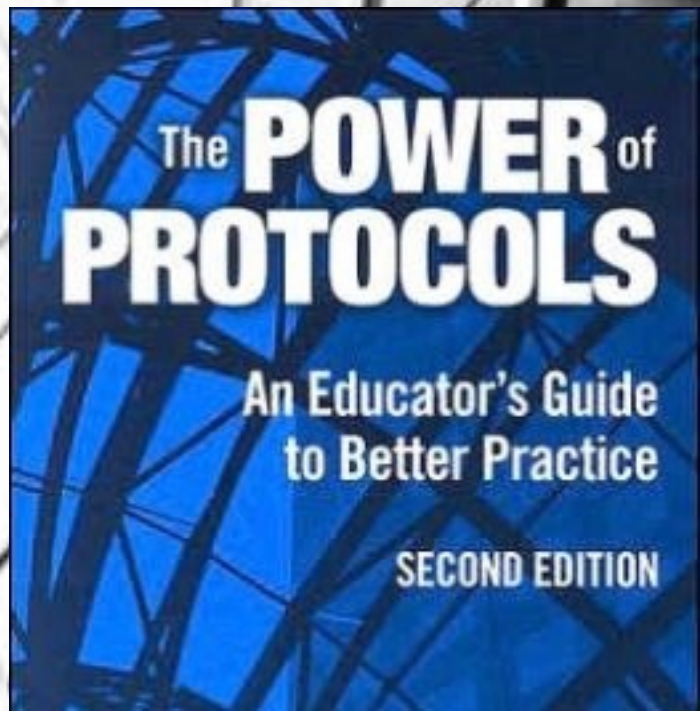


About 1/3 of the schools teach treatment when decay is in the inner enamel (E2) with the aid of an x-ray and or explorer (Low Sensitivity)





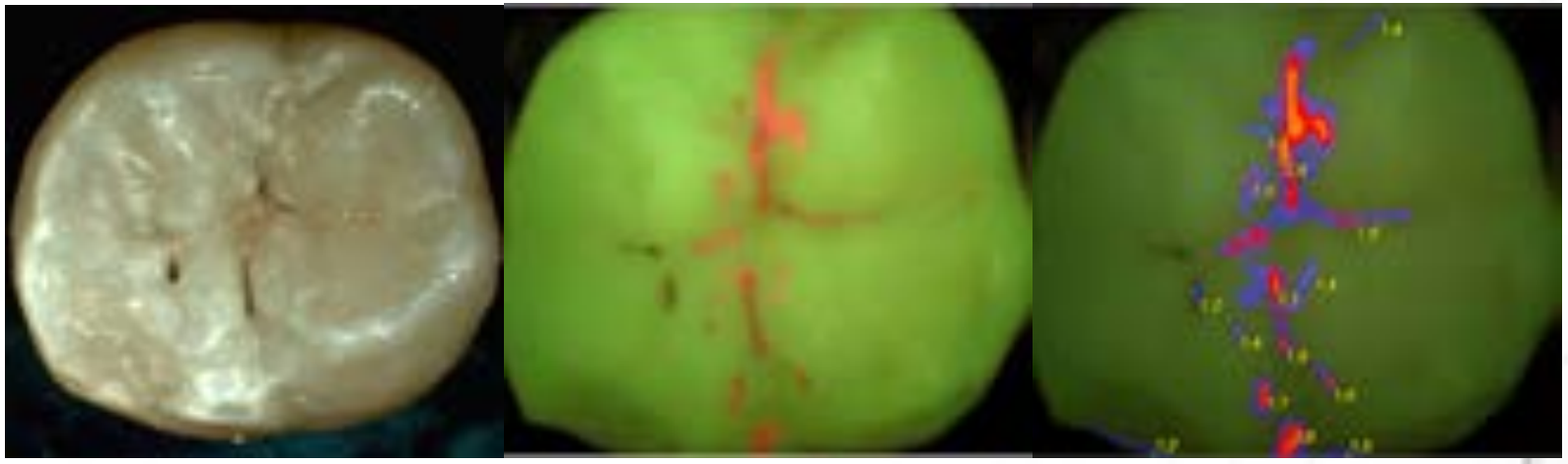
How this is changing our habits into new office protocols and diagnostics



Our first technology introduced today will be Spectra

Beyond Visual, Tactile and lot's of guessing!

Spectra Detection/Analysis- Examples



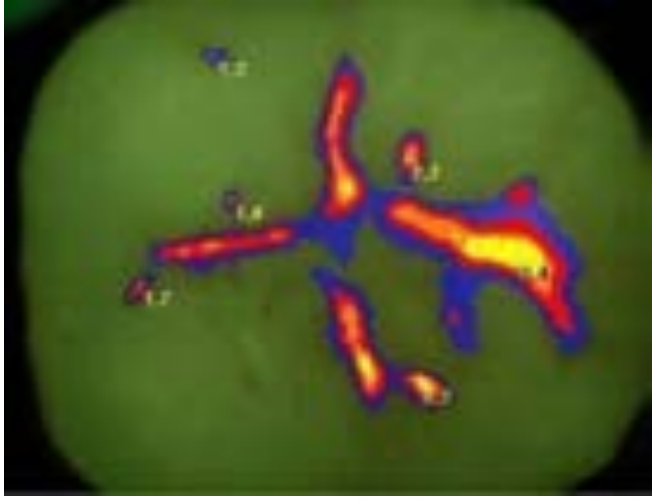
Spectra differentiates fluorescence from healthy and demineralized tooth structure.

This wavelength stimulates red porphyrins produced by caries-related bacteria to emit **red light**, containing less energy.

*** Plaque and Stain with porphyrins can give you a false postive

Sound enamel, in contrast, sends out a green auto-fluorescence light.

Spectra

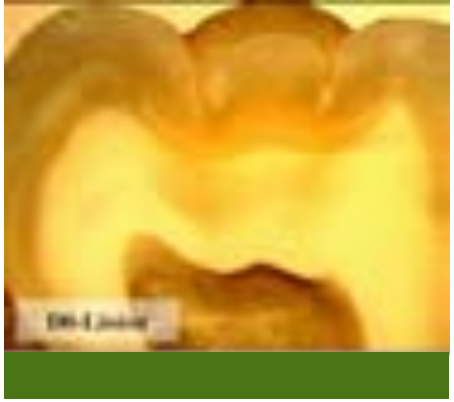


1.0	1.5	2.0	2.5	> 3.0
Sound Enamel	Beginning Enamel Caries E1	Deep Enamel Caries E2	Dentin Caries D1	Deep Dentin Caries D2-D4

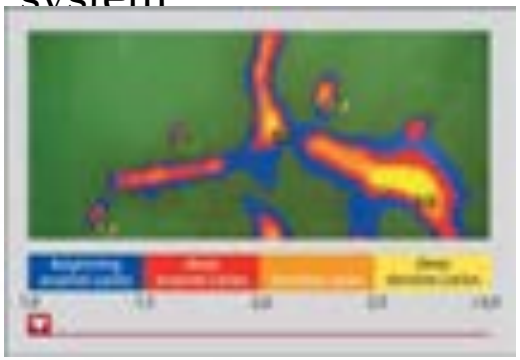
"Doppler Radar" for Caries Detection

A Picture is Worth a Thousand Words

Analysis of Spectra images Color Scale and Diagnostic Value



D0 – sound fissure system

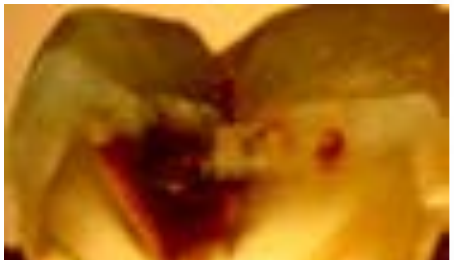


Diss. Madani, 2004 Uni Jena

E1 outer enamel

D1 early dentin

E2 inner enamel



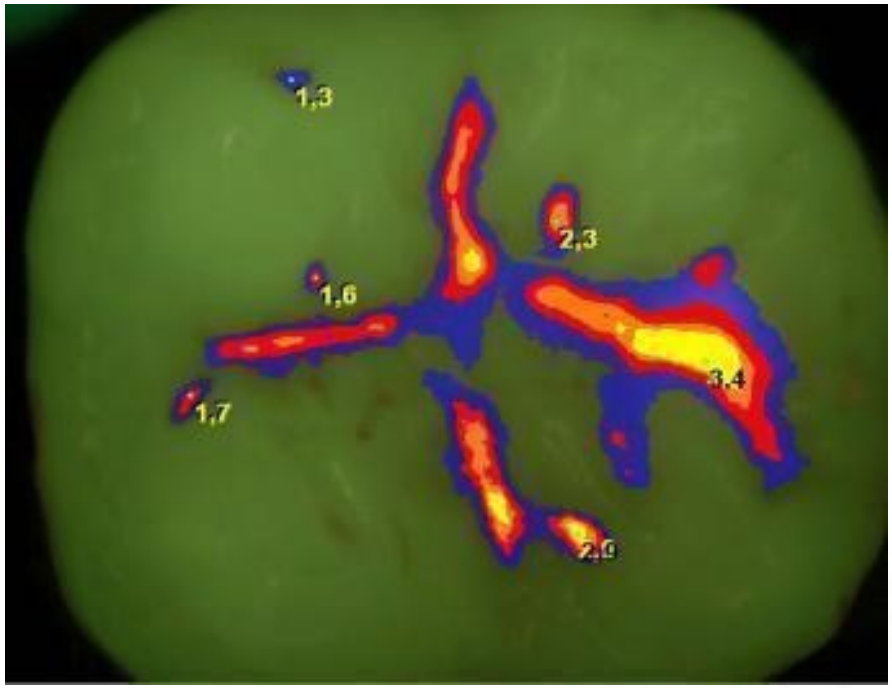
D4 deep dentin

Histological Clinical Analysis

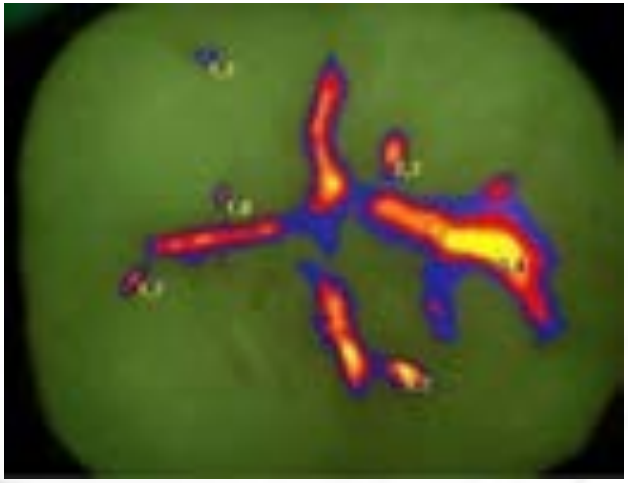
Nomenclature of Dental Lesions

The Bottom line…

This guides the practitioner and team to better decision making



Spectra is able to store the fluorescence images in the patient file for follow up and allows us to see if further demineralization has occurred and thus take out a tremendous amount of subjectivity



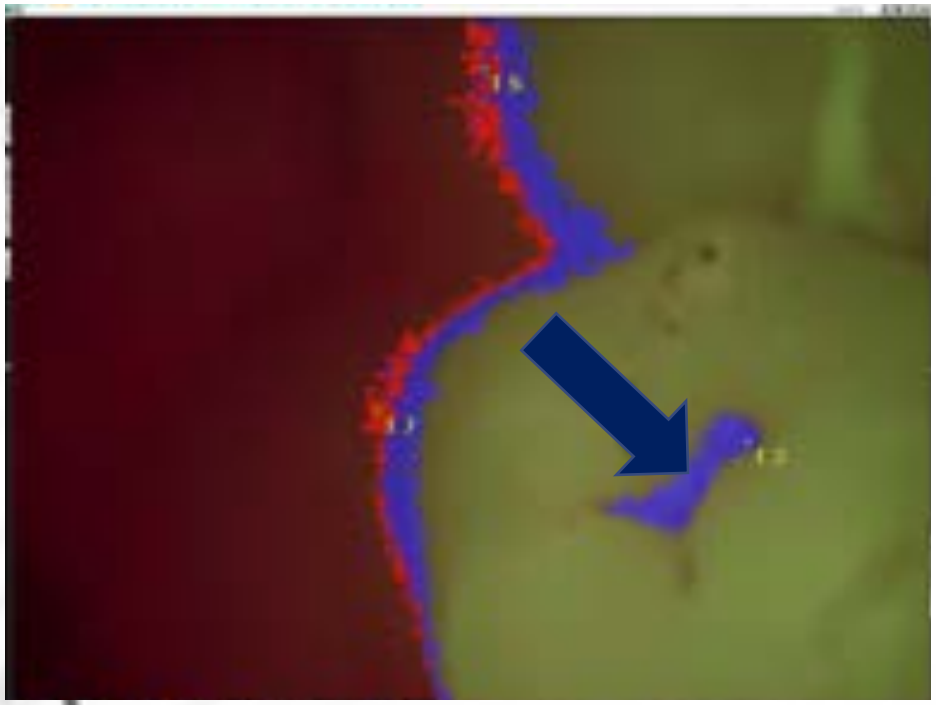
How has Spectra been Incorporated into my office?

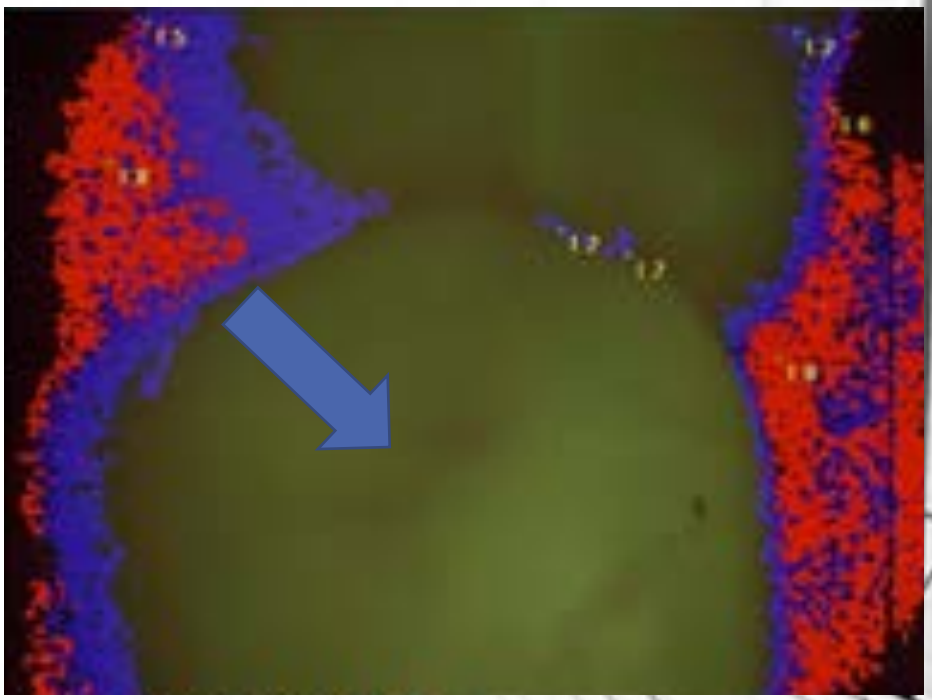
Is this Technology Worth the Investment?

The vast majority of my initial exams for patients with no occlusal restorations

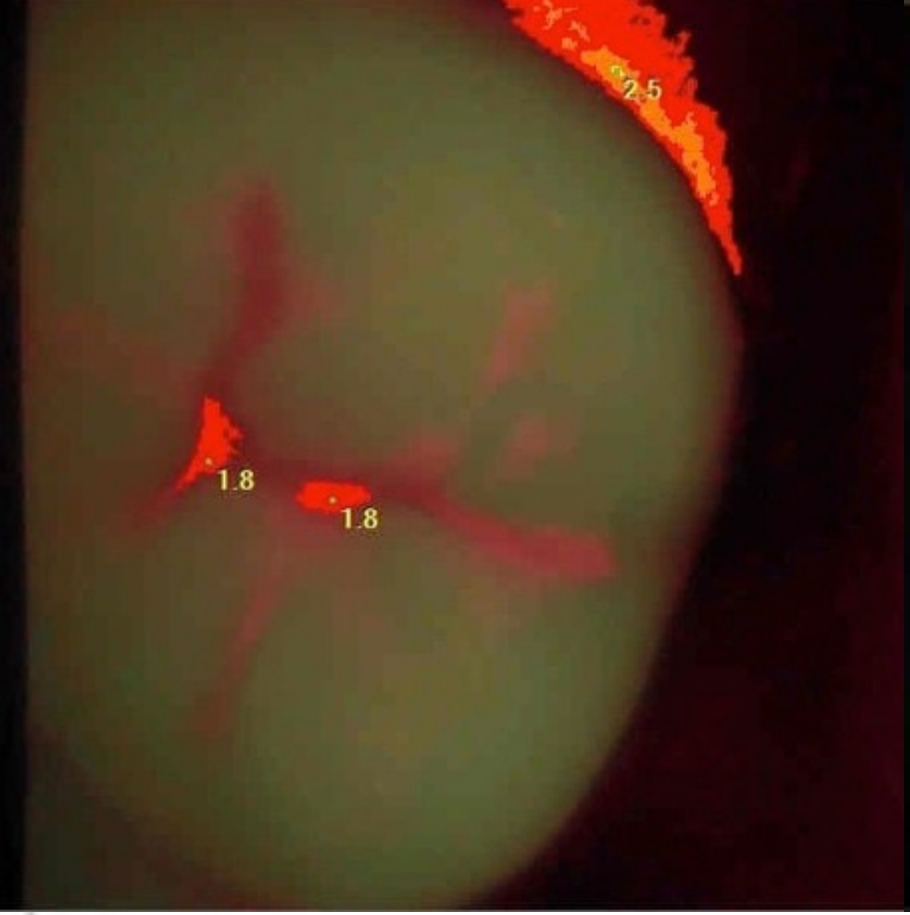
This allows me to evaluate both occlusal and smooth surface areas:

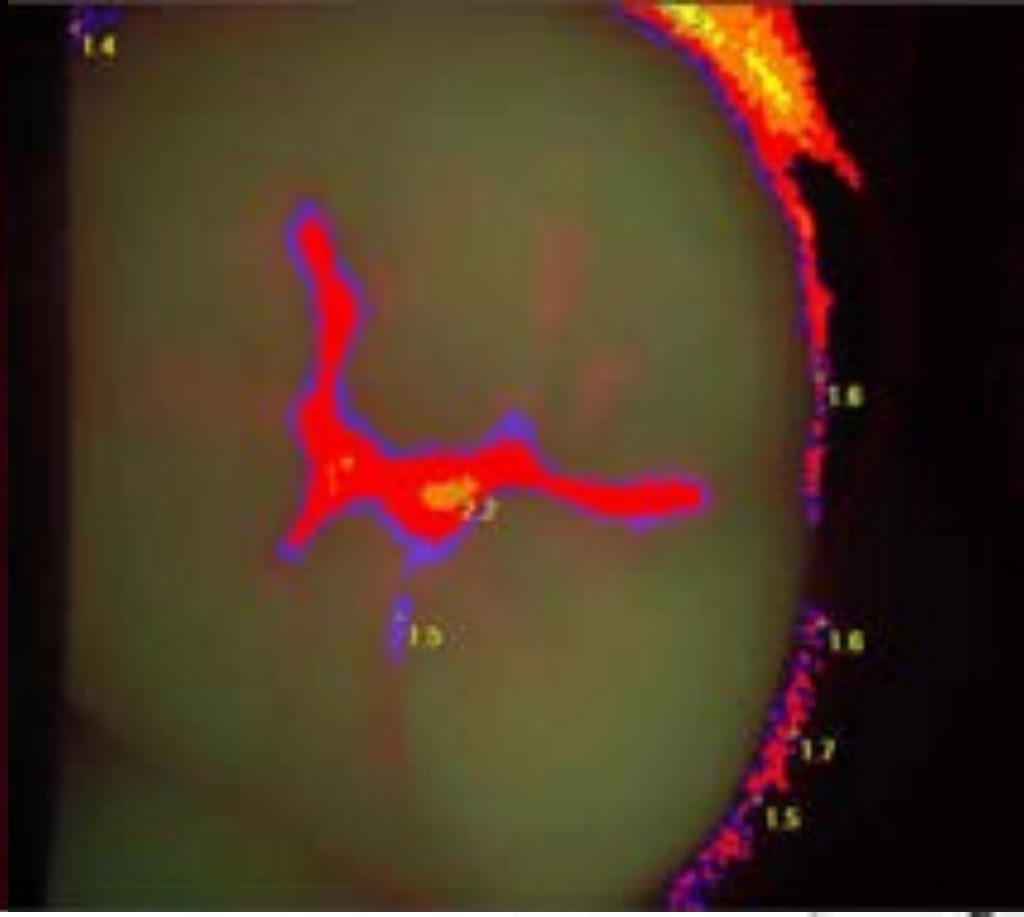
Staining can create false positive
Simply air polish or ultra sonic away





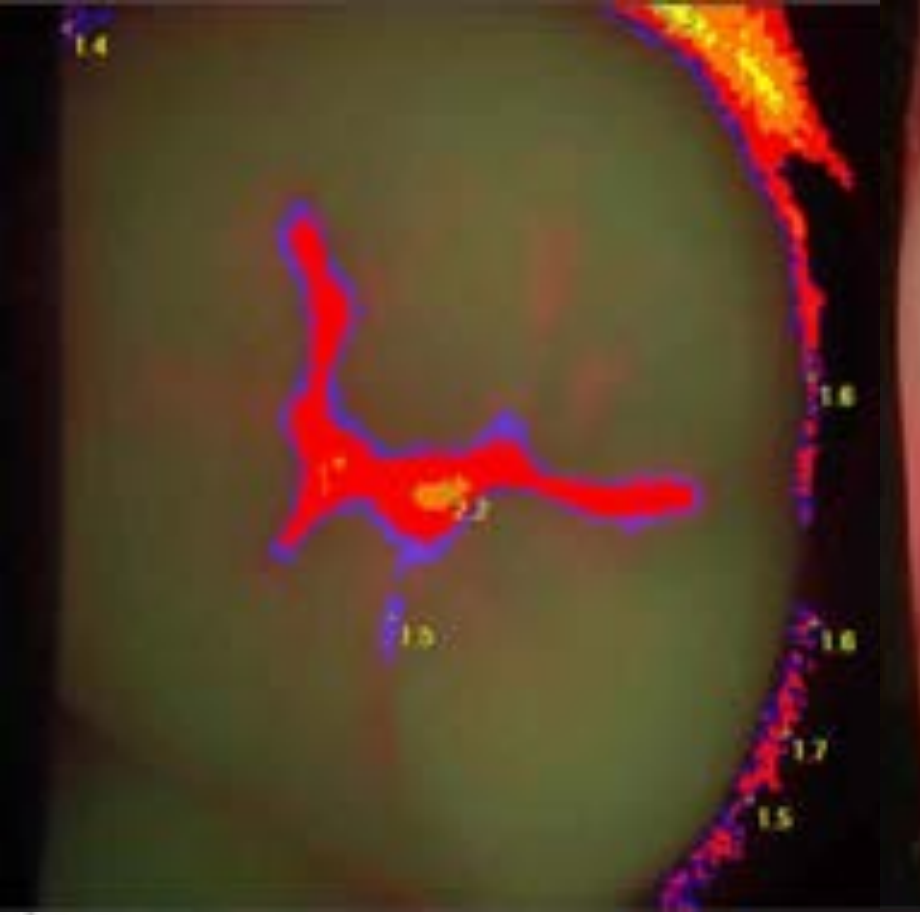
For recall exams to follow any changes

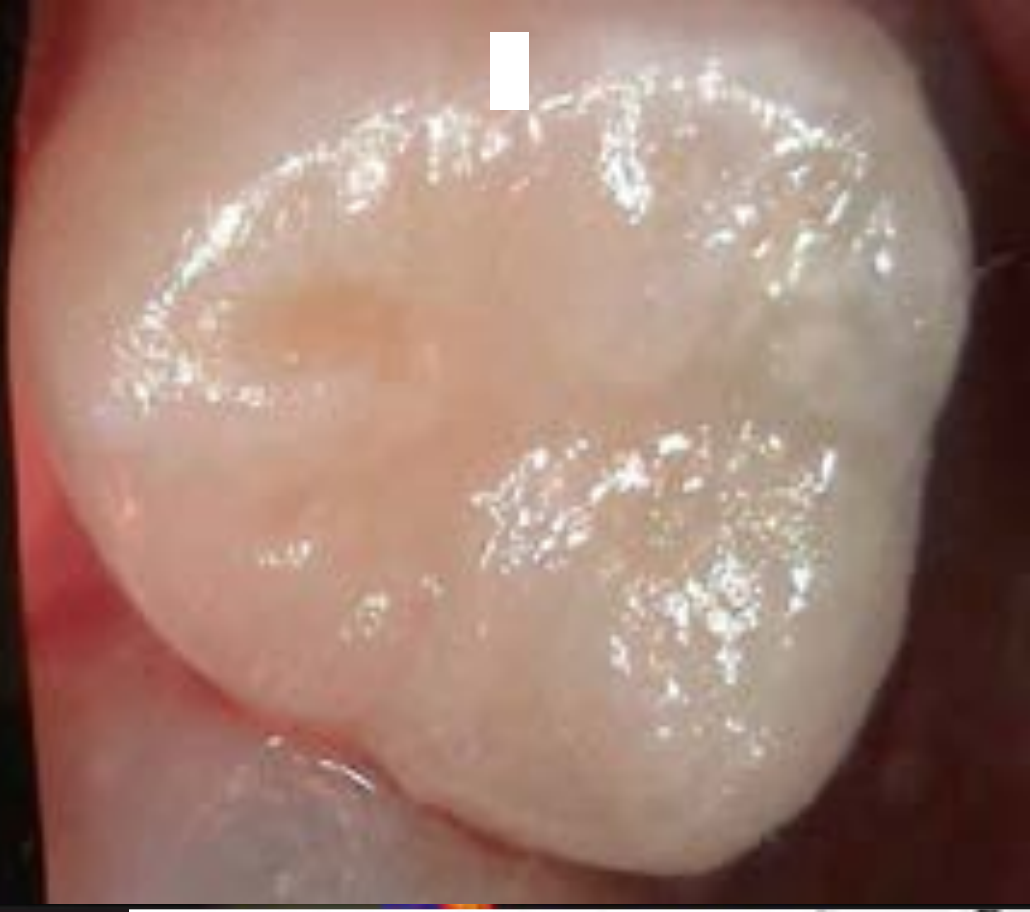




12 months later,
My hygienist utilizes **Spectra**
and captures the change

Evaluating caries removal during excavation… When do you stop drilling?

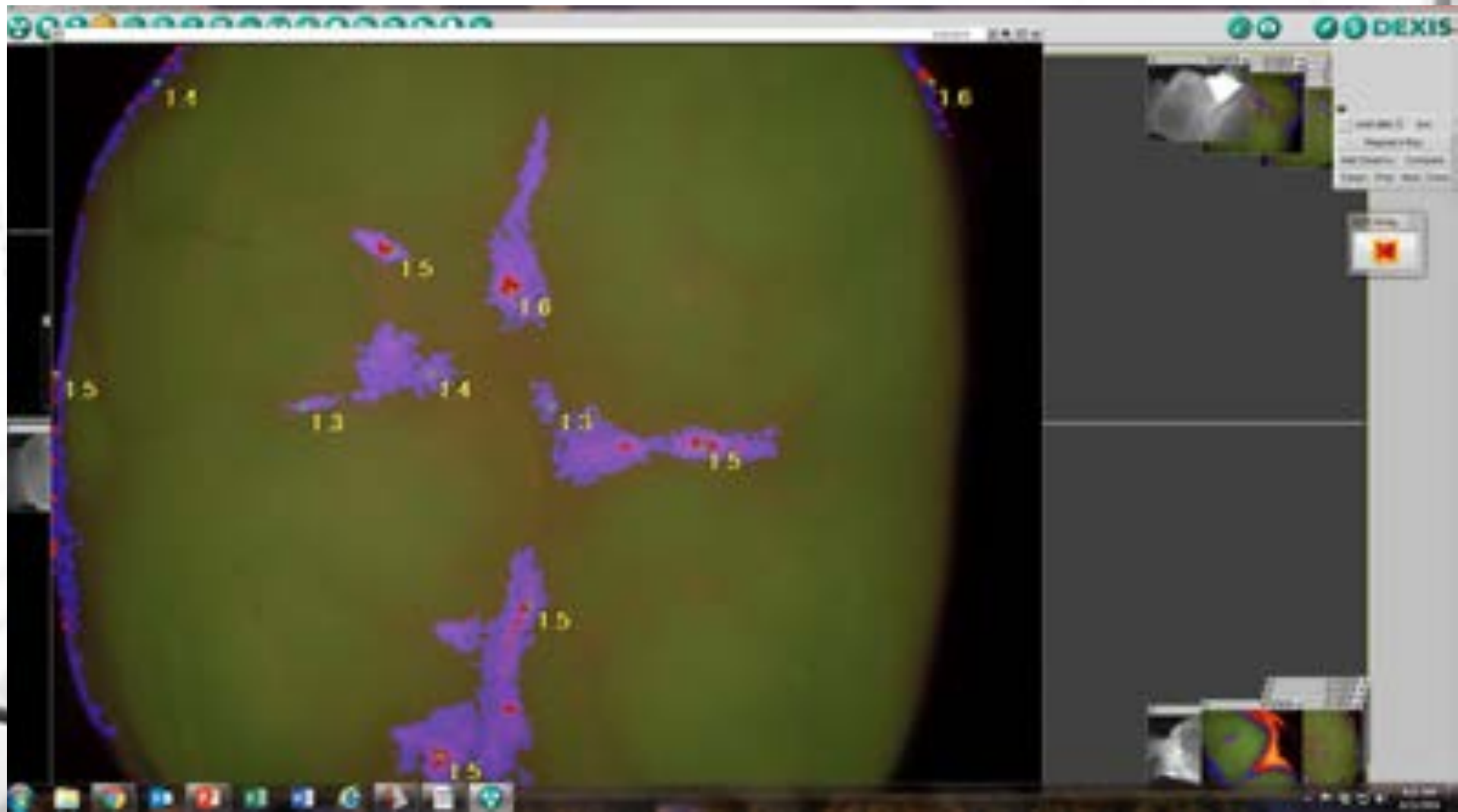




The first image shows full caries removal
Treated with a TE/Universal Bonding Agent: and a final placement of a low shrink low stress composite like Admira Fusion Flow, G Aenial Flow or SDR Flow Plus

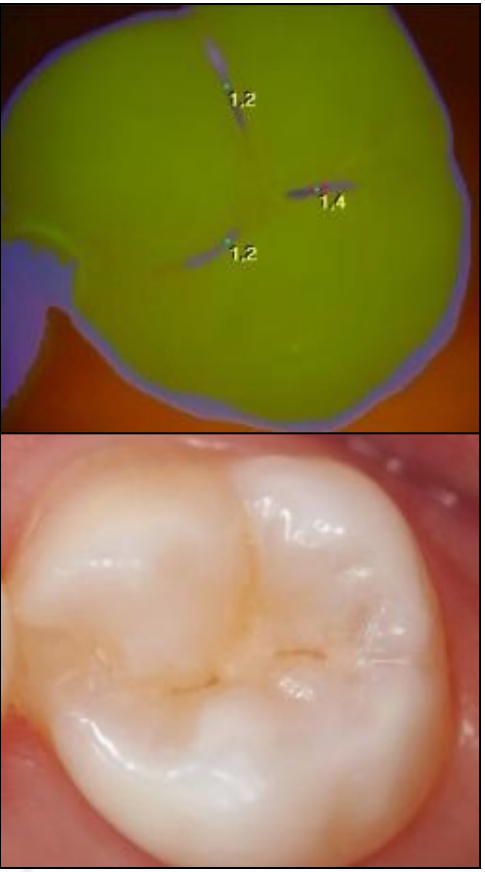
In our Sealant Protocol… Always Prior to any sealant placement!

#31… E1-E2…Knowing before you seal!

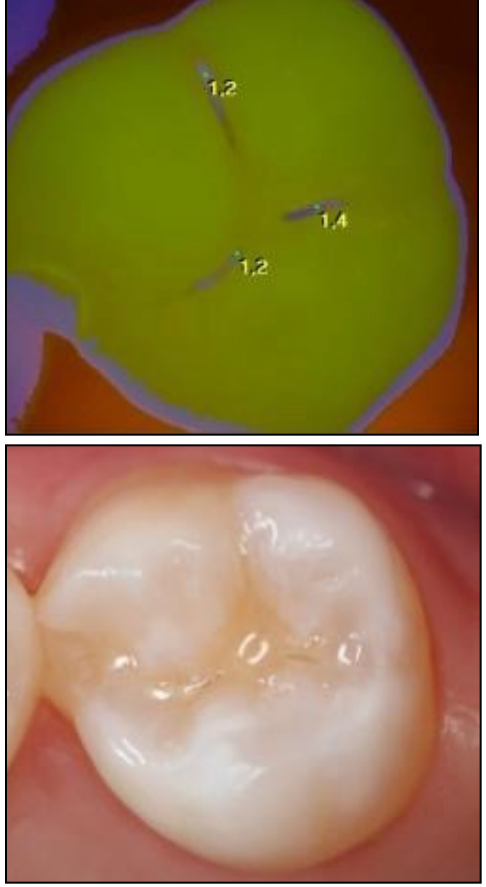


With Spectra I can use Ultradent's Ultra Seal XT Plus but I use the Clear if I am following the lesion without preparation

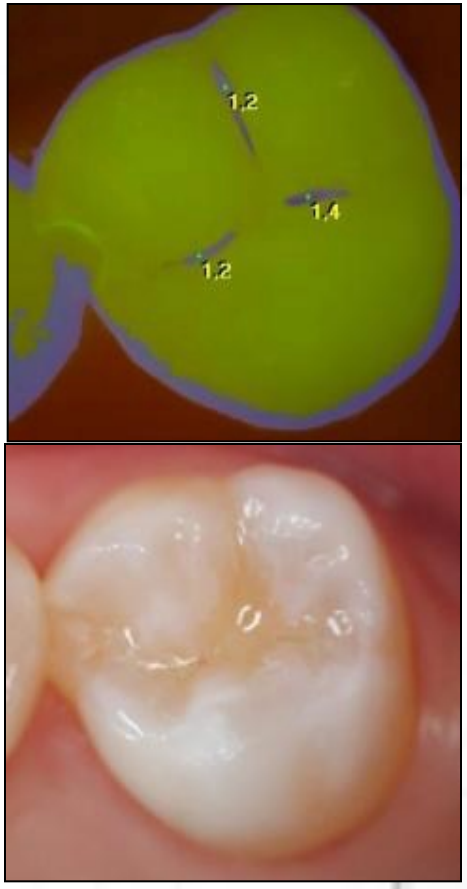
- 58% filled
- Radio opaque
- Low Shrink
- The Inspiral brush shears the material allowing it to become less viscous and thus the highly filled sealant can flow
- The sealant's resin then firms upon contact and thus doesn't run.



Before sealing



After sealing



Six months after sealing

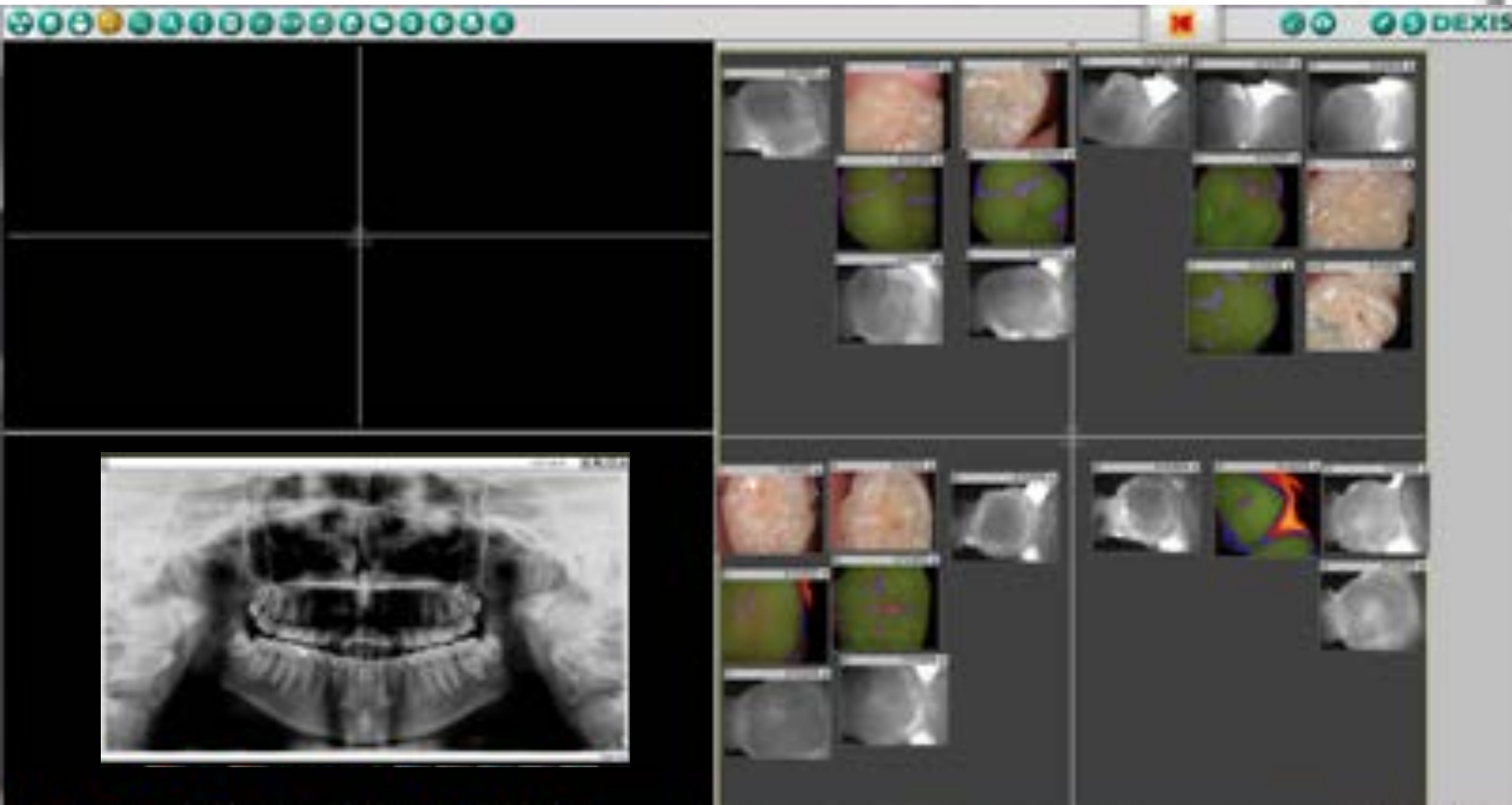
In this case…even the small red area was not touched, simply etched and sealed monitored

“Becky at 17”

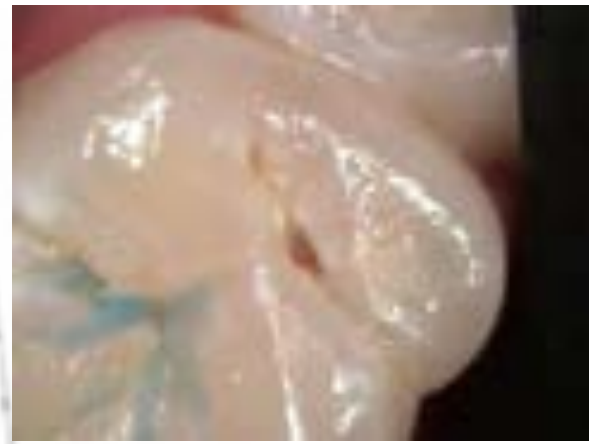
17 years old
Recent visit to pedodontist

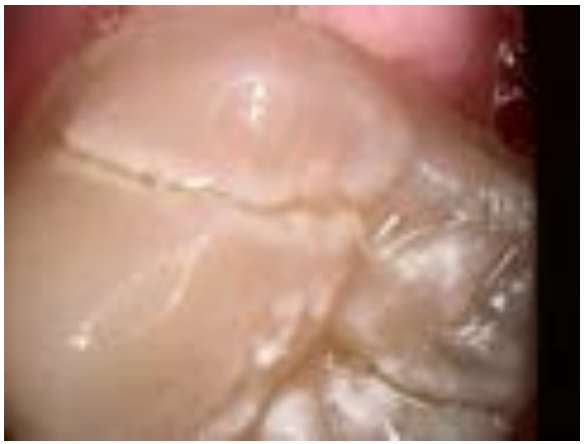
Parent received Solution Reach E mail about our radiation free diagnostics

Today's Examination per UDP Protocol for 17 year old patient

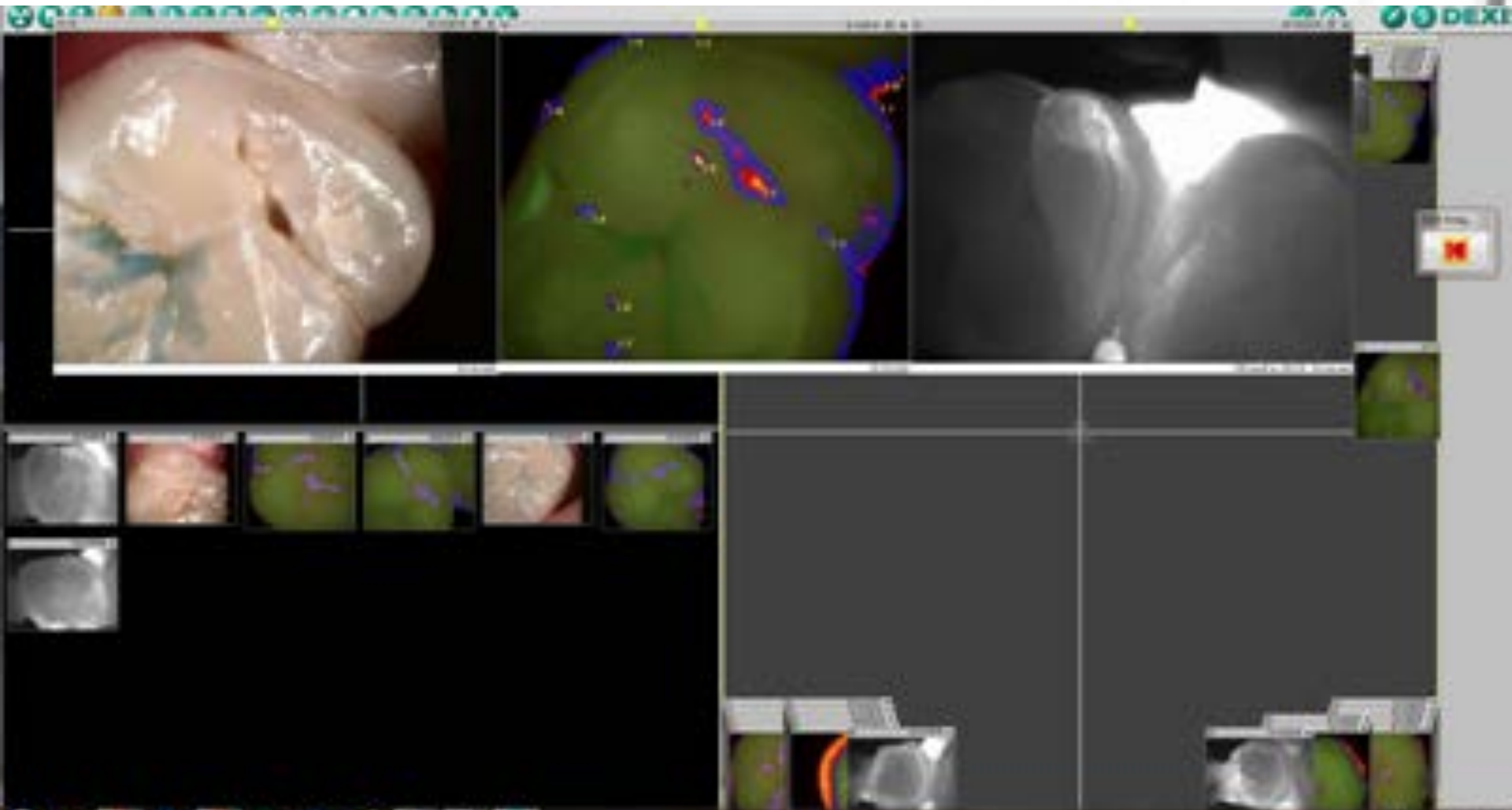


If 14 is visually like this yet no stick and nothing on the x-ray?
How do you evaluate, and even more challenging how do you evaluate 2 and 15 and monitor them?



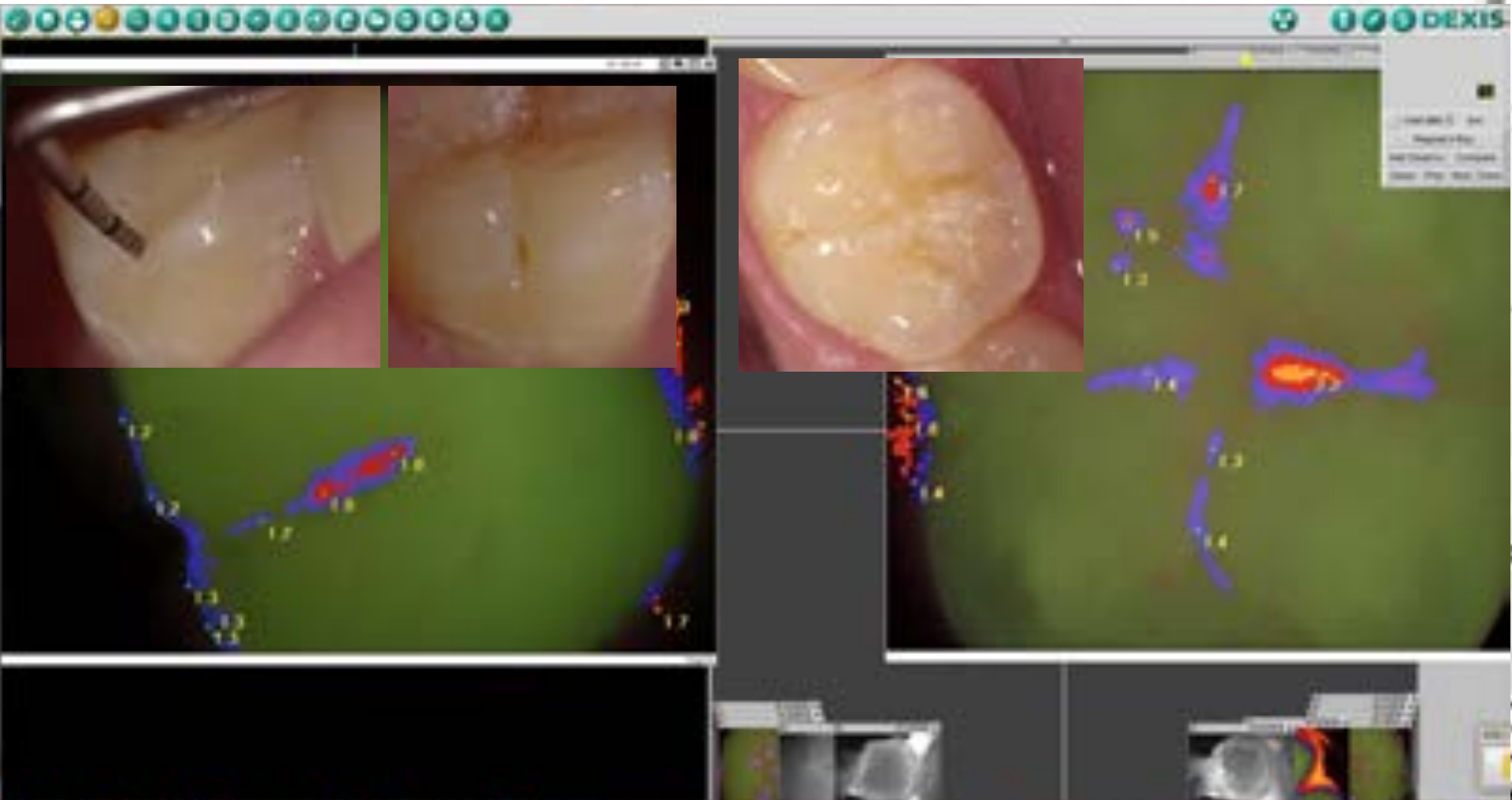


Within Dexis: X-rays, Spectra, Carivu and Intra-Oral images are all bridged



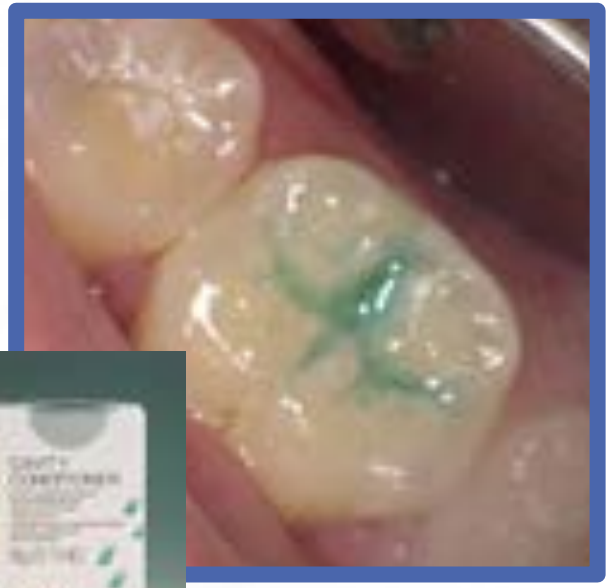
The Minimally Invasive Protective Restoration

#30 with Early D1 Occlusal Caries and E2 Buccal Caries

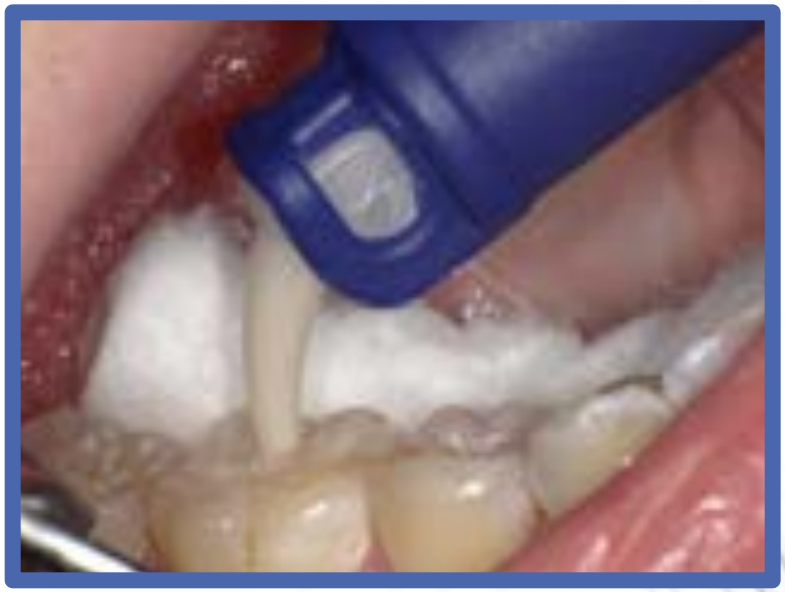


So Easy (today I use IonoStar Plus or Fuji 9 X-tra Fast Set)

Etch for 5
Condition for 10



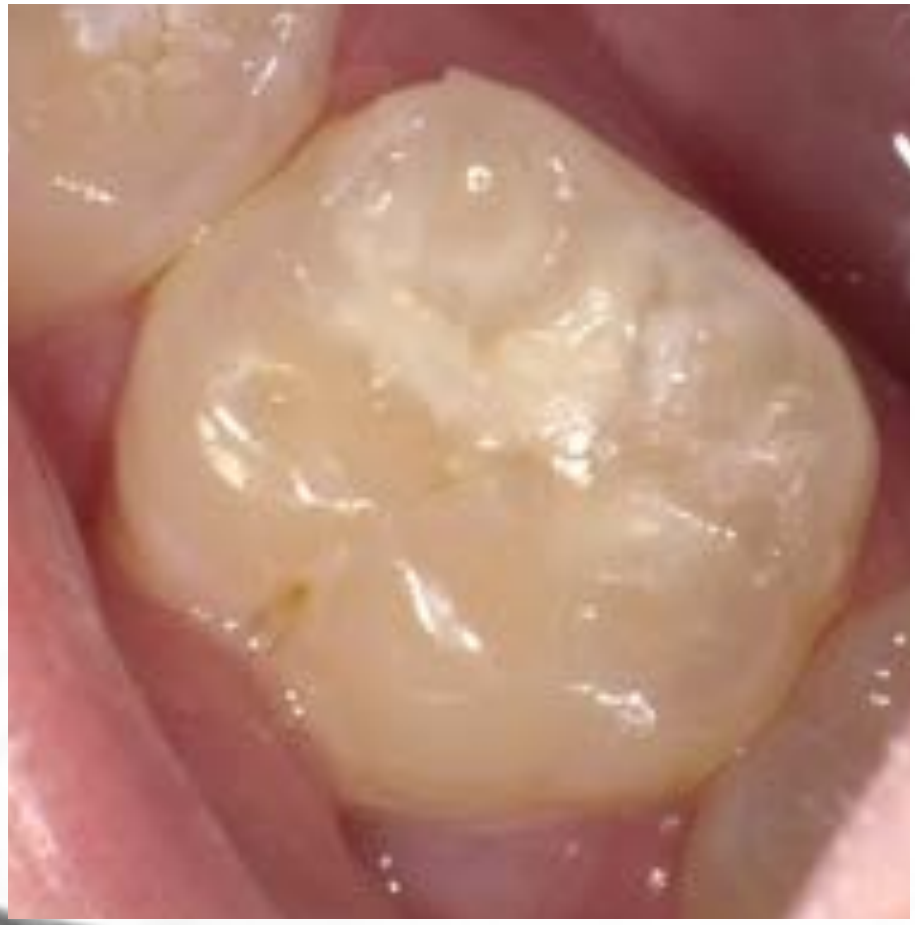
Triturate 10 or 15 (firmer)



Glass Ionomers…Yes still in my everyday practice!

- Ionostar Molar…pure GIC, 5 min set time
- IonoStar Plus has the uniqueness of a more cosmetic glass ionomer due to fluorescence
- Far faster working and setting time 10 seconds for soft consistency and 15 for firmer…
- Bulk Fill placement, love the speed and for my implant access holes
- Ionolux is a resin reinforced Glass Ionomer…more strength…2mm increments, wonderful geriatric repair material

60 seconds of Work Time and then just wait 120 seconds to finish IonoStar Plus

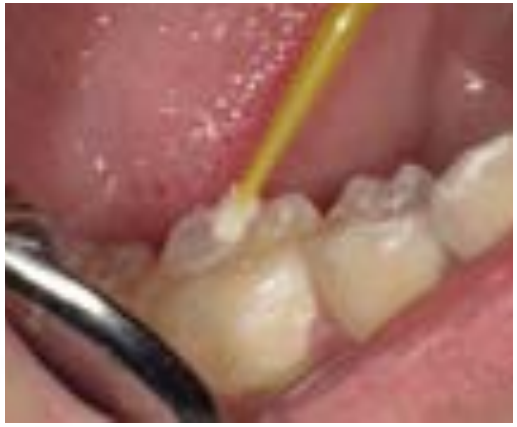


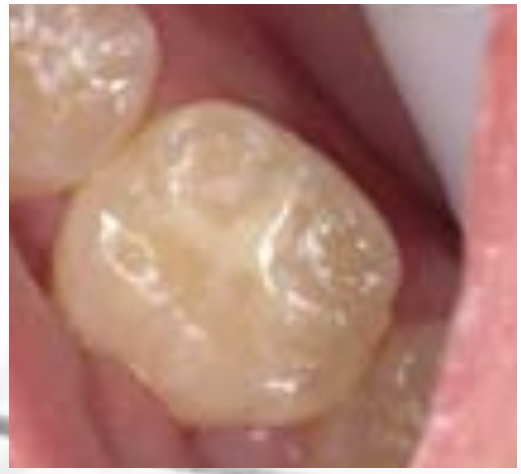
Working Time Includes placement and condensing

Chemically bonds to tooth

Physical properties similar to dentin

After finishing…
With Microbrush…wipe a fine amount on and no air…just light cure

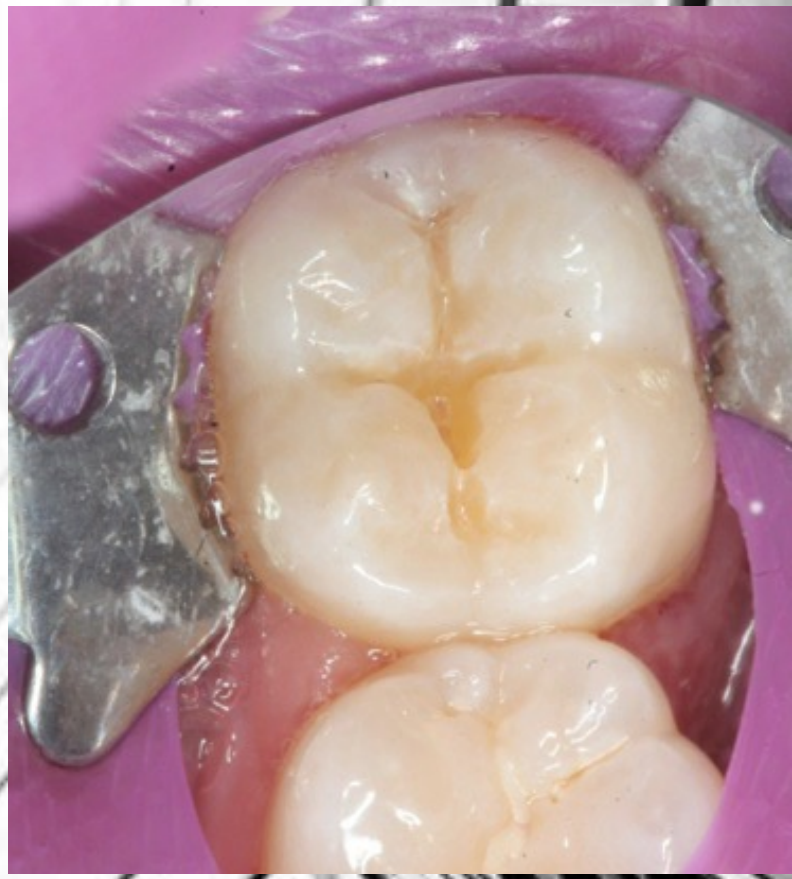




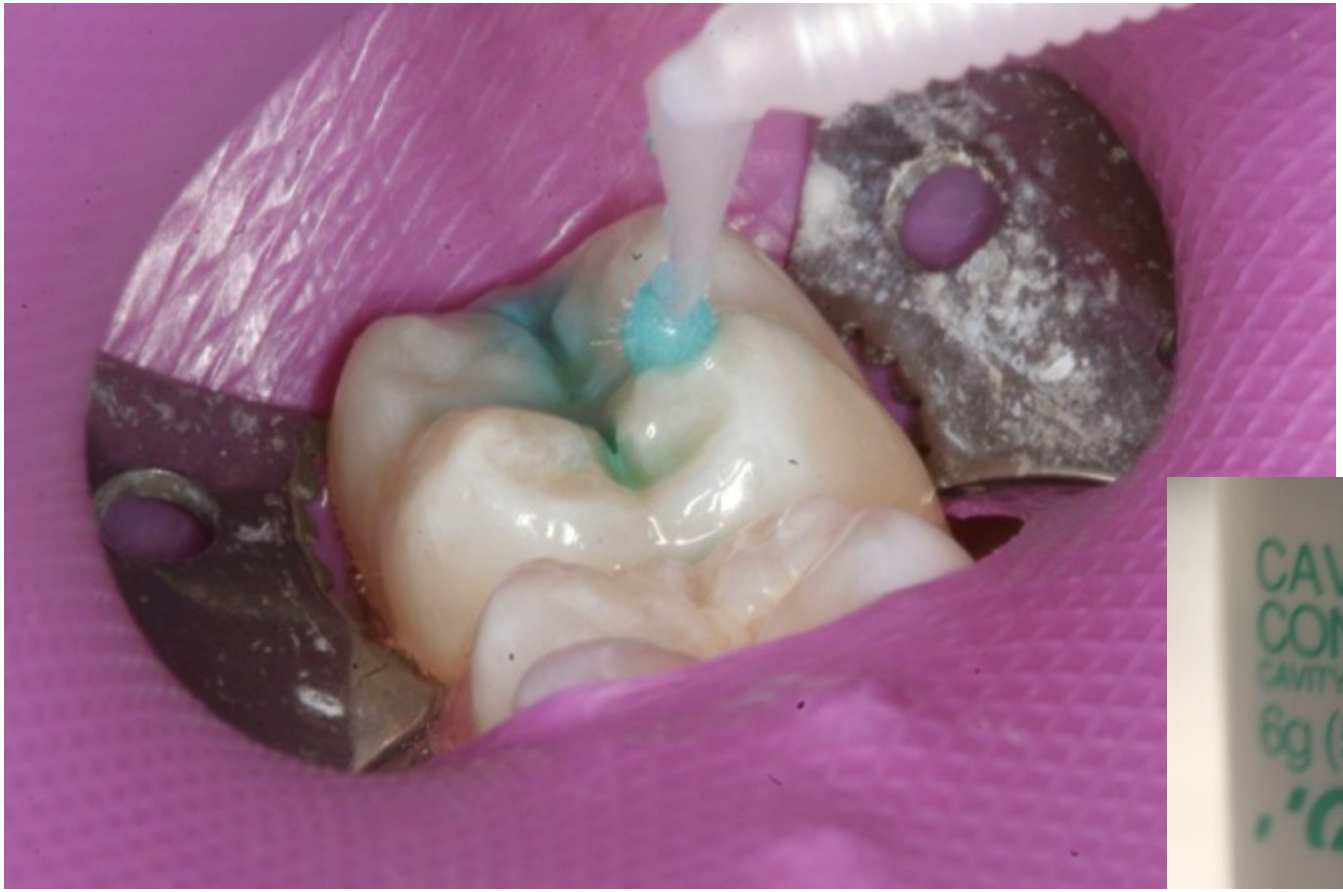
I promise to brush better!!

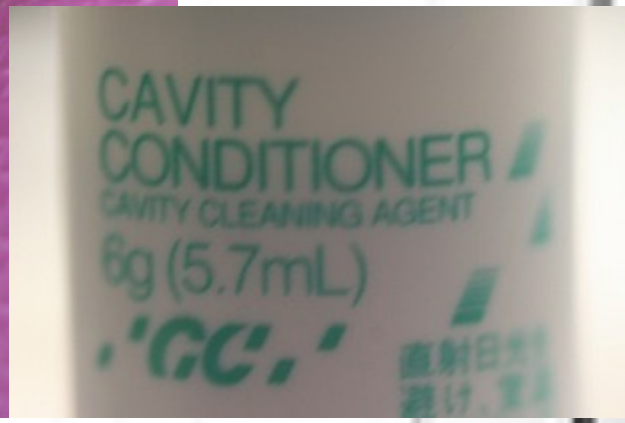
The Minimally Invasive Protective Restoration

The Equia Technique



Class1 E2 or Early D1
Without major occlusal function

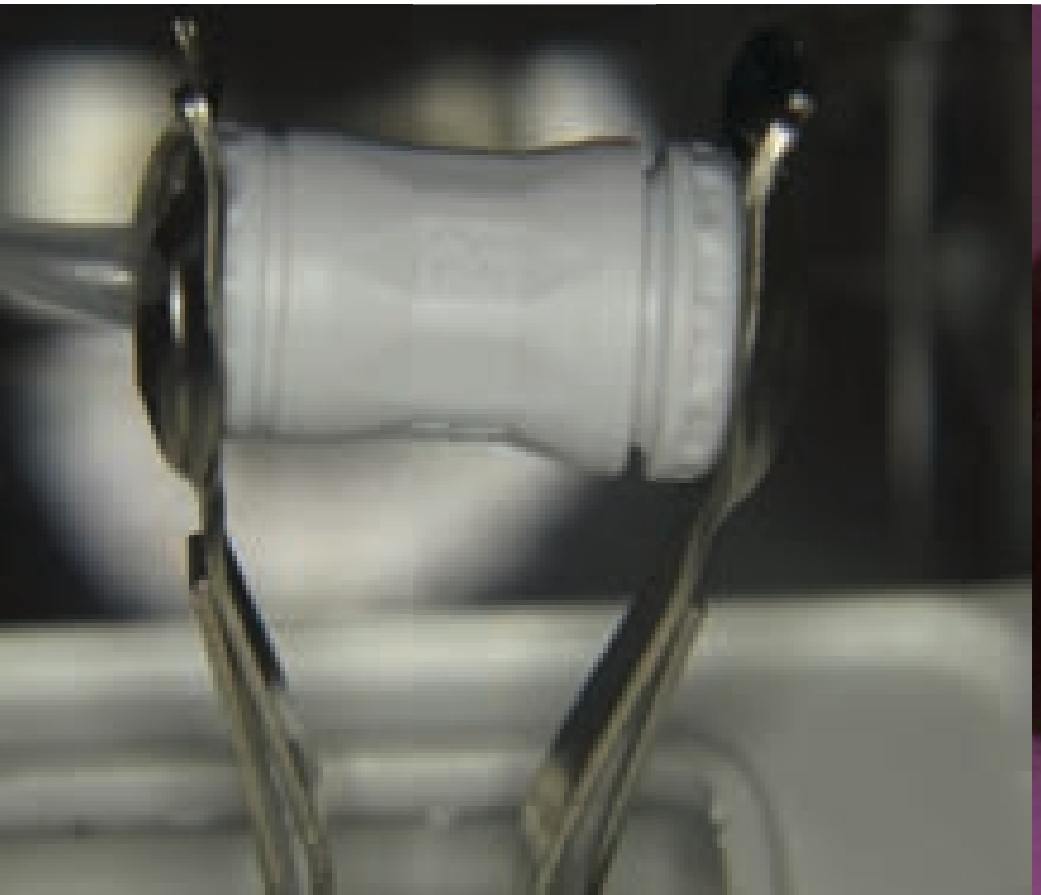


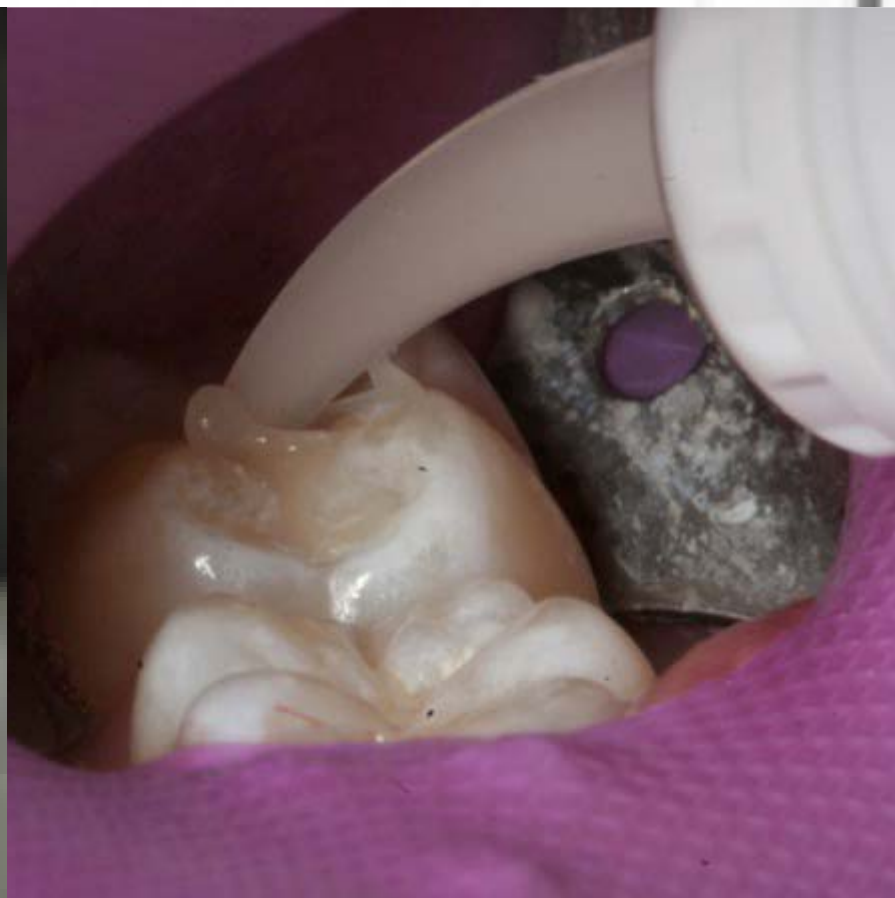


10 Seconds of a Dentin Conditioner or even 5 seconds of Phosphoric Etch...

Activation

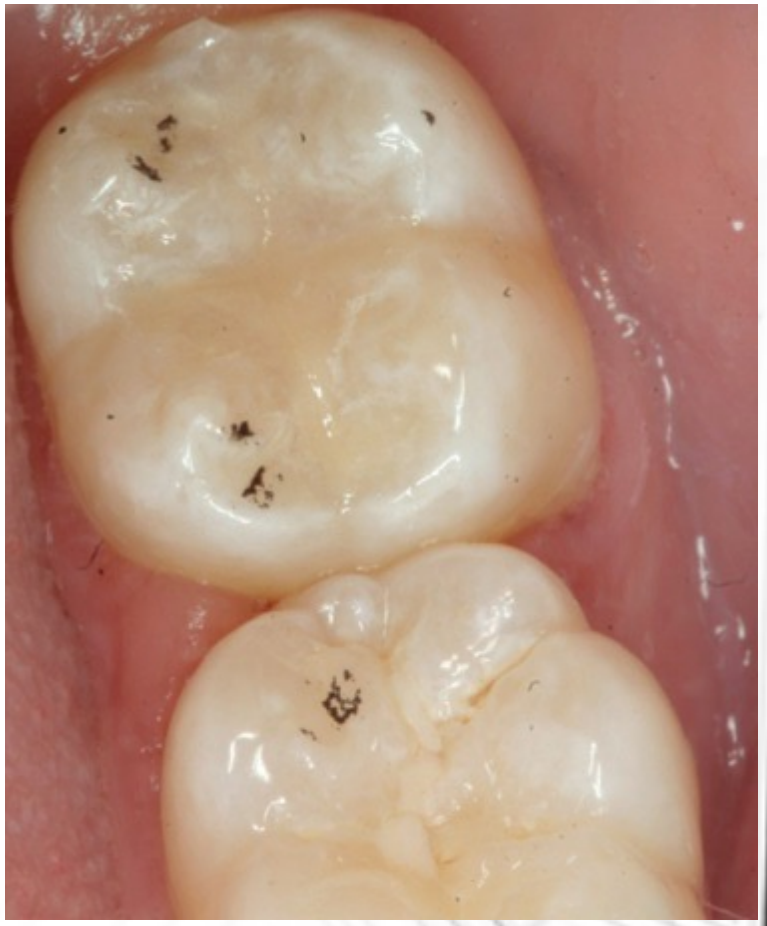
Equia Placement

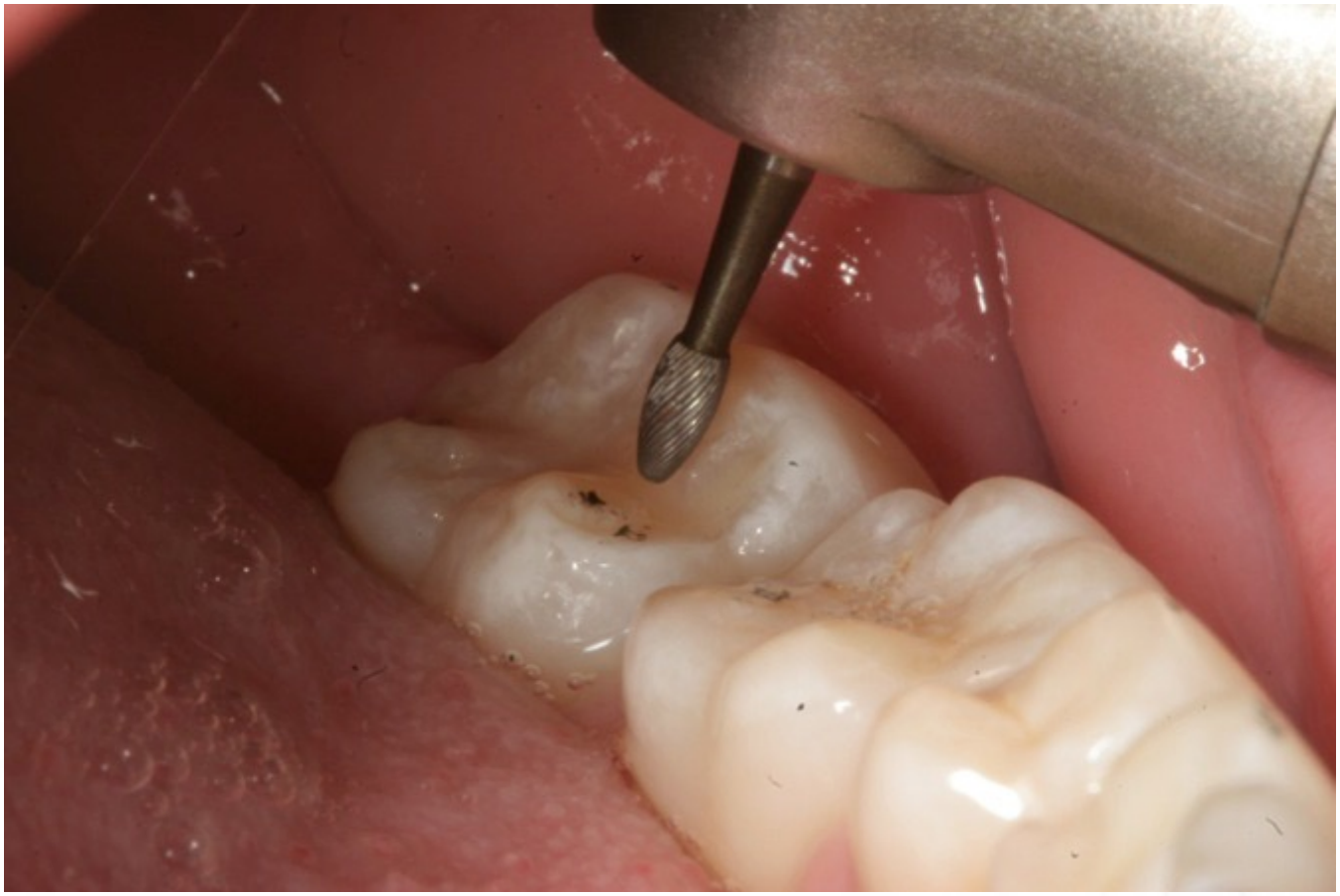




Equia

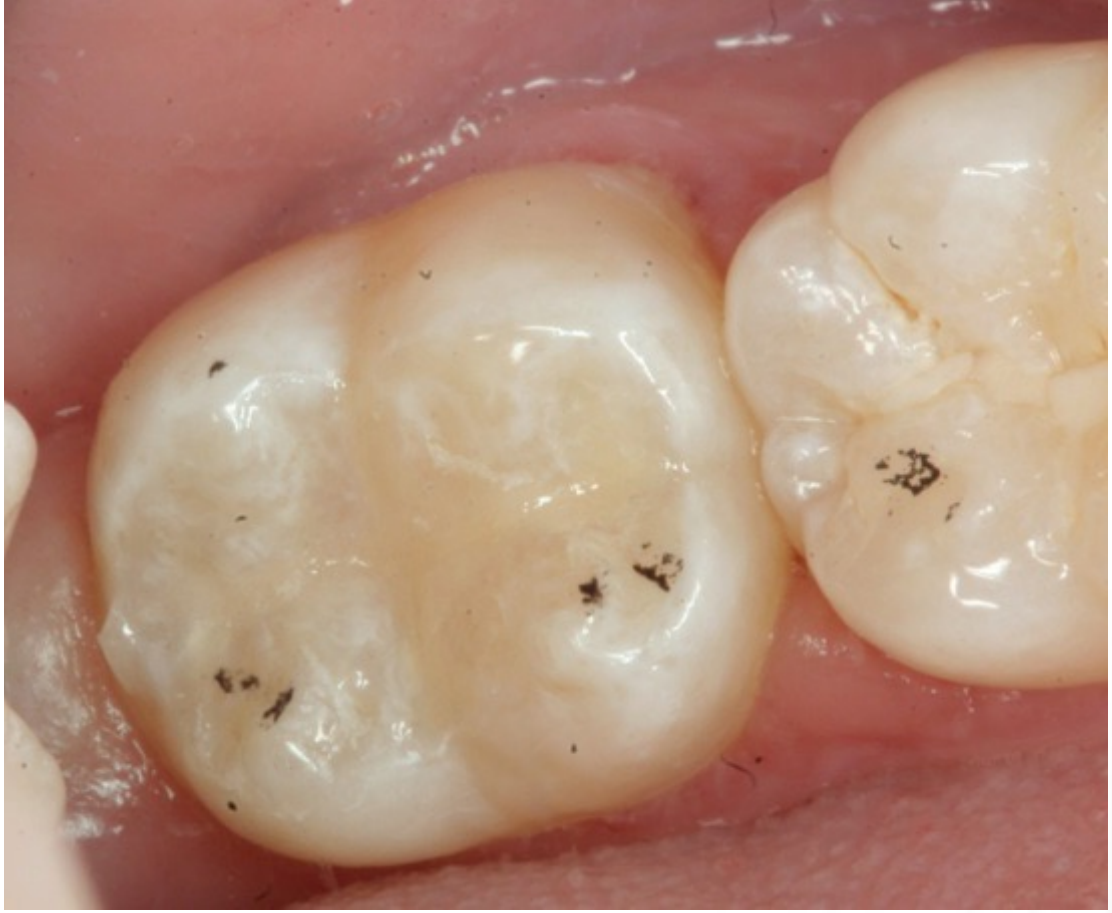
Total Working time is the same as IonoStar Plus of 1 minute, then sets in 3 minutes



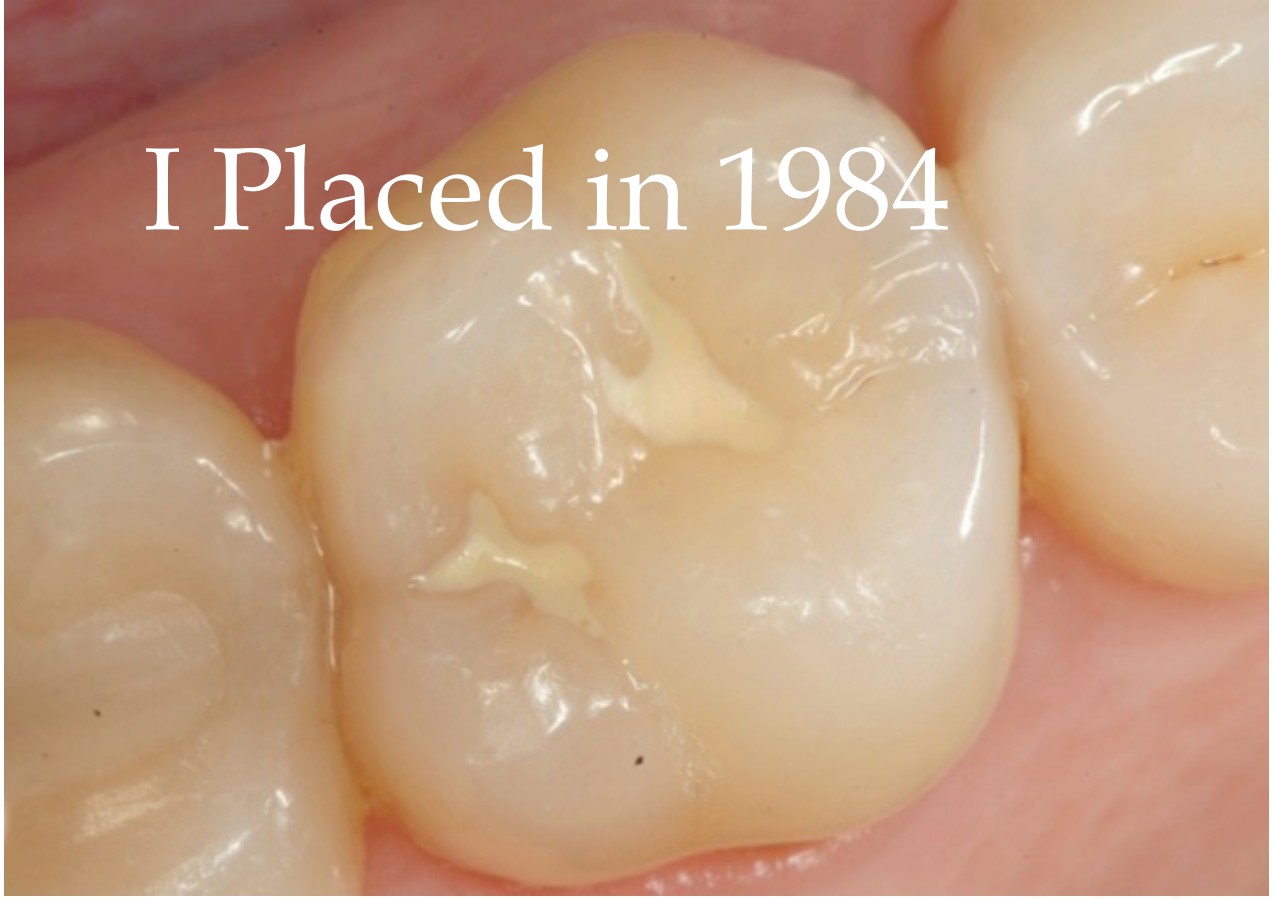


After waiting 3.5 minutes, trim and polish with 30 flute carbide or fine and ultra fine diamonds

Placement of thin coat of Equia Seal and NO air drying and simply light.cure
This makes it a resin/ionomer restoration
2391



After occlusion is checked, one final look and a little distal excess material requires removal



Glass Ionomer sealants 29 years out when I knew nothing!

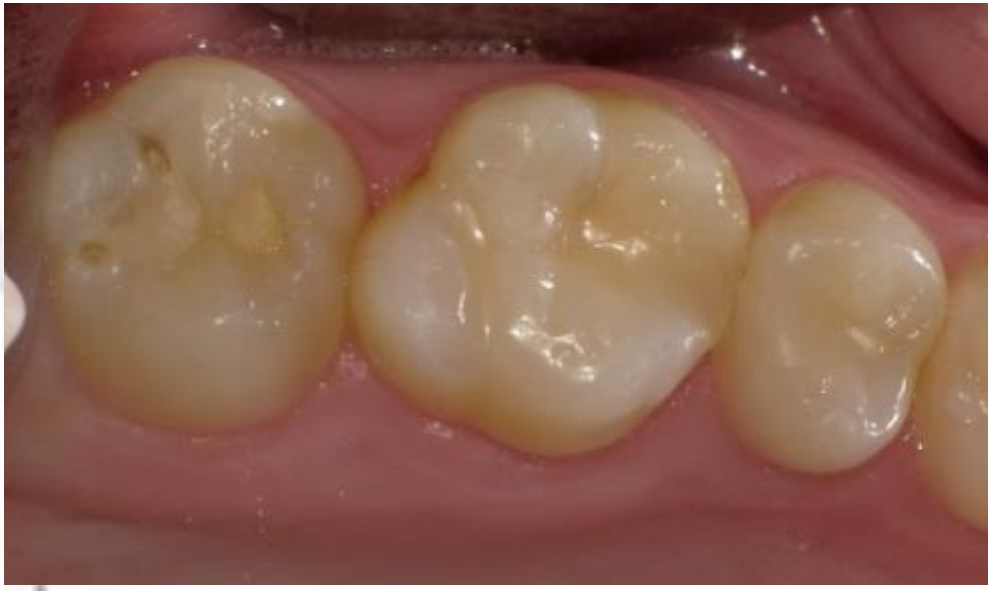
Drill Free Preparations

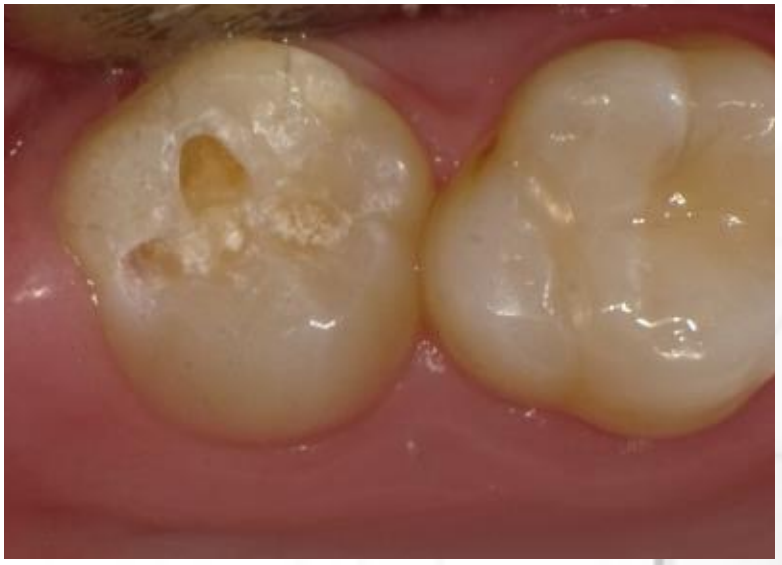
Here's RON....

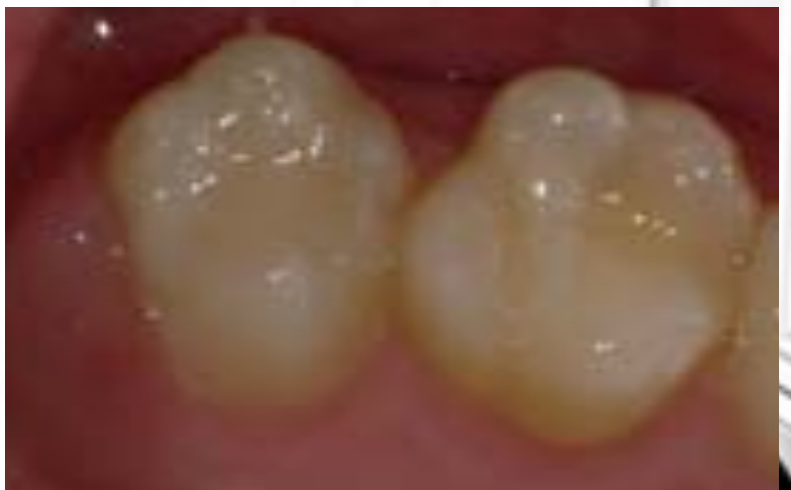
Hard Tissue Lasers

- Er Yag- 2940nm
- Er Cr YSGG--- 2780nm
- 10,600- CO_2
- Energy absorbed by water and hydroxyapatite.
- Able to cut enamel, dentin, composite, bone and soft tissue.
- Many preparations can be done without anesthetic due to lack of heat generation.

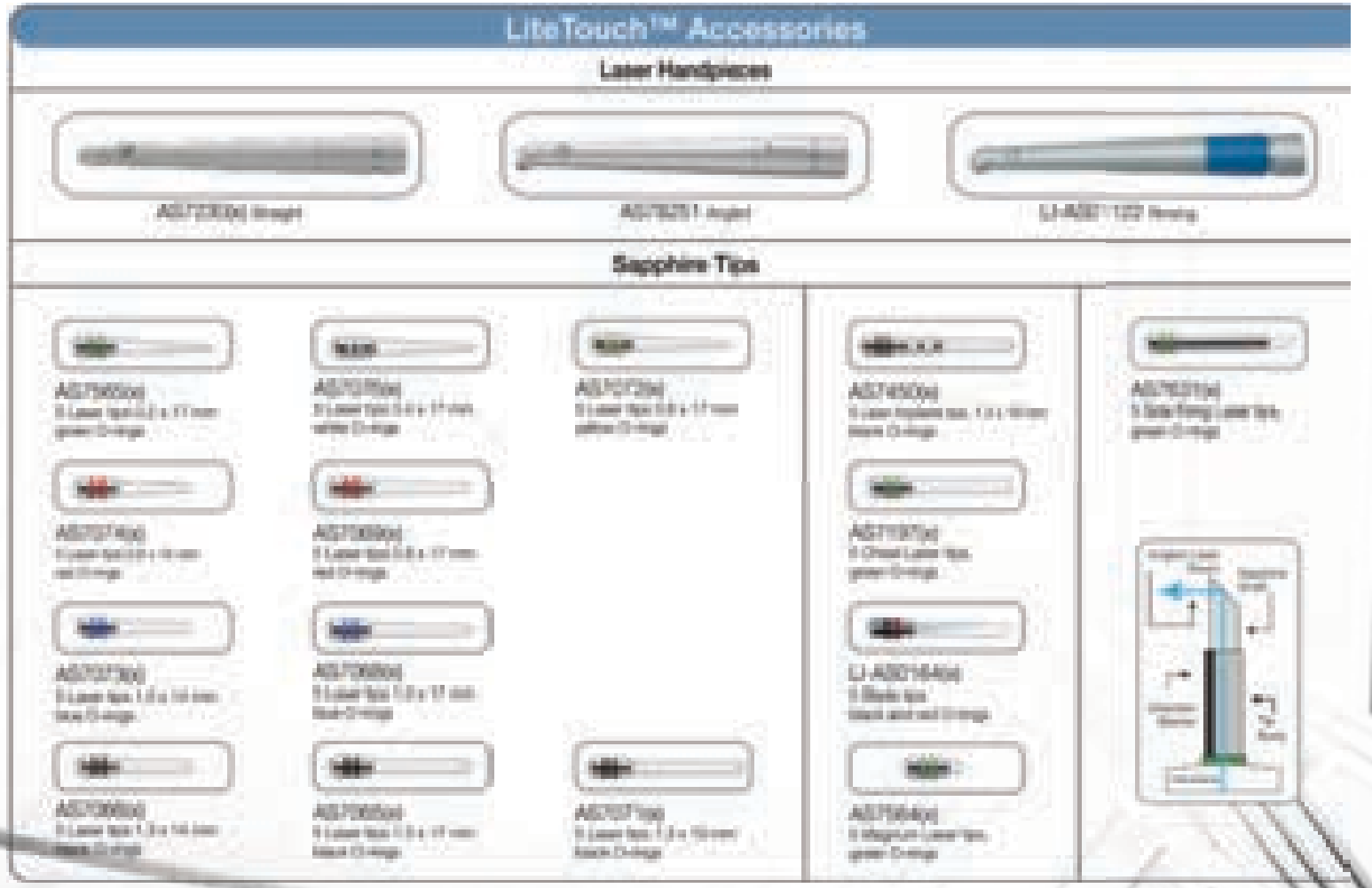
Composite and Initial Caries removal with no anesthetics
Does this change the game?







3 laser hand-pieces and over fifteen tips in different shapes and sizes. There is a learning curve because there is so much you can do!



Could this be our other hand-piece?

EVERYDAY DENTISTRY WITH LITETOUCH®

LiteTouch's unlimited versatility allows it to easily be incorporated in most areas of dentistry carried out in clinics every day.

RESTORATIVE DENTISTRY

- **Exceptional Visibility:** Non-contact work
- **Microsurgery:** Precise & selective ablation of carious lesions; avoids unnecessary ablation of healthy tissues; enables class 2, 3, and 4 restorations without damage to surrounding teeth
- **No vibration:** No micro cracks. Etched surface for better composite adhesion
- **Bactericidal effect:** Due to thermal characteristics of laser energy
- **LiteTouch™'s unique versatility & special accessories allow access to any oral area**

IMPLANTOLOGY

- **Ergonomic & comfortable for transmucosal implantation**
- **Increased bone-implant contact rate:** Laser encourages bone growth factors
- **Precise & minimally invasive:** The target tissue is disinfected without injuring the bone
- **Low impact on implants:** Second stage surgery without harming implants
- **The most effective treatment modality for peri-implantitis and implant decontamination**

ENDODONTICS

- **Minimally invasive opening preparation:** No thermal damage or microcracks
- **Bactericidal efficiency:** Removes smear layer and cleans root canals. Venturi effect even results in clean dentinal tubules
- **Apicoectomy:** Performed with unique accessories

PERIODONTICS

- **Effective and unrivaled pocket debridement:** Bactericidal effect disinfection
- **Excellent surgical precision:** Precise & selective granulation tissue ablation avoiding unnecessary damage of healthy tissues
- **Effective and selective calculus removal**
- **Faster healing of surrounding tissue and bone:** Minimal postoperative swelling and discomfort, leading to fewer follow-up visits

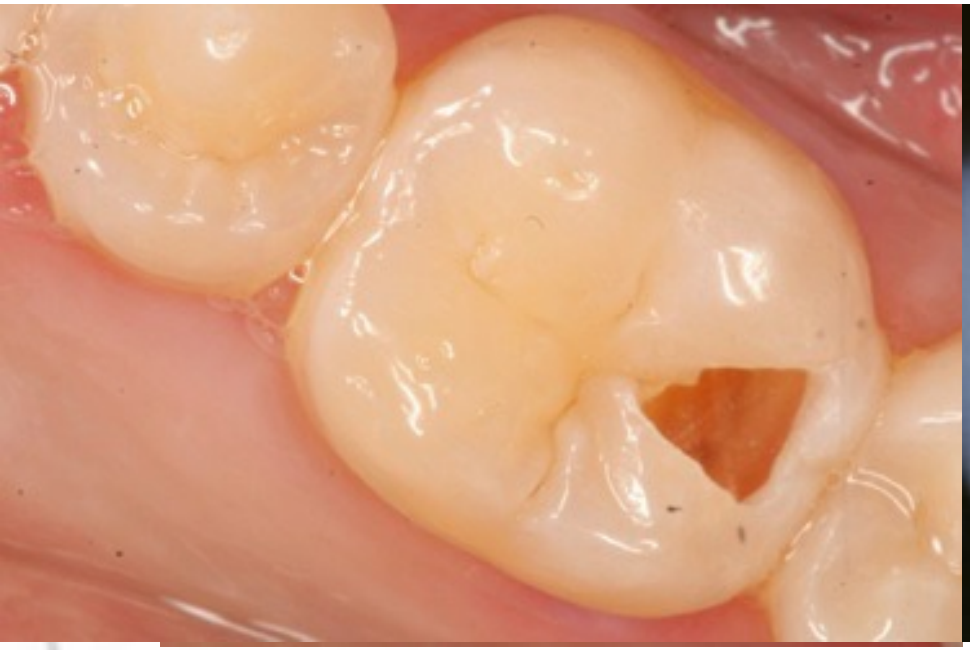
PEDODONTICS

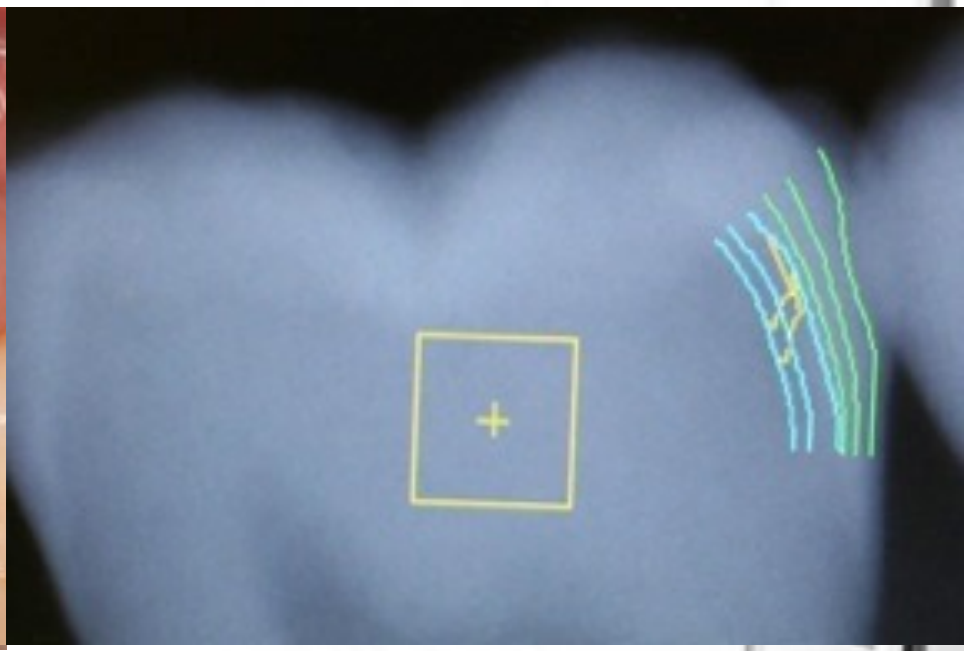
- **The preferred method for treating children:** No fear factor, shorter procedures; less noise; no vibrations
- **Preventive Dentistry:** Precise and delicate treatments; minimally invasive; enables microsurgery (pits and fissures) that preserves healthy tissue
- **Friendly equipment:** Well accepted by kids

AESTHETIC DENTISTRY

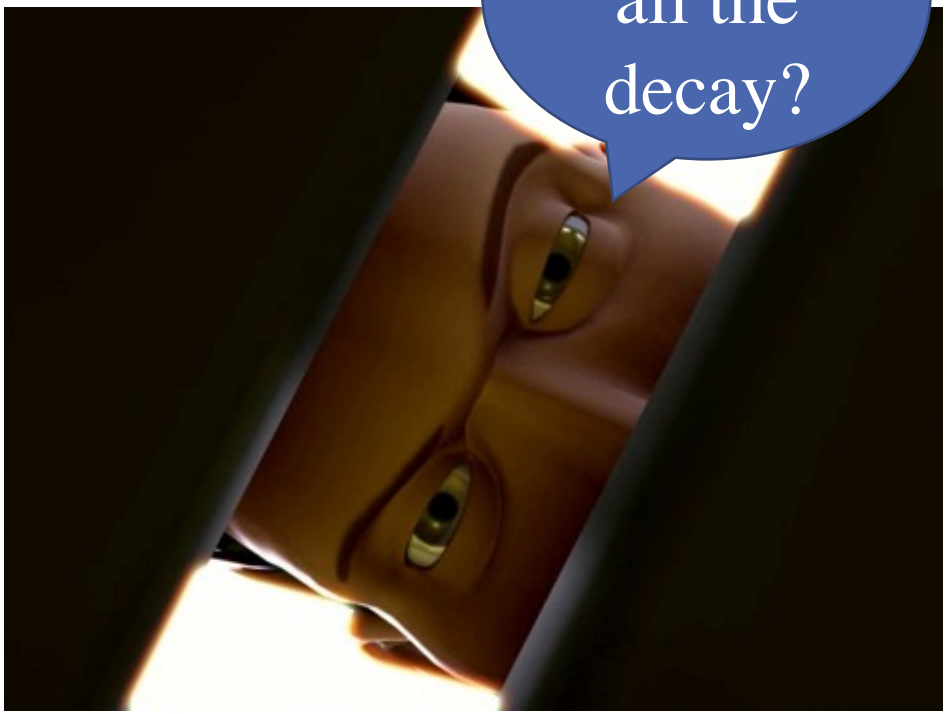
- **Precise manipulation:** Gingival re-contouring, smile design & depigmentation of natural melanin deposits
- **Excellent for debonding porcelain veneers:** Allows dentists to reuse veneer while effectively preserving tooth substance

So lets relook at this clinical situation





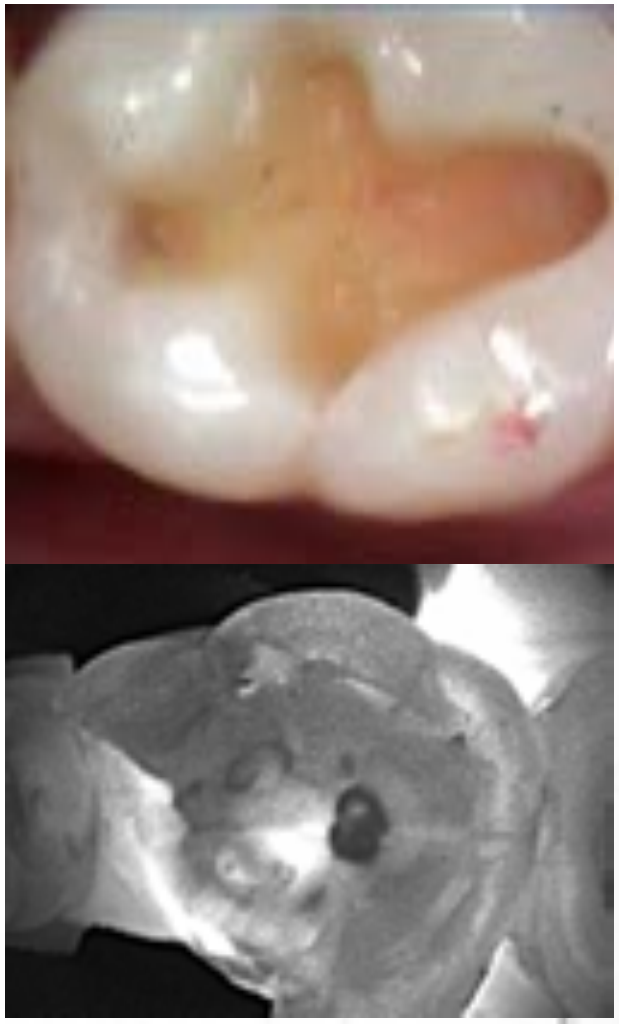
Selective Caries Removal



The question….
When do you stop drilling? You have removed the soft infected dentin…then what?

The Studies….

Mertz-Fairhurst
Ribeiro and Colleagues



All found partial caries removal and sealed restorations… reduce bacterial numbers dramatically within the restoration, yet….

The Question: How can a hand-piece make us more efficient and in fact enhance our clinical work?
In this clinical application:
Selective Caries Removal

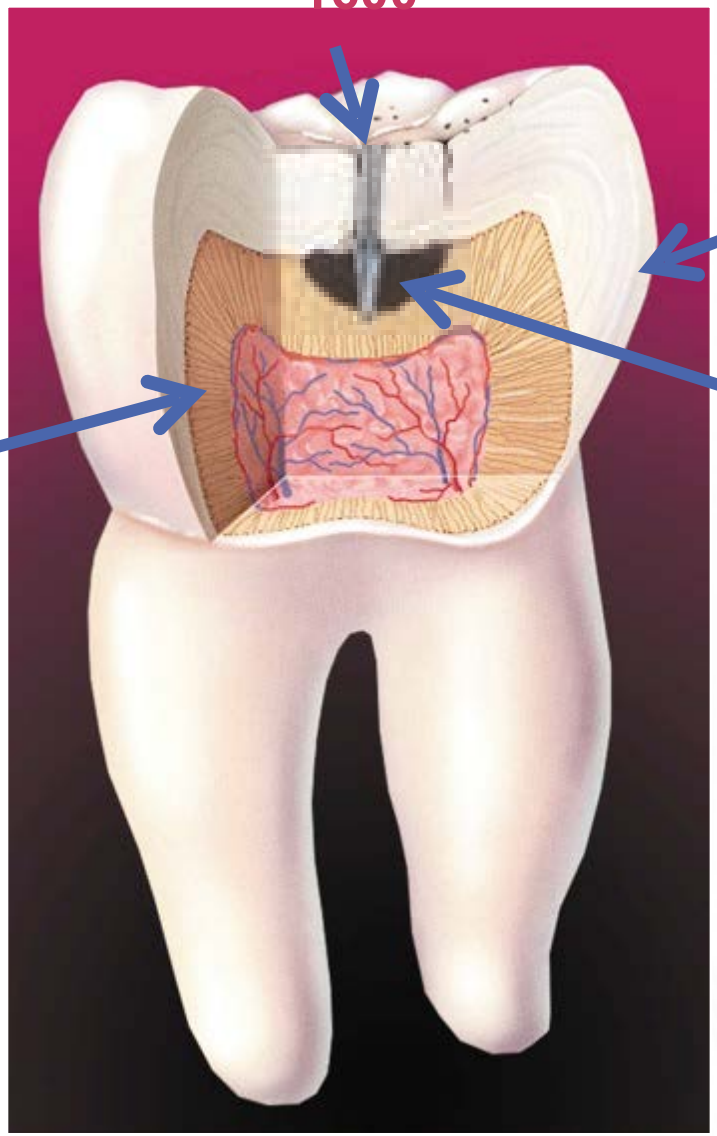
In one word: Versatility

I have 4 basic settings All with Light and Water

- 1:200,000 1:5 High Speed, nothing beats it!! Cuts so beautifully and drills right though all various crown substrates (bur dependent)
- 1:20,000 1:1 Initial Caries Removal, Margin finalization, Finishing and Polishing
- 1:10,000 1:1 Initial Caries Removal, Finishing and Polishing
- 1:1,500 1:1 Selective Caries removal

Carbide

1600



Enamel

360-430

Infected Dentin

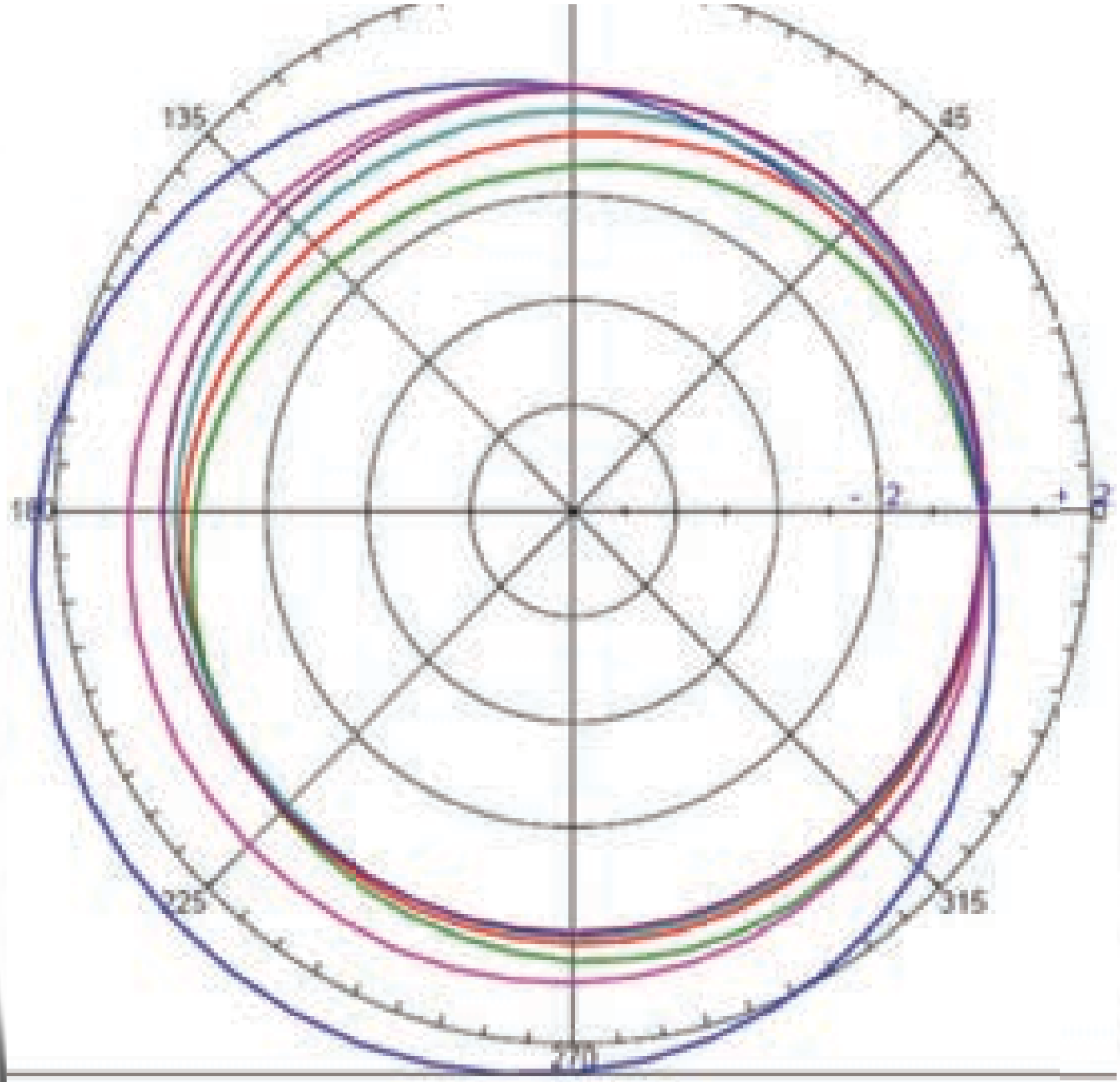
(caries to be removed)

0-30

Healthy Dentin

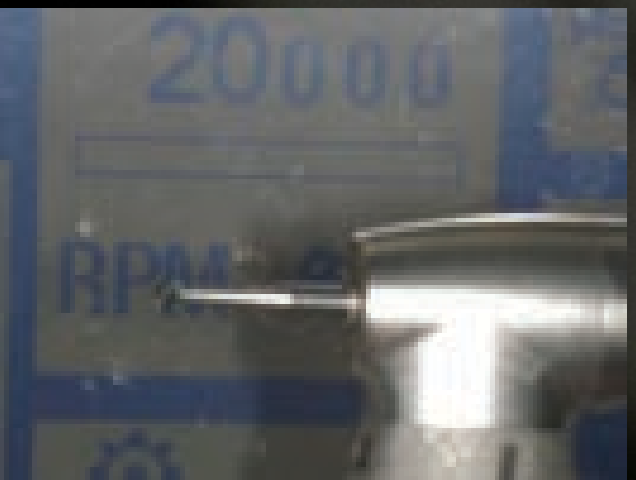
(unaffected)

70-90



CONCENtricity

Initial decay removal, 10,000 or 20,000 traditional 4-6 round latch type



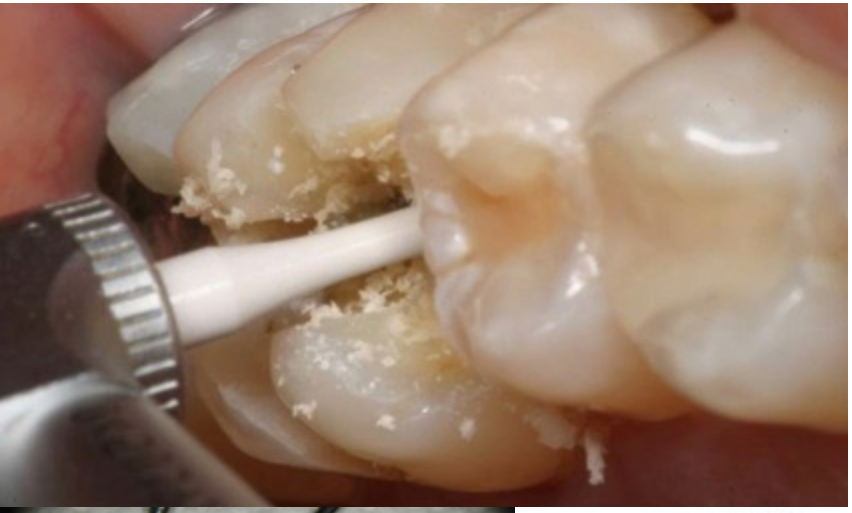
Final Caries Removal at 1500 RPM's with Komet's Cerabur

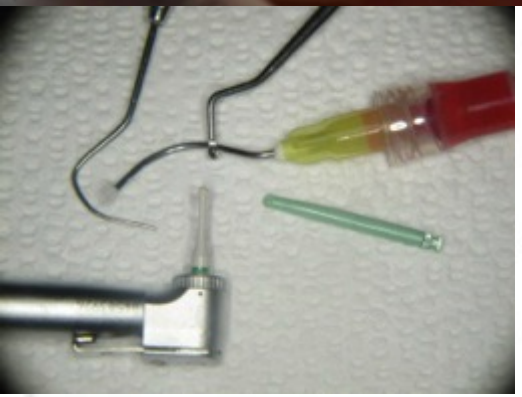
With my low speed preset at 1000-1500rpms…

I now have **water and light** for final infected caries removal

Electrics and why to me they are the future

So….we know we don't want to leave infected dentin, yet nor do we want to see that little red dot of blood





When do you stop drilling? Is it when you see 'red" "on no"!!

ASR

Komet's Cerabur 1000-1500 rpms

Sharp Spoon /Explorer?

Caries Seeking solutions up to you…

I still use it occasionally but more so to evaluate cracks

Transillumination… via Carivu

Fluorescence via Specta

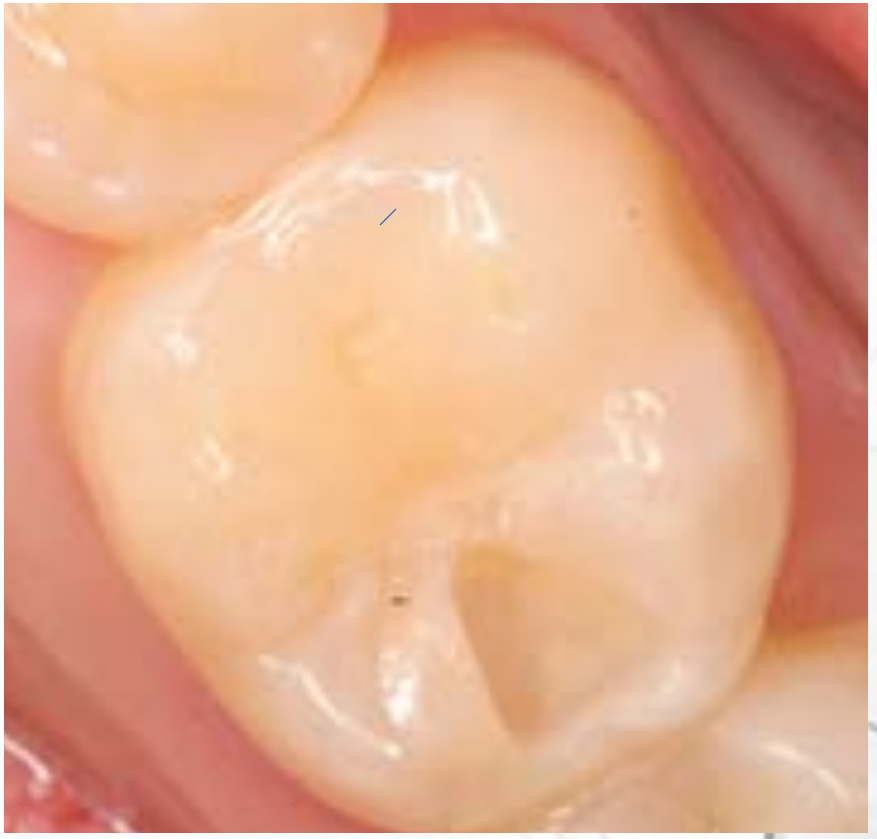
Thoughts…

Etching for 5 or Conditioning for 10

While the conditioner is placed and rinsed… Triturate your Glass ionomer

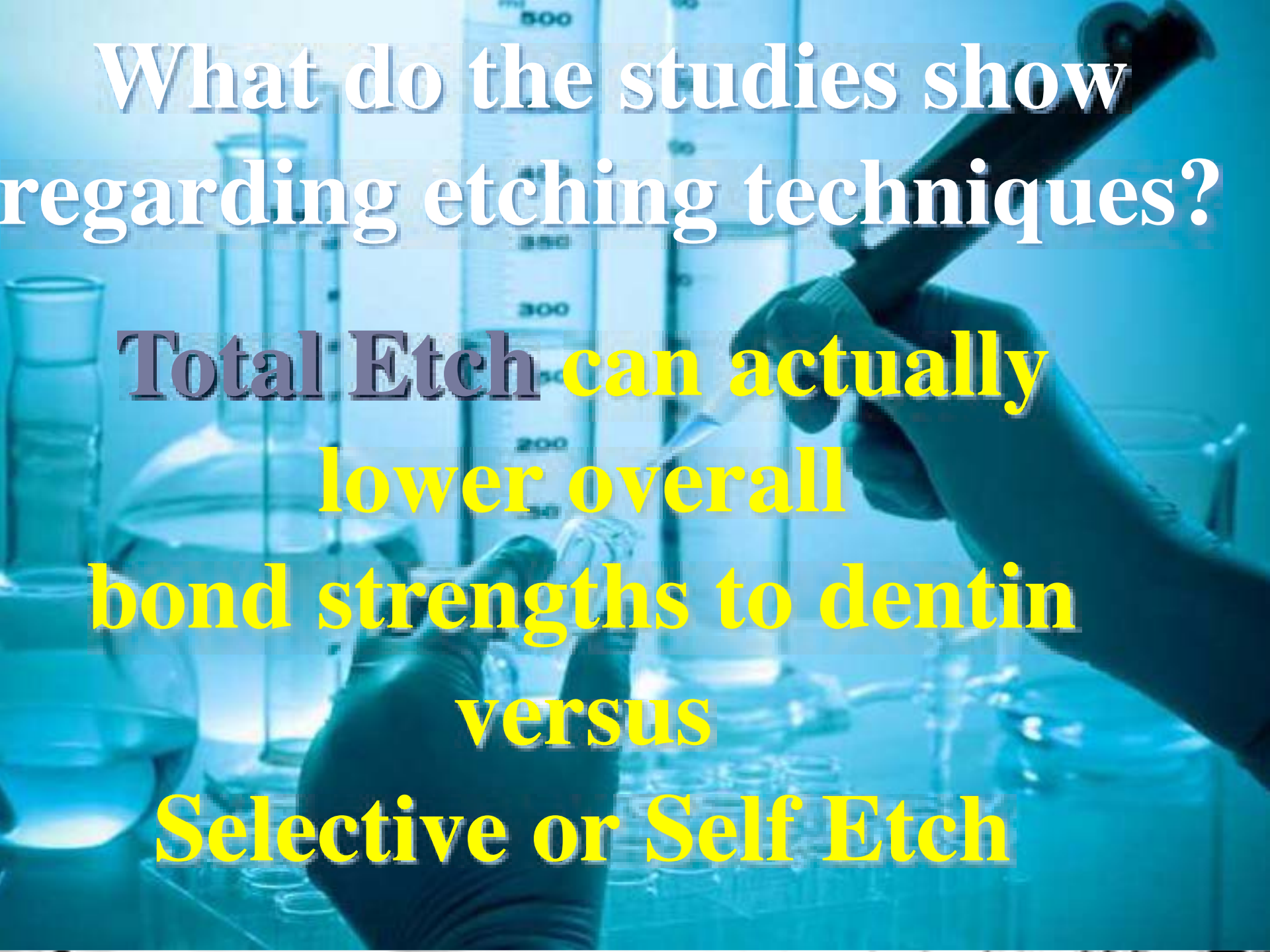
After 3 minutes it's set

- Remove excess, on enamel, place bevel



- Verify 2mm of room for final composite
- TE/ then simply air/light cure and place a low shink/ low stress composite

Updates in Direct Restorative Dentistry



What do the studies show regarding etching techniques?

Total Etch can actually lower overall bond strengths to dentin versus Selective or Self Etch

Comparison of Bonding Agents

Current representative adhesive products are listed below. Some current products from past comparisons are also included to assess progress.

	Adhesive Company	Approximate Cost / Use	Number of Components (application time)	Composite Bonding Techniques (per manufacturers' kit contents): Self-etch	Total-etch	Selective-etch	Radiopacity (% aluminum equivalency)	Initial Bond Strength (MPa) Self-etch/ Total-etch: Dentin	Enamel	Composite Repair Performance	Evaluator Rating	Overall Rating
New Universal Adhesives	Scotchbond Universal Adhesive *3M ESPE*	$1.30	1 (20 sec)	●	●	●	9	50 35	20 40	Excellent	Excellent–Good	Excellent
	OptiBond XTR *Kerr*	$1.90	2 (35 sec)	●			25	65 50*	35 35*	Excellent	Excellent	Excellent
	Prime & Bond Elect *Dentsply Caulk*	$1.40	1 (20 sec)	●	●	●	[illegible]	[illegible] 25	[illegible]	Excellent	Excellent	Excellent
	Peak Universal Bond *Ultradent*	$1.00	2 (30 sec)	●	●	[illegible]	[illegible]	[illegible] 25	35 [illegible]	Excellent–Good	Good	Excellent–Good
	All-Bond Universal *Bisco*	$1.30	1 (30 sec)	●	●	●	7	35 25	20 30	Excellent	Excellent–Good	Excellent–Good
	Clearfil SE Bond 2 *Kuraray* *pre-market*	$1.70	2 (20 sec)	●			9	50 40*	30 30	Excellent–Good	Excellent *(ease of use)*	Excellent *(pre-market)*
Controls	Brush & Bond *Parkell*	$1.00	1† (20 sec)	●			7	35 25	11 30	Excellent–Good	Excellent–Good	Excellent–Good
	Clearfil SE Bond *Kuraray*	$1.70	2 (20 sec)	●			9	40 50*	30 40	Excellent–Good	Excellent	Excellent
	OptiBond Solo Plus *Kerr*	$1.00	2 (30 sec)		●		26	40* 25	10* 35	Excellent–Good	Excellent–Good	Good
	Prime & Bond NT *Dentsply Caulk*	$1.50	2 (35 sec)		●		7	30* 15	11* 35	Excellent–Good	Excellent–Good	Good

† Requires special Activator brush; supplied   * Not indicated in instructions for composite bonding; tested for comparison only

Summary of Chart

- **Bond strength:** All bonding agents tested show adequate initial bond strength (24-hr). For long-term (6-month) bond strength data for most universal products in the current comparison, see *Clinicians Report* August 2012.
- **Decreased dentin bond from phosphoric acid use:** Majority of adhesives tested (8 out of 10) showed decreased bond strength when phosphoric acid was used on dentin (total-etch technique). Excessive acid etching has been shown by multiple studies to remove favorable micromechanical retention of dentin collagen structure.
- **Radiopacity:** All adhesives tested were very radiolucent (from 7 to 26% aluminum equivalency).

CRA


Thus the move to Universal Bonding Agents….Total Etch when you need it, Selective Etch when you need it or Self Etch when you need it

Thoughts with Bonding Agents

If you are bonding JUST to **dentin,** state of the art self etchants or Universal bonding agents with NO etch are the recommended technique, There is no reason to use phosphoric etch if NO enamel and a perfect example is a crown buildup

If you are bonding JUST to **enamel**, it is still the recommendation to total etch technique especially if there is uncut enamel present

If you are bonding to both…**Selective etching** is now seen as the best option for maximizing bond strengths but often in small preparations you will Total etch

The New Gang!

All Bond Universal
Prime and Bond Elect
Scotchbond Universal
Peak Universal
Adhese Universal
Futurabond
G-Premio Bond

Universal Bonding Agents
One bonding agent for all 3 applications!

Total Etch….15 seconds of etching enamel and dentin, rinsing, suction drying and then Universal Bonding Agent (UBA) no scrubbing required

Selective Etch… 15 seconds of etching enamel, rinsing, suction drying and then UBA

Self etch with UBA

The later 2 etch techniques require 20 seconds of agitation and then air drying (soft to hard)

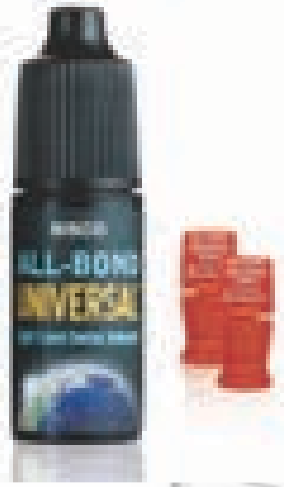
So with all the Universal Bonding Agents How do we differentiate?

Versatility

My daily options
How do you choose?

When to Use…

- These are the same
- One is simply in a unidose delivery system
- The unidose allows you to use multiple times on multiple restorations on one patient.
- The bottle in our office is when you need only on or two drops: for one procedure
- WE prefer unidose because it's 100% the same content when we open it.
- These MUST be light cured



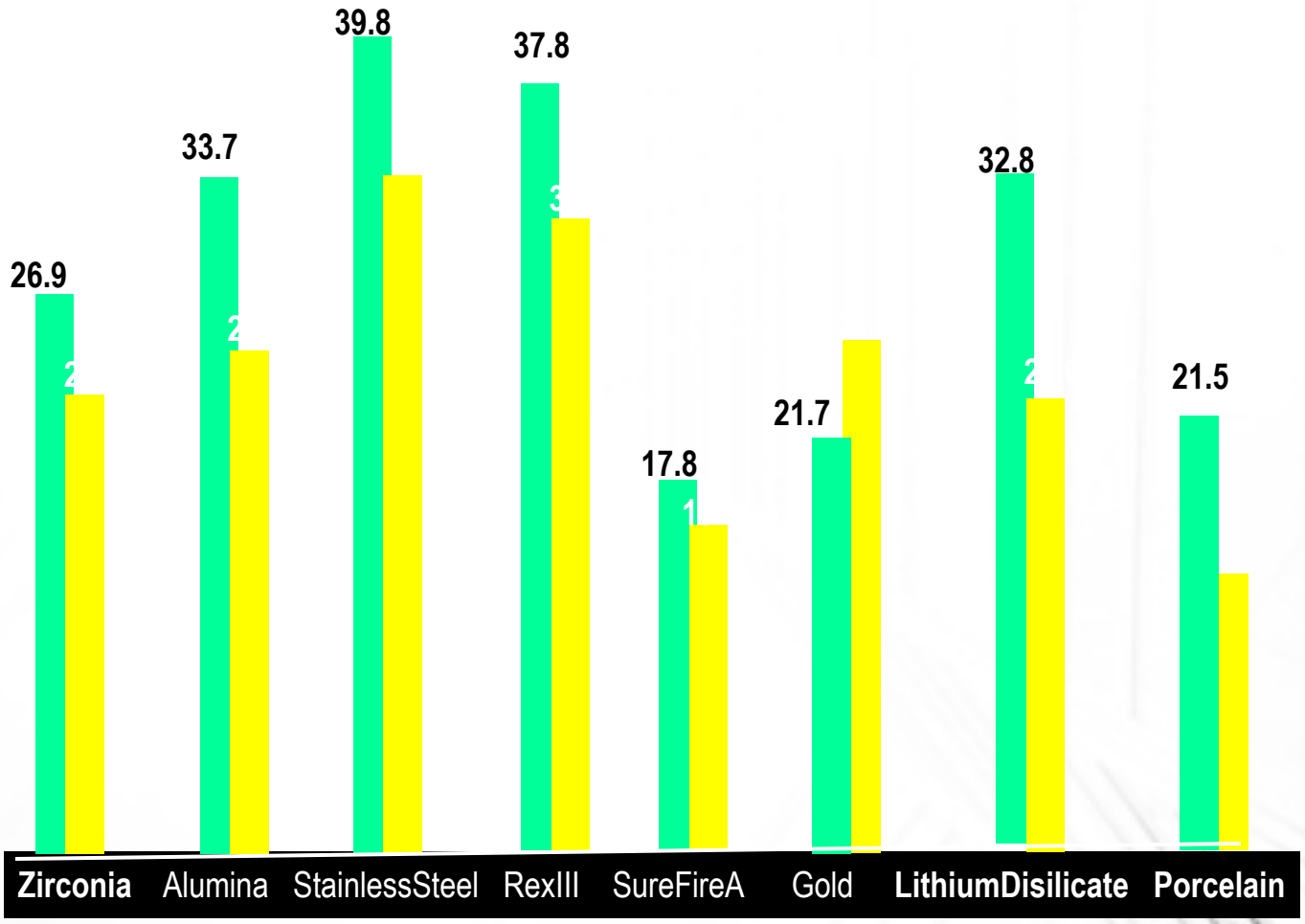
All Bond Universal

- **Low film thickness (less than 10μm)**
- **NO additional activator required unless you want full self cure….**
- **NO refrigeration needed, store at room temperature**
- **Bonds well to many substrates and this is a key point!!**
- **Directions include scrubbing for 10 and then 10 more**
- **Air drying a minimum of ten seconds….**


Saving Money….
All Bond Universal
Enough for way to many
restorations on one patient

Bonding to Indirect Dental Substrates, MPa

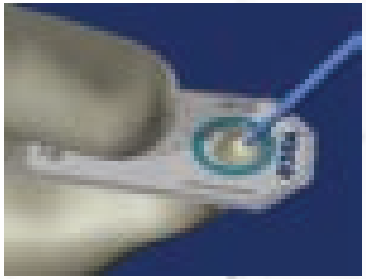
ALL-BOND U versus SCOTCHBOND U + D/C Activator



All-Bond Universal w/ Duolink & ScotchBond Universal w/ RelyX ARC. Resin cements were light-cured (except where indicated).

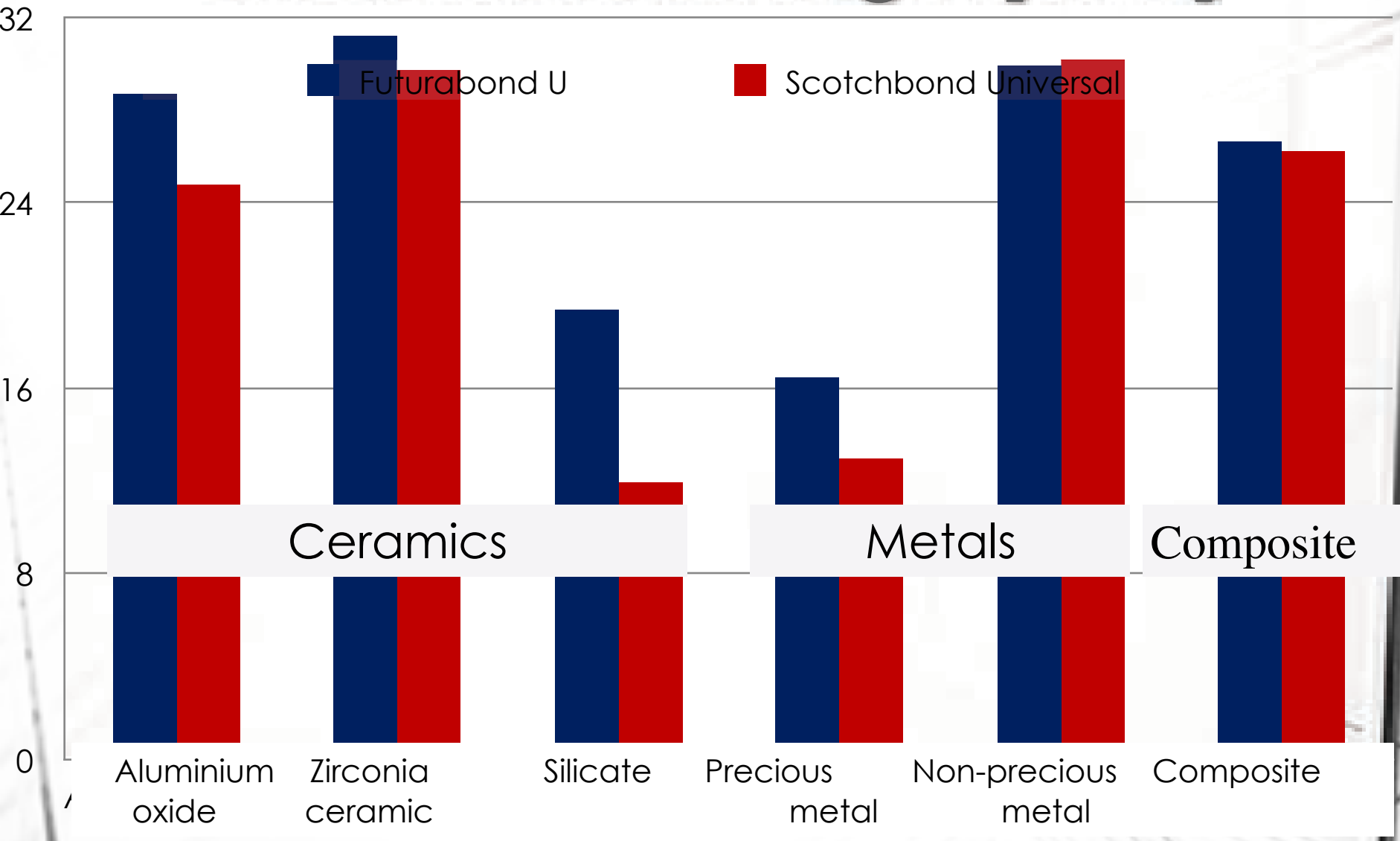
Advantages: With Futurabond U, one adhesive for all adhesive needs

- For all direct or indirect materials including posts
- NO additional activators required for self or dual-cure modes.
- Bonds to all light, dual and self-cured resin materials
- Bonds to metal, zirconia, aluminum oxide, silicate ceramic without any extra primer
- No refrigeration necessary



Fast and easy one-coat application
(apply, dry and cure in 35 sec.)

Shear bond strength [MPa]



Source: VOCO internal measurement

Futurabond U flows onto the ceramic (one example is zirconia), The acid group of its unique monomers has a very high affinity to the surface of the oxide ceramic, and achieves an excellent bond

Great for Resealing Endodontic Access openings in Ceramics

Without the need for Primers and Silanes, This becomes far less technique sensitive

Another benefit of the adhesive monomers is that they reduce the surface tension of the liquid itself, which decreases the viscosity and thus allows a superior wetting ability.

This equates to a complete covering of the retentive surface, a homogenous penetration of the collagen network and optimal sealing of the dentinal tubules or along any surface

I love them for my posts for many reasons, this is one

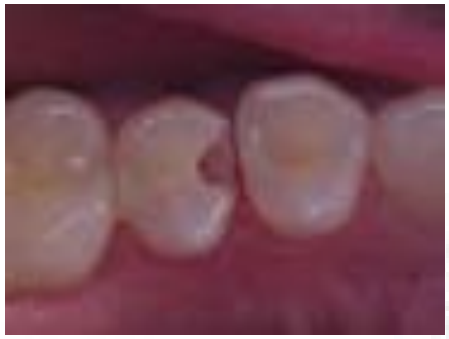
Due to this wetting ability even in phosphoric etched dentin the material will flow to the depths of the etching

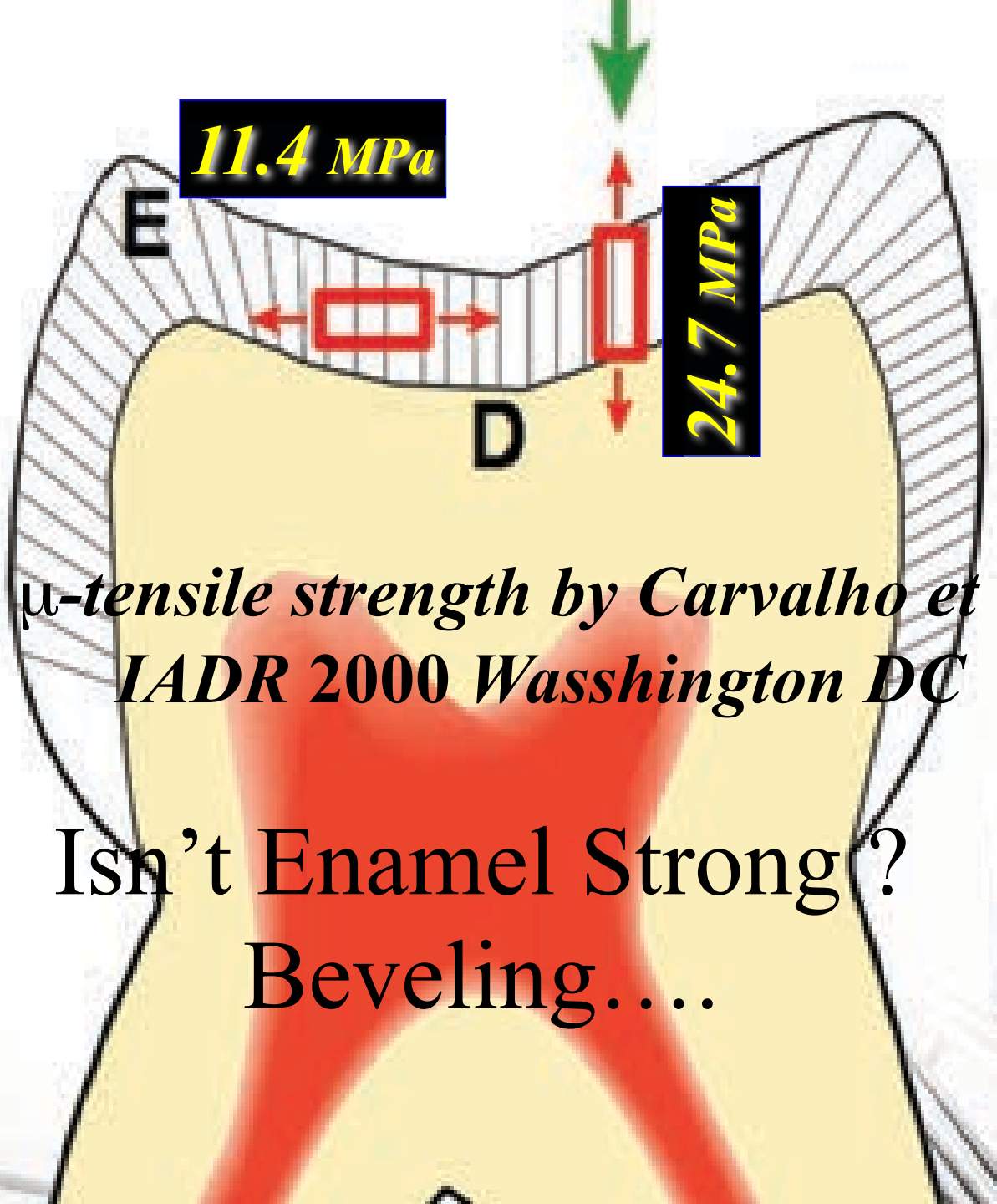
Another wonderful advantage that we love is that it can be used as a light cure/dual cure or self cure without the need of an additional bottle.
All based on chemistry and it's unique delivery system.

Why do I have both then?

- **Futurabond U only comes in a unidose and this is good for routinely one restoration if you are doing one restoration at a time.**
- **I love having the convenience of everything in Futurabond U**
- **Equally, I am cheap, and many times I like one or two drops from the All Bond Universal bottle or if doing multiple restorations, I only have to open one unidose**

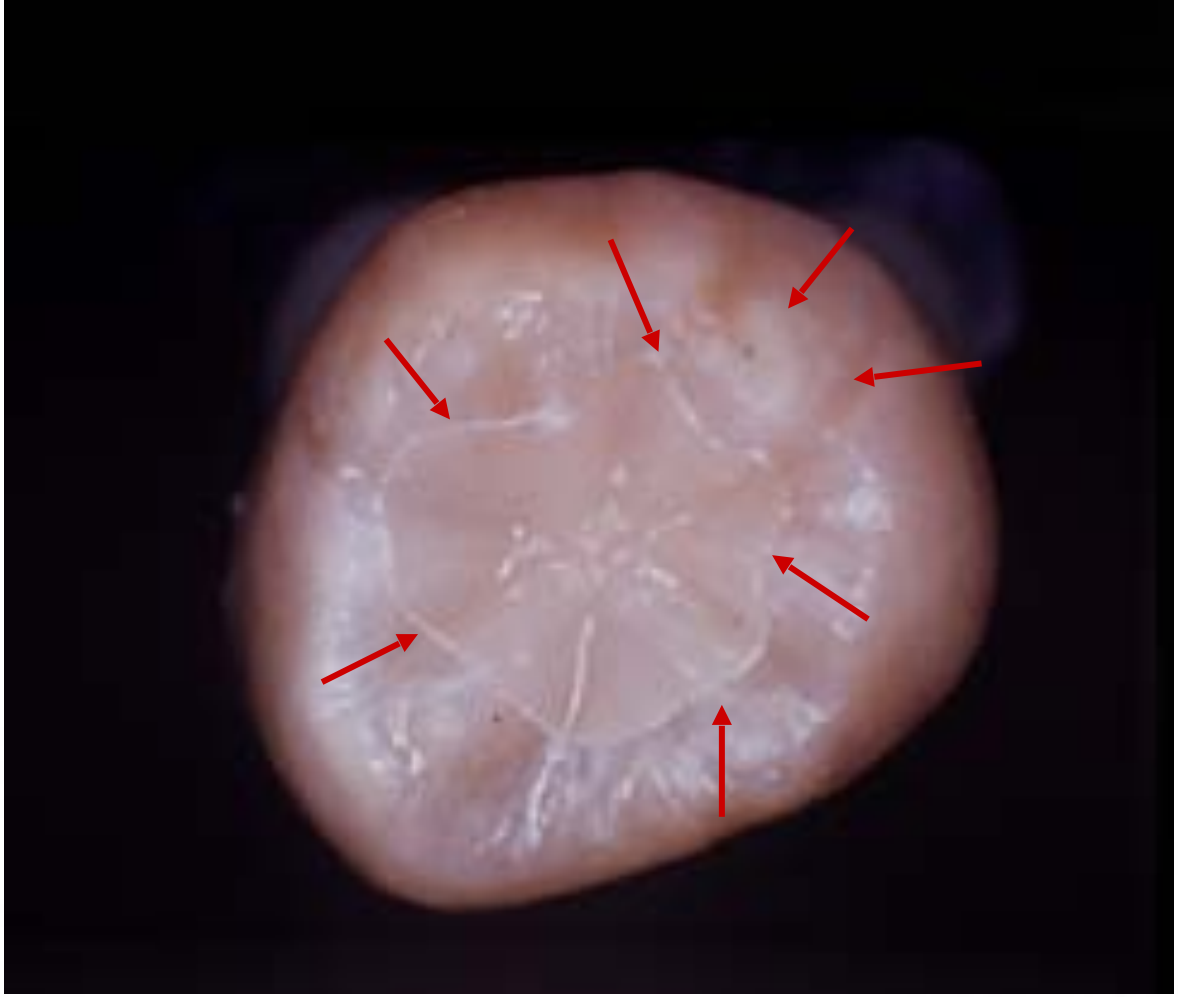
Part 2…
The low stress low shrink posterior composite and why





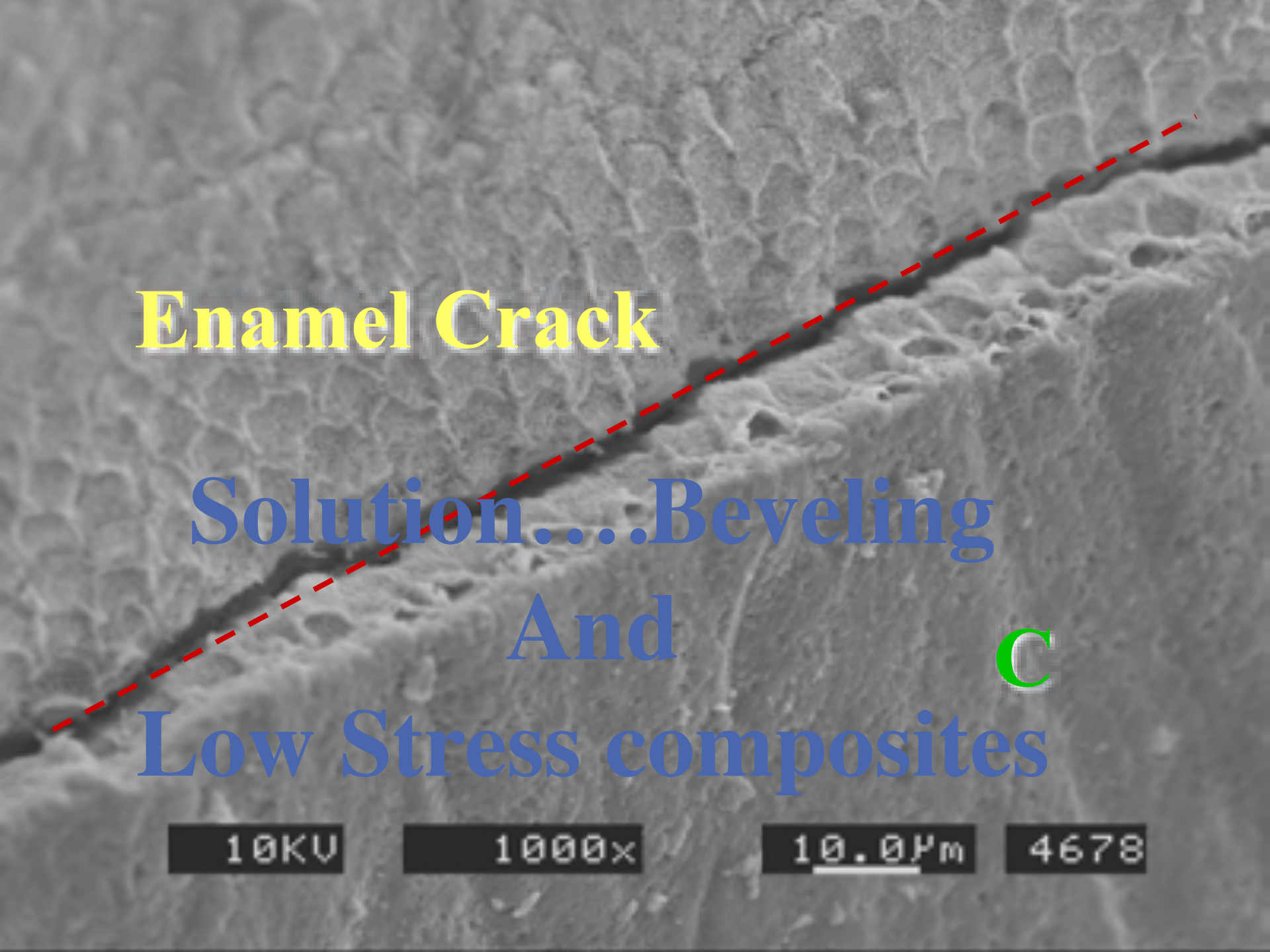
μ-tensile strength by Carvalho et el.
IADR 2000 Wasshington DC

Isn't Enamel Strong ?
Beveling….



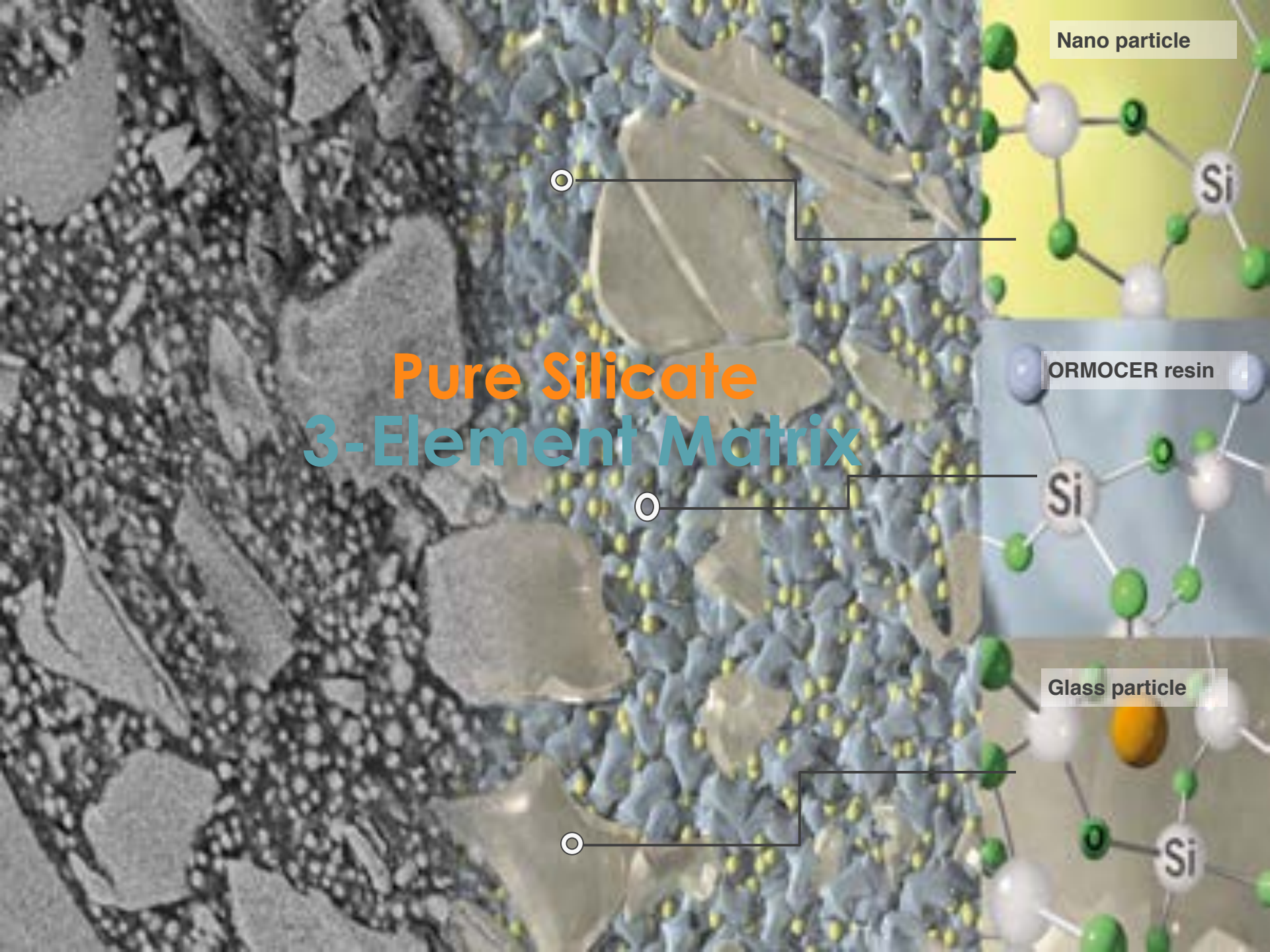
Post Curing Stress

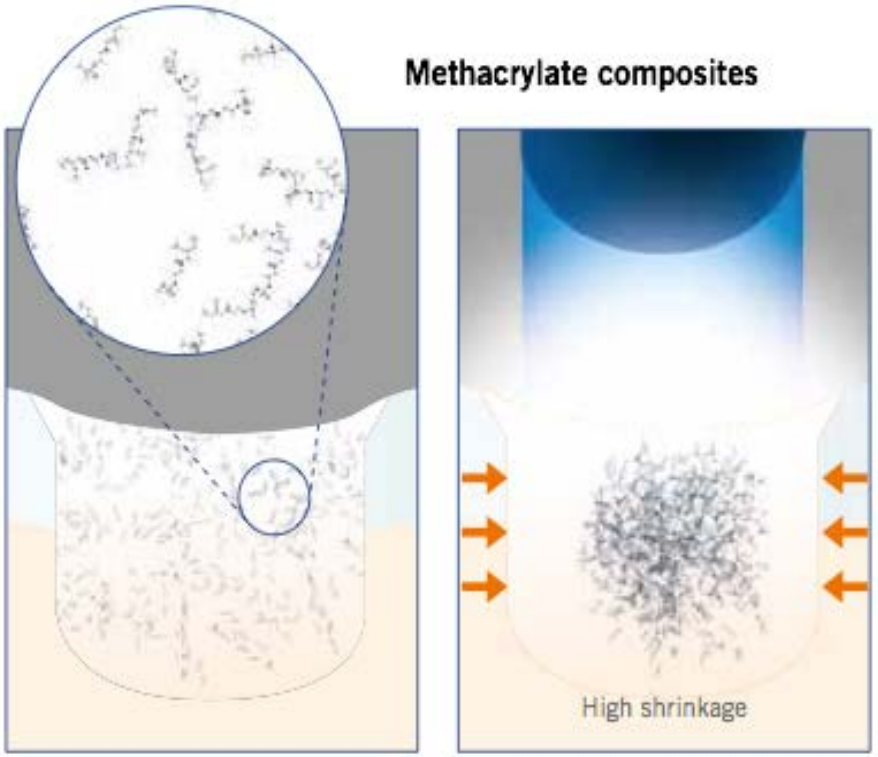
What is the cause of the white line?

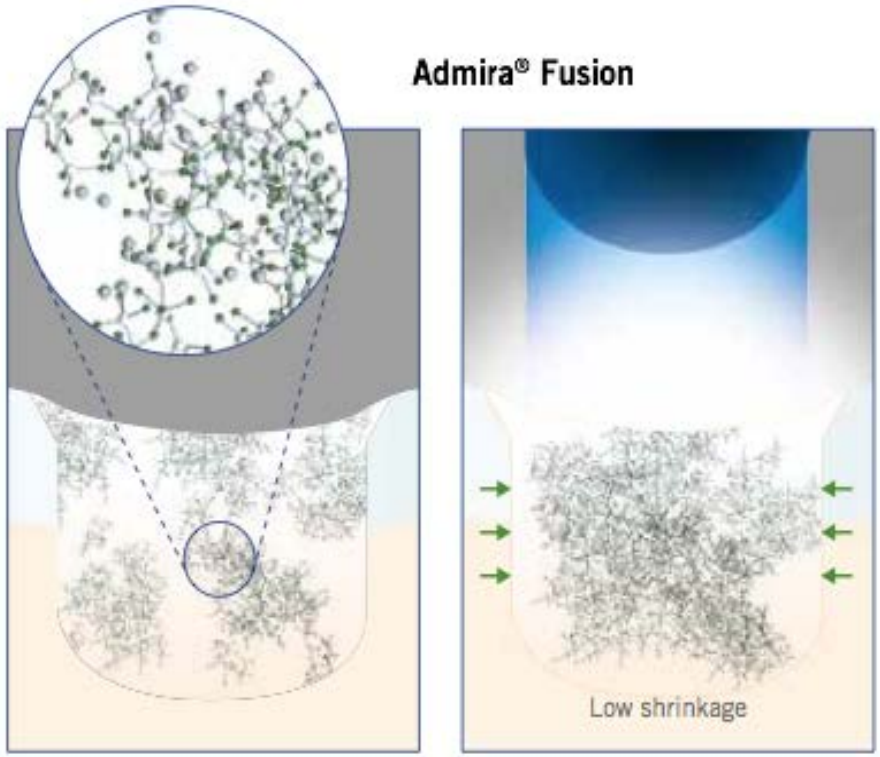

Enamel Crack
Solution….Beveling
And
Low Stress composites
10KV
1000x
10.0µm
4678

The latest…universal low stress and low shrink composites but that can be used in the anterior!

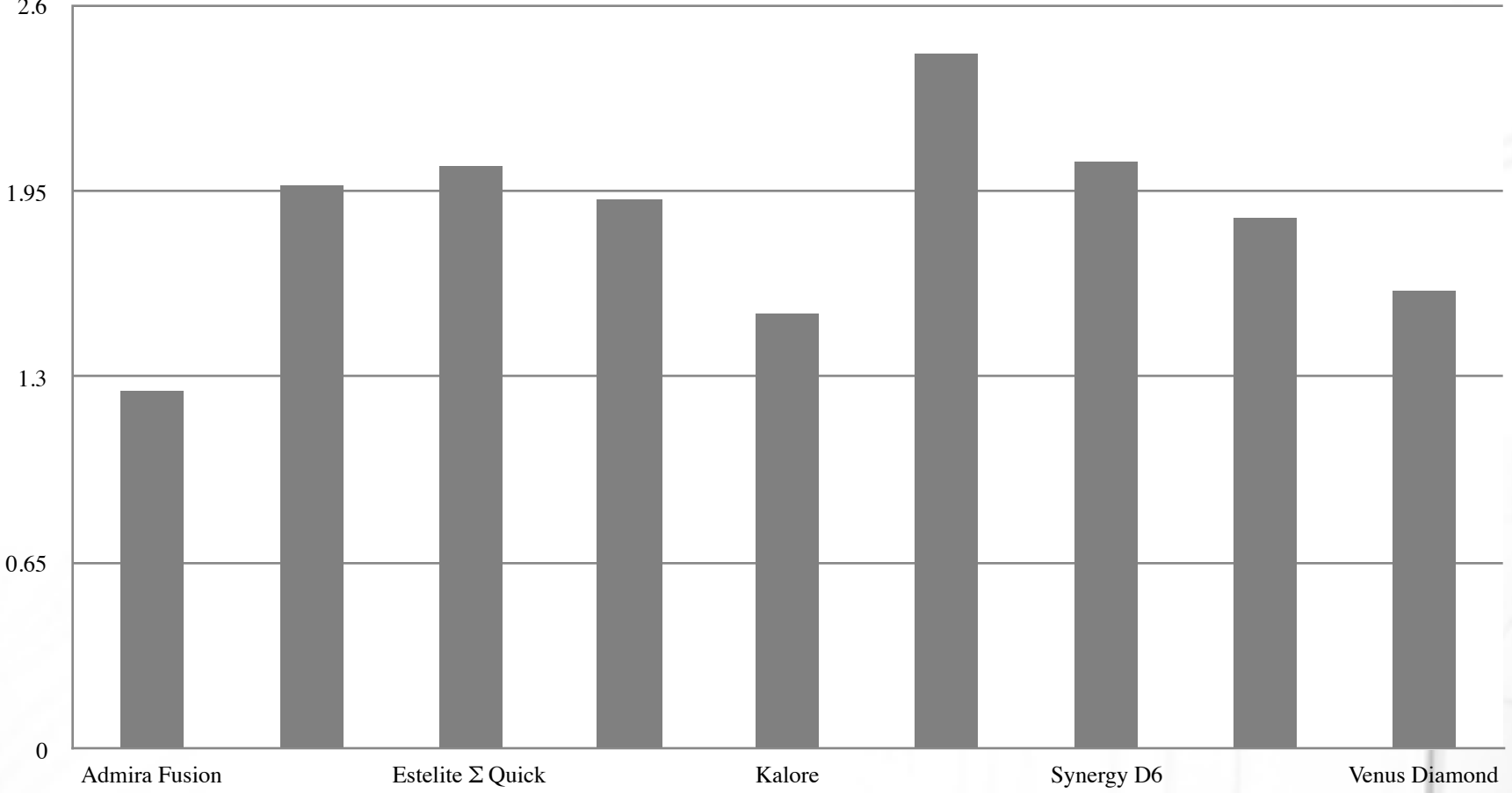
ORMOCERS
NO “METH”
meaning
No Methacylate Monomers
Very Biocompatible


Pure Silicate
3-Element Matrix
Nano particle
Si
ORMOCER resin
Si
Glass particle
Si





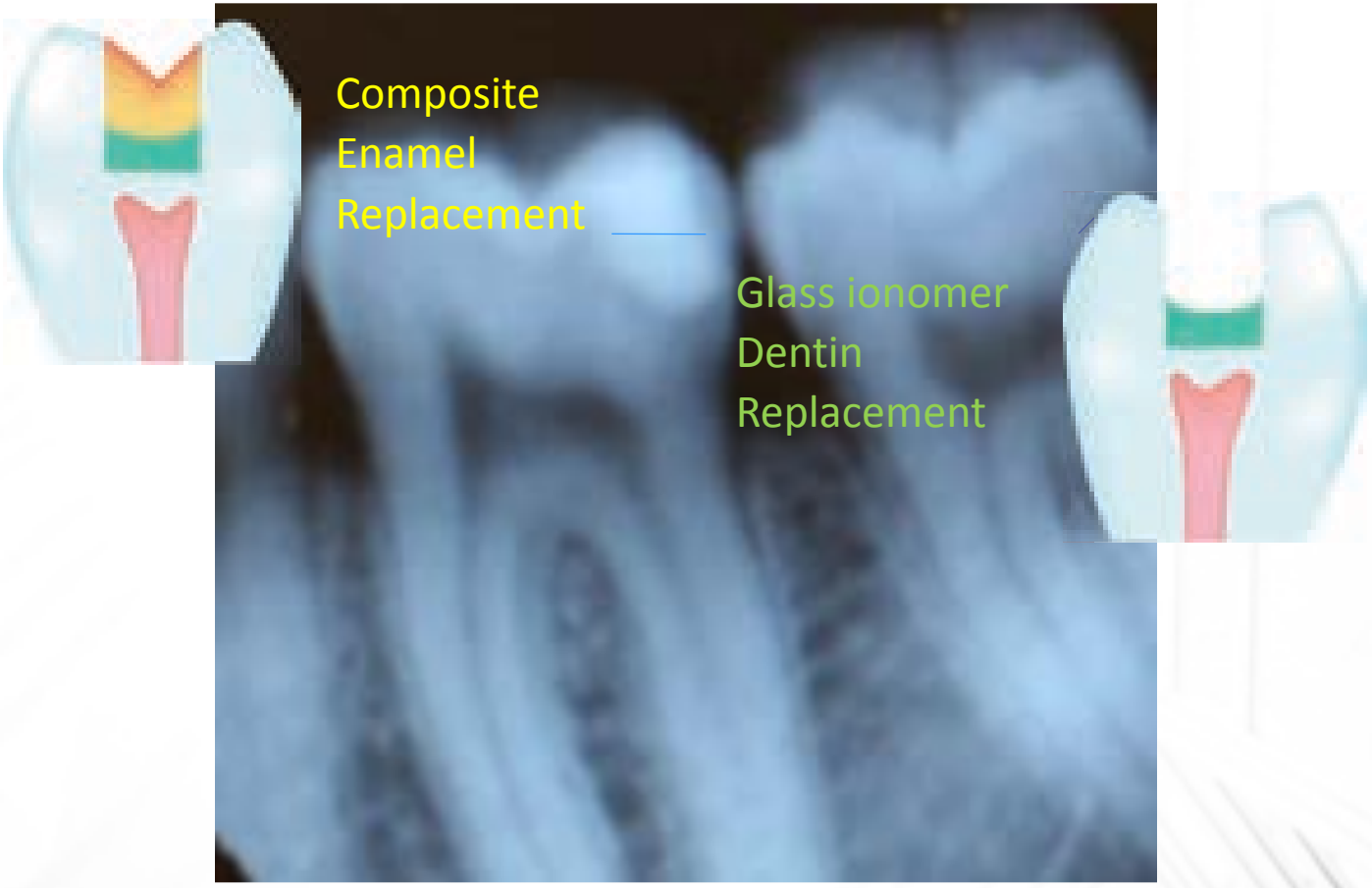
Without traditional methacrylate technology
Lower cross linking shrinkage and lower shrinkage stress



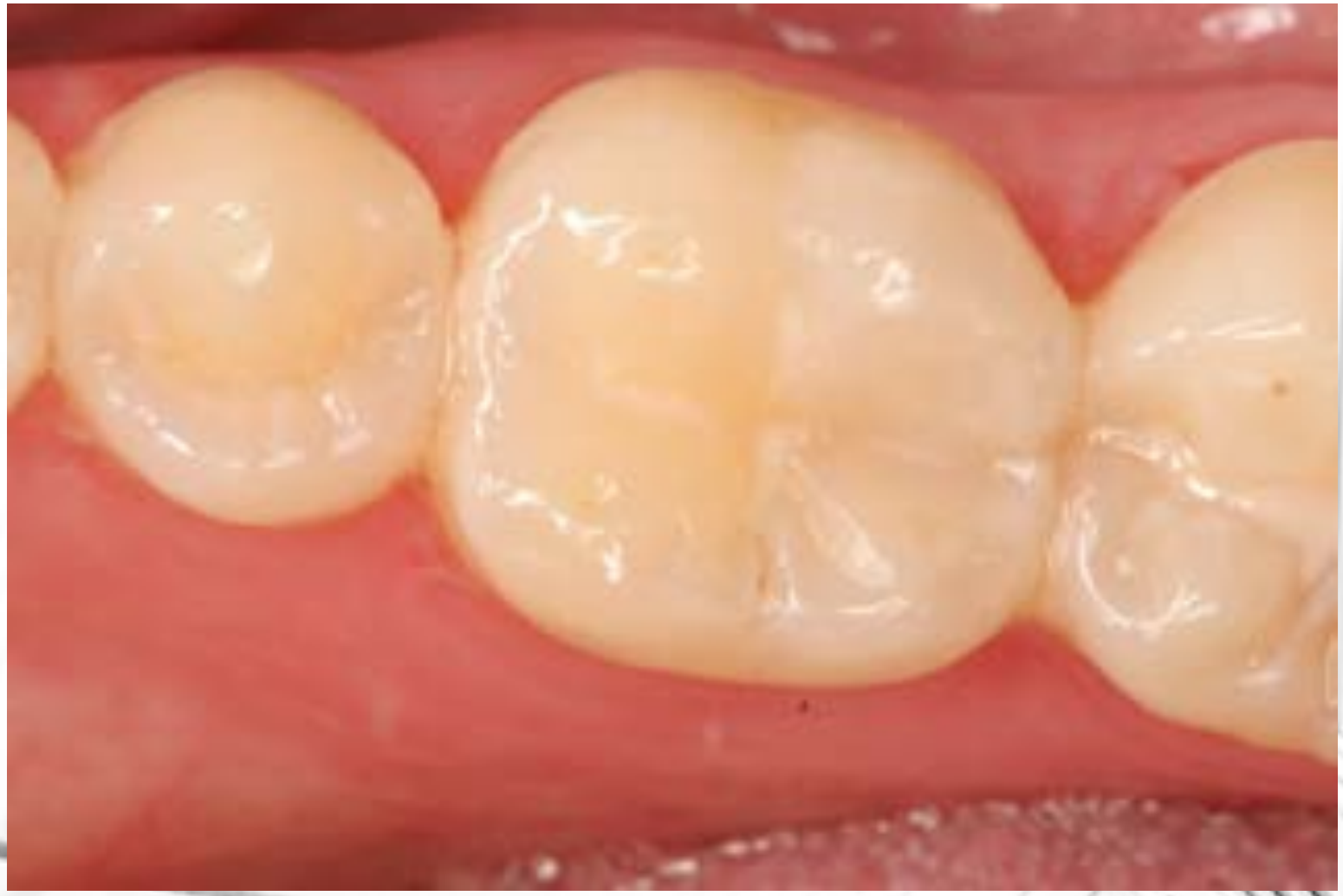
Shrinkage Internal Studies

Stress
Internal Studies

Placement: Dentin/Enamel Replacement

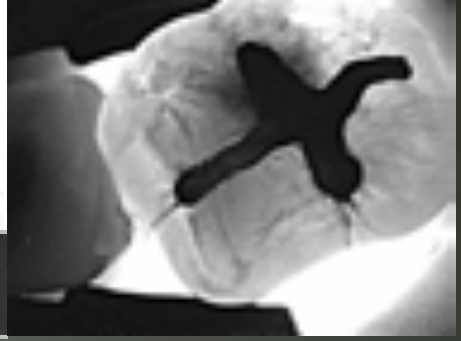


Recall…
What would you want in your mouth?




Introducing
The latest in
Transillumination

CariVu: Transillumination



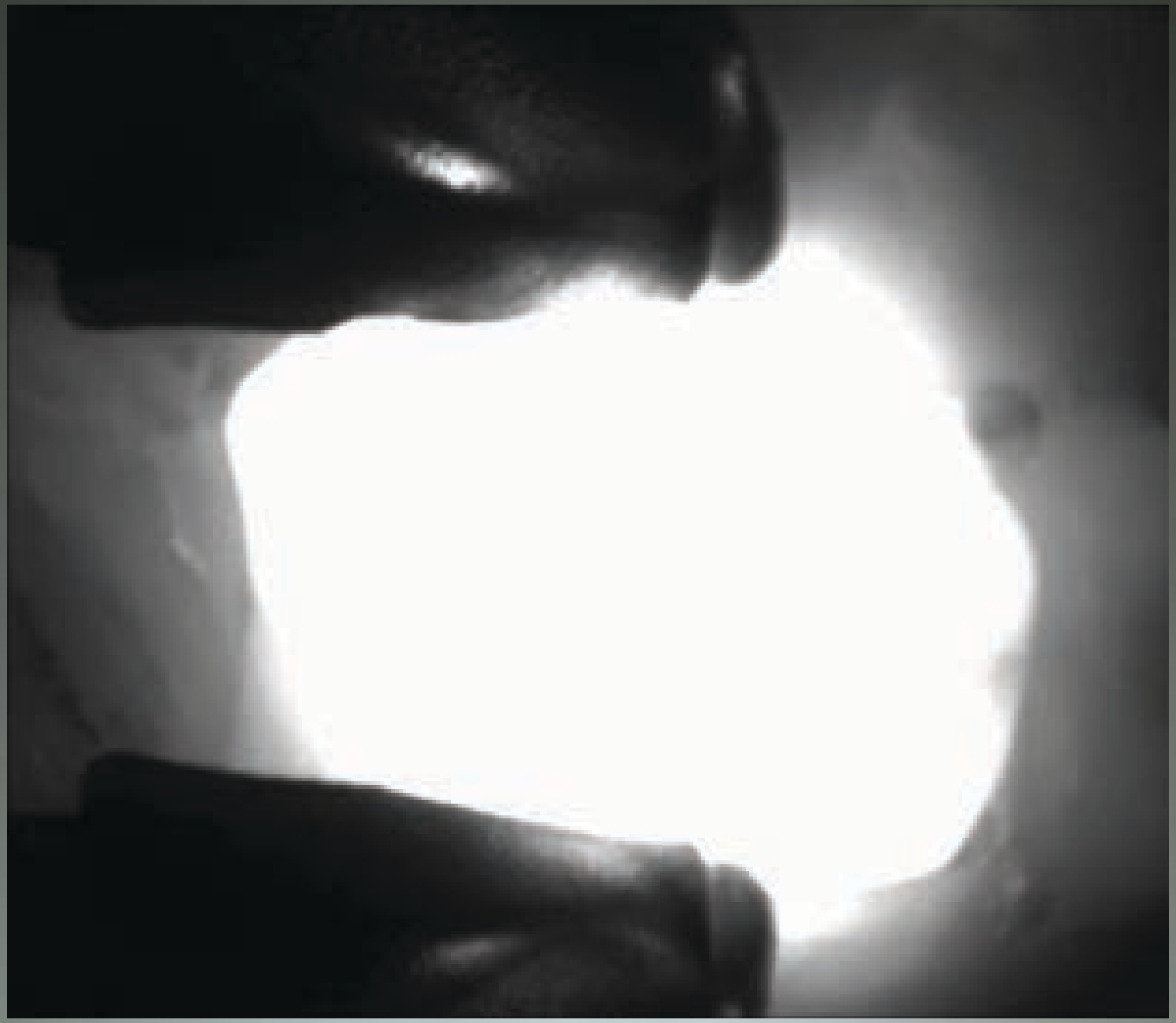
- Near Infared light…no radiation
- Enamel appears transparent or light
- Porous lesions appear **darker** by trapping and absorbing the light: these include cracks and caries
- Video capture….live scans
- Stored in Dexis, excellent for communication to patient and yes…to insurance companies

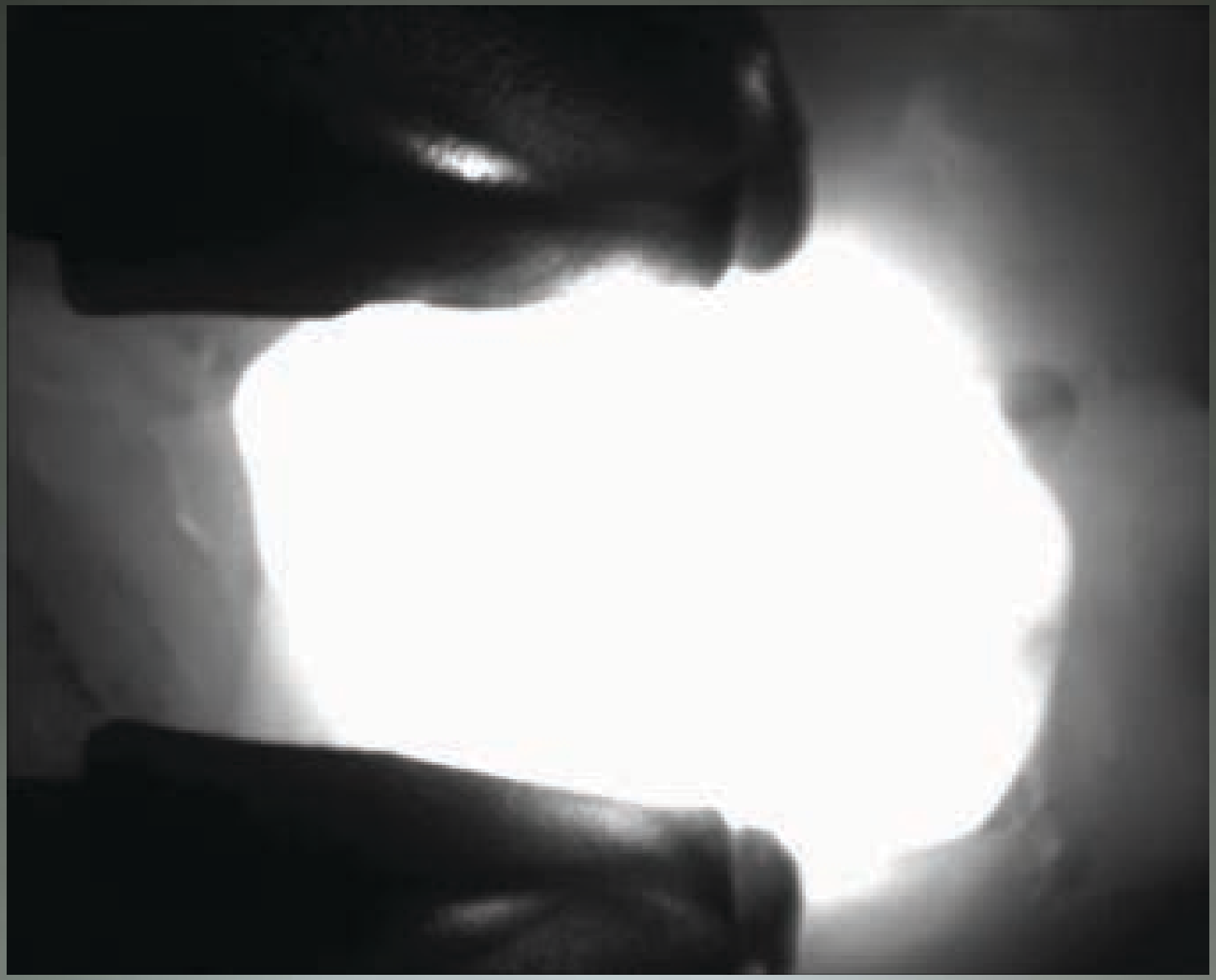
How has CariVu been incorporated into my practice?
Is it worth the investment?

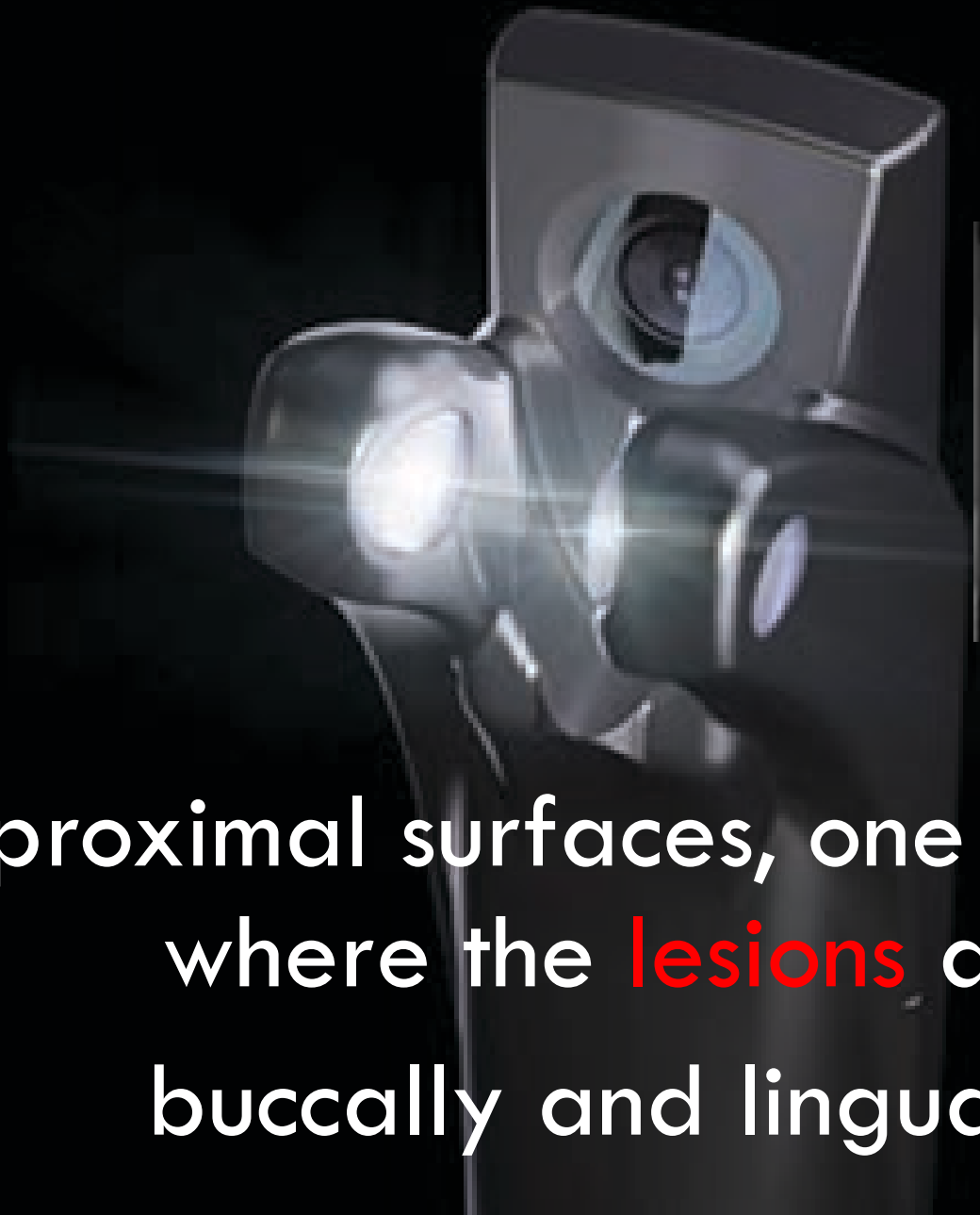

For identifying decay pre-treatment, lesions on smooth, occlusal, and proximal surfaces

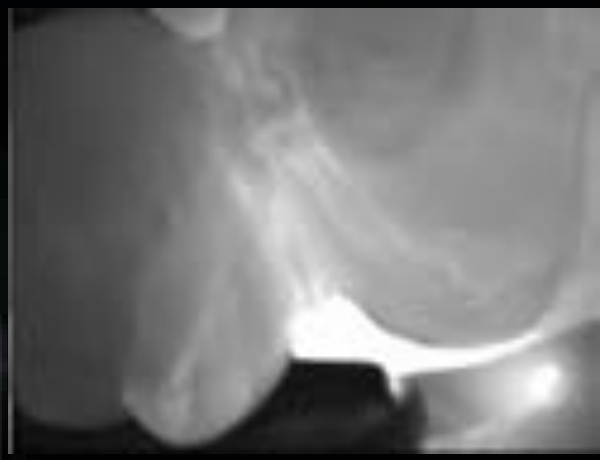
This is included in all of my initial exams and periodic exams for patients who do not have class 2 restorations:

Utilized to compliment or substitute for x-rays for evaluation of non restored class 2 lesions

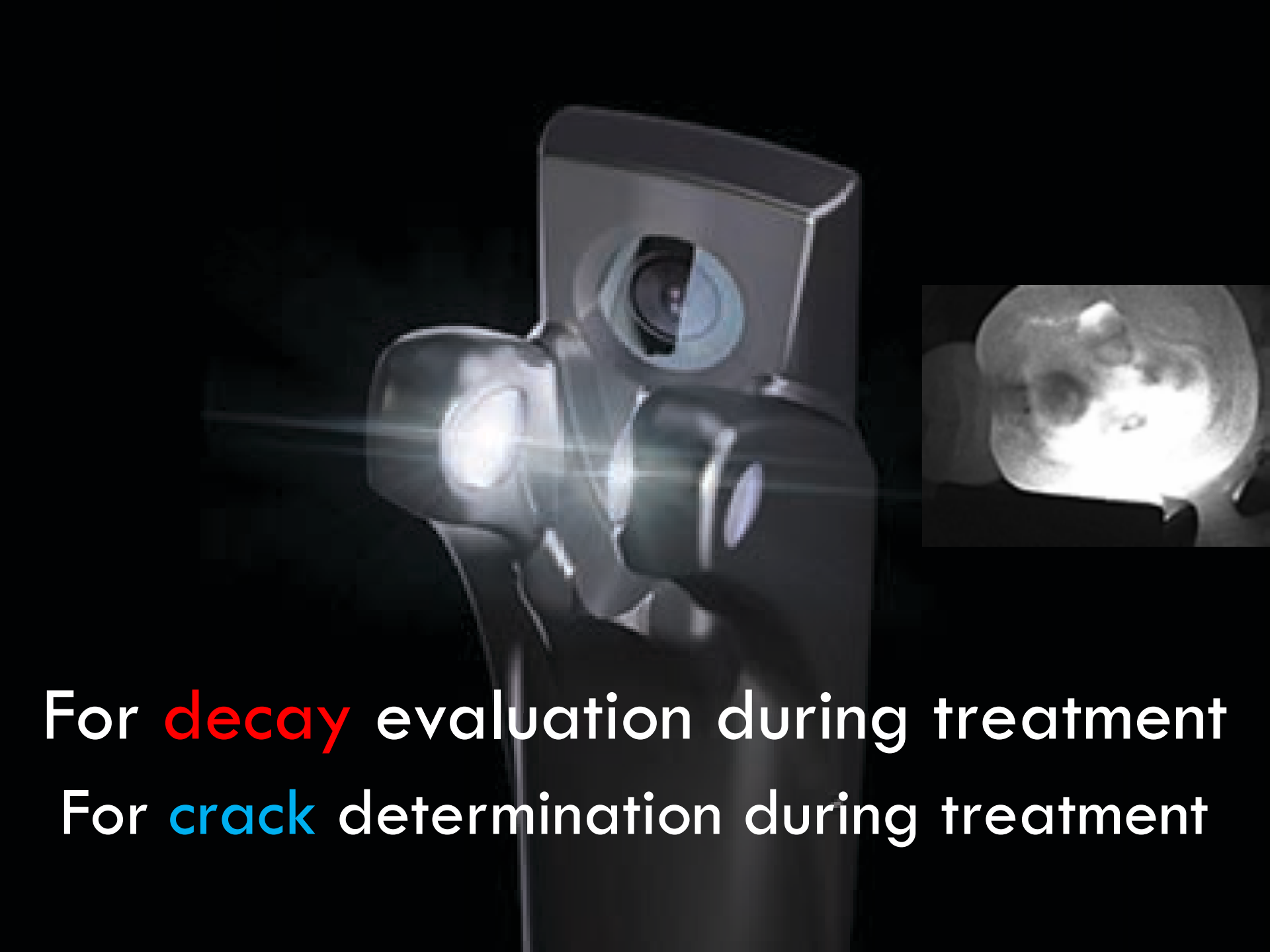




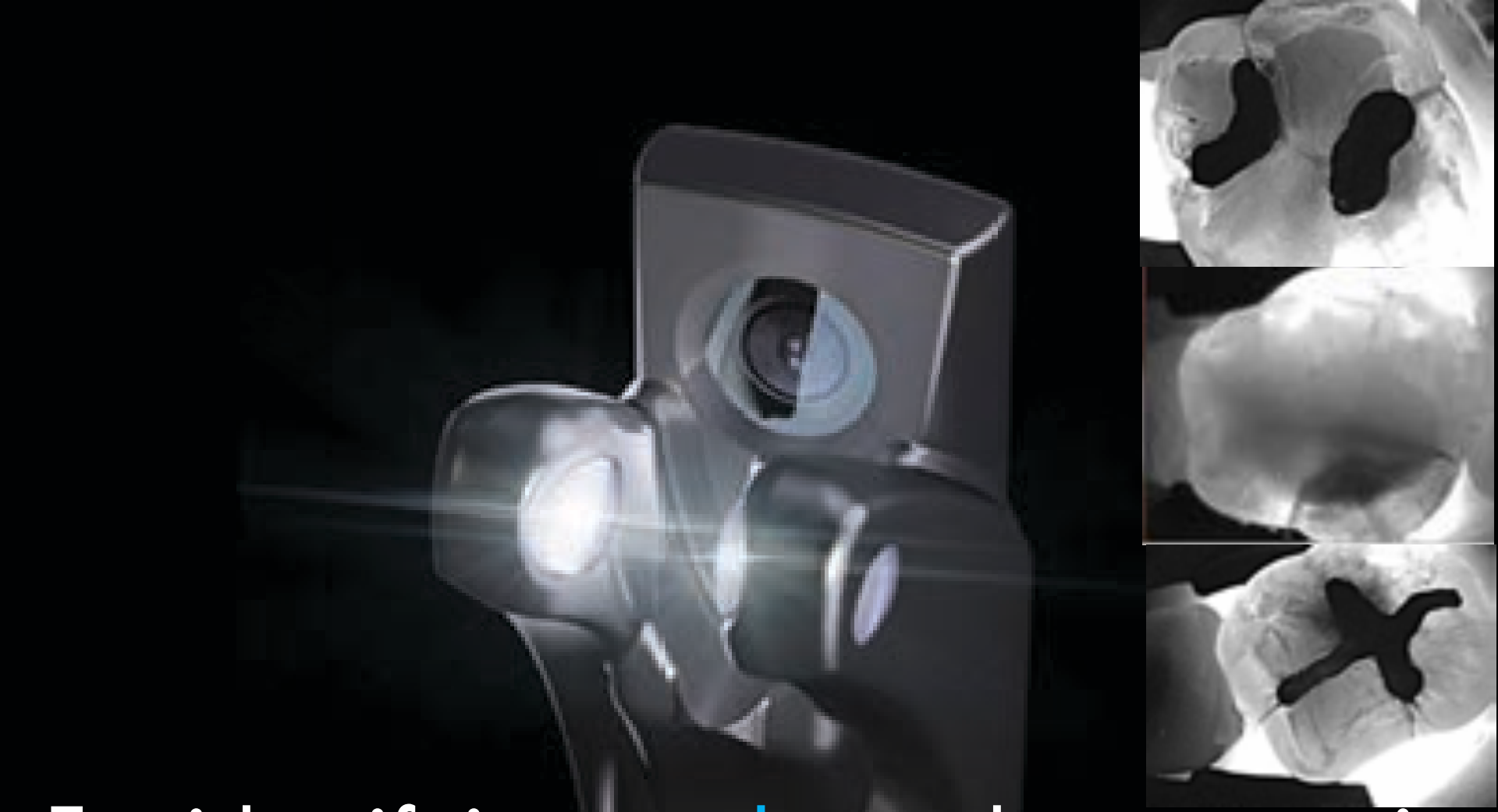




With proximal surfaces, one can identify where the lesions are buccally and lingually


For decay evaluation during treatment
For crack determination during treatment

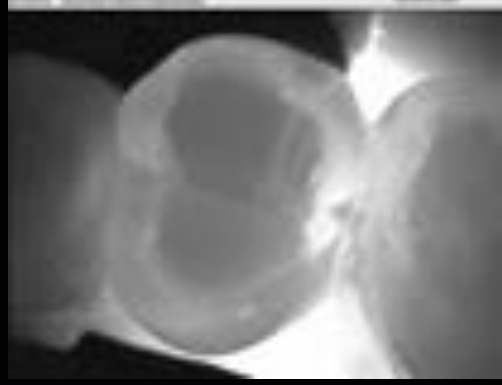
Evaluate older restorations for peripheral decay, evaluate for cracks

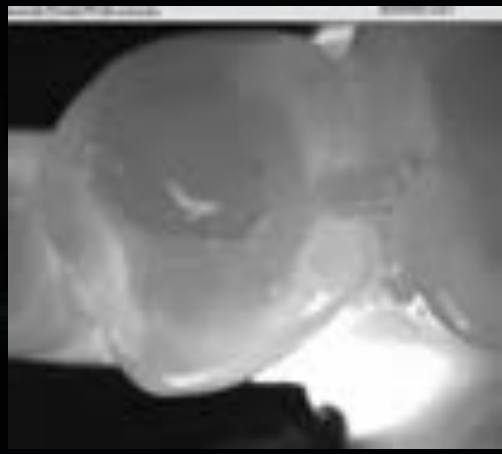


For identifying cracks, and to a certain level, the severity of the cracks

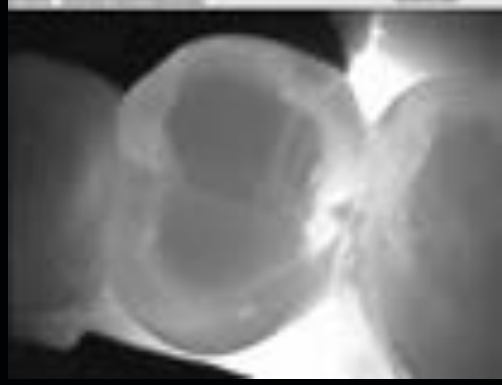
This has become my “go to” diagnostic when evaluating for interproximal decay and in fact for patients under 18 we have eliminated the vast majority of Bite-Wing X-rays

This coupled with our Loupes/Lights along with Spectra for Class 1’s and smooth surface caries has replaced traditional diagnostics in our practice for patients





Allows superior interproximal decision making regarding Watching, Infiltrating, Drilling



After Icon translucent Infiltration

For saving these images within the software for:

Comparison and Follow-up

Carivu does NOT replace x-rays in our practice because the diagnostics of x-rays are far expansive in other complimentary areas


For saving these images within the software for:
Insurance

The ADA code D0425 new in 2017

If used instead of bite-wings our fee is $75

If patient has insurance and wants bite-wings, we do these complimentary

These are covered in our in-office Dental Plan

FYI…United Concordia and other Insurance companies are decreasing their reimbursements for
x-rays if pathology is NOT found

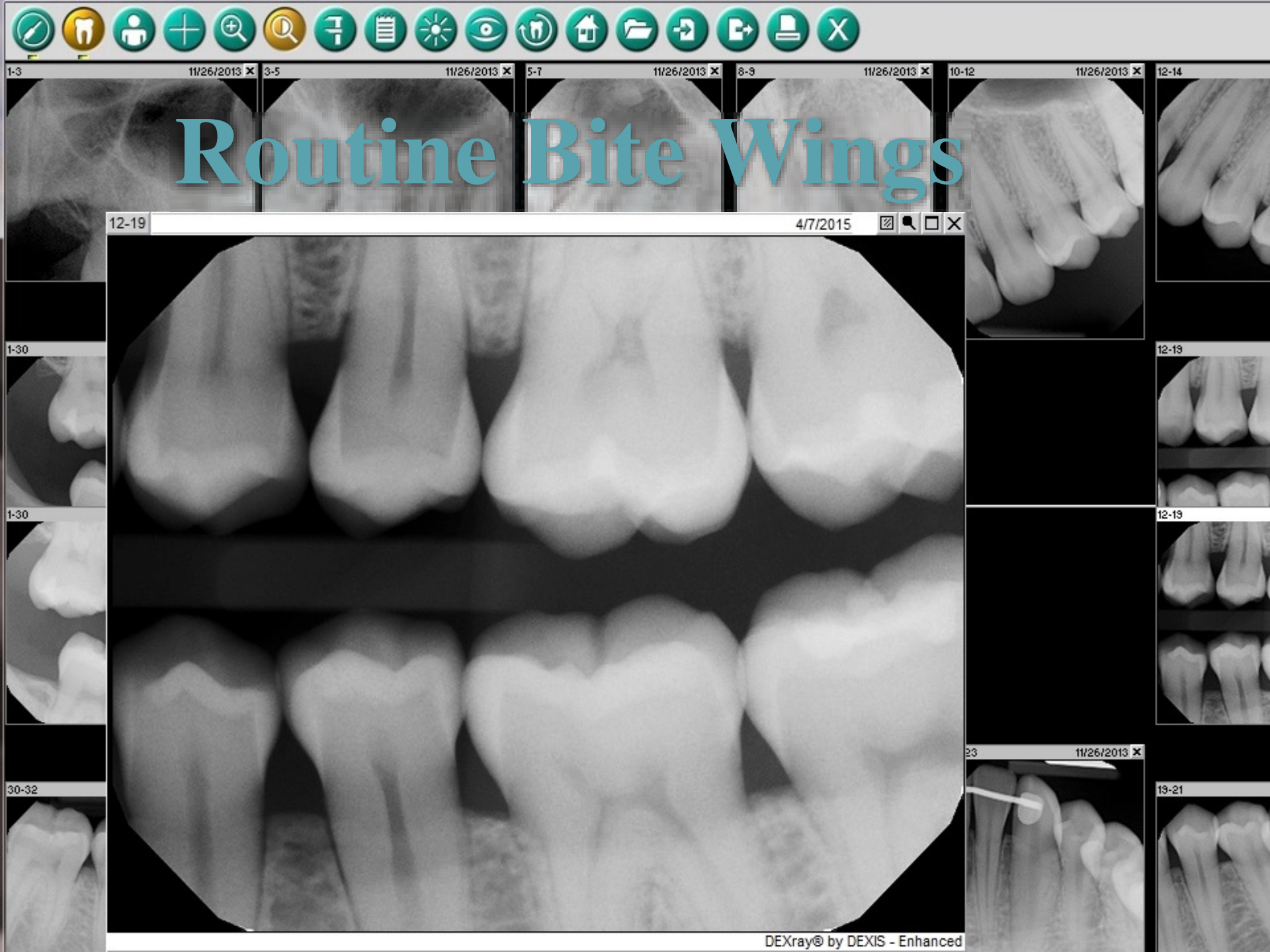
The number 1 question
when I present CariVu…
Can it work with my current digital imaging system if it's not Dexis?

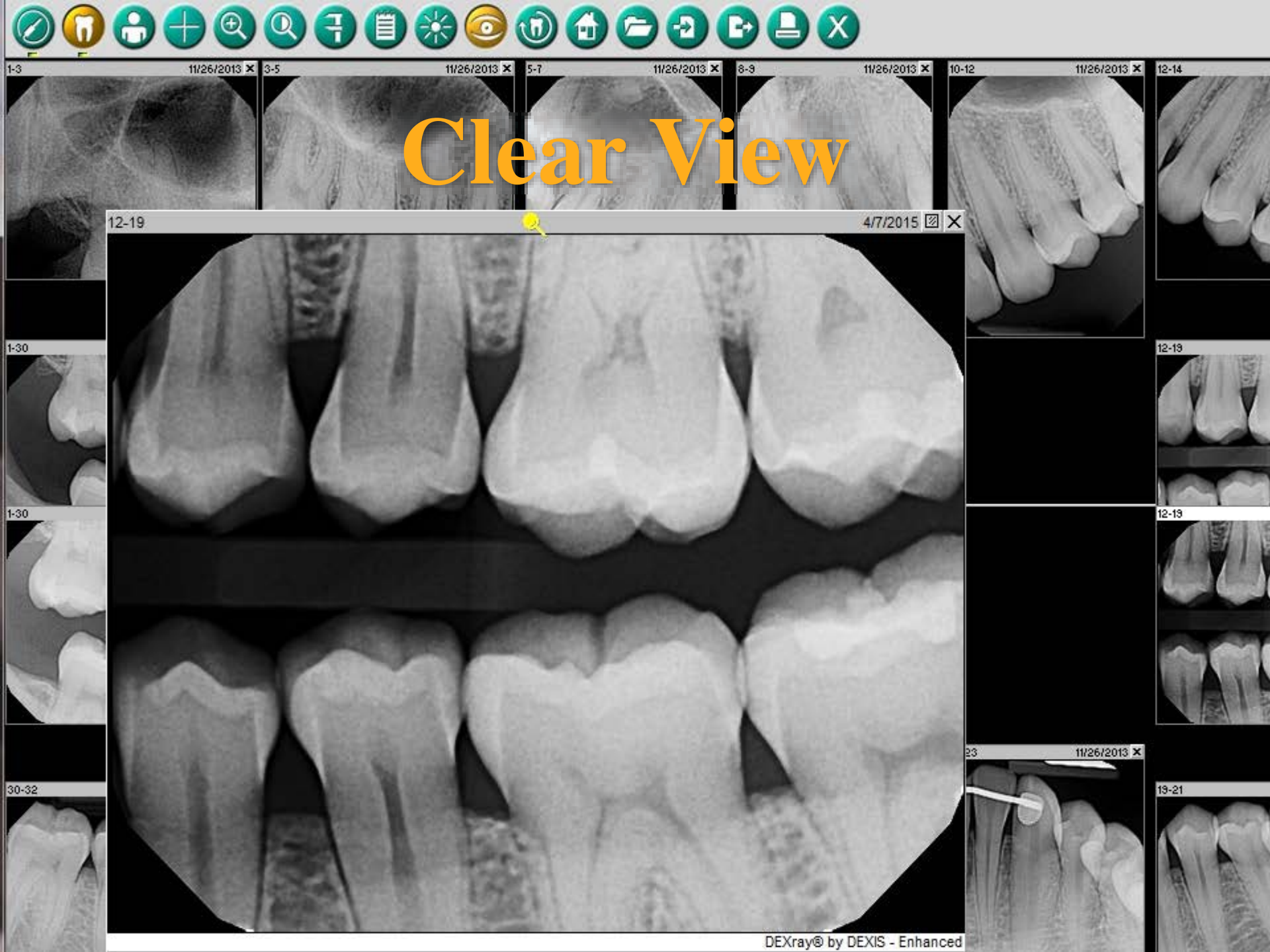
Why we are changing our protocols

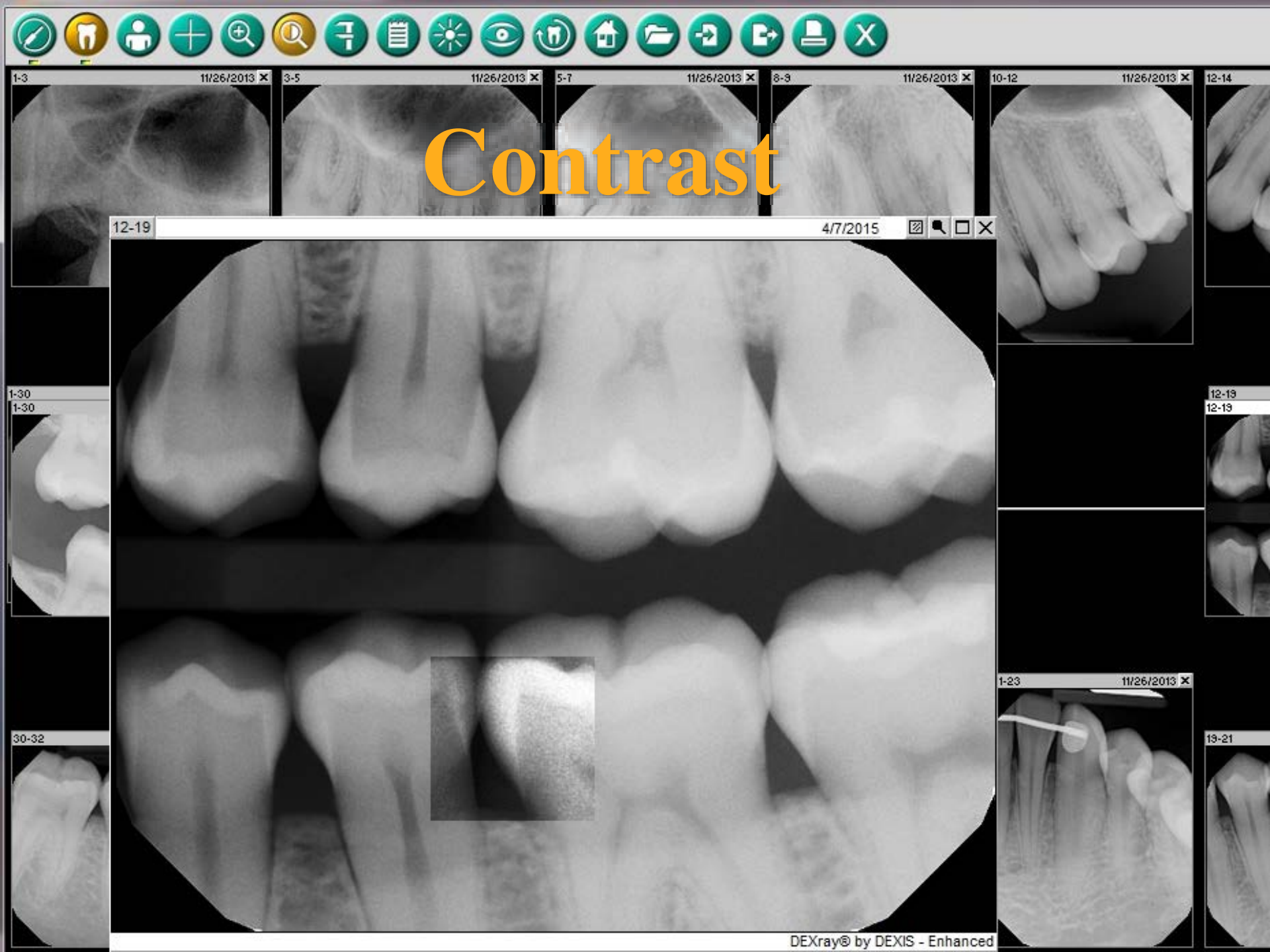
Nicole's (ICON GIRL) Her first check-up with Carivu

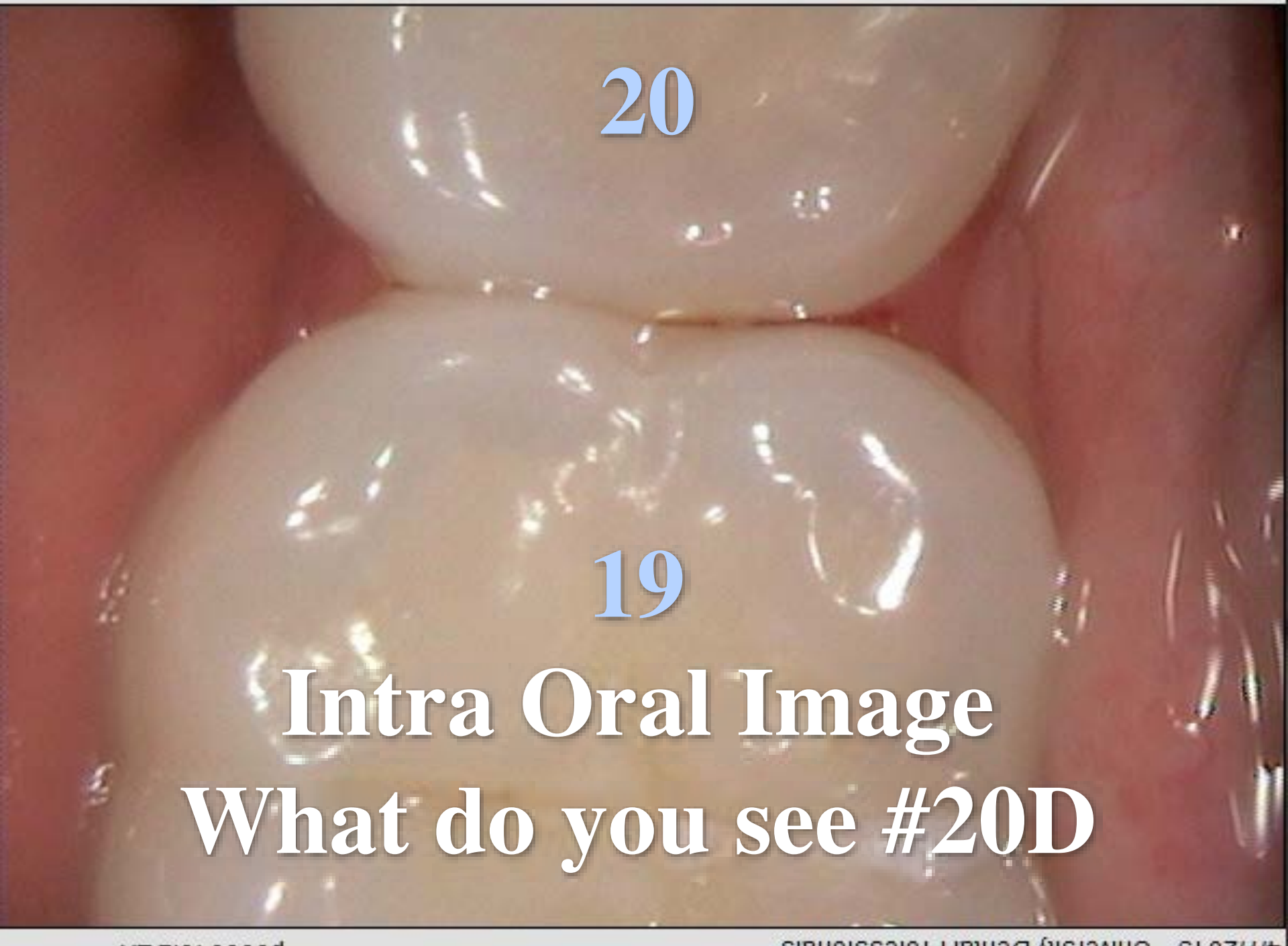
33 year old mom of two
Low caries rate, or so we thought
Uses floss at Christmas for ornaments
Twice a year hygiene visits
Small breaking down class 1 restorations
Asymptomatic

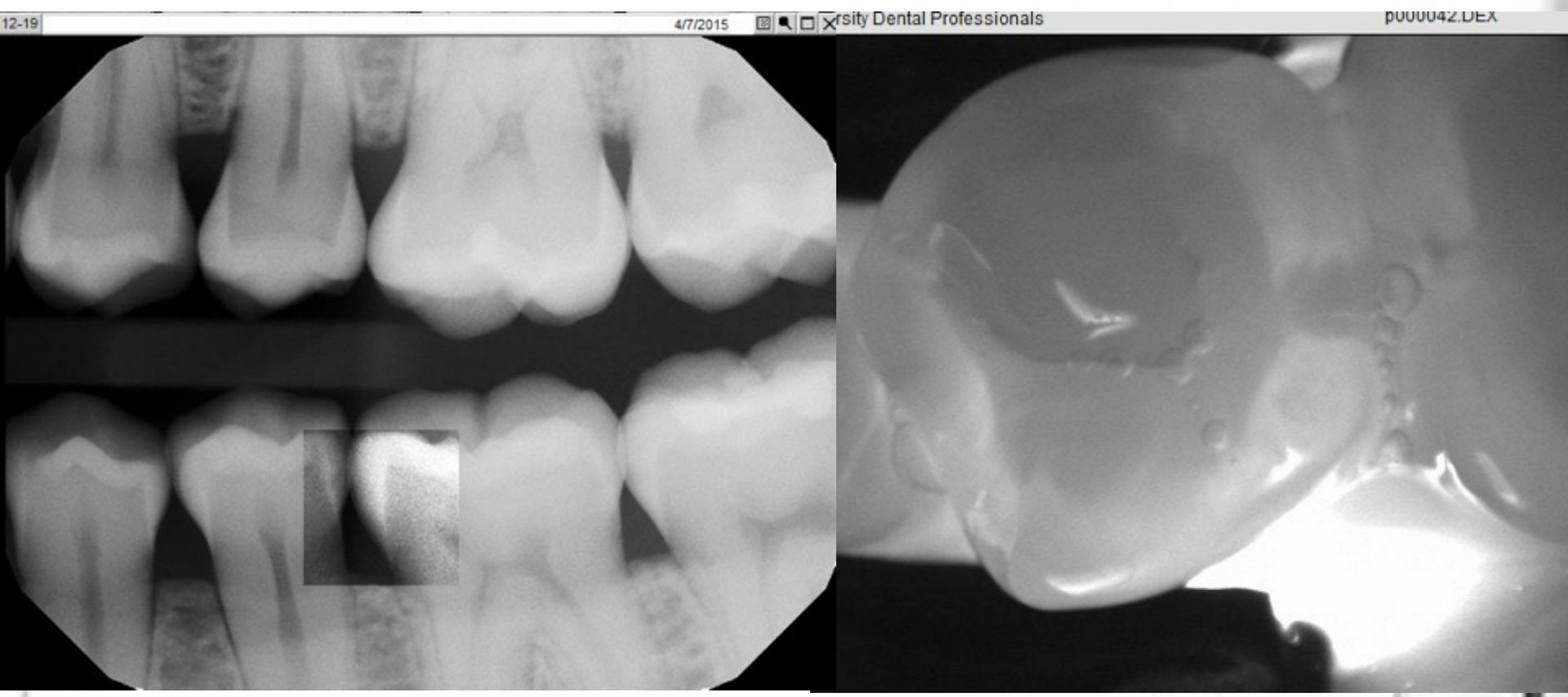
Routine Bitewings yearly images with a great system


Routine Bite Wings
1-3 11/26/2013
3-5 11/26/2013
5-7 11/26/2013
8-9 11/26/2013
10-12 11/26/2013
12-14
12-19 4/7/2015
1-30
1-30
12-19
12-19
23 11/26/2013
30-32
13-21
DEXray® by DEXIS - Enhanced


Clear View
1-3
11/26/2013
3-5
11/26/2013
5-7
11/26/2013
8-9
11/26/2013
10-12
11/26/2013
12-14
12-19
4/7/2015
1-30
1-30
12-19
12-19
30-32
23
11/26/2013
13-21
DEXray® by DEXIS - Enhanced

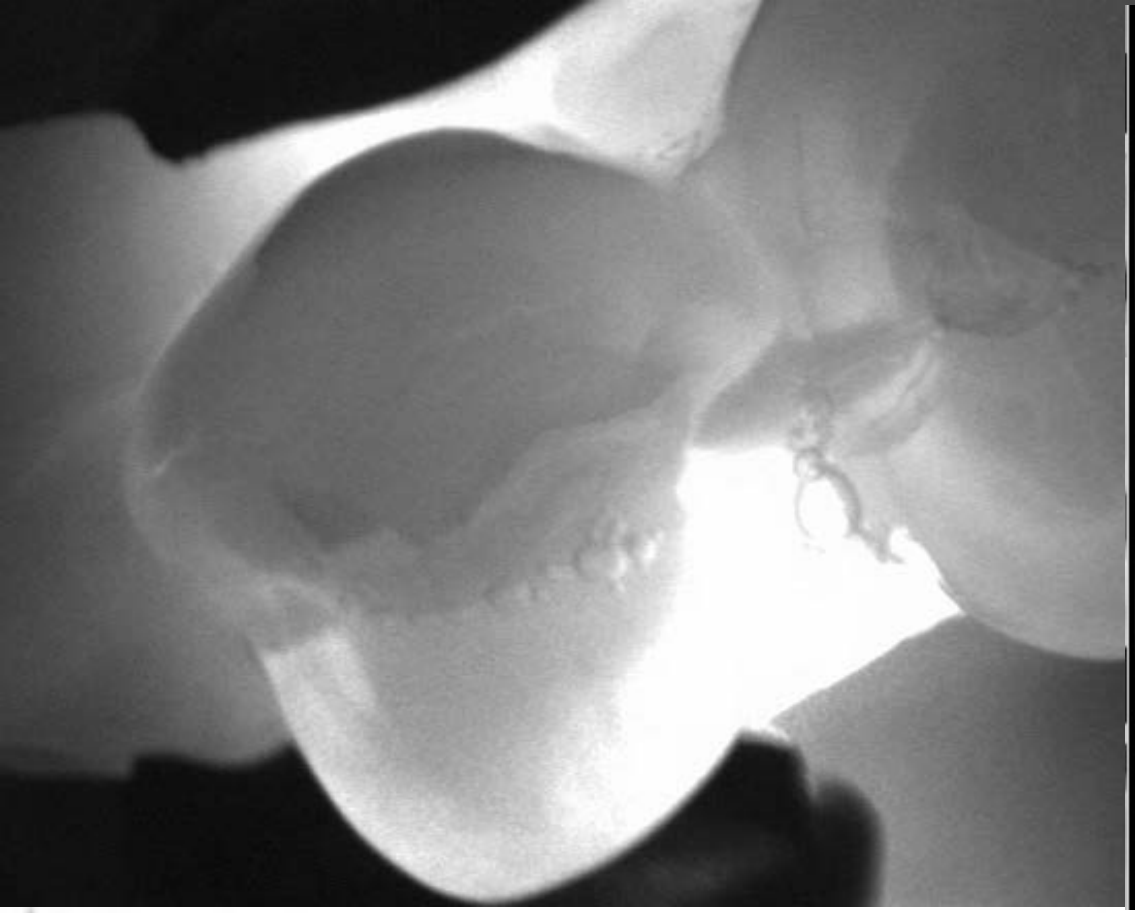

Contrast
1-3
11/26/2013
3-5
11/26/2013
5-7
11/26/2013
8-9
11/26/2013
10-12
11/26/2013
12-14
12-19
4/7/2015
1-30
1-30
12-19
12-19
1-23
11/26/2013
30-32
19-21
DEXray® by DEXIS - Enhanced

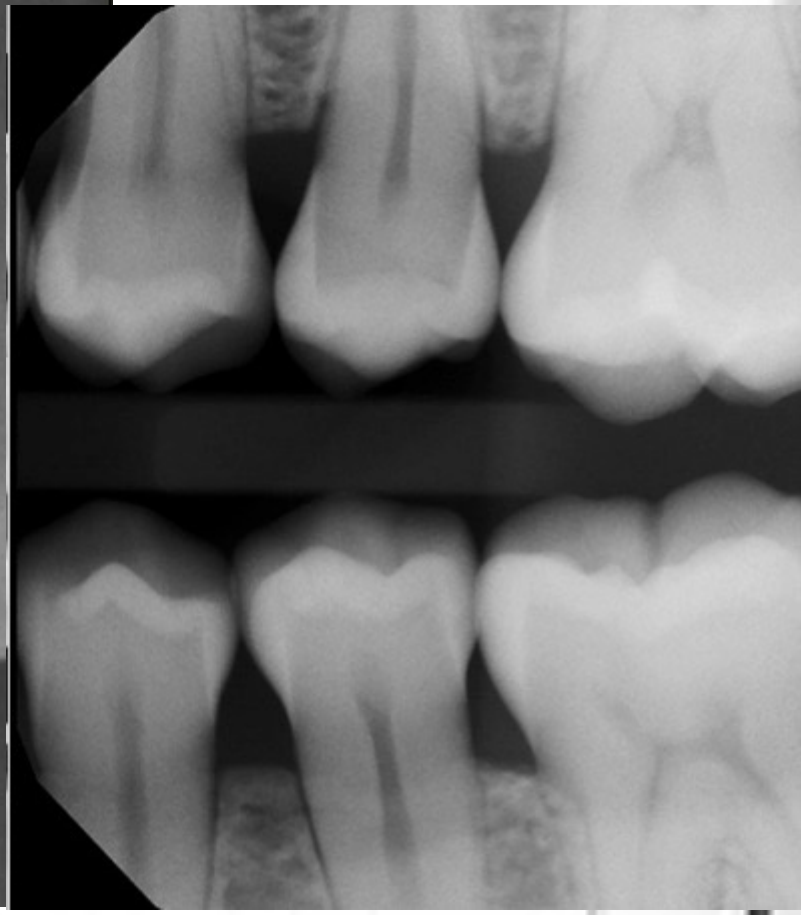

20
19
Intra Oral Image
What do you see #20D



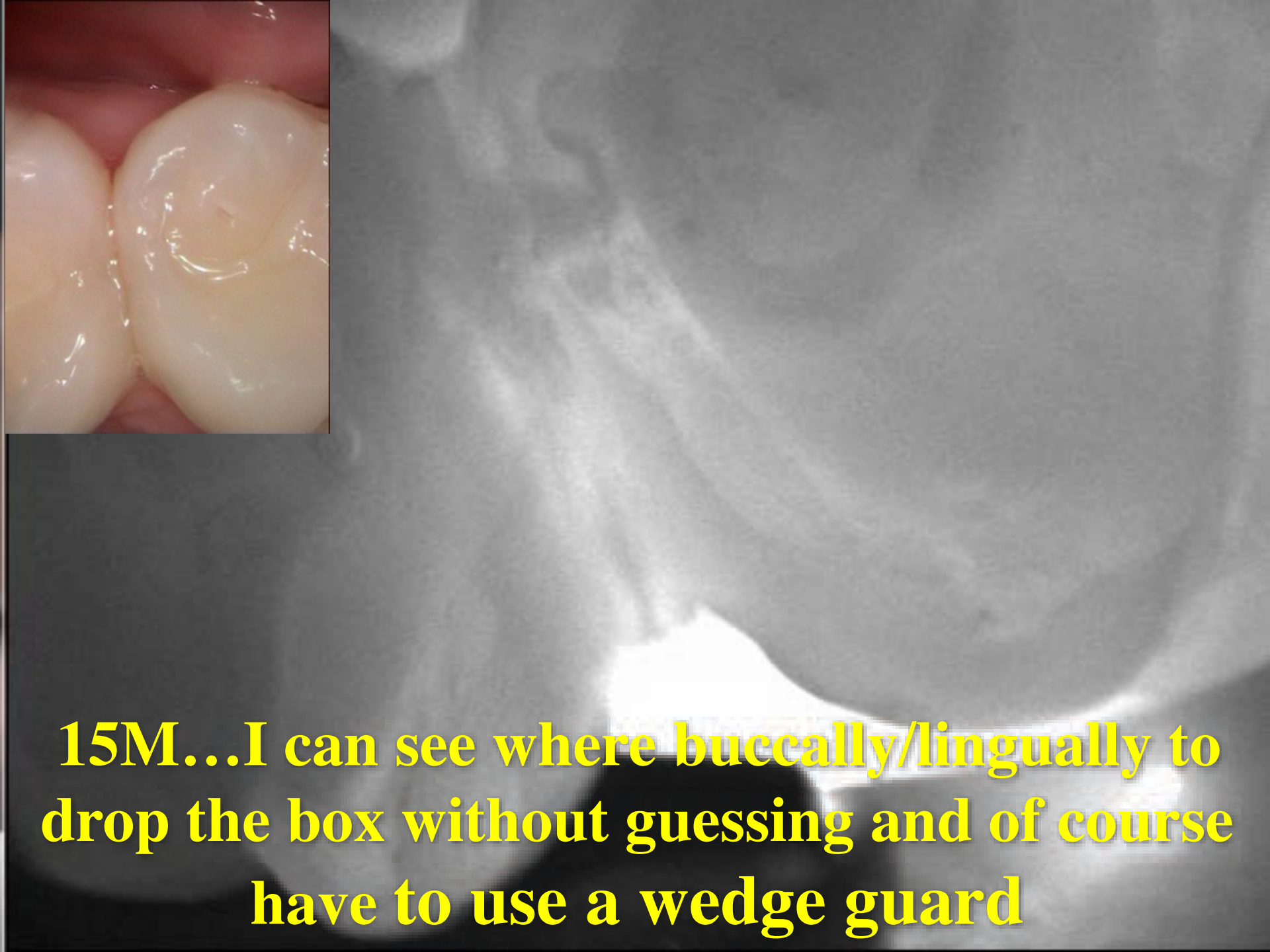
Bitewings versus CariVu

No question D1 caries



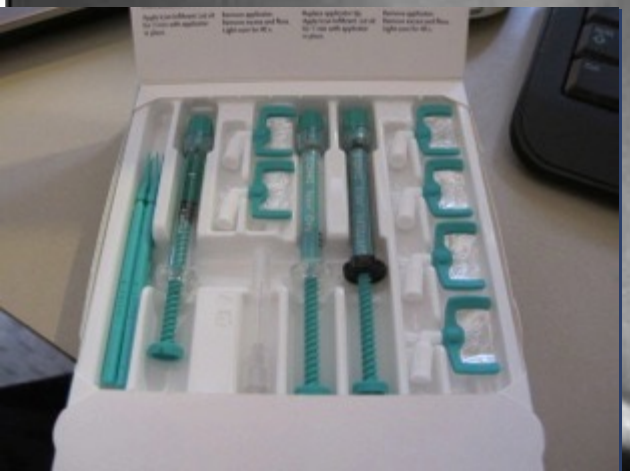


12D….13M1….. All D1 caries clearly seen diagnostically

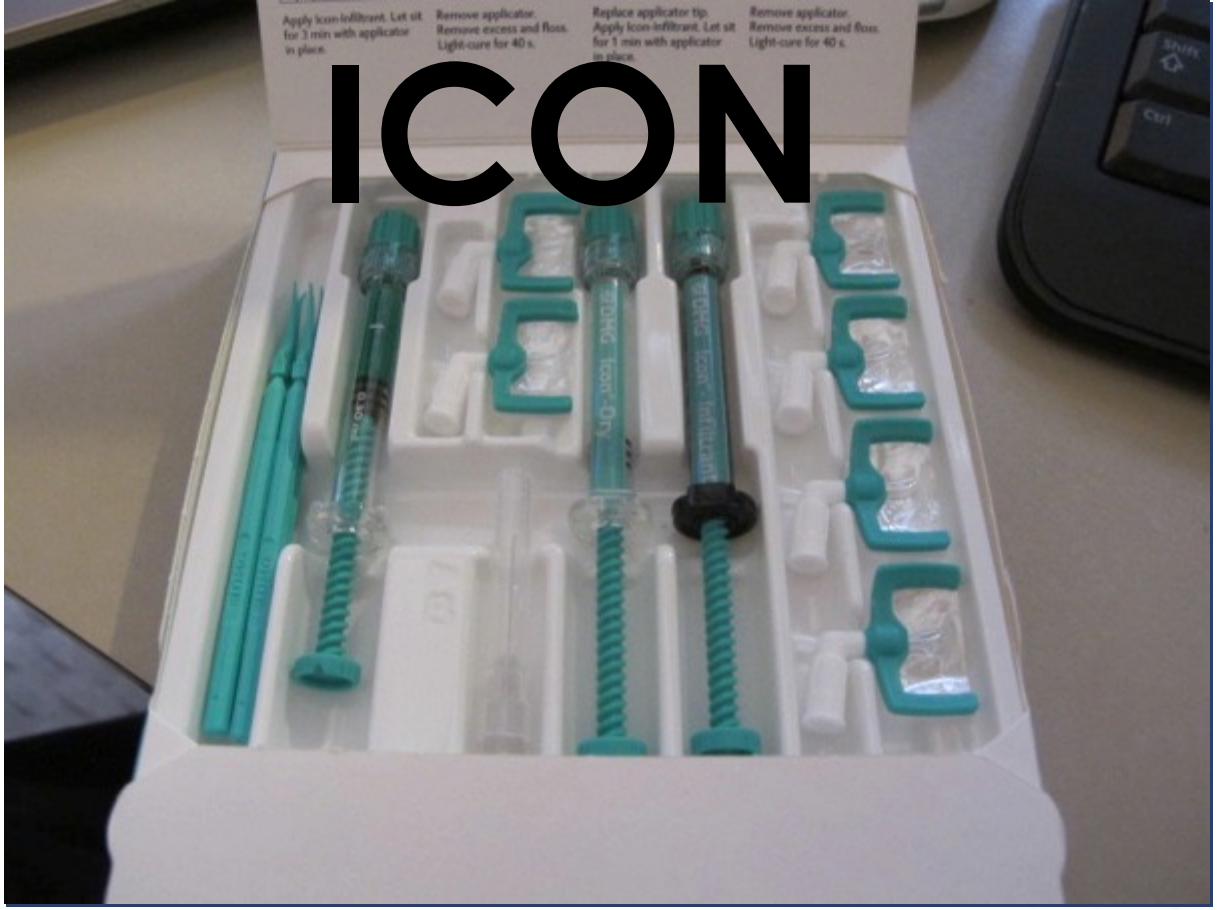


15M…I can see where buccally/lingually to drop the box without guessing and of course have to use a wedge guard

#5 Distal…E 2 caries
We ICON These



ICON



Application of a resin material engineered to penetrate and fill the sub-surface pore system of an incipient caries lesion to strengthen, stabilize and limit the lesion's progression as well as mask visible white spots

ICON

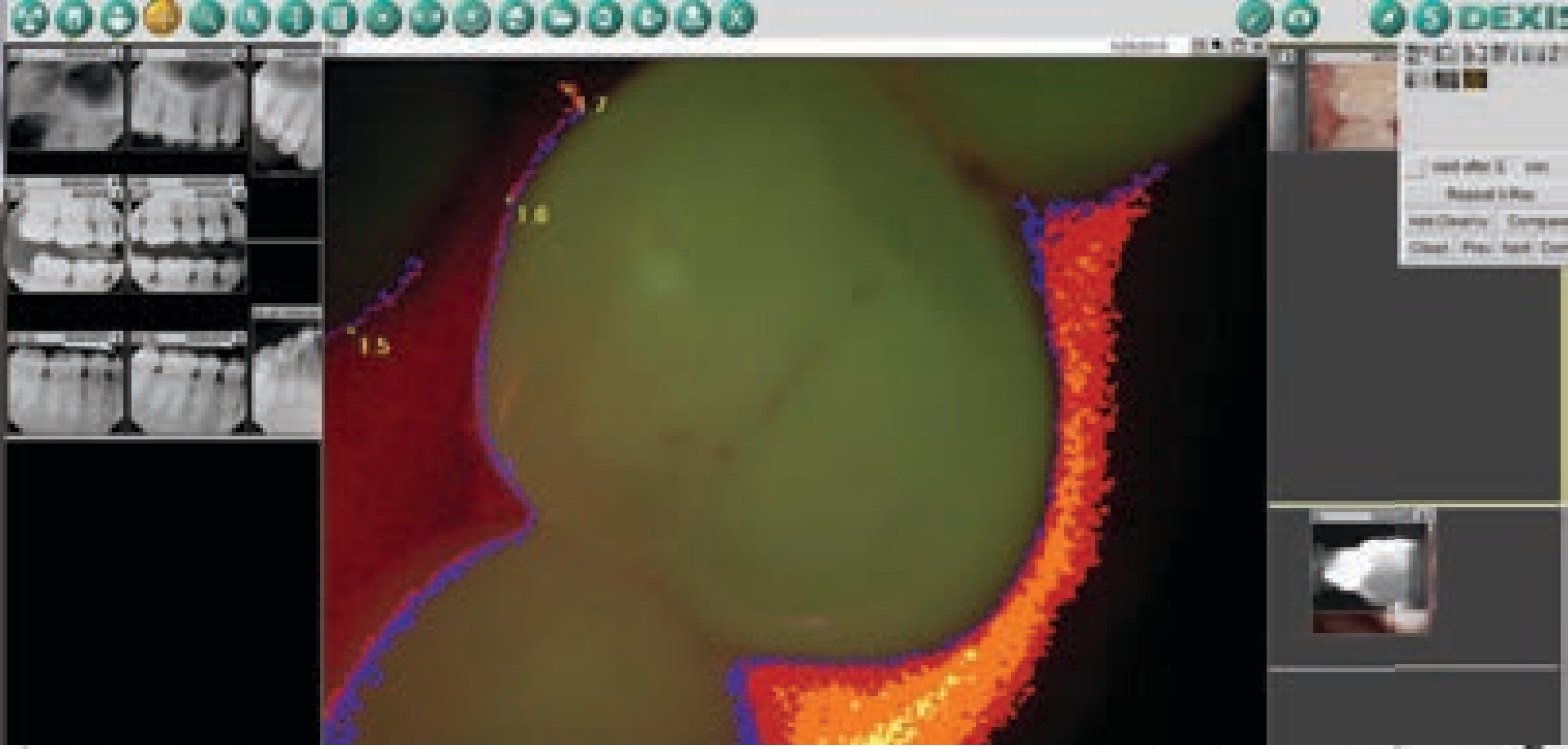
- IS NOT radio-opaque due to the fact that the material would NOT infiltrate. The process takes about 20 minutes per tooth
- Billing is 150-200$ and my pitch is…no drilling is best and we follow yearly on x-rays
- 47 research articles show far less caries after placement than NOT placing
- Dam is highly recommended especially in lower posterior
- If contacts are tight…orthodontic separator may be required prior to therapy

Summary of ICON

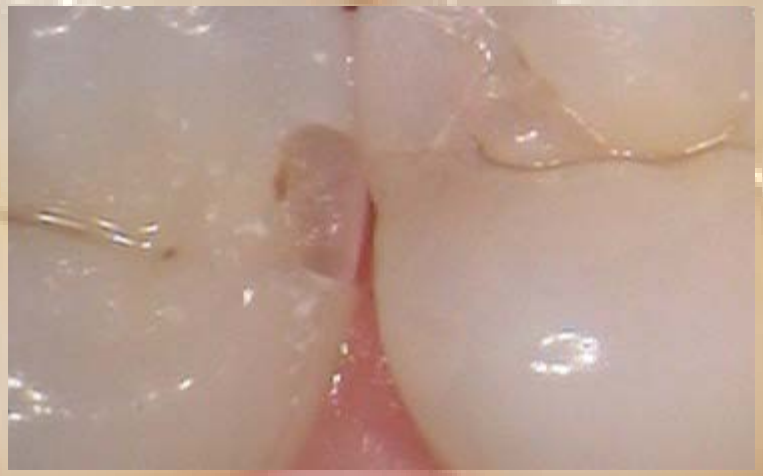
This goes back to the concept
If we can diagnose earlier,
or in fact simply…
"UP OUR GAME IN DIAGNOSTICS"
Can we Redefine
"OUR APROACH TO CARE"

12 and 13
Minimally invasive

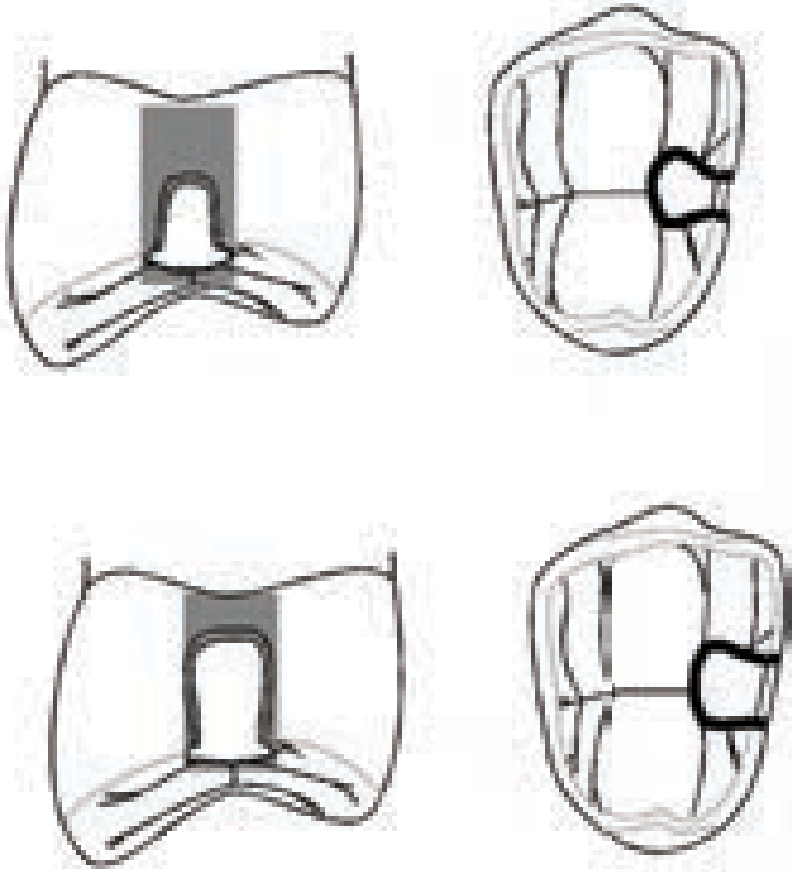
12D has an opalescence
13 minimal change seen, yet…



12 Spectra…no occlusal decay
Why weaken the tooth?
Slot preparation only



12 caries removal
Note the brown
D1 Caries



Minimally Invasive Preparations with MicroCopy's single use and multi use Diamond Burs

1300F

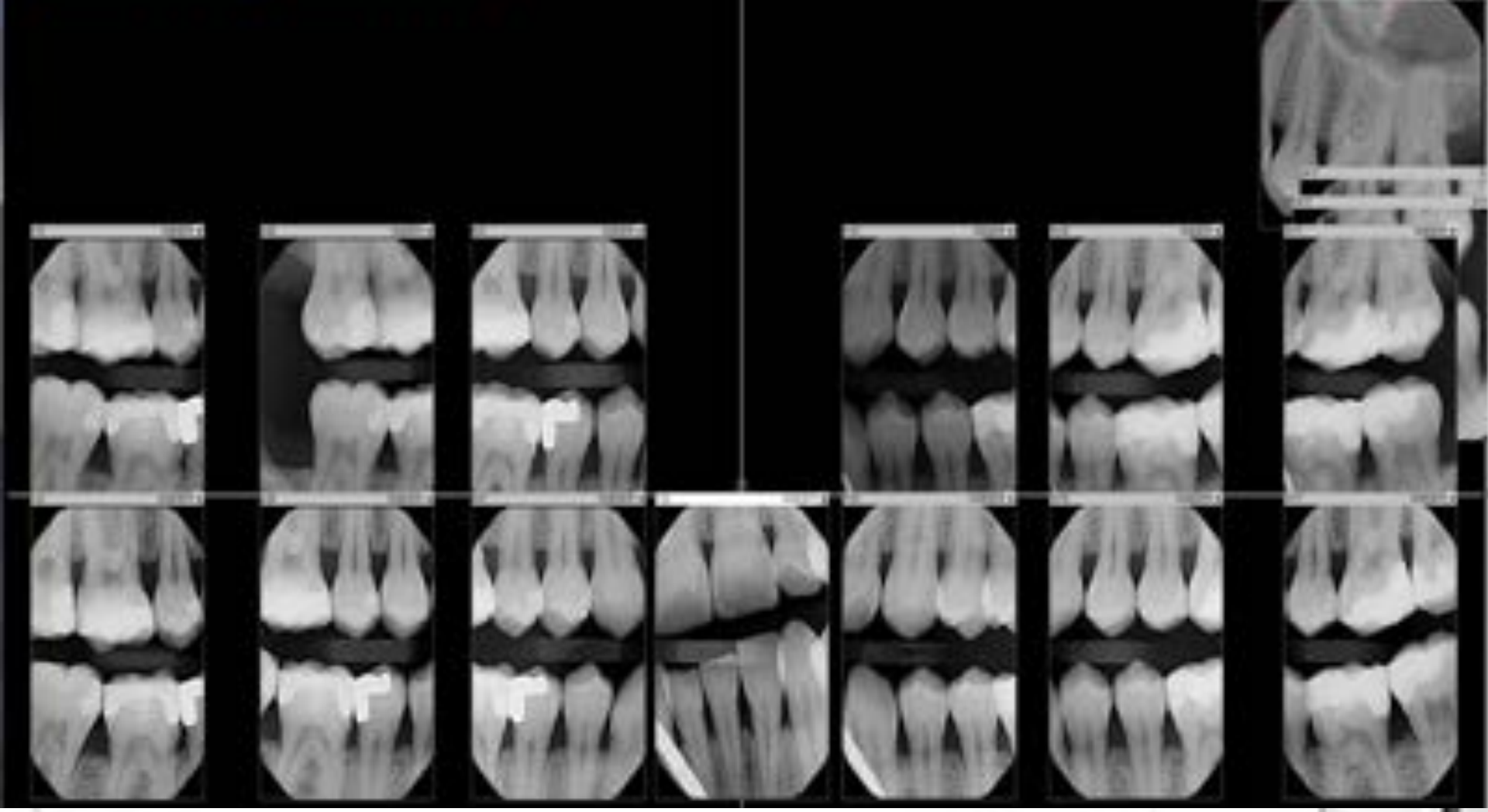
0710 C

5012M

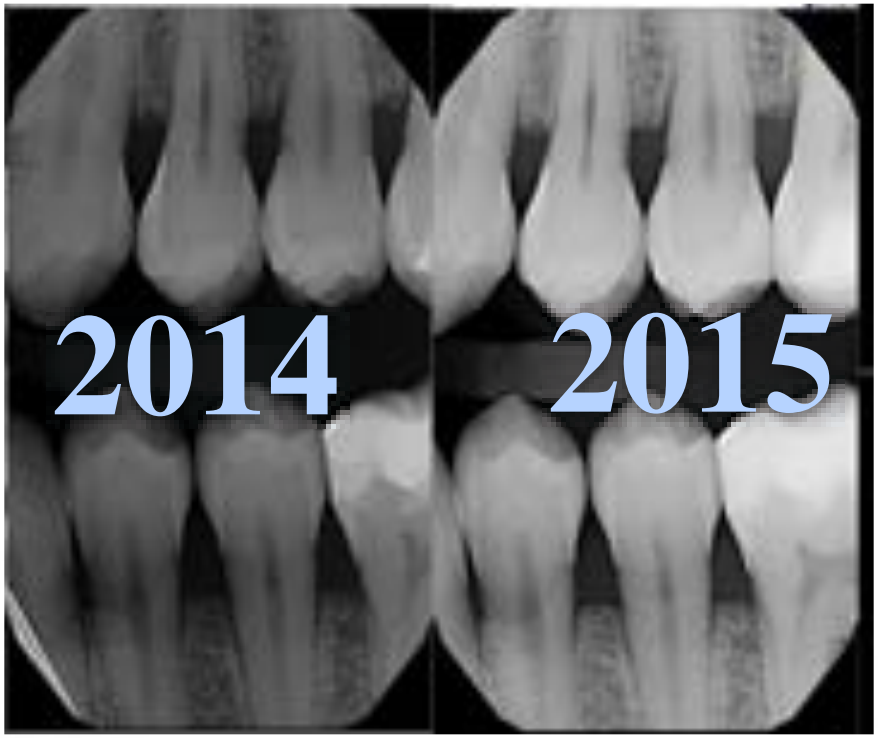
Minimally Invasive Burs

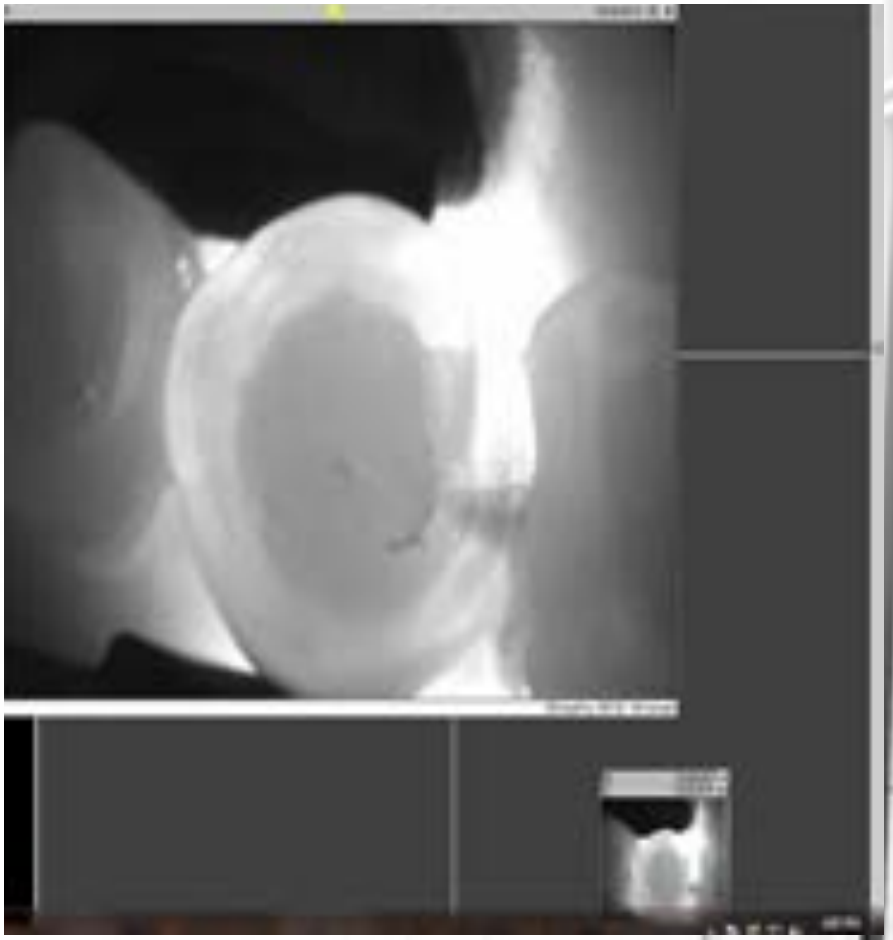
Ring and Wedge in place


Minimally invasive Class 2's
Was there any reason not to treat?

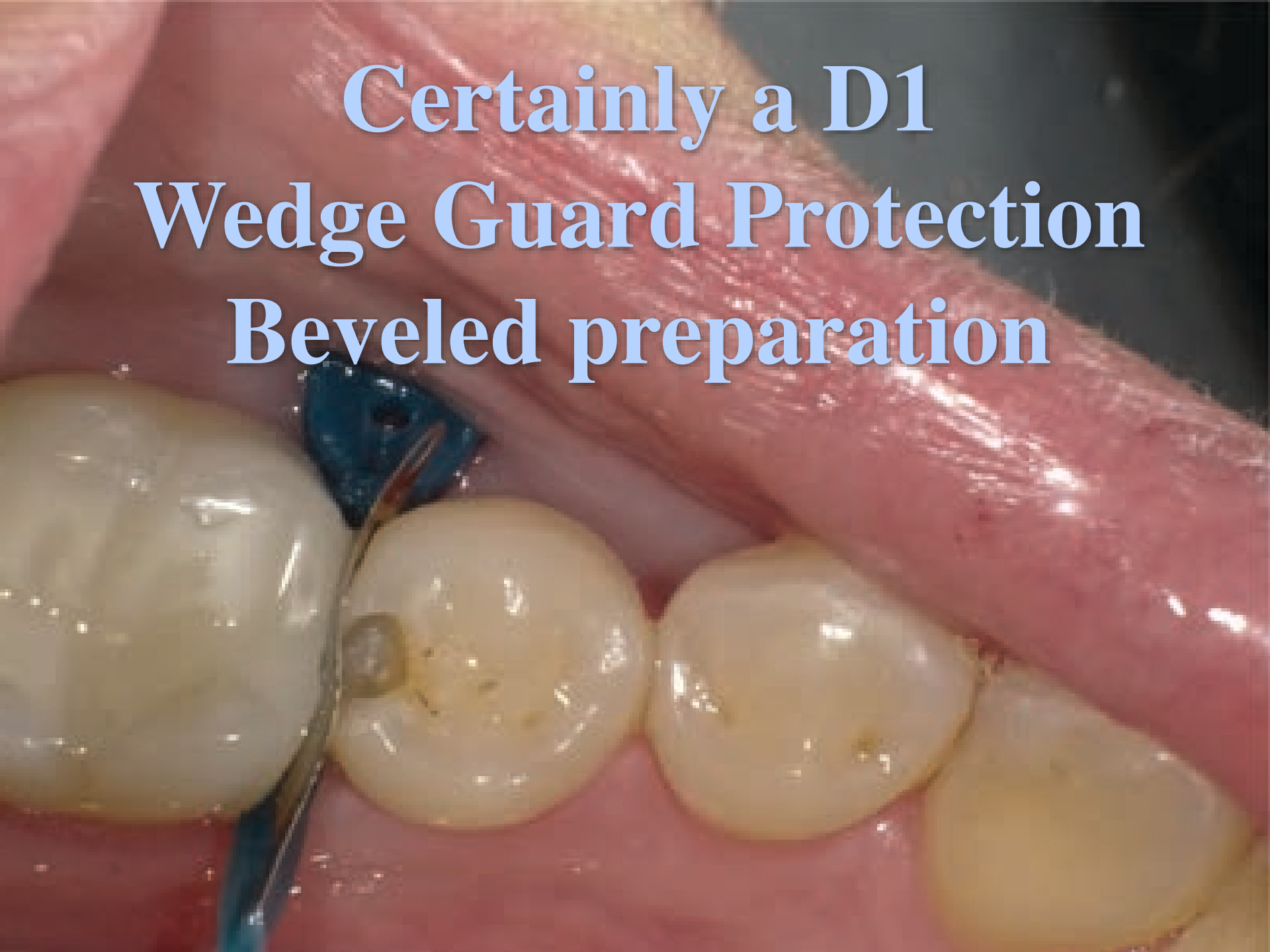


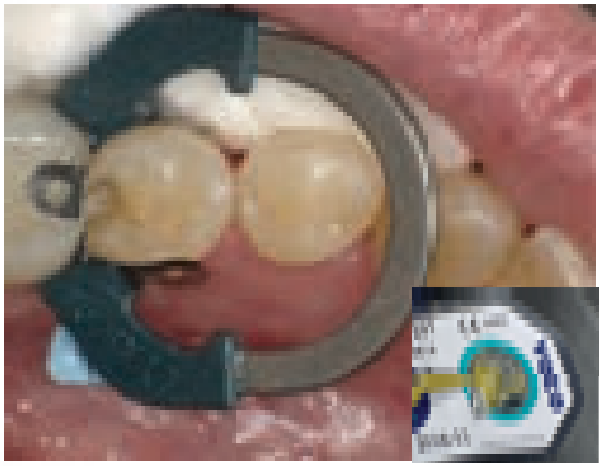
Why CariVu has become part of my recall visits



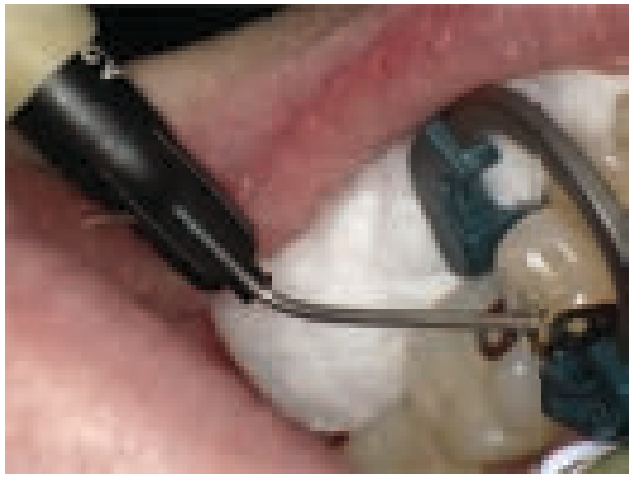


From 2014…faint sign on 20 distal, nothing really in 2015…but now we have CariVu in each room

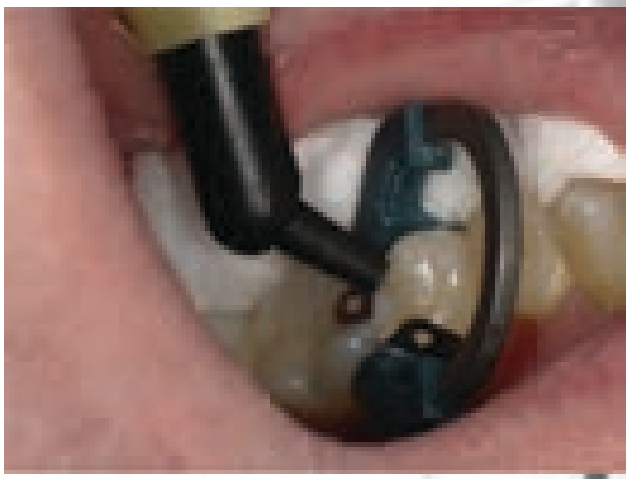

Certainly a D1
Wedge Guard Protection
Beveled preparation



Futurabond U
Universal Bonding Agent
Hybrid Layer



X-tra Base
Low Stress
Bulk Fill Flowable
(SDR type material)

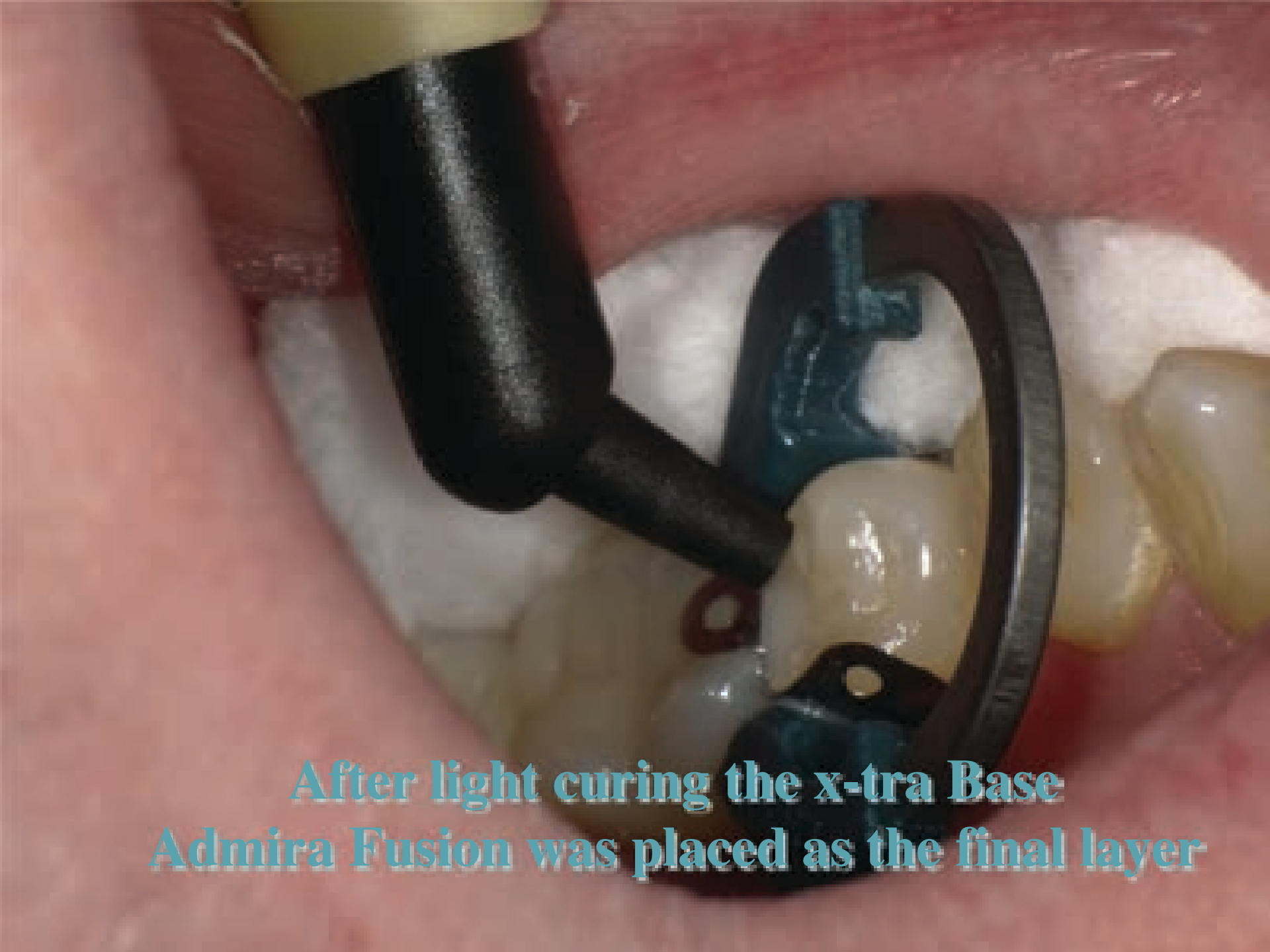


Admira Fusion A2
LowStress
Low Shrink

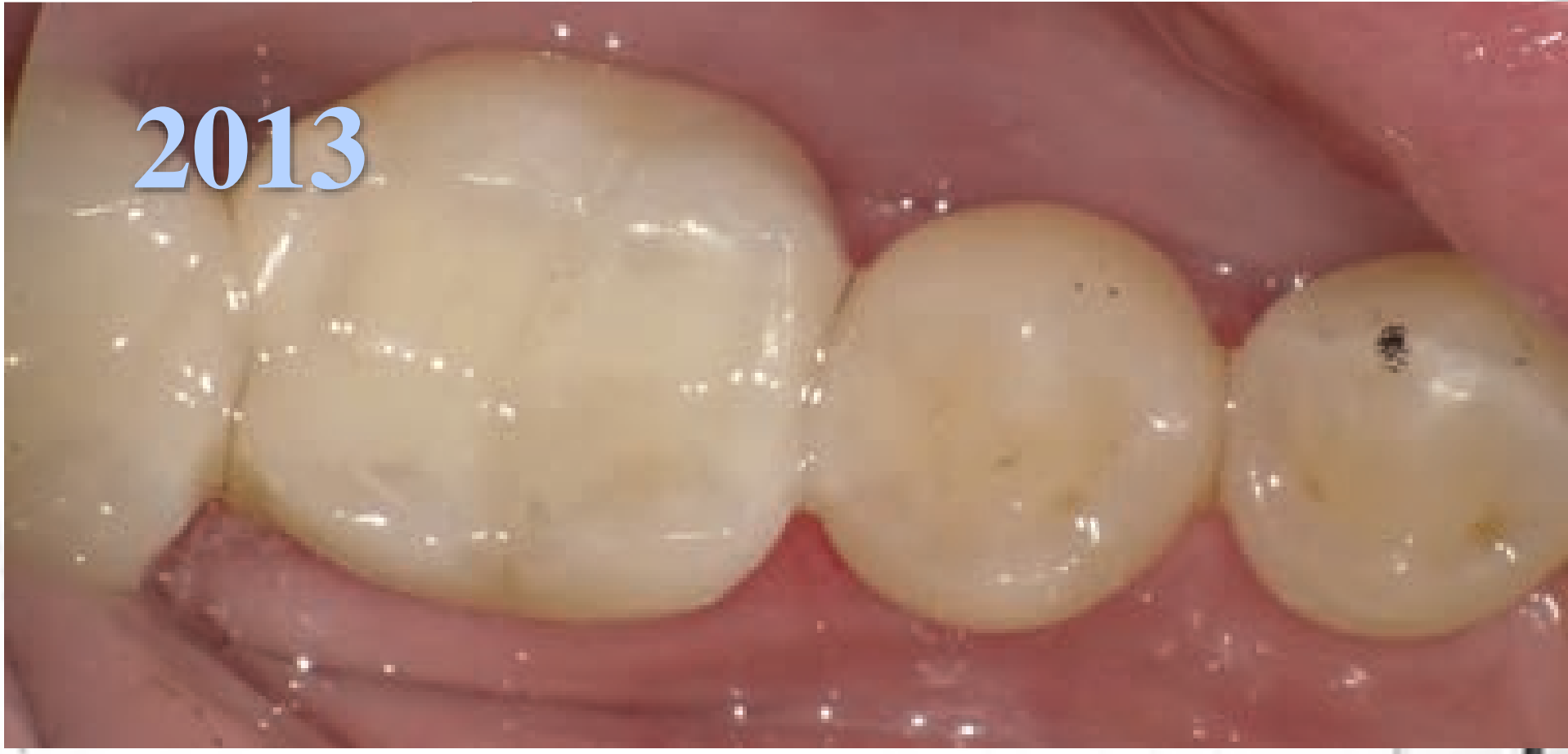
Futurabond U
X-tra base
Admira Fusion


Beveled preparation
Did not break full Buccal contact
Did NOT prep through occlusal fissure
Paladent Matrix system
Futurabond Universal


The first layer in all my class 2's
Low Stress Bulk Fill Flowables
In my office, SDR or X-tra Base or Beautifil Bulk Fill


After light curing the x-tra Base
Admira Fusion was placed as the final layer

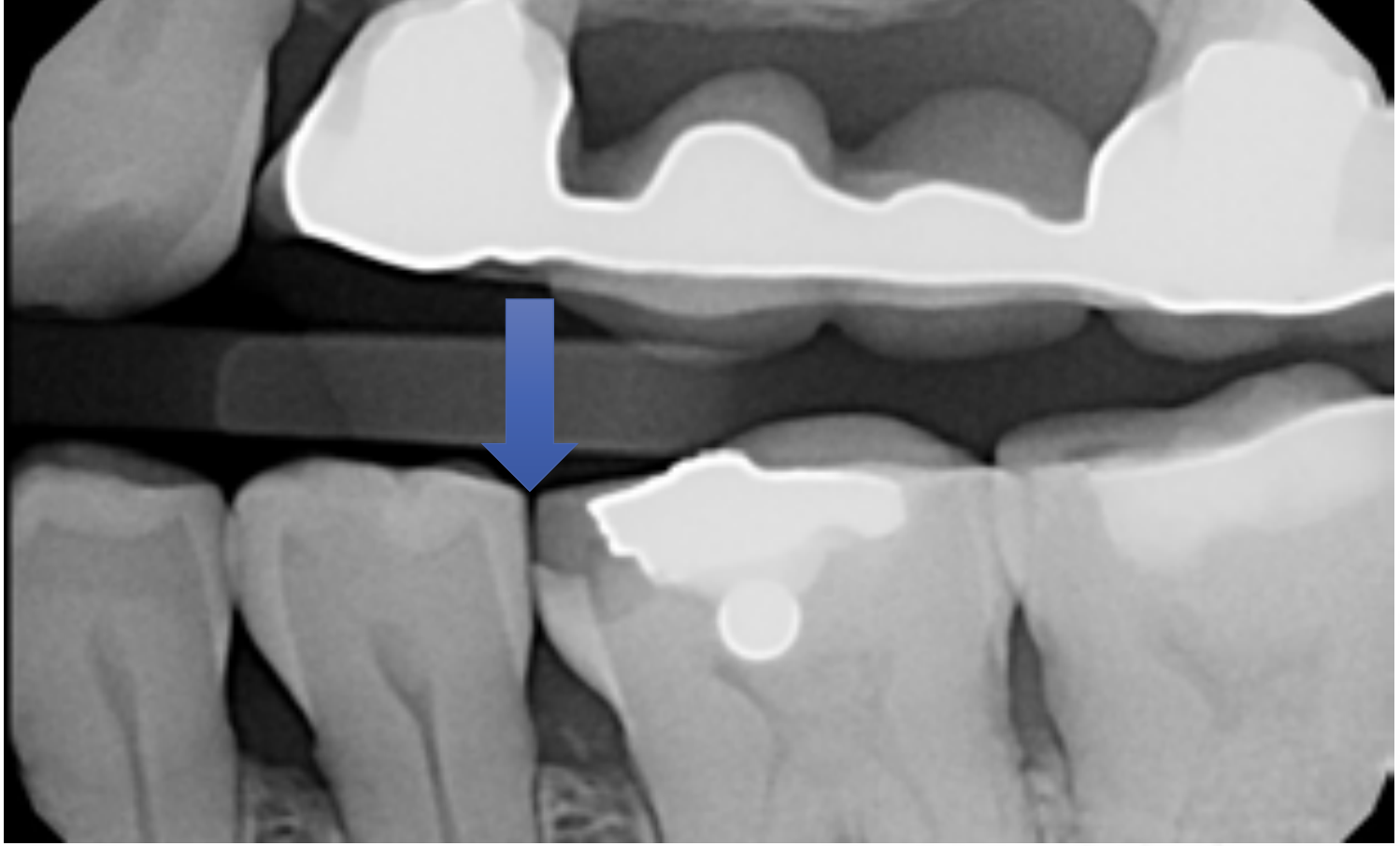

Final Polishing
Dimanto



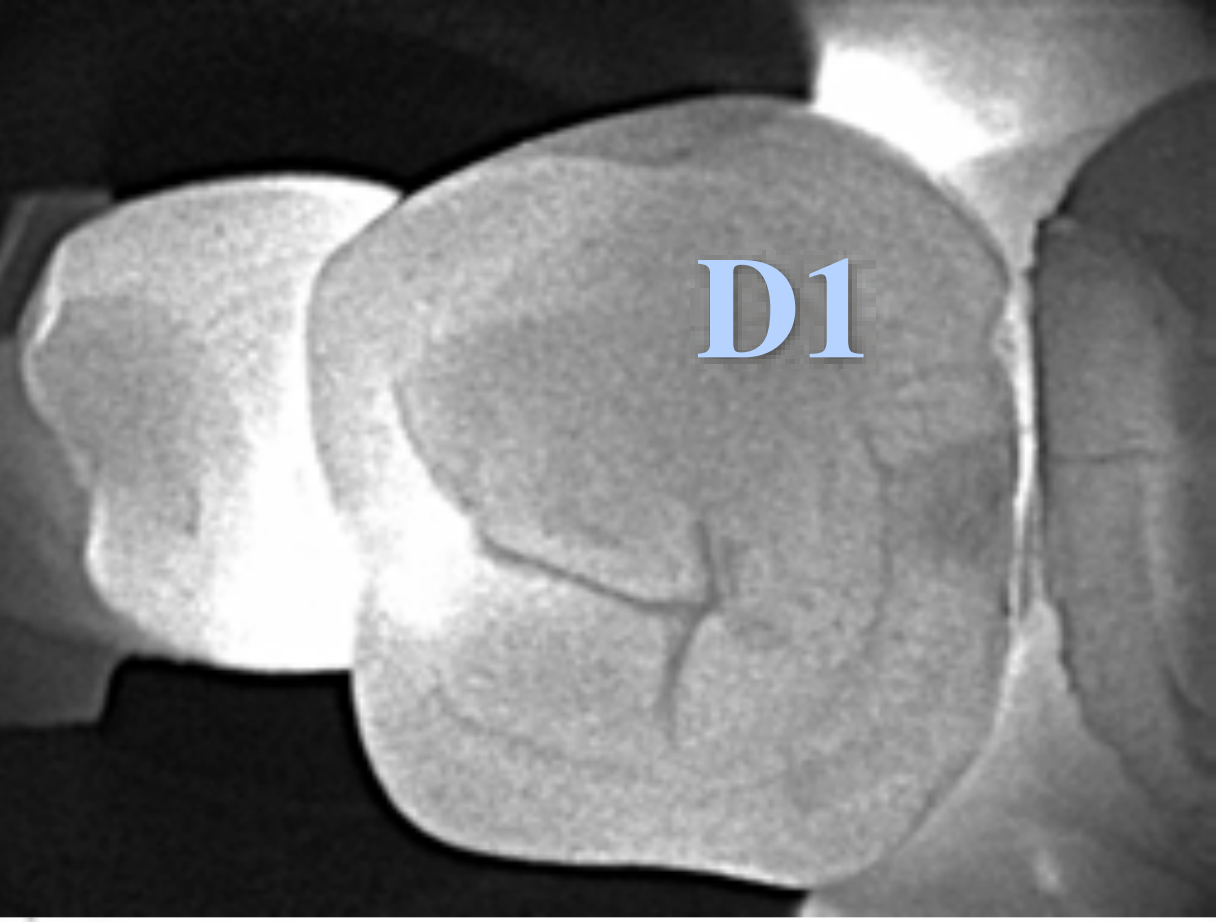
Quadrants of Composites

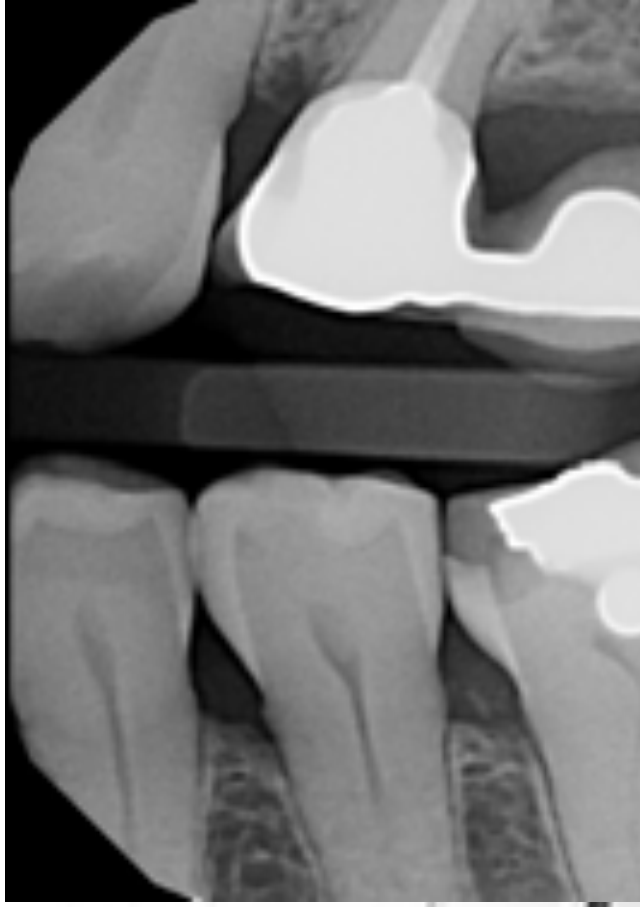
Brown Fluorosis

The classic…fractured mesio-lingual cusp with a class 2 alloy…how much time do you book? What is the expected treatment?



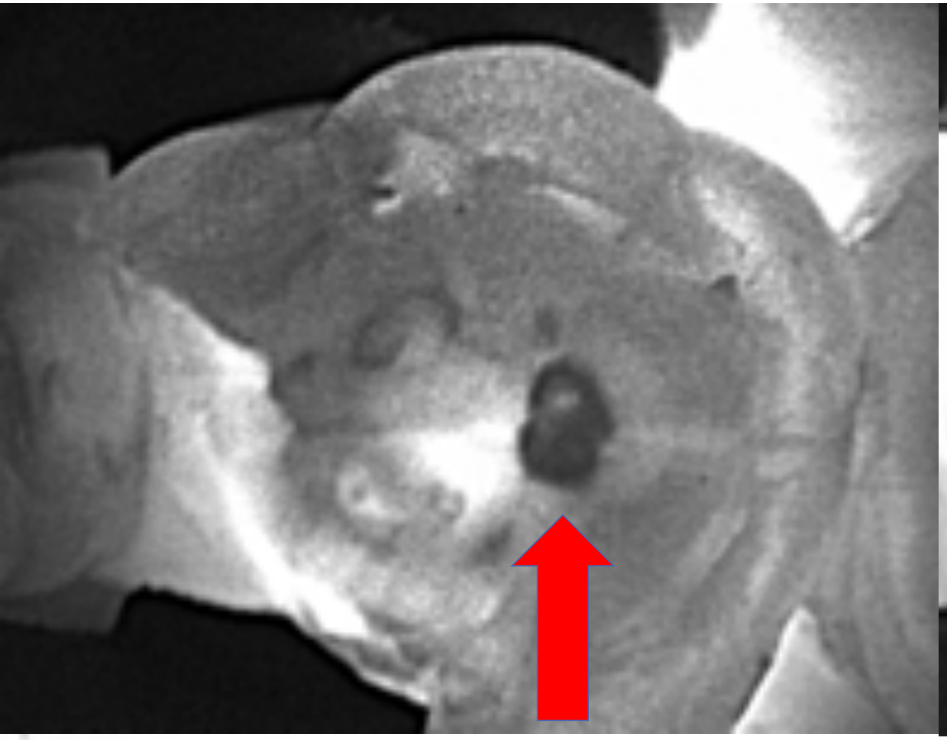
So what do you see on the x-ray?
Yes, you see a fractured old alloy, anything on 20 Distal

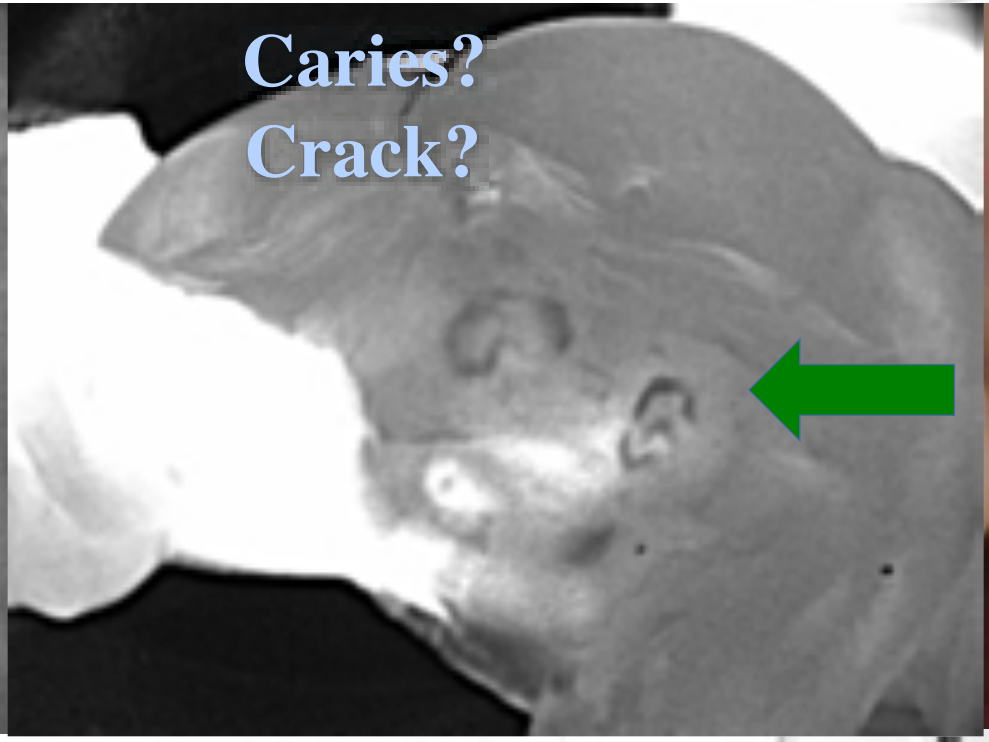




Nothing truly visible on the x-ray. But on CariVu.. Easily seen #20 with distal caries…NOW how much time do you need to complete these restorations?

I am looking at dark areas for decay and cracks

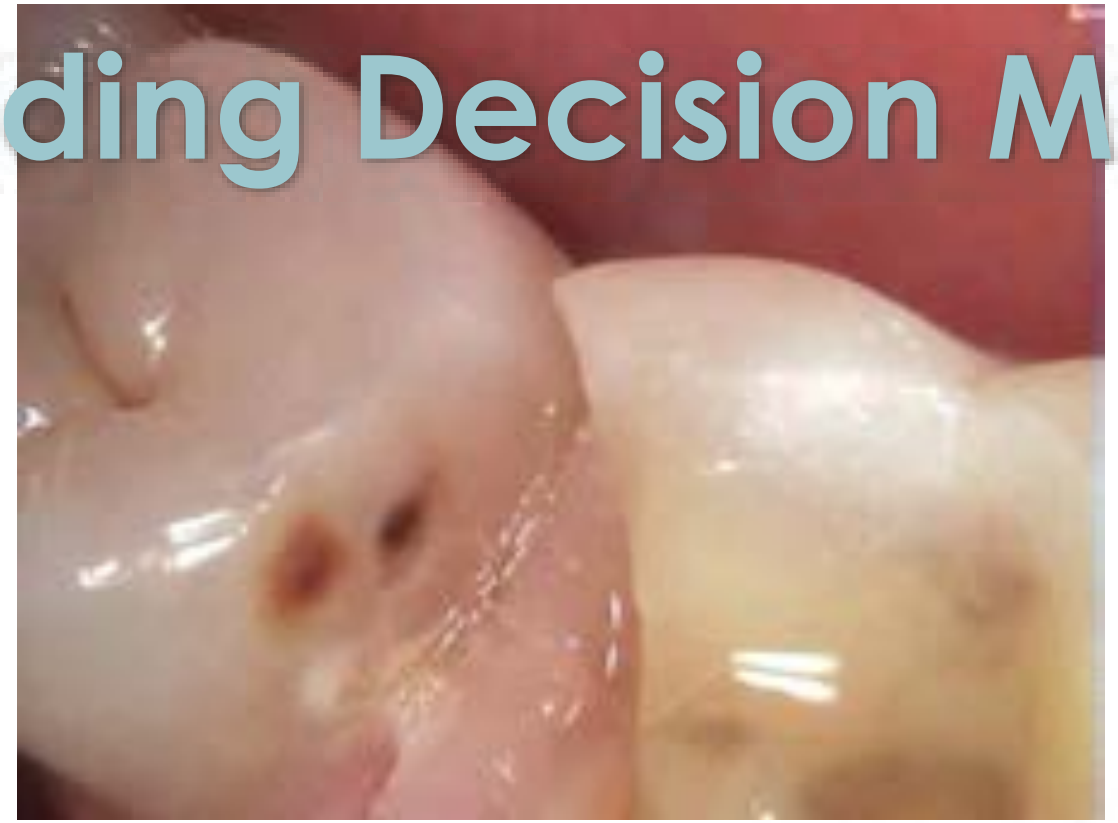




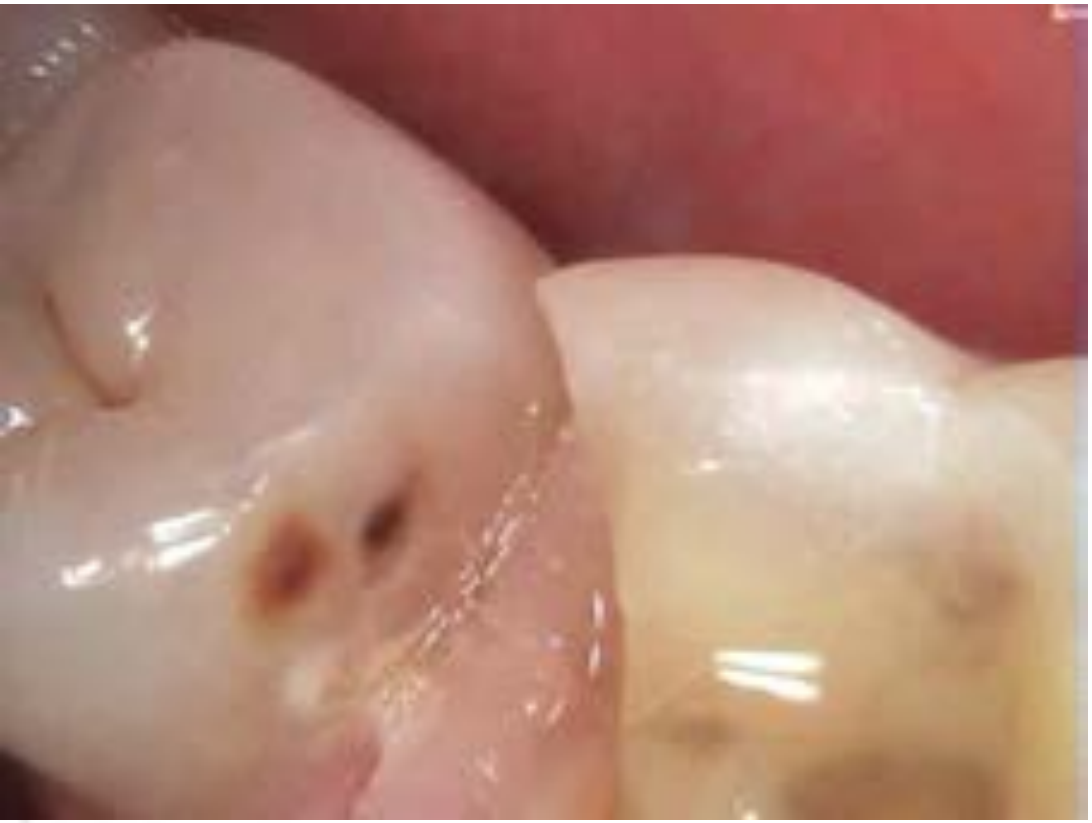
Caries Removal (arrows)and no deep crack running through the occlusal floor!.
Caries removed with
"Selective Caries Removal"

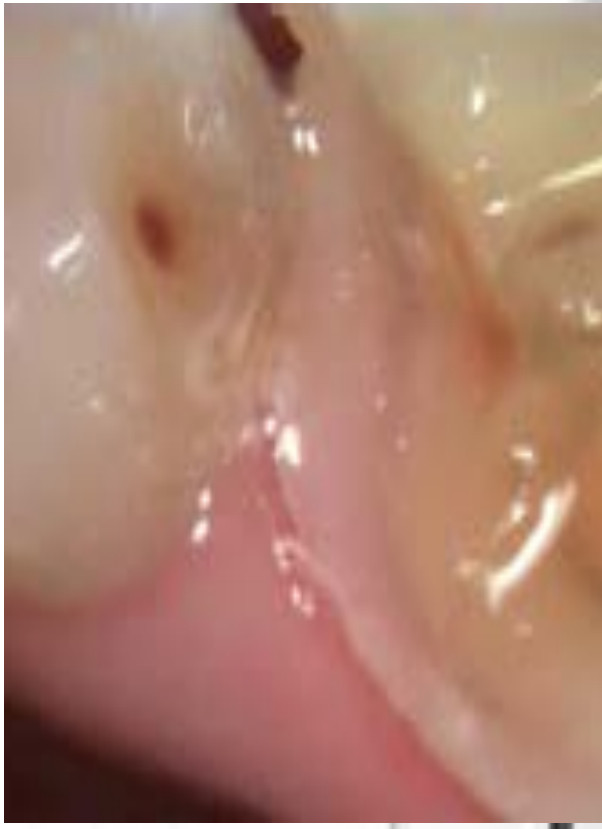
Guiding Decision Making

#20



Brown spots…Nothing on the X-ray…Do you drill? Do you ICON? Do you floss after MI Paste? Do you do nothing? CariVu guidance

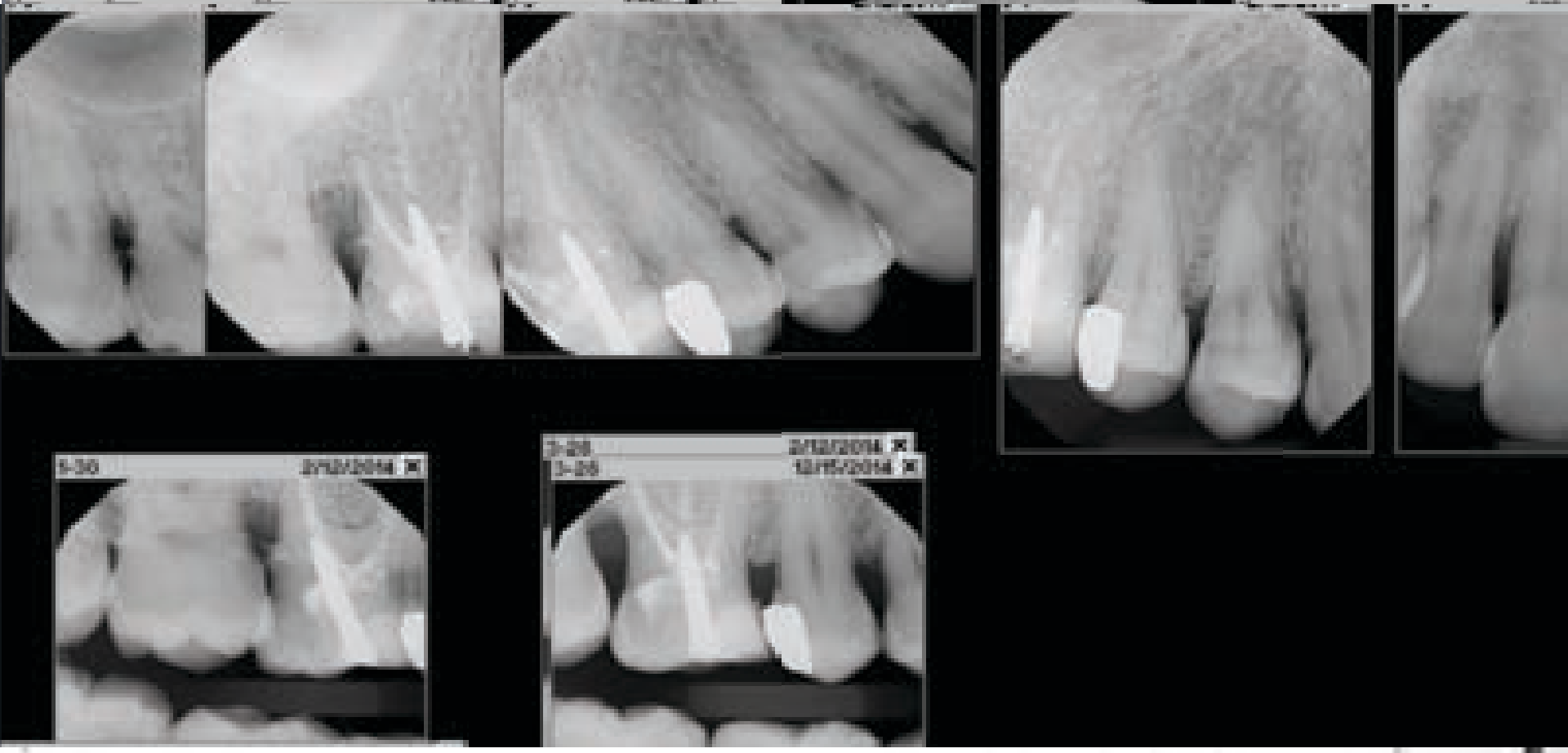




First removing the dark brown area, then as we go into the lighter brown area, the decay runs deeper. Removing the hypo-calcifications necessitated ultimately dropping a box

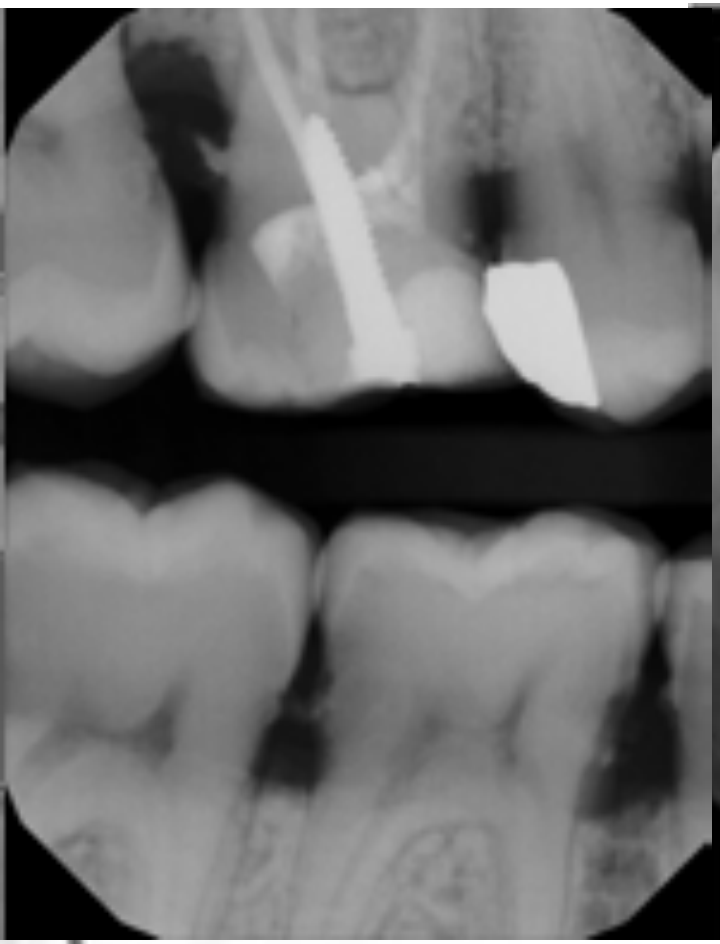
Conservative Dentistry: time efficient 60 minutes with predictability
The Approach here was total/selective etching, UBA, SDR and then Low Stress Posterior Composites
Yes…we should have done the 2nd molar too!

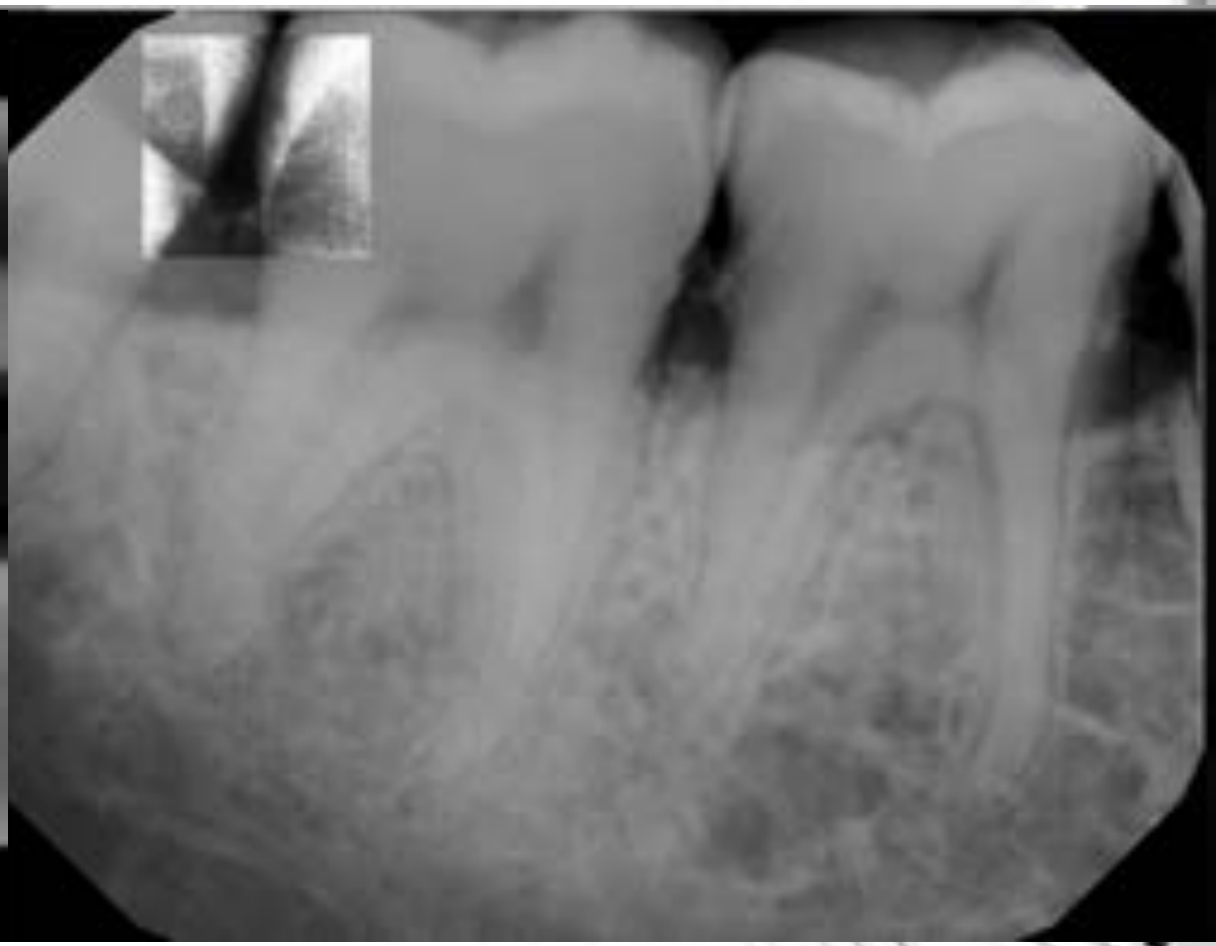
“Modern Diagnostics With the Contemporary Hygiene”



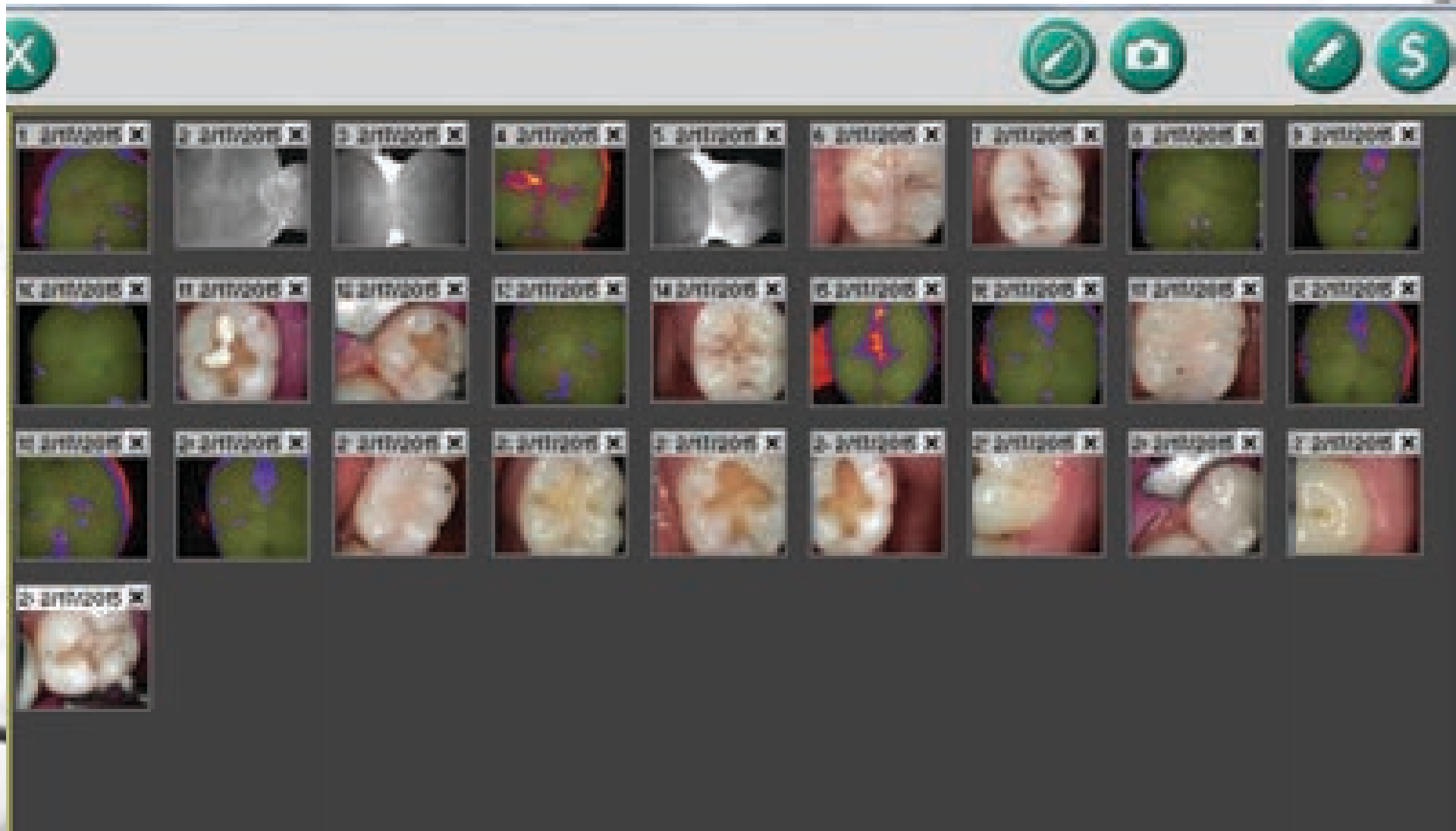
35 year old
CC my wife hates my breath
Mulitple DDS Opinions
HIS FMX

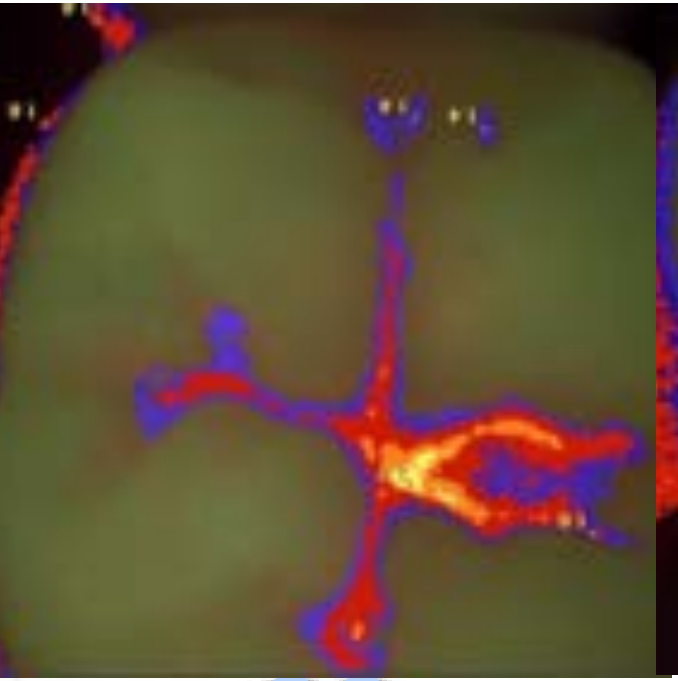
Initial examination with x-rays
Evaluating interproximal of 31/32

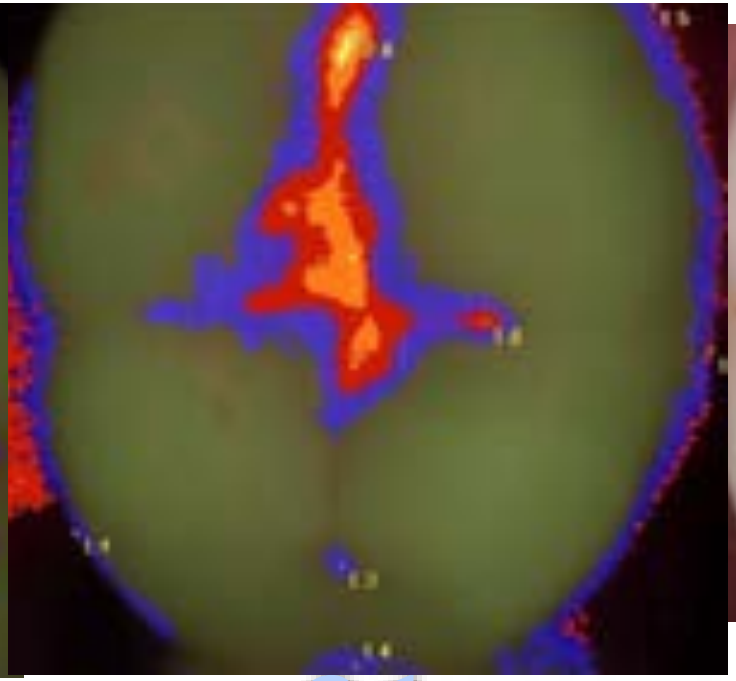


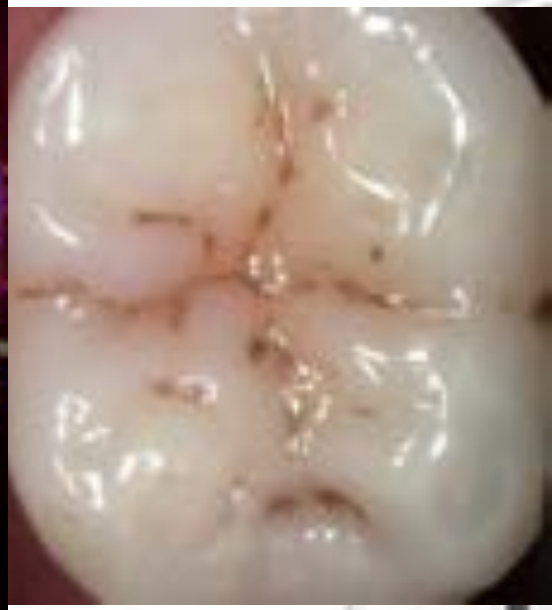


Dexis Imaging
Carivu/Spectra/Polaris Imaging









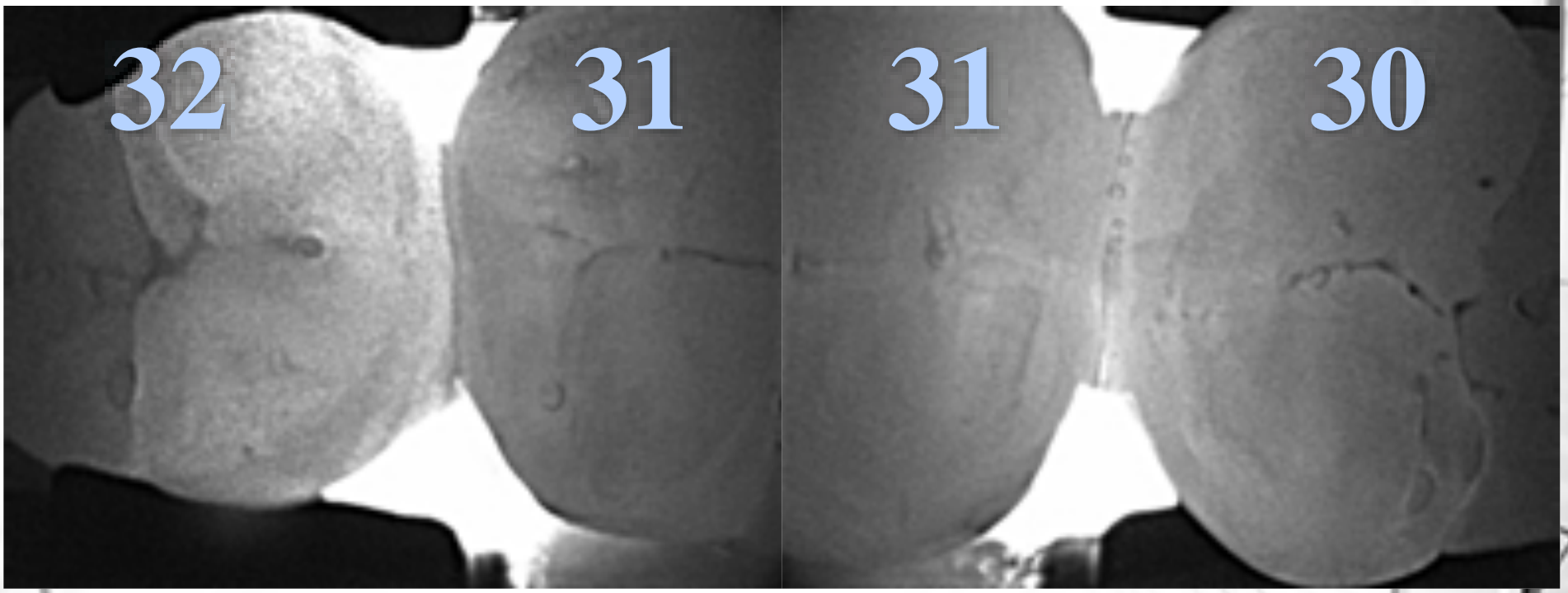
32 31 30

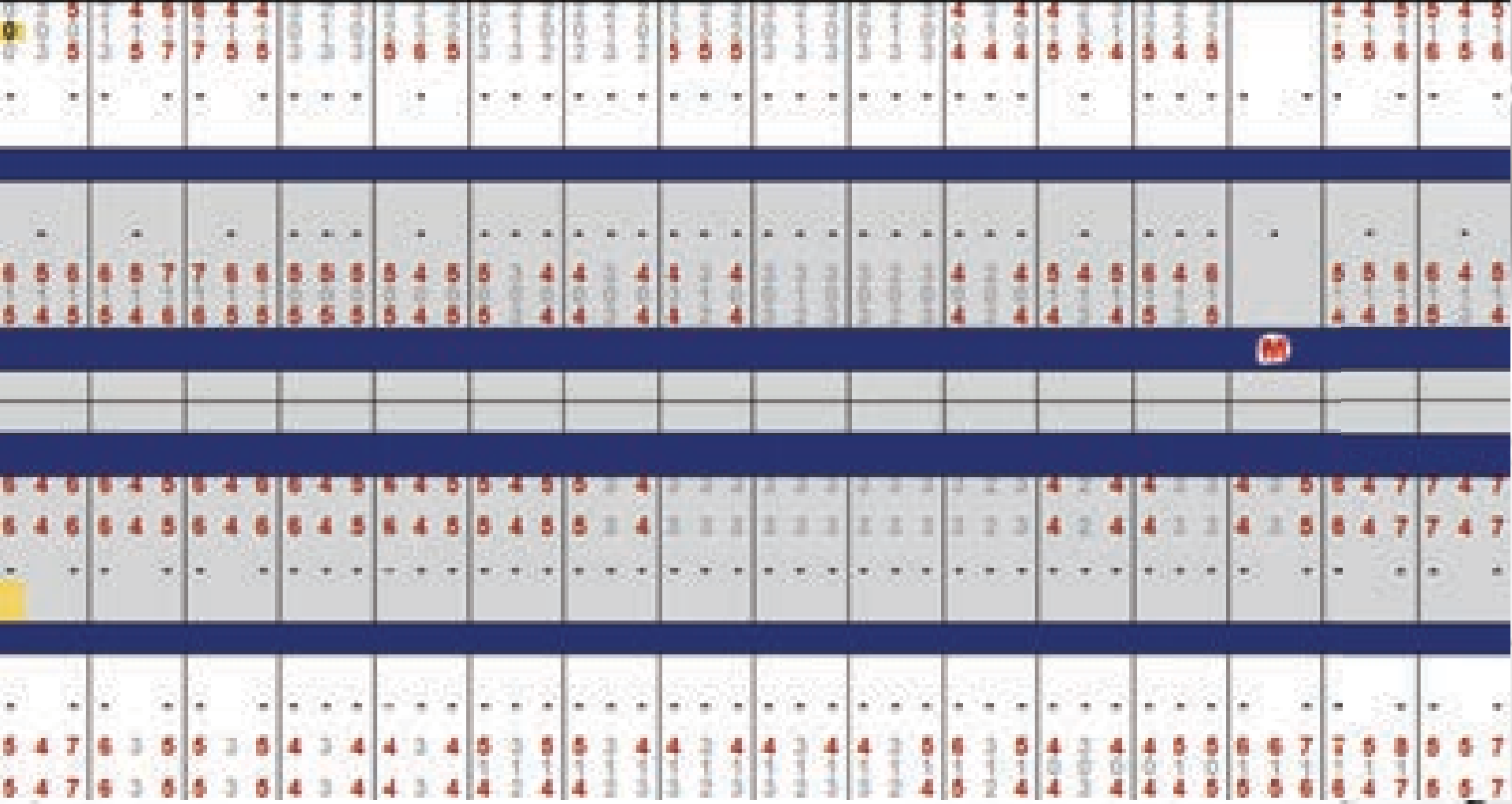
Caries with NO sticks and nothing on the x-rays

What do you do?

Spectra images

Carivu images showing NO Interproximal lesions





His periodontal exam :
Over 100 bleeding pockets

Date	Tooth	Surface	Code	Provider	Description	N	R	D	M	Status
03/20/2014	UR		D4341	HCT1	Perio scale & rt pl per quad					C
10/20/2014			D4911	LSG1	Perio Trays					
10/20/2014			D4911	LSG1	Perio Trays					
10/20/2014			D6973	LSG1	Core buildup for retain.inc pin					
10/20/2014	1	O.	D2391	LSG1	Resin composite-1s, posterior					
10/20/2014	3		D6740	LSG1	Crown-porcelain/ceramic					
10/20/2014	4	OD.	D2392	LSG1	Resin composite-2s, posterior					TP
10/20/2014	12	OD	D2392	LSG1	Resin composite-2s, posterior					TP
10/20/2014	15		D2391	LSG1	Resin composite-1s, posterior					TP
10/20/2014	16	O.	D2391	LSG1	Resin composite-1s, posterior					TP
10/20/2014	18	O.	D2391	LSG1	Resin composite-1s, posterior					TP
10/20/2014	31	O	D2391	LSG1	Resin composite-1s, posterior					TP
10/20/2014	32	O.	D2391	LSG1	Resin composite-1s, posterior					TP
11/10/2014			00012	LSG1	Delivery					C
11/17/2014	LL		D4341	HSP1	Perio scale & rt pl per quad					C
12/01/2014	LR		D4341	HSP1	Perio scale & rt pl per quad					C
12/08/2014			00078	RET1	PerioGel					C
12/08/2014	UR		D4341	HSP1	Perio scale & rt pl per quad					C
12/15/2014	3	MOBL	D2394	LSG1	Resin composite-4+s, posteri..					C
12/15/2014	4	DOB	D2393	LSG1	Resin composite-3s, posterior					C
12/16/2014	12	DOBL	D2394	LSG1	Resin composite-4+s, posteri..					C
12/16/2014	13	M	D2391	LSG1	Resin composite-1s, posterior					C
01/28/2015			000157	RET1	Perogel					C
01/28/2015			D4910L	HSP1	Laser Assit Periodontal Ther..					C
02/17/2015	30	OB	D2392	LSG1	Resin composite-2s, posterior					C
02/17/2015	31	OB	D2392	LSG1	Resin composite-2s, posterior					C
02/17/2015	32	O	D2391	LSG1	Resin composite-1s, posterior					C

Treatment Plan after Initial Exam, FMX Initial Debridement

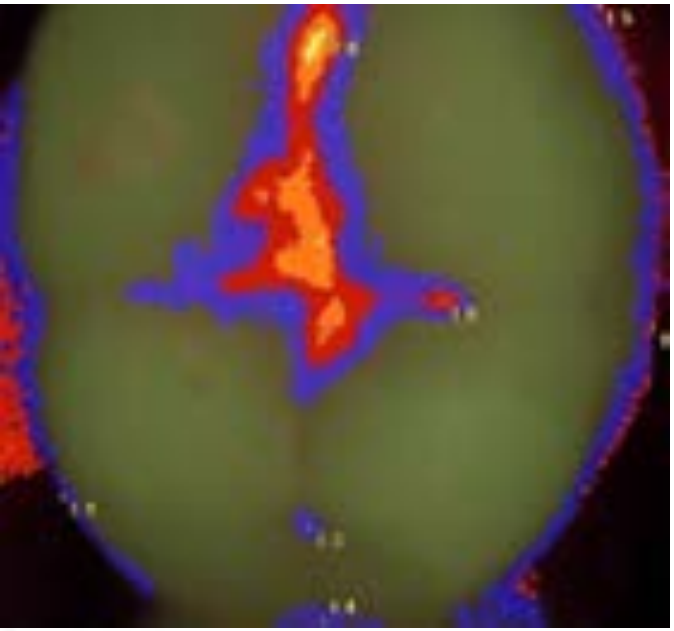
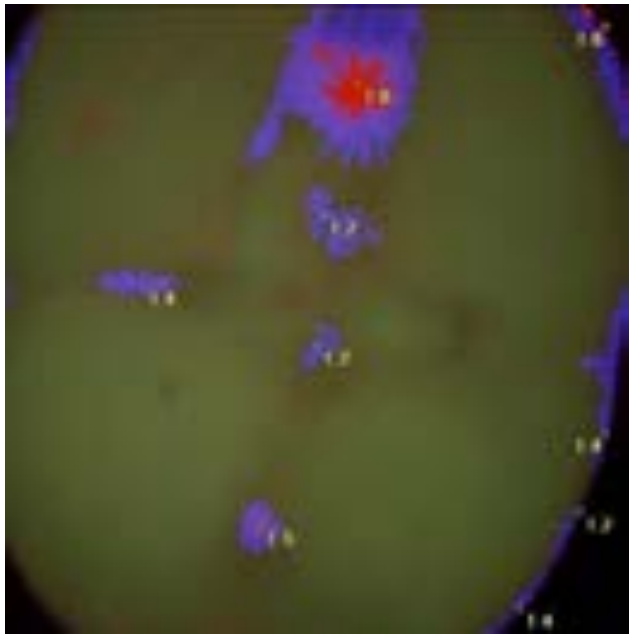
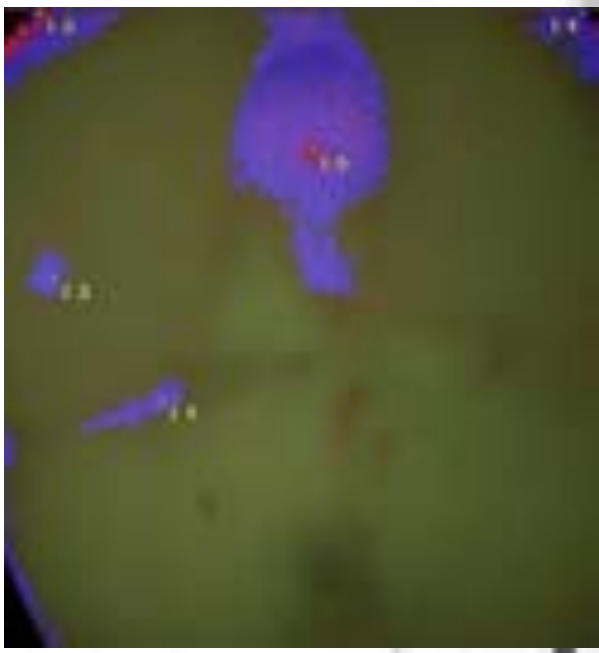
1330 REVIEW OF ORAL HYGIENE
0180 COMPREHENSIVE PERIODONTAL EXAM
Dental History and Medical History
Potential DNA, Genetic, Saliva Testing, Occlusal Evaluation, Restorative Evaluation, Sensitivity

First Visit
4355
Full Mouth Debridement with laser in decontamination setting
Power Brush/OHI and Perio Protect Impressions

2nd Visit (assistant)
Delivery of Perio Protect Trays 2 weeks later
2-3 times a day prior to treatment (10-15min) for 2 weeks
3rd and 4th Visit
Therapies 2 and 3
Full Mouth Scaling and Planning with Laser

5th Visit
Re-debride the areas treated that have deep pockets, these do not have to be in the same quadrant, use laser in either decontamination mode or debridement and one can apply Arestin at this point (but if they have Perio Protect we don't)

Re-evaluation 6 weeks later…NO probing for 3-6 months

31

Caries removal with Spectra as guidance “off label” but….

After deep caries removal its all about protecting the pulp

Over 4 years ago we were challenged with a ‘Game Changer” called Theracal and it has been adopted by thousands

TheraCal LC…one of my favorite products

Protecting the Pulp

Clinical Research

Int Endod J. 2013 Jun;46(6):571-6. doi: 10.1111/j.1365-2591.2012.02013.x. Epub 2012 Mar 31.

Chemical-physical properties of TheraCal, a novel light-curable MTA-like material for pulp capping.

Gandolfi MG, Siboni F, Prati C.

Author information

Abstract

AIM: To evaluate the chemical-physical properties of TheraCal, a new light-curable pulp-capping material composed of resin and calcium silicate (Portland cement), compared with reference pulp-capping materials (ProRoot MTA and Dycal).

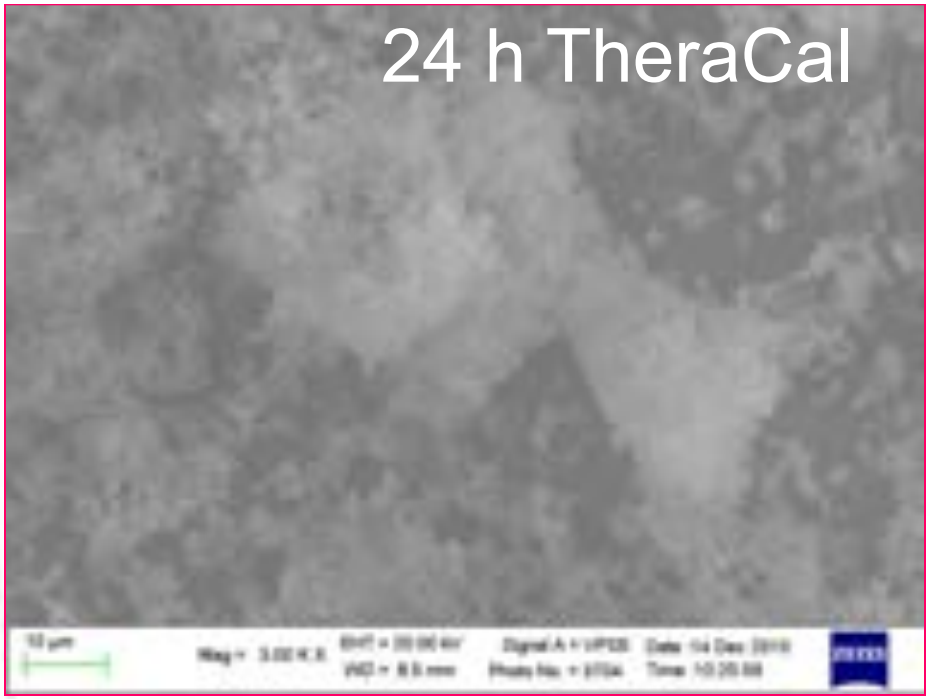
METHODOLOGY: Calcium (Ca) and hydroxyl (OH) ion release over 28 days, solubility and water uptake (weight percentage variation, Δ%) at 24 h, cure depth and radiopacity of TheraCal, ProRoot MTA and Dycal were evaluated. Statistical analysis ($P < 0.05$) of release of ion was carried out by two-way repeated measures anova with Tukey, whilst one-way anova with Tukey test was used for the other tests.

RESULTS: TheraCal released significantly more calcium than ProRoot MTA and Dycal throughout the test period. TheraCal was able to alkalinize the surrounding fluid initially to pH 10-11 (3 h-3 days) and subsequently to pH 8-8.5 (7-14 days). TheraCal had a cure depth of 1.7 mm. The solubility of TheraCal (Δ-1.58%) was low and significantly less than that of Dycal (Δ-4.58%) and ProRoot MTA (Δ-18.34%). The amount of water absorbed by TheraCal (Δ +10.42%) was significantly higher than Dycal (Δ +4.87%) and significantly lower than ProRoot MTA (Δ +13.96%).

CONCLUSIONS: TheraCal displayed higher calcium-releasing ability and lower solubility than either ProRoot MTA or Dycal. The capability of TheraCal to be cured to a depth of 1.7 mm may avoid the risk of untimely dissolution. These properties offer major advantages in direct pulp-capping treatments.

TheraCal LC

- The monomers are very hydrophilic as they interact with tubular fluid allowing the release of calcium to create new appatite
- It's the Calcium exchange that allows the remineralization
- There is NO fluoride
- TheraCal insulates from heat greater than other liners



IADR 2011 Abst. #2520 Gandolfi et al. Apatite-forming ability of TheraCal pulp-capping material

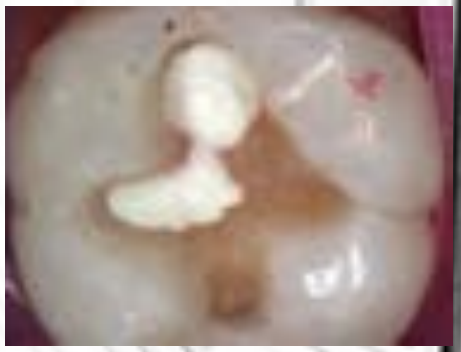
Why is the alkalinity of TheraCal important to dentin healing?

- **The hydroxide ion release through TheraCal creates an alkaline (basic) pH. Alkalinity creates an antibacterial environment which is important in promoting wound healing.**

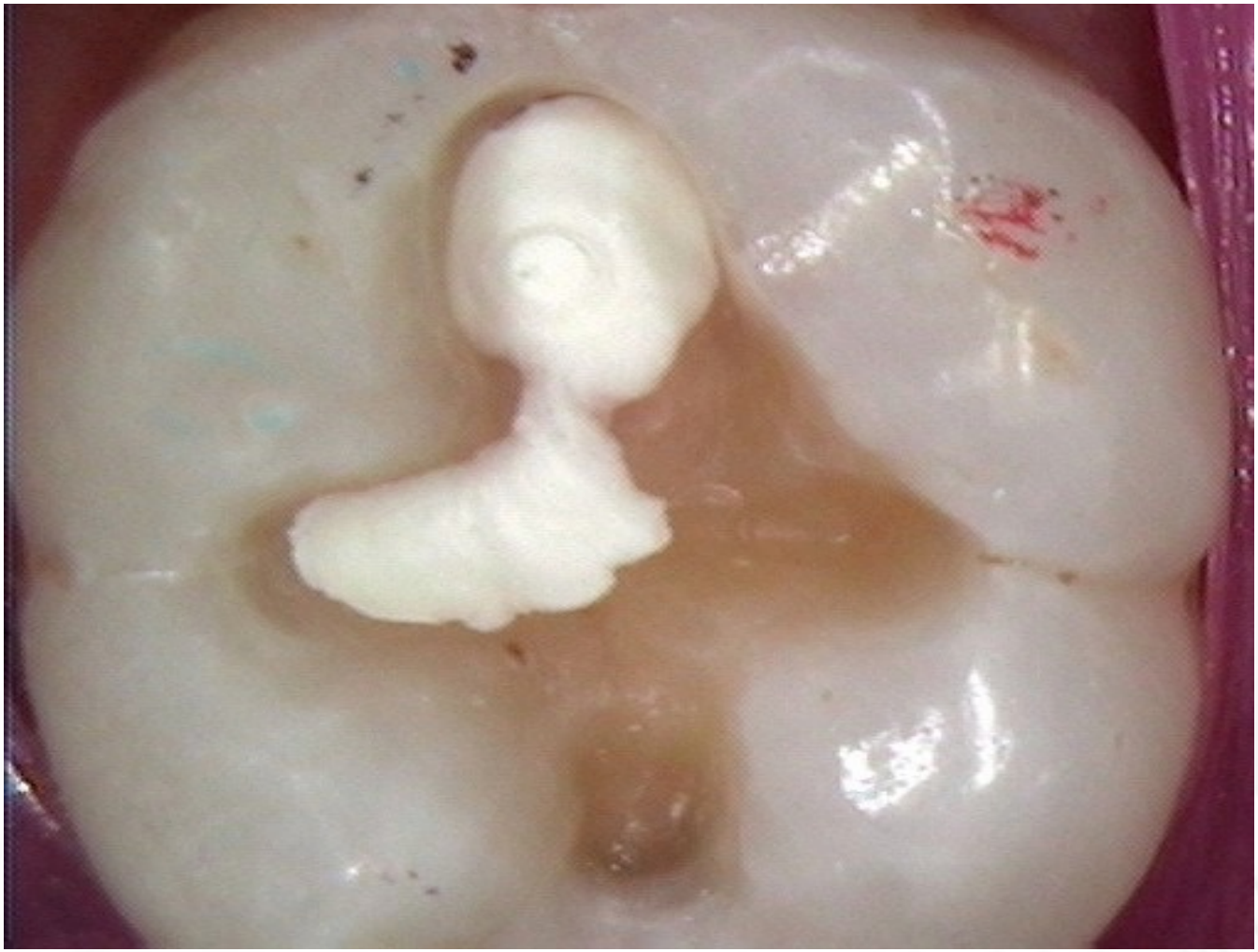
- **Gandolfi MG, Suh B, Siboni F. Chemical-physical properties of TheraCal pulp capping material. Presented at: International Association of Dental Research (IADR). March 18, 2011; San Diego, CA. Abstract #2521.**
- ***Mineral Trioxide Aggregate, Comprehensive Literature Review, Journal of Endodontics, March 2010***

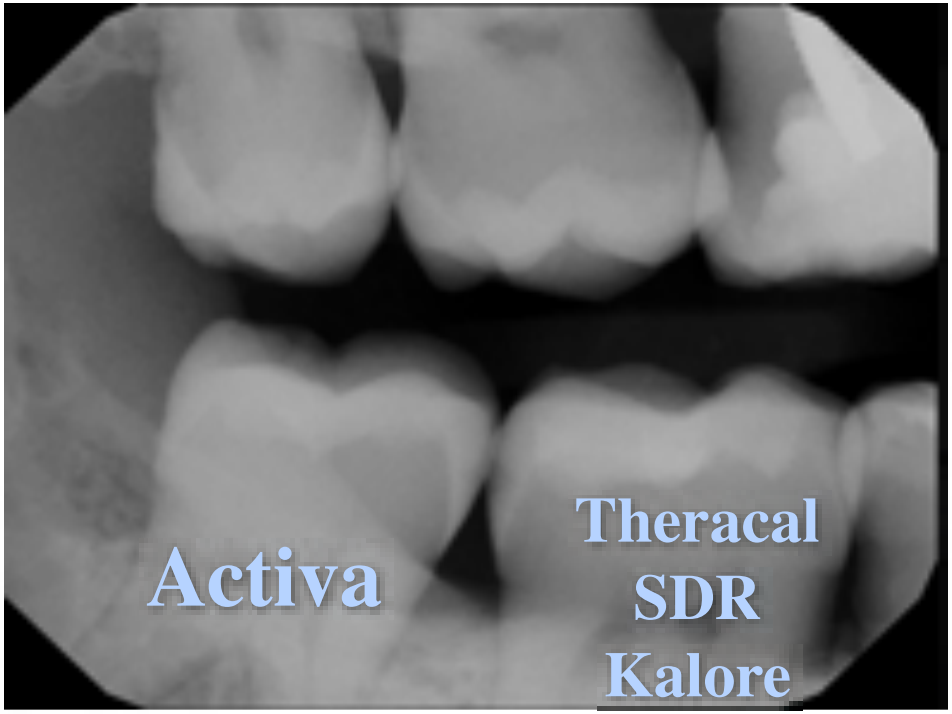
For a Direct Restoration: The Indirect Pulp Cap….commonly referred to as the liner

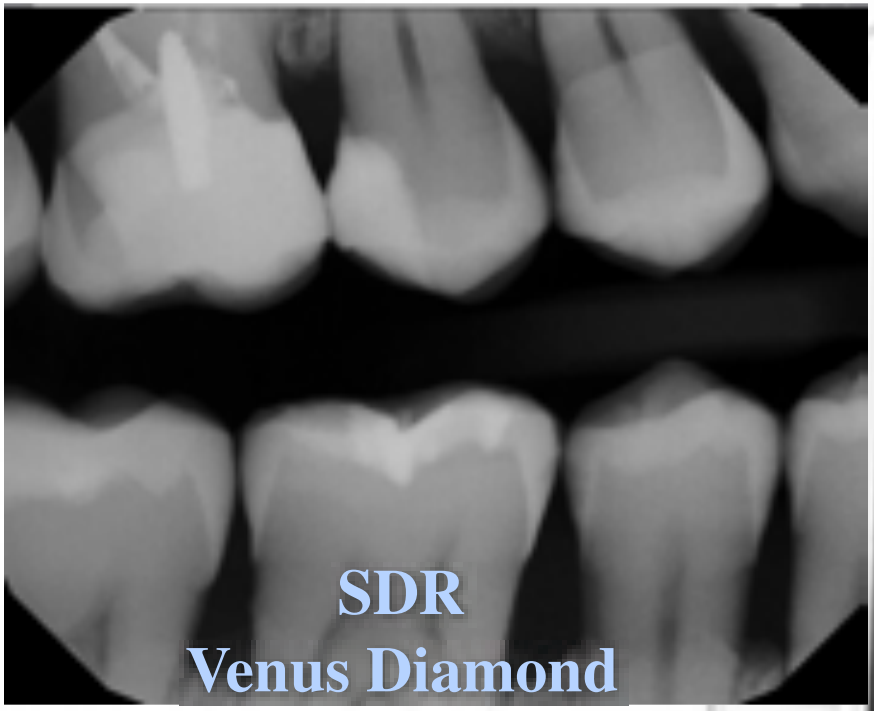
- 2% Chlorhexidine for 30 to 60 seconds or NaHypochlorite, or Ozone,
- Rinse…suction or blot dry
- LEAVE MILDLY MOIST (Technique Tip: Dip a micro-brush in a dappen dish with water, then remove excess via micro-brush or scrub a small amount first and then reapply
- Place TheraCal and light cure for 20 seconds at least
- No more than 1mm in thickness
- One can re-prep excess away once light cured
- Then etch, bond and complete restoration



Theracal liner





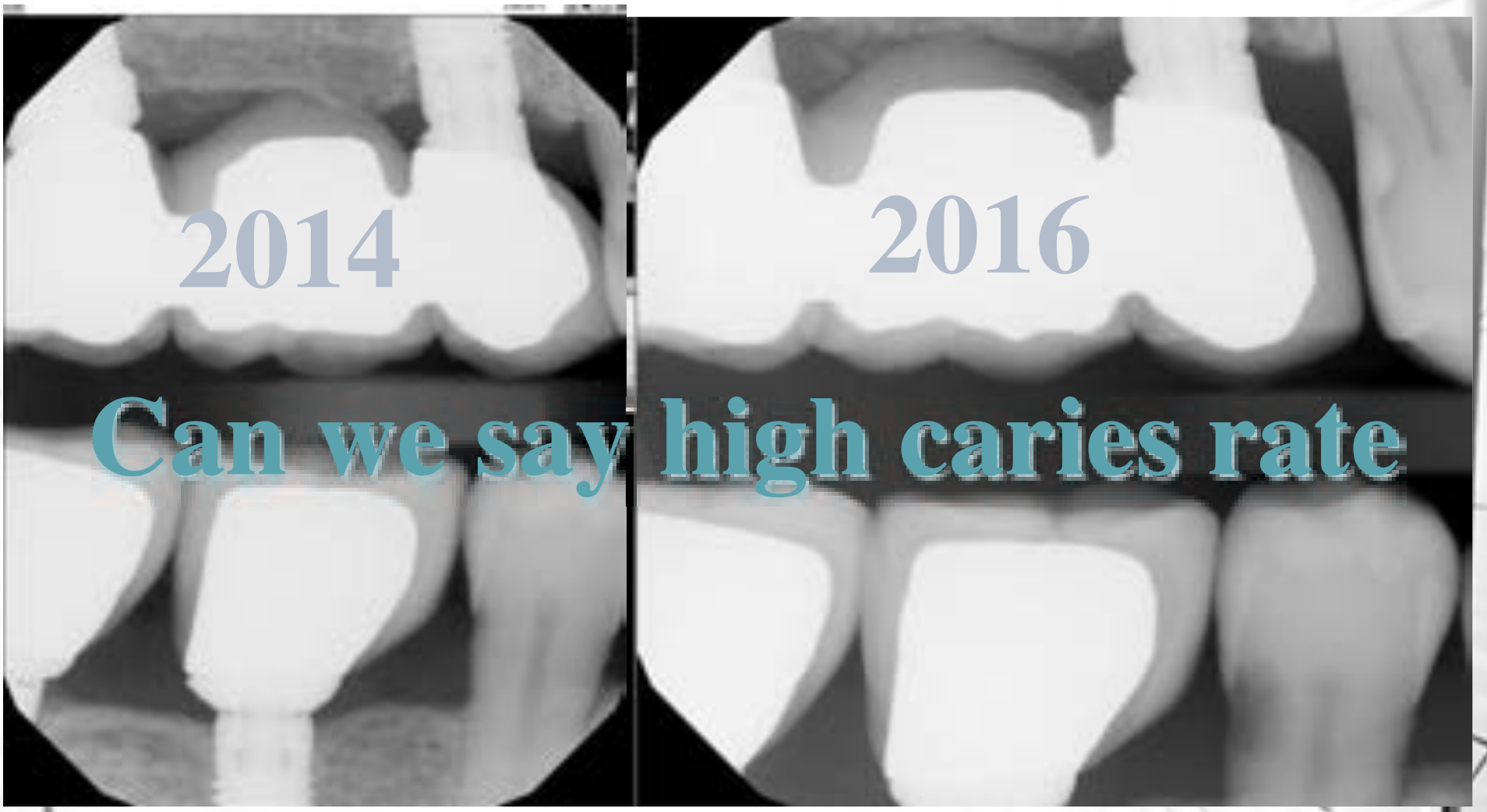


After 2 visits of S/P with Lasers
PP trays before, during and maintenance
Conservative Direct Dentistry


Perio/Restorative
Conservative
Dentistry

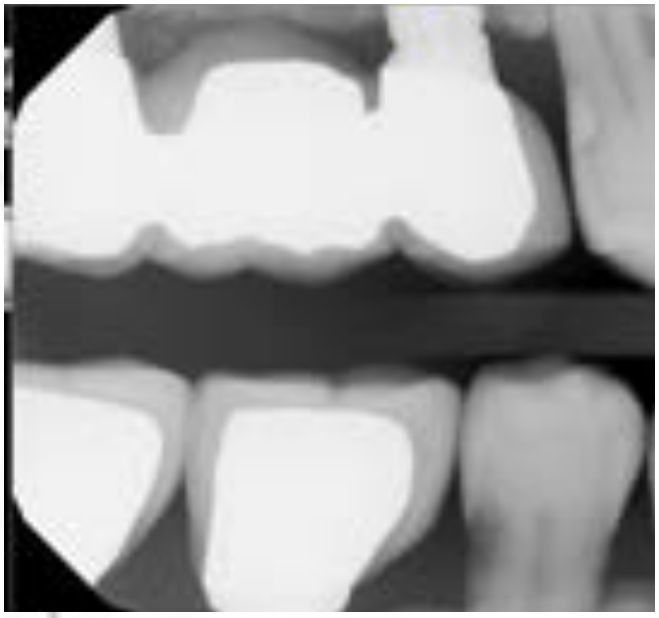
Normal tissue response seen at recall visits

Challenge Type Cases


2014
2016
Can we say high caries rate


Truly nothing visible

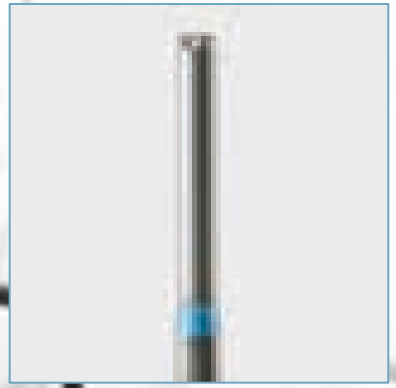
The Challenges of "Conservative Dentistry"



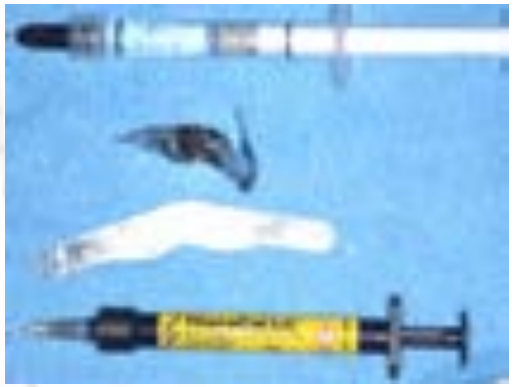
- How would approach this? Laterally or occlusally?
- How do you remove the excess tissue?
- How do you isolate the gingival box and get a great emergence?
- How do you then get a great contact?
- How do you protect the pulp?
- How do you do selective caries removal?
- How does a wedge…wedge against an implant? It's not that easy!
- DO you really charge a 2 surface for this?

Step 1 Tissue and Tooth Preparation

- After utilizing the Picasso Lite at 1.8 watts at a continual pulse and an activated tip to remove excess tissue
- We evaluated the lesion laterally and found the decay extended coronally and hence decided to drop a ‘box”
- Utilizing the Komet Cerabur for final caries removal at 1500 prms
- Final Preparation finishing with end cutting diamond and “mosquito” bur to open interproximals

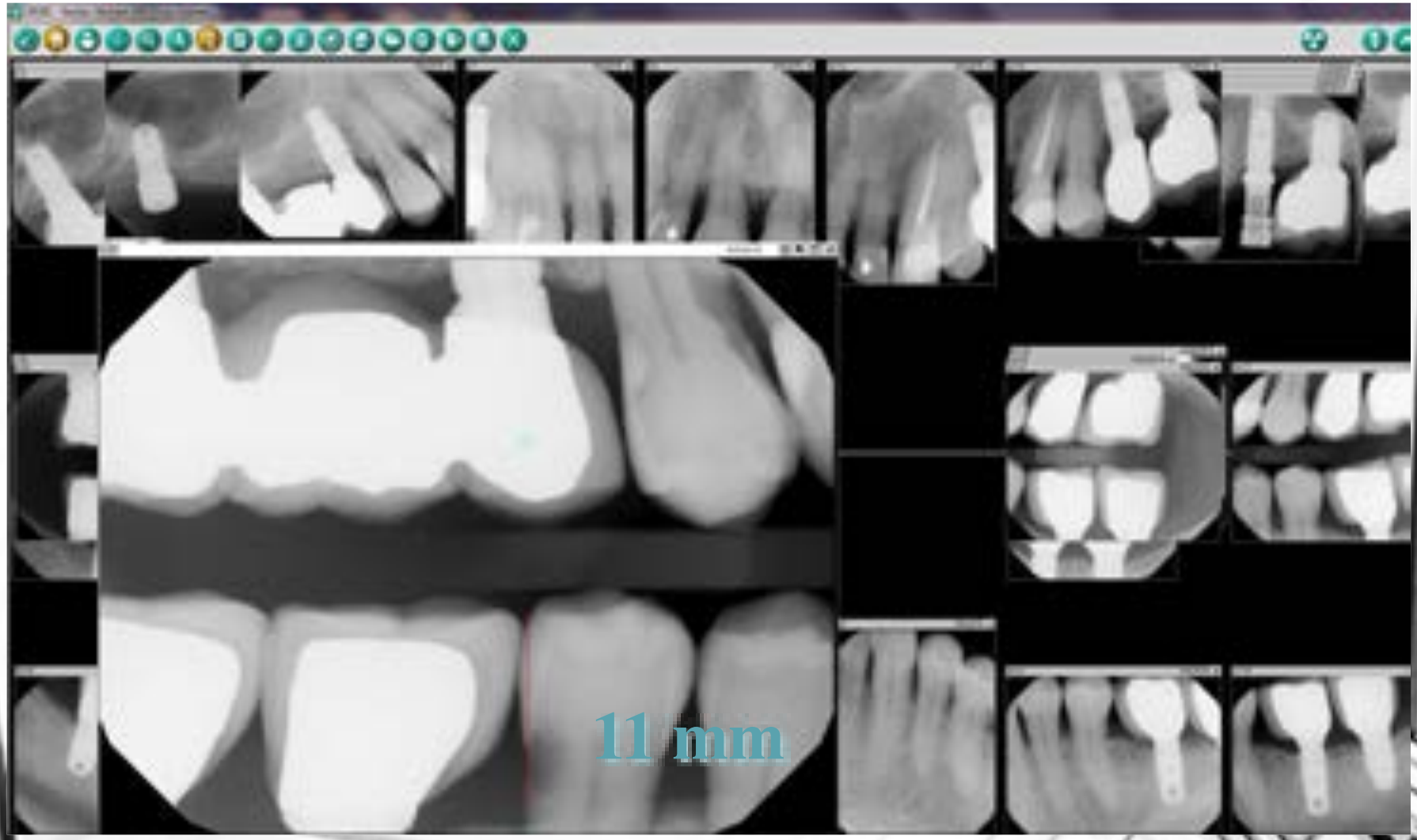


Step 2….Protect the Pulp and Creating the gingival box seal



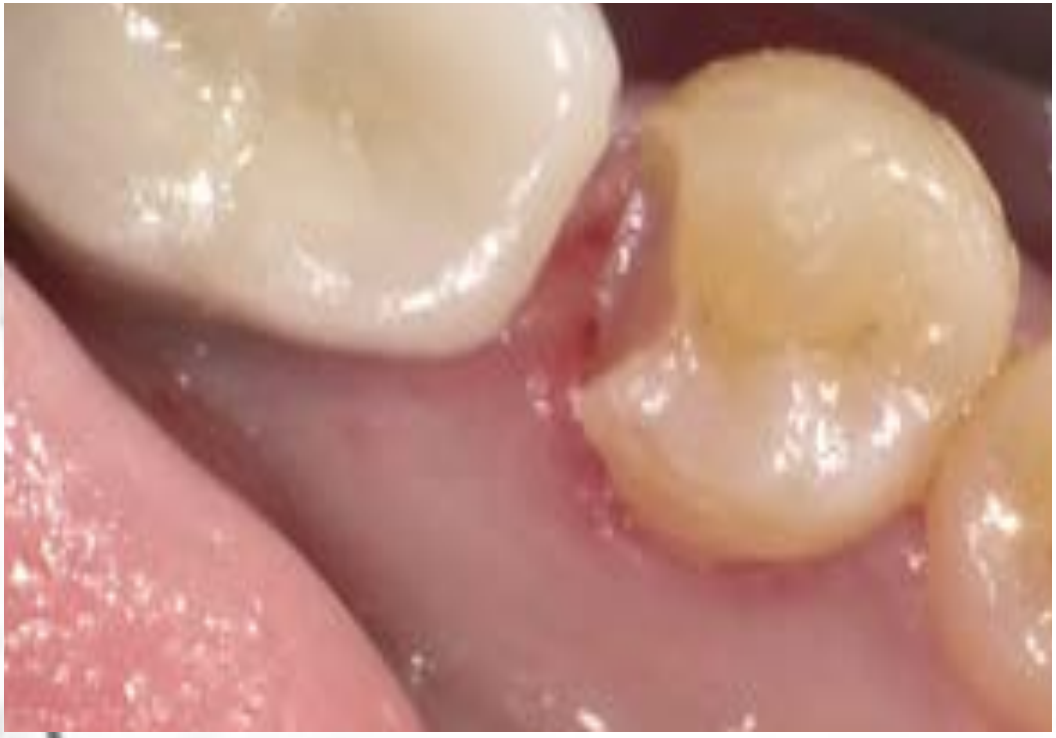
- Once caries were removed, hypochlorite was applied for 30 seconds and then rinsed
- The area was blot dried
- Thercal was placed onto mildly moist dentin and then cured for 30 seconds from multiple angles
- Excess Theracal was then removed via diamond bur removal
- A Tofflemier molar band was then used with one wing cut off to seal the area
- “blot dry test” with Microbrush to confirm isolation
- Total Etch in box, Rinse, blot dry, ABU unidose, placed and then dried after 20 seconds for 10 seconds (air only)
- Light Curing for 30 seconds, multi-directional
- SDR placement and then allowed to self level and then light cured for 30 seconds, multi-directional

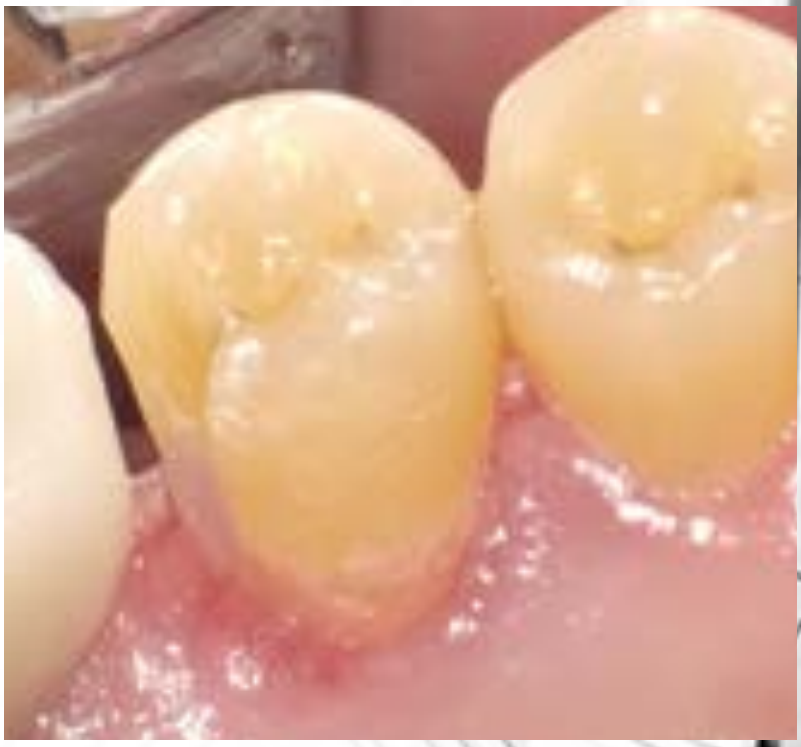
Measuring the Distance? This becomes essential in proper curing. Is your light directly on top of this or does that add distance?



The Band is removed and excess SDR is removed to the gingival level and this will allow a nice emergence

About 2 mm of SDR remains

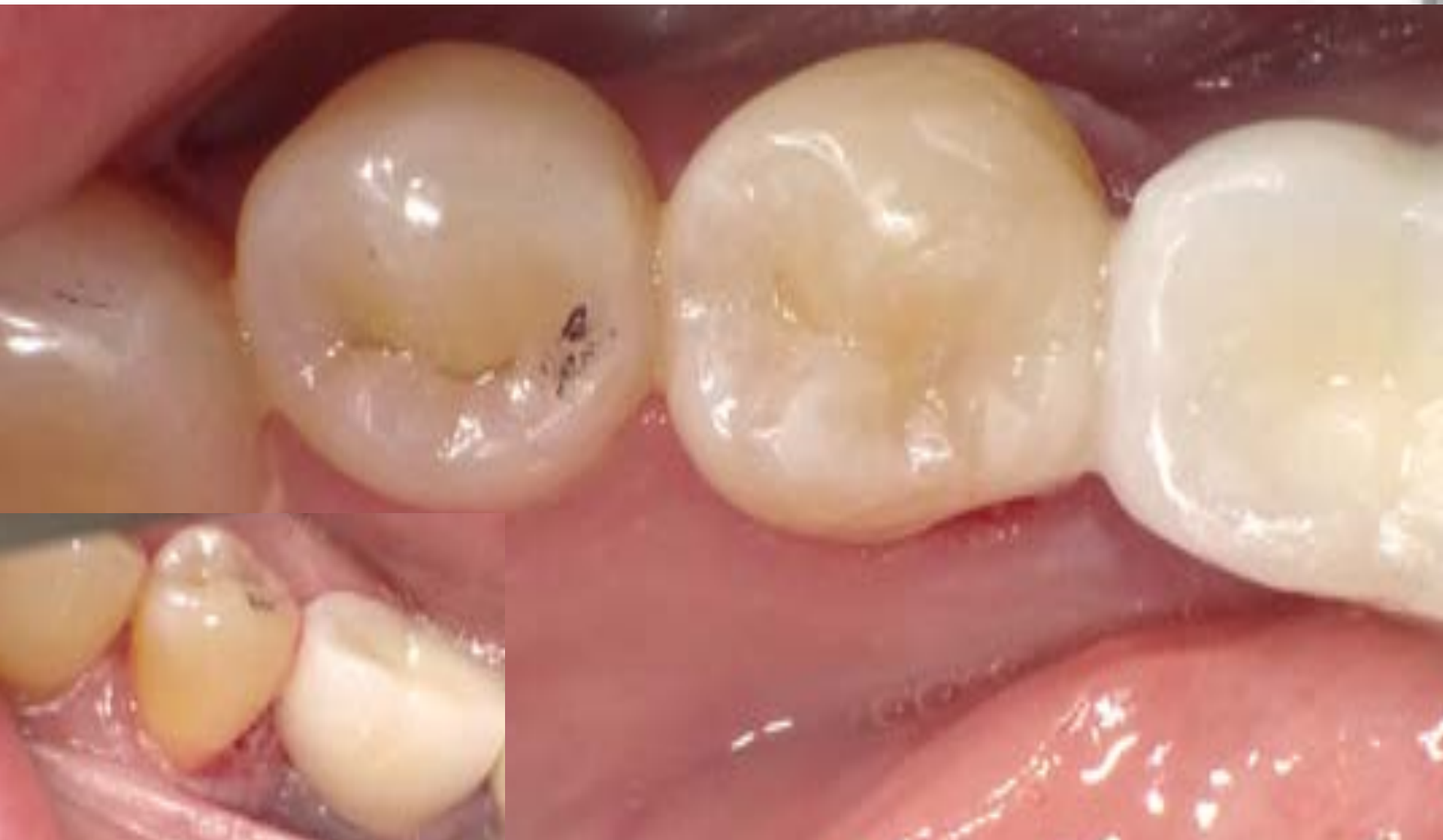




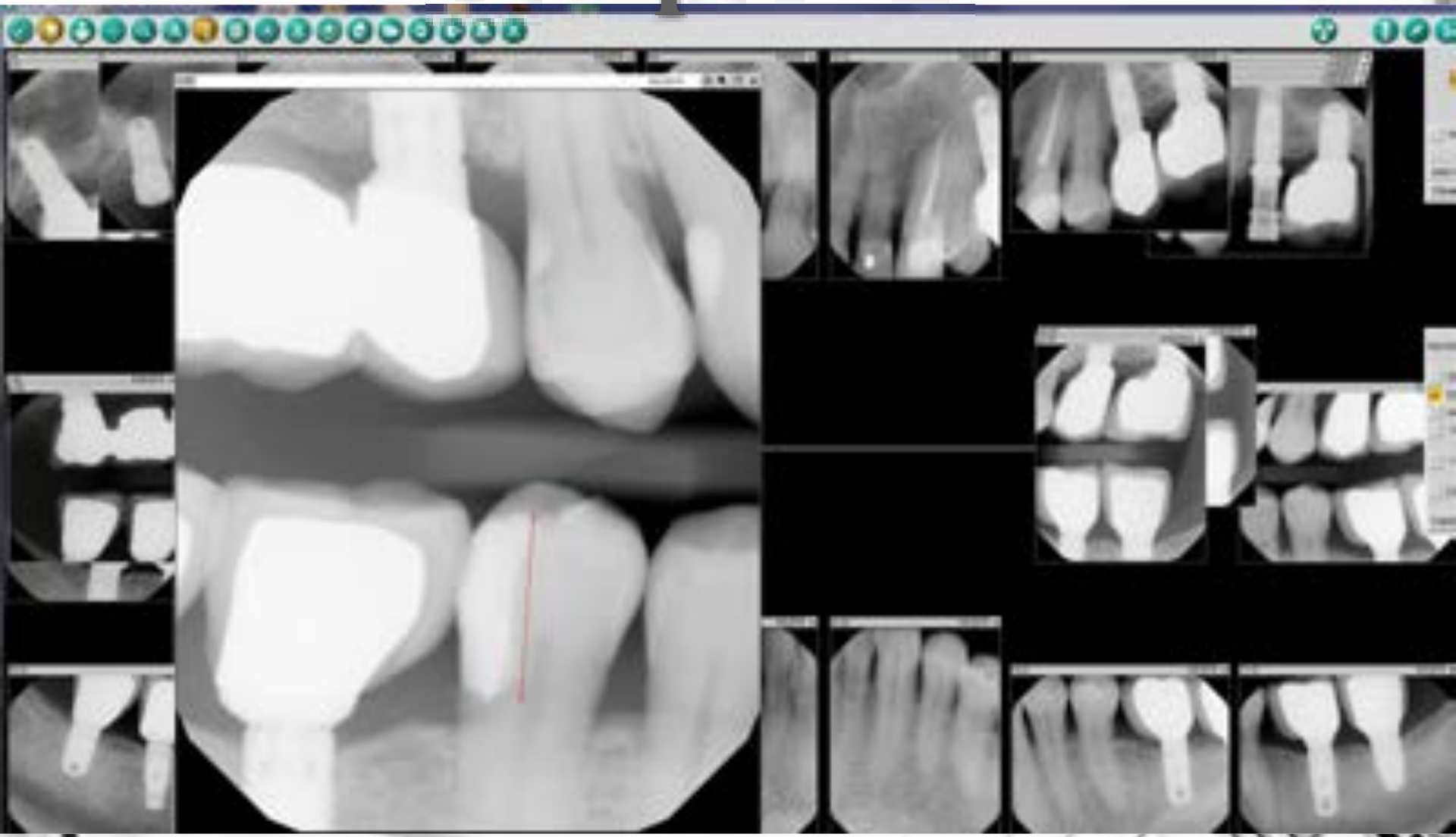
The Final Steps

- Paladent Molar band, Ring and wedges
- Total Etch and Bonding Steps (Reusing All Bond Universal Unidose)
- Light curing for 20 second increments
- SDR placed and cured
- Fusion Universal X-tra Bulk Fill final 4 mm increment

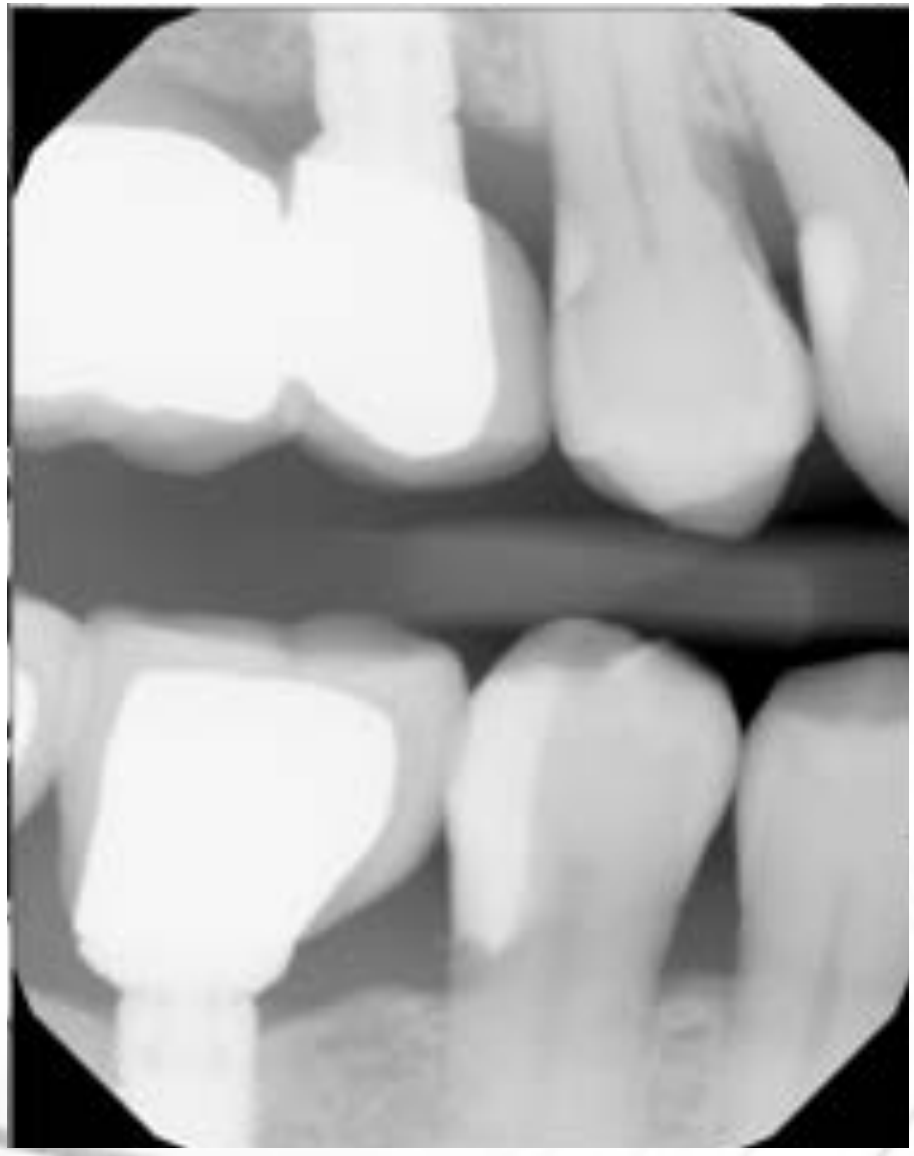
Final layer of Admira Fusion X-tra (up to 4mm) before final contouring and polishing...



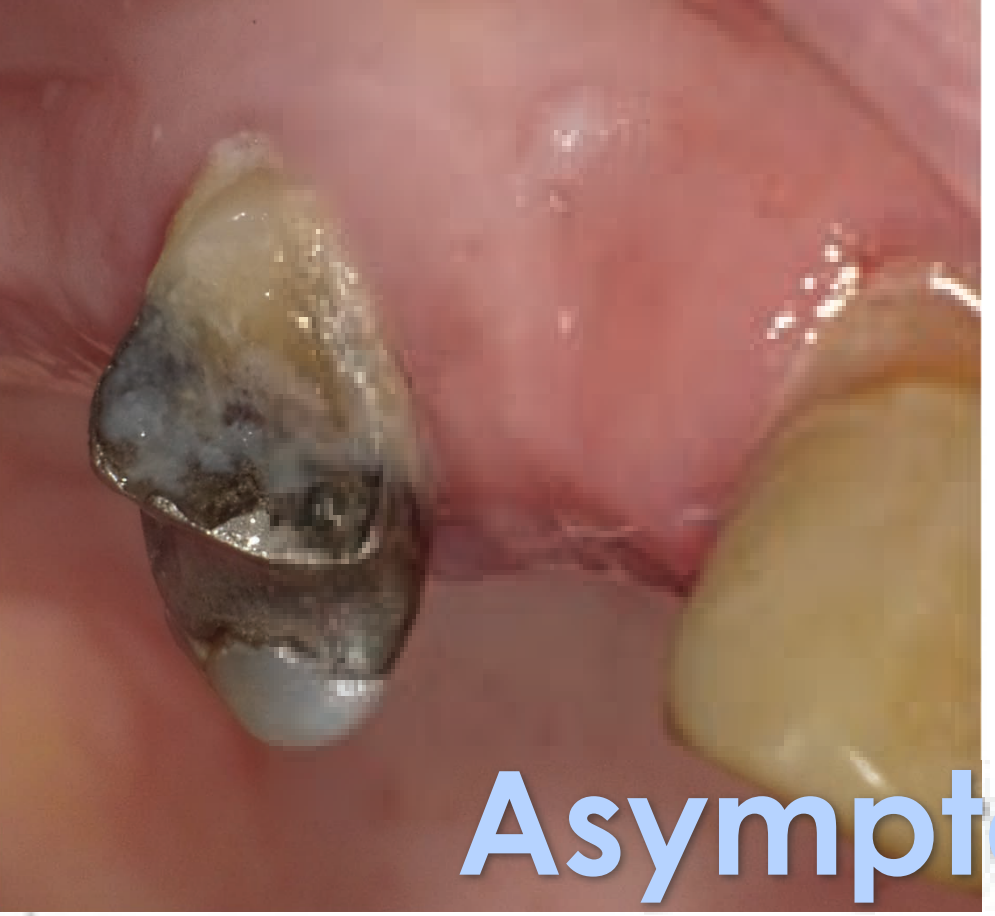
Note the Opacity of the Composites

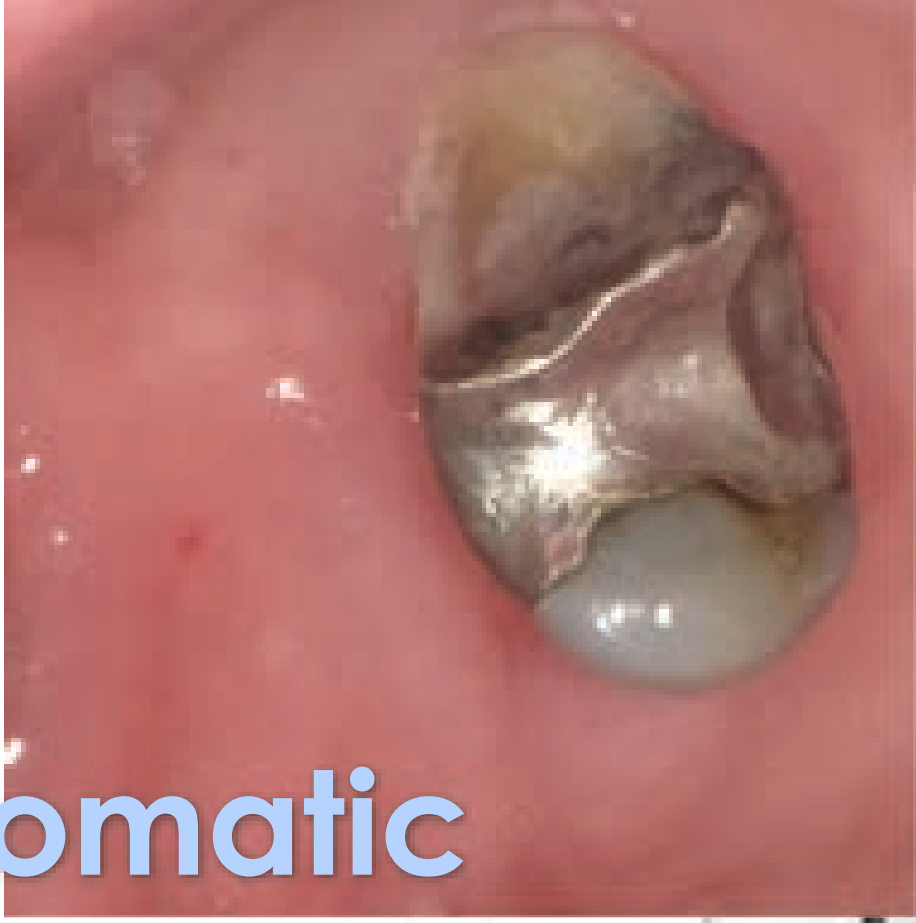


Theracal/SDR/Fusion X-tra



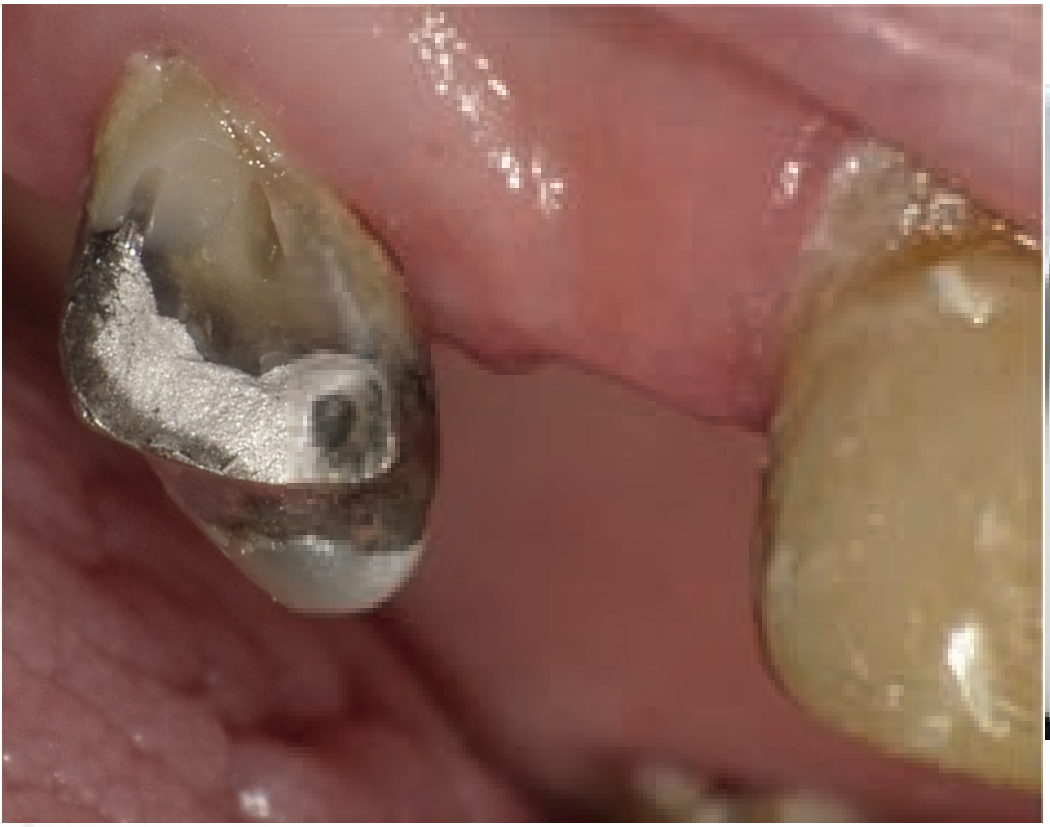
Meet ADA
94…and going strong
What to do?



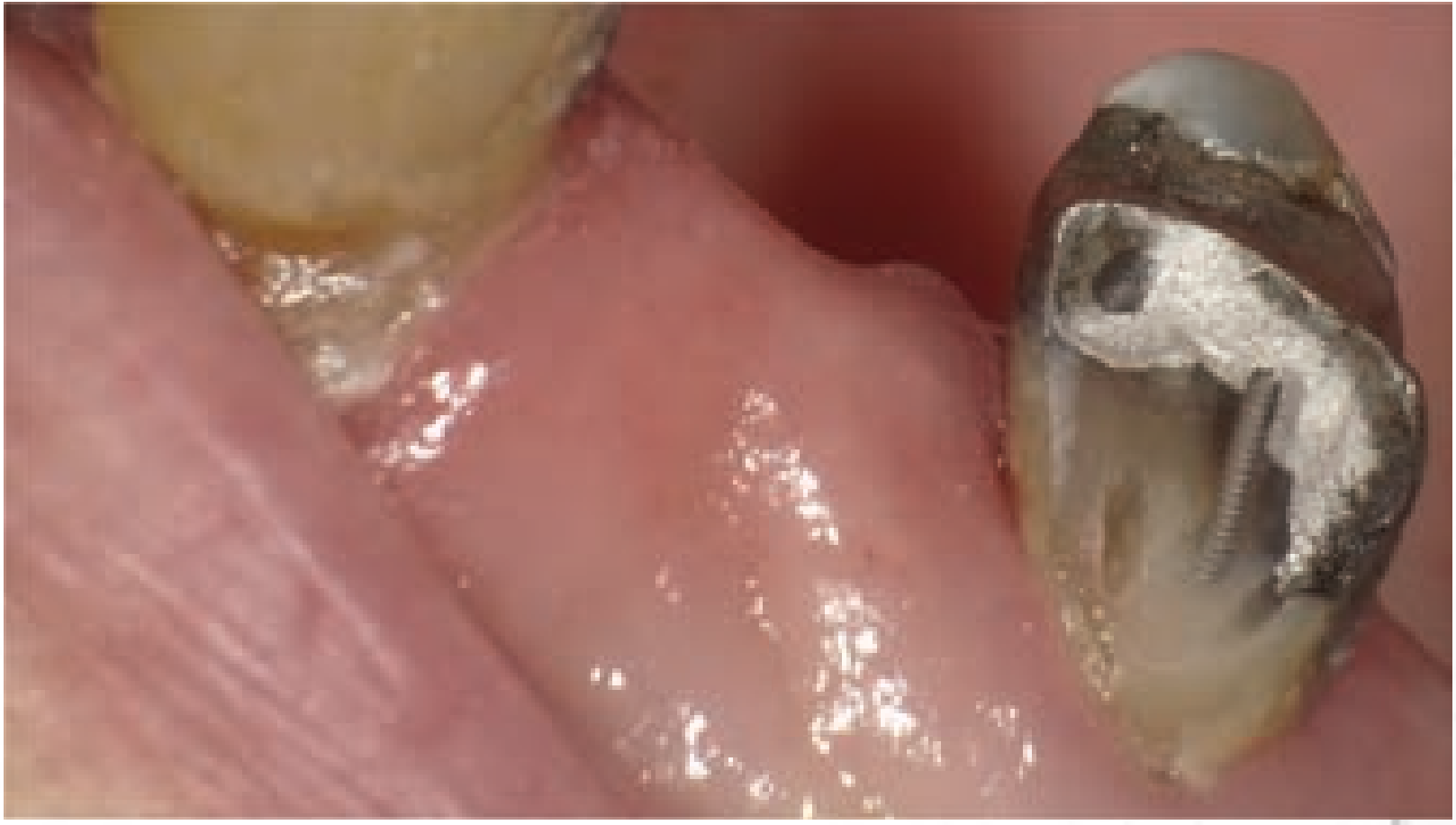


Asymptomatic

She's 94…what to do?
Fractured Buccal Cusp that holds her partial in place (no doubt there is decay)

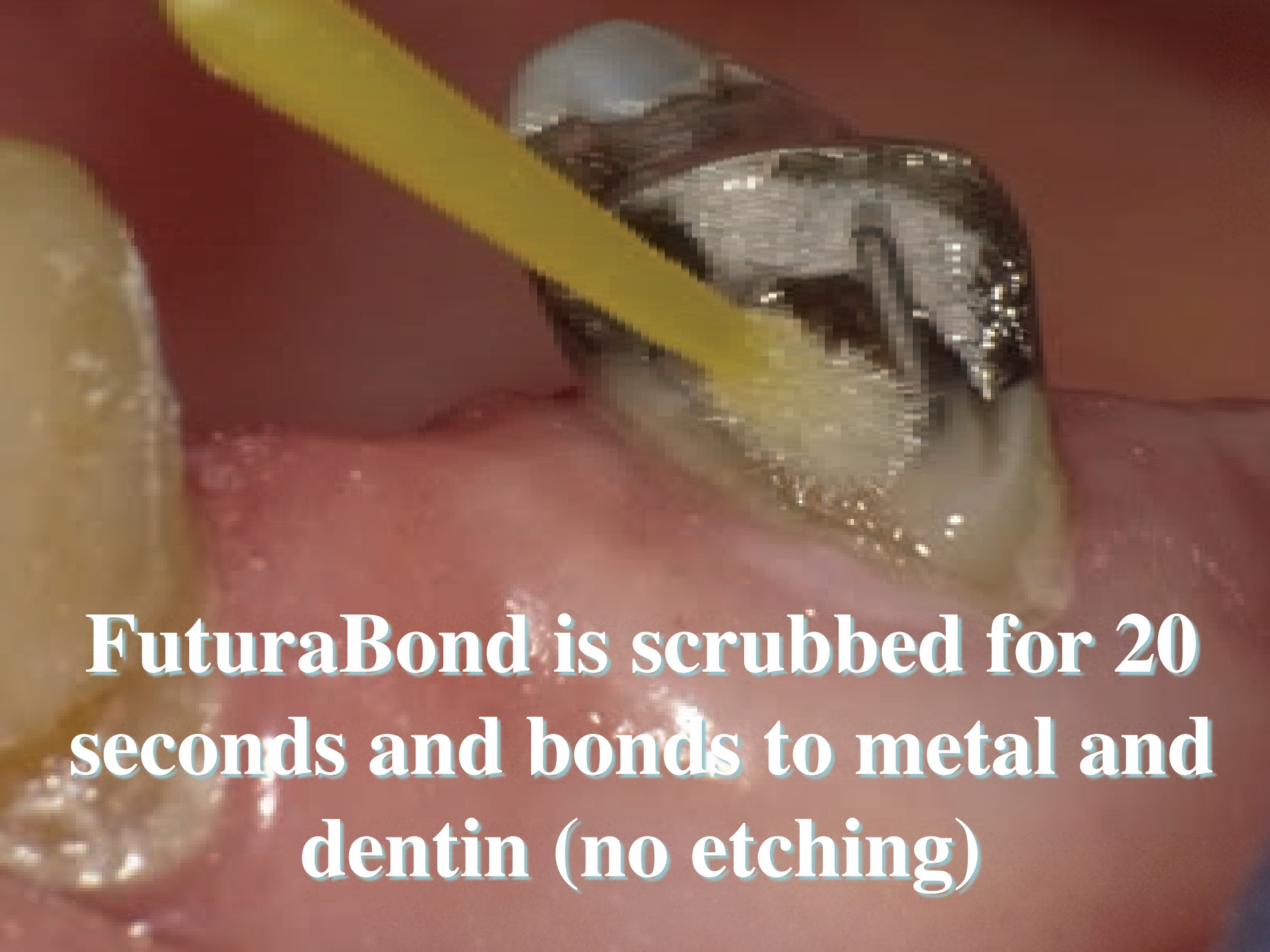


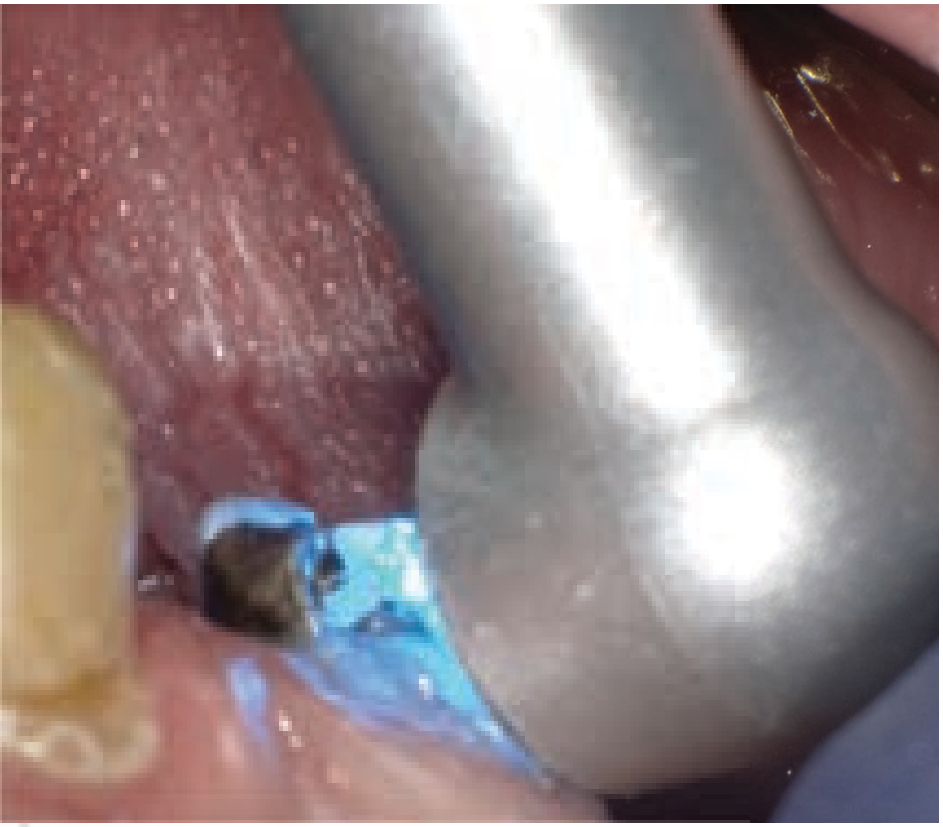
Step 1
Grooves and Micro-etched first step

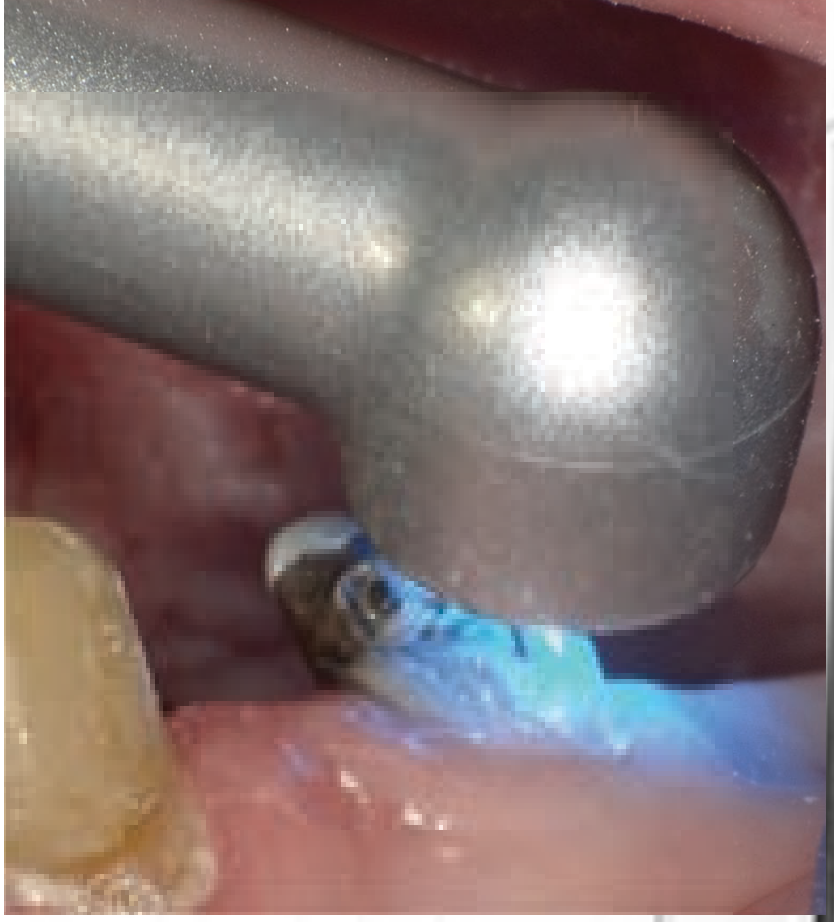


Pin placed and now ready to be restored

For bonding to dentin and metal,
I require Universal Bonding Agents
that can bond to both

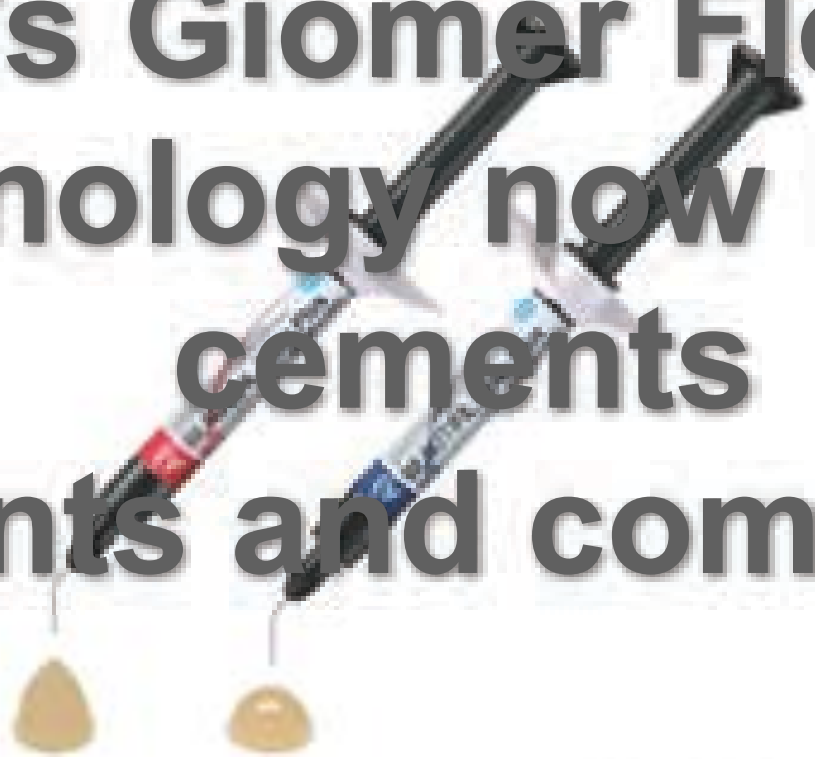

FuturaBond is scrubbed for 20 seconds and bonds to metal and dentin (no etching)





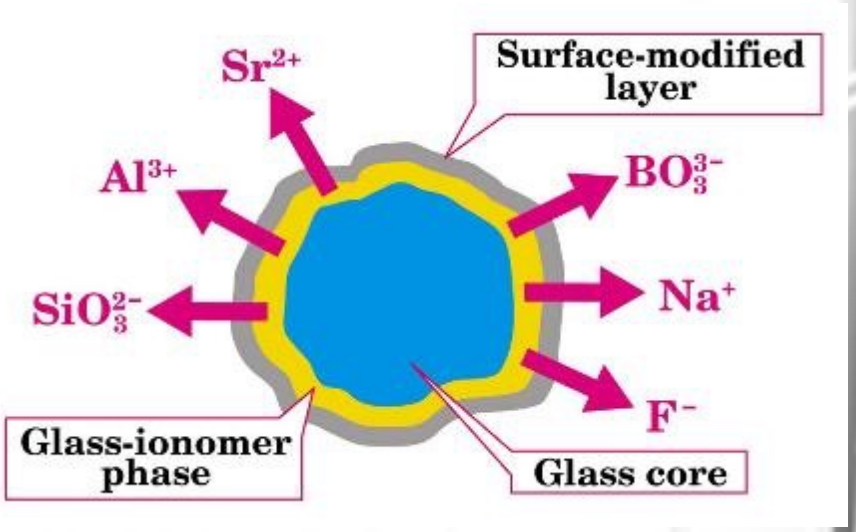
Multiple directions of light curing for 20 seconds

Shofu's Giomer Flowables Technology now in their cements
Sealants and composites



Direct Restorative…why Giomers?

- **F- : Fluoride**
  - Acid resistance via fluoro-apatite
  - Antibacterial effect
  - Remineralization
- **Sr2+ : Strontium**
  - Acid resistance via strontium-apatite
  - Inhibits dentinal hypersensitivity
  - Accelerates calcification
  - Accelerates bone formation



Al3+ : Aluminium

Inhibits dentinal hypersensitivity

SiO32- : Silicate calcification of bone tissue

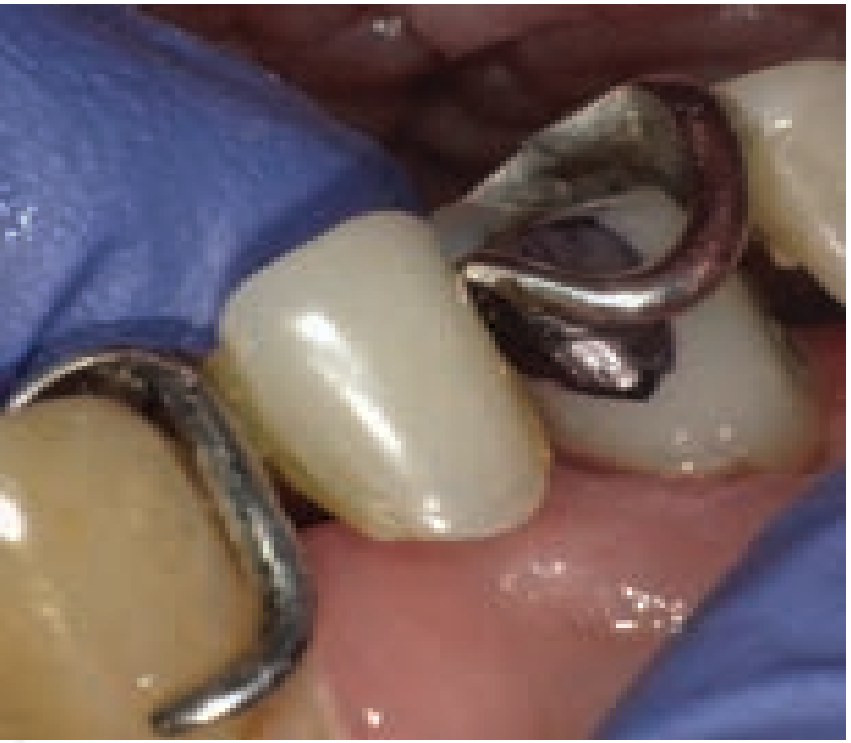
BO33- : Borate Bactericidal effect

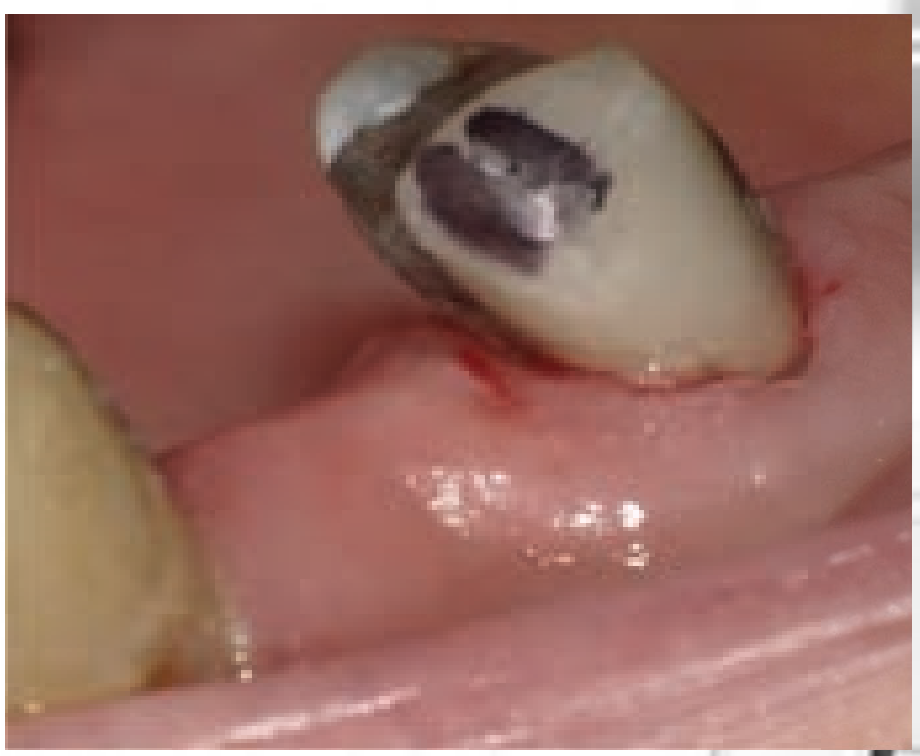
Accelerates bone formation

Shofu's unique GIOMER Materials

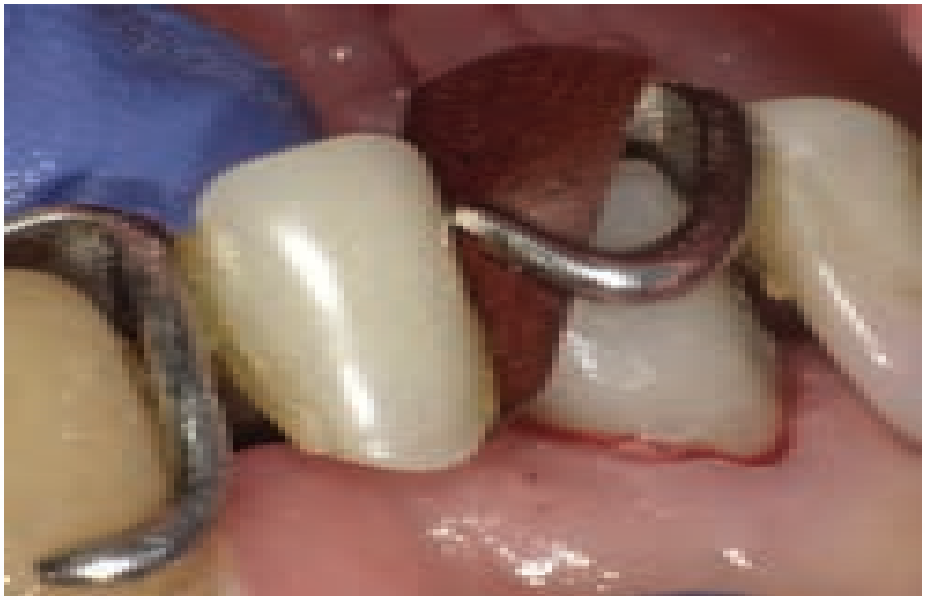
Why Giomers? The constant Acid attack!

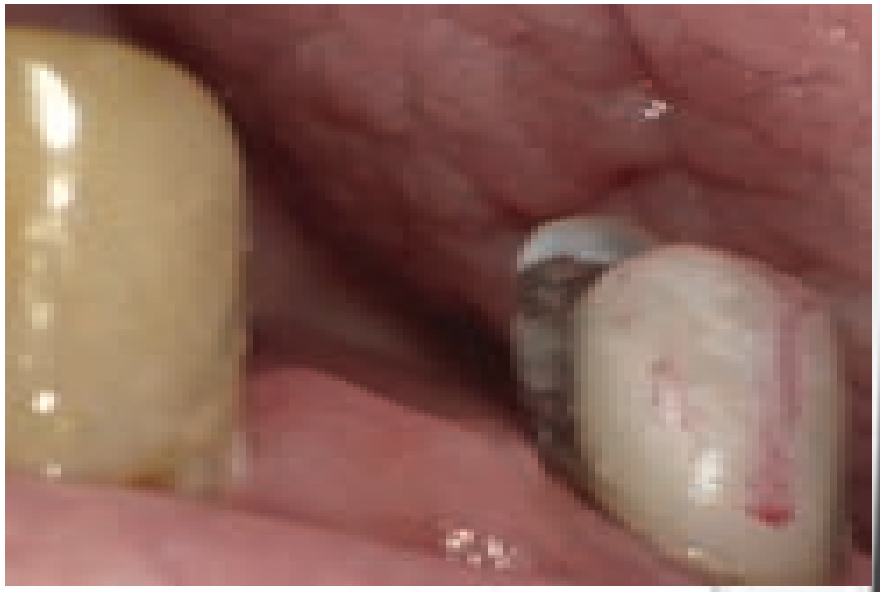

First layer placed with A3
Beautifil Low Flow Plus



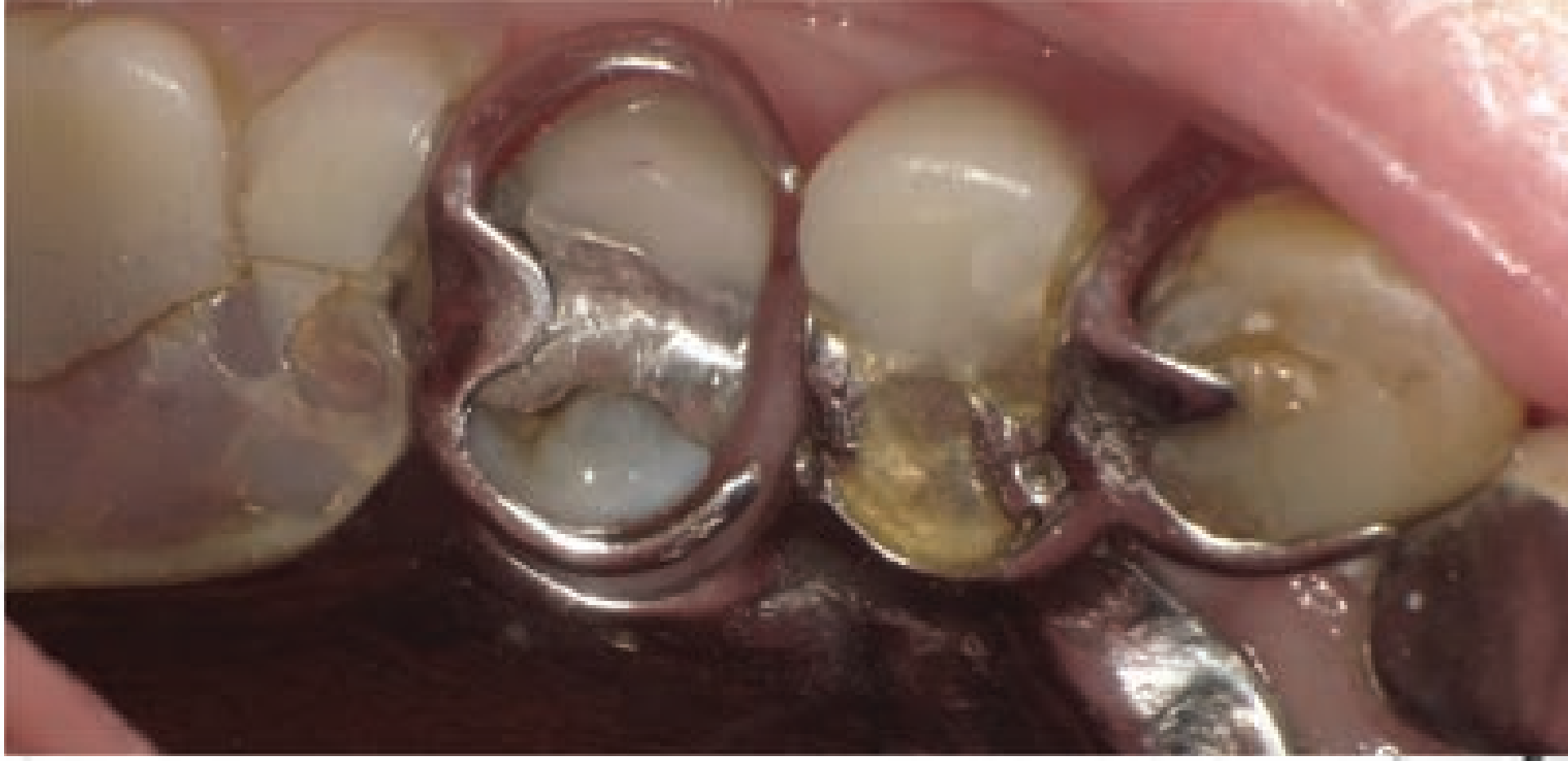


After placing a articulating paper over the tooth, the area that is stopping full seating is marked



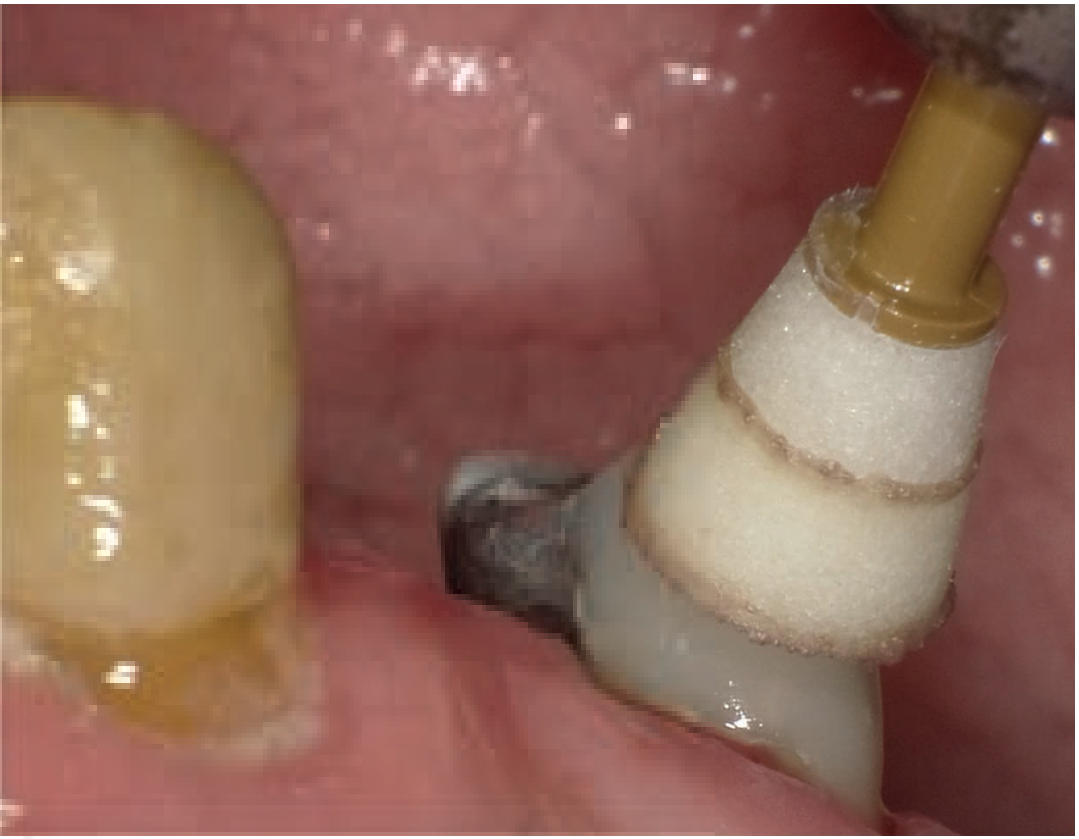


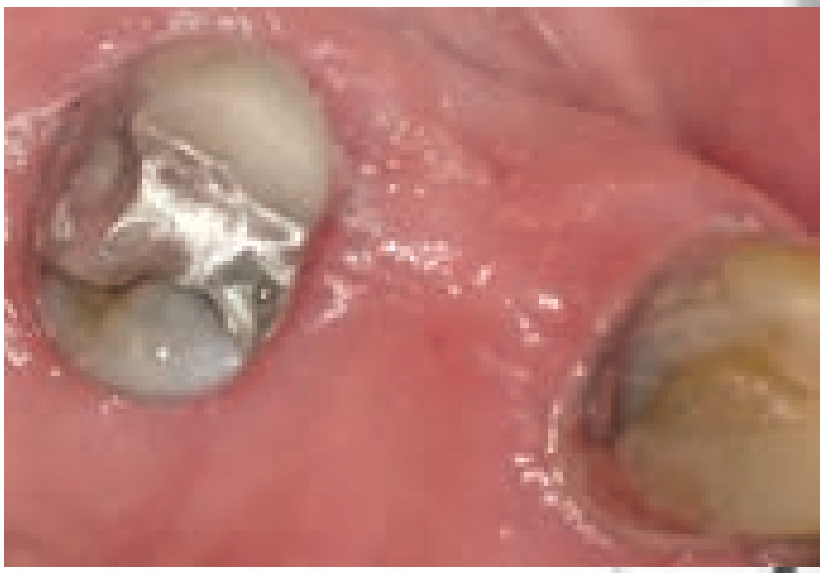
This is redone a few times until final seating



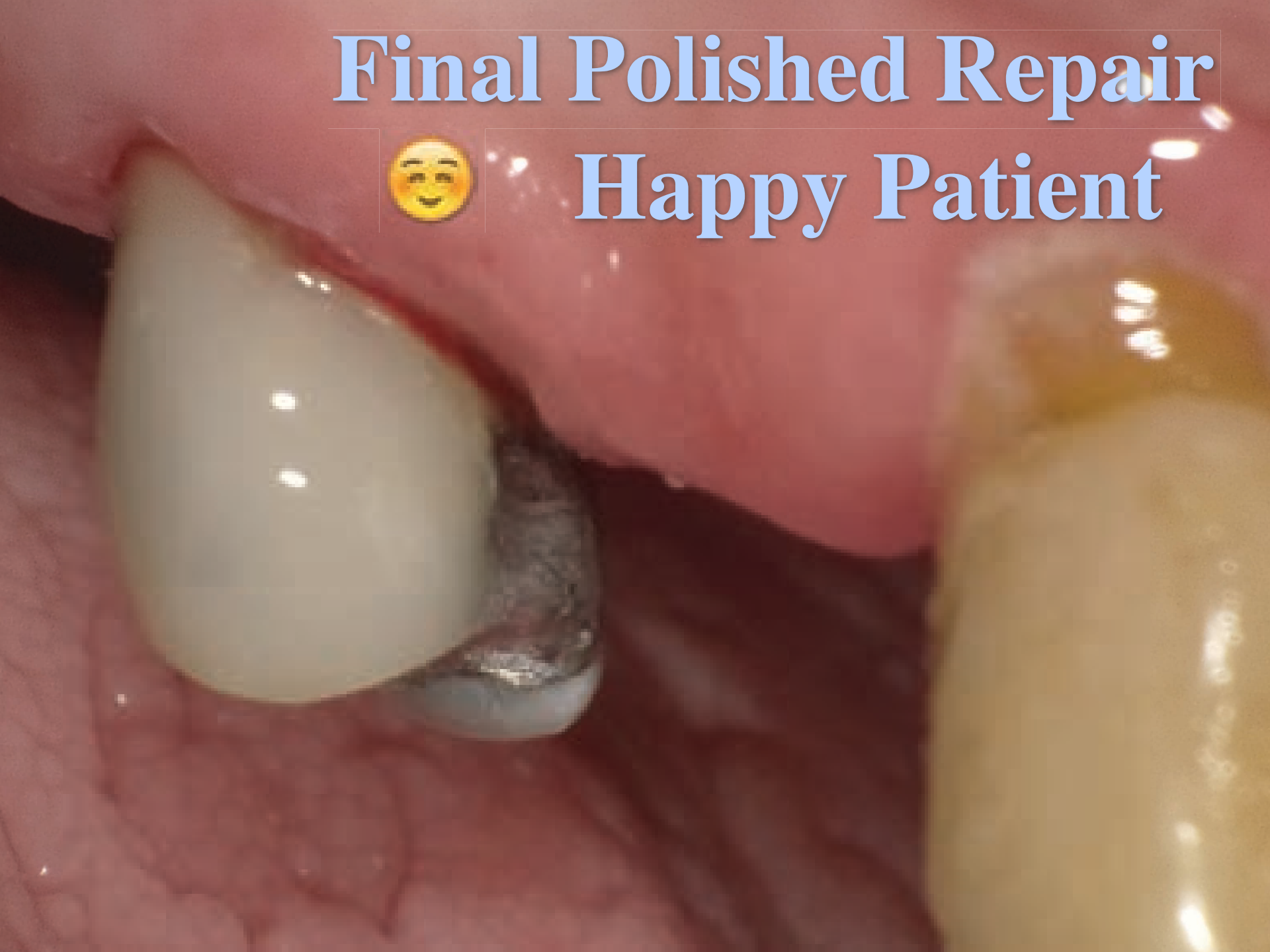
Partial now in full seating

*** Very important to pre-check full seating of partial prior to restoration to know “end point”**





After the contouring is complete, final finishing and polishing

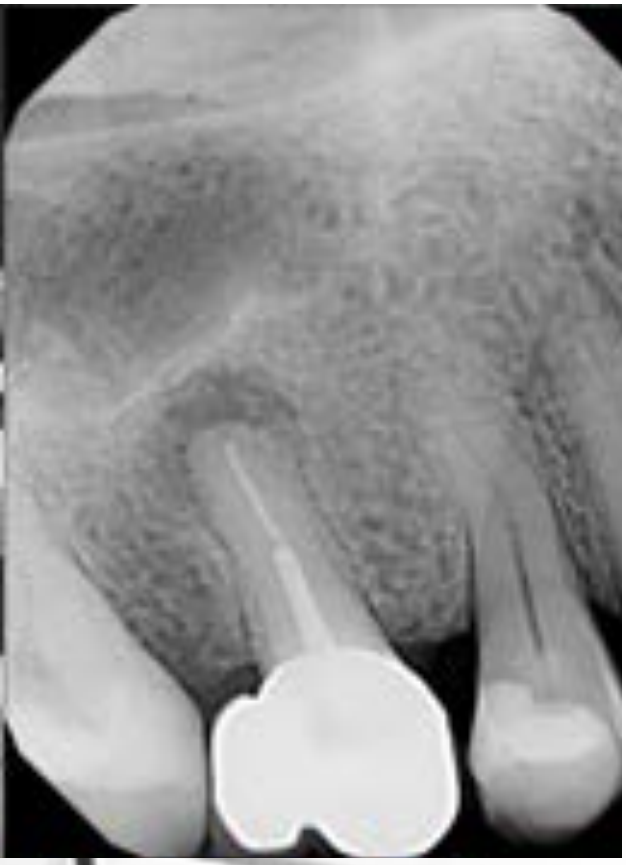

Final Polished Repair
Happy Patient

Modern Adhesive Dentistry

Incorporating the Latest into Conservative Restorative Concepts

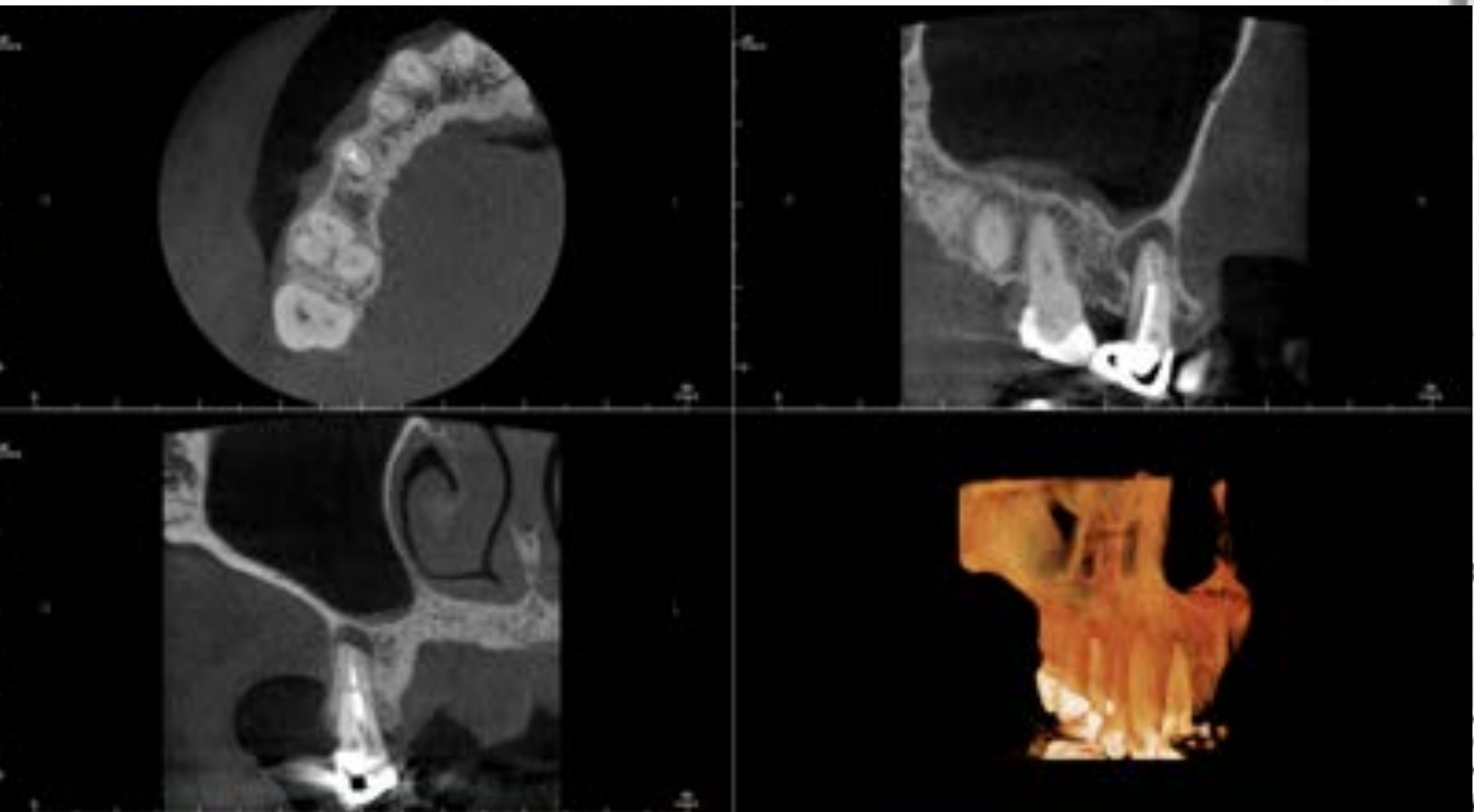
Helen: Presents in hygiene with a parulis at recall

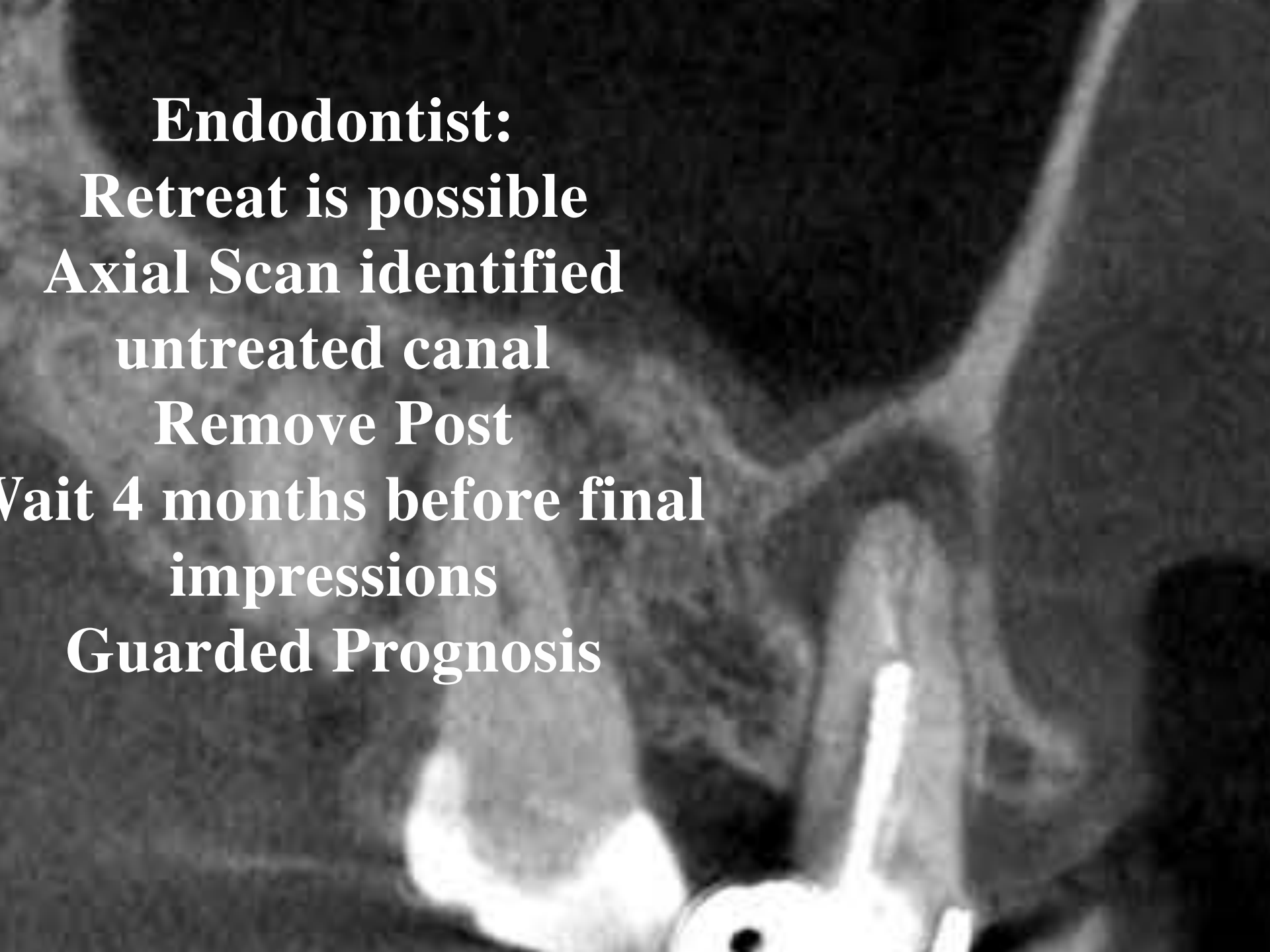
Pre-treatment



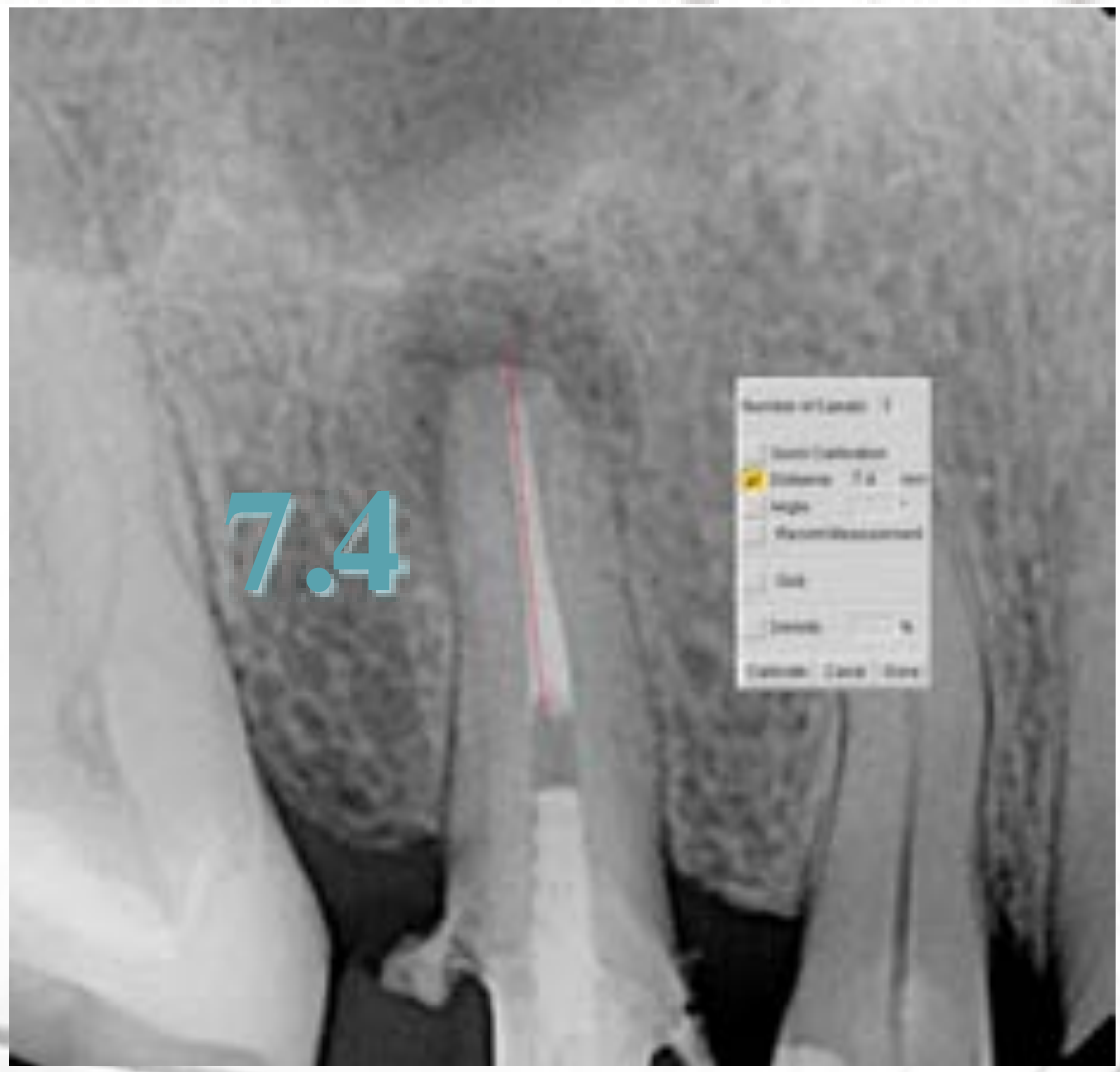
- 45 years old
- Asymptomatic
- Hygienist has already identified the problem and presented to the patient
- Options I presented
- RCT retreatment/Post and Core and wait 2-4 months and evaluate healing
- If no better, removal, extraction and eventual implant
- Extraction, non immediate placement of implant which patient least desired

CBCT Scan and Endo Consult

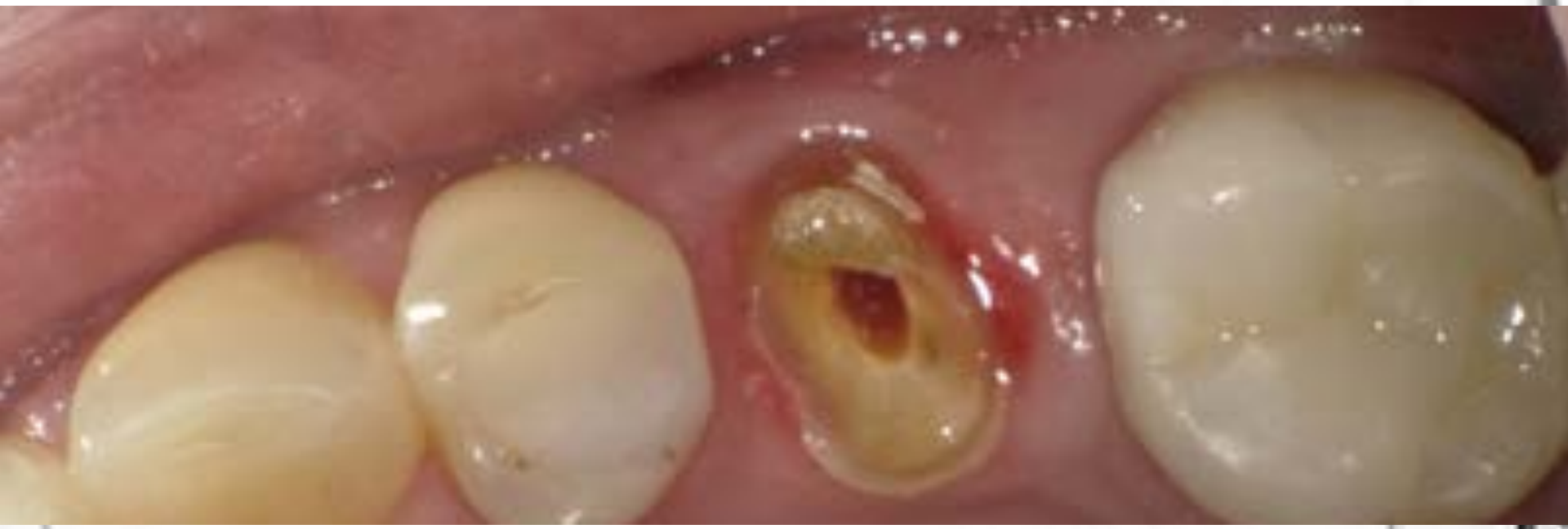



Endodontist:
Retreat is possible
Axial Scan identified
untreated canal
Remove Post
Wait 4 months before final
impressions
Guarded Prognosis

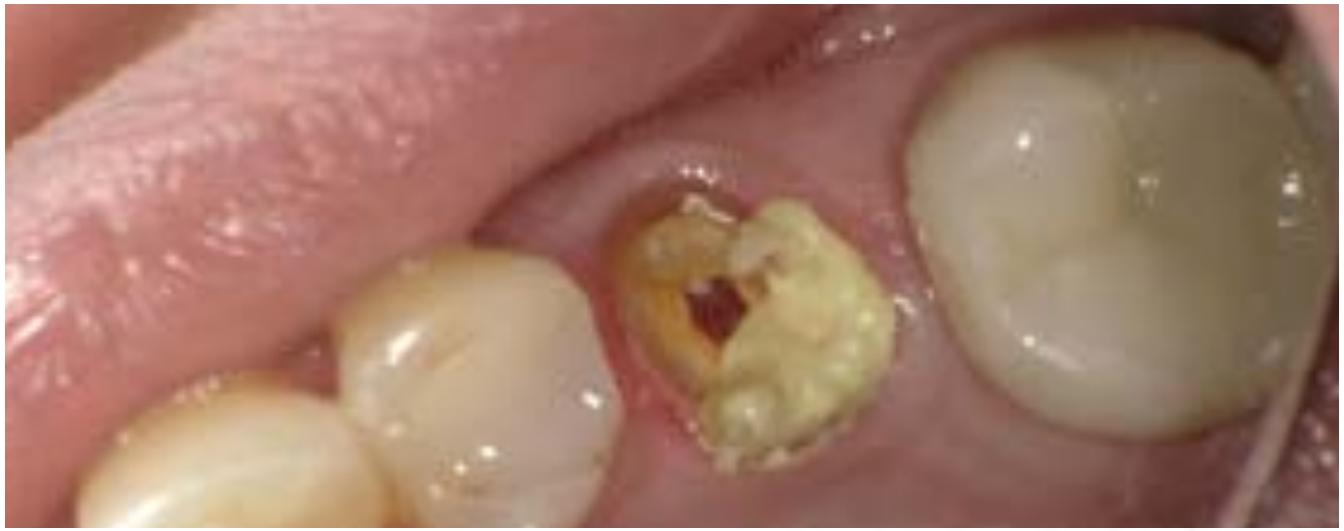
After RCT treatment: Parulis absent
Wonderful advantage of Digital X-rays

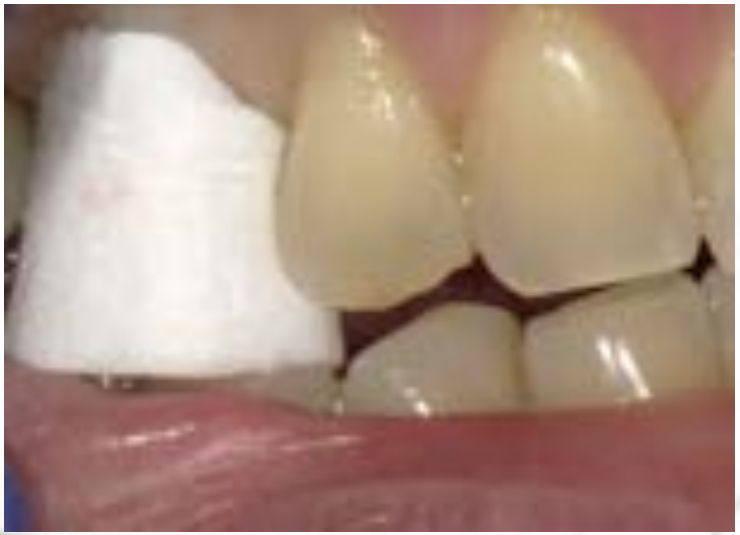


The Oval Canal



Traxodent for 2 minutes to stop bleeding with Custom Cap





The key part of the system is the paste, this is used to manage minor bleeding

The Catapult Group found this stopped minor bleeding 100% of the time

For Bleeding in General

15% Aluminum Chloride in disposable syringes

- Often before I pack cord, to stop bleeding as it comes out in a clay format, and the key, leave on for 2 minutes
- After removing a temporary and there is an area of bleeding, and as it stops bleeding, it absorbs fluids and displaces tissues slightly…not like Expasil
- Routinely for all my little bleeders!
- Rinses away easily
- I routinely burnish and flatten the tip

traxodent®

Hemodent® Paste Retraction System

2 main components

Bisco's D.T. Light Post

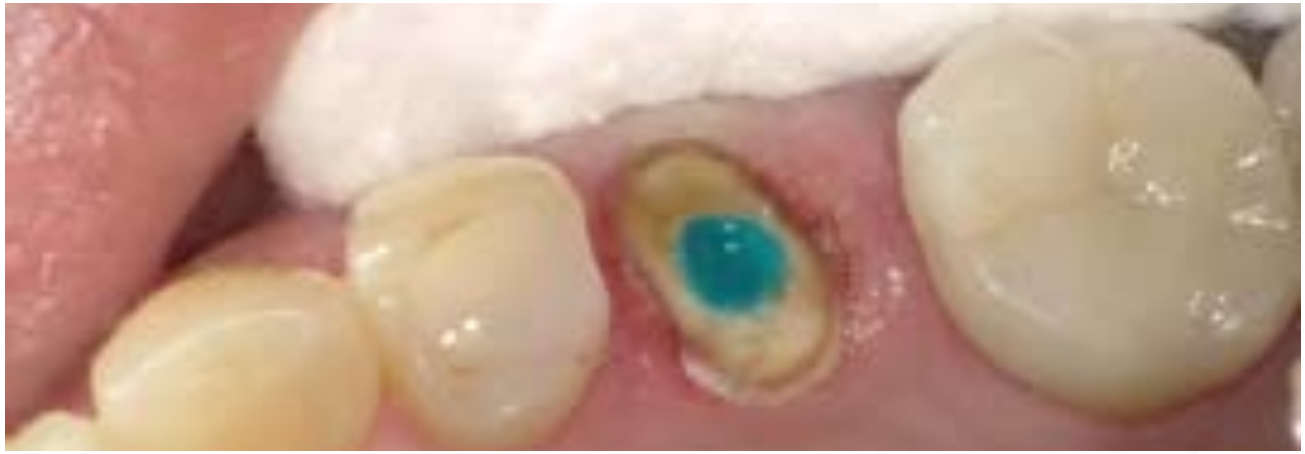
2 posts selected, one main post and one secondary post

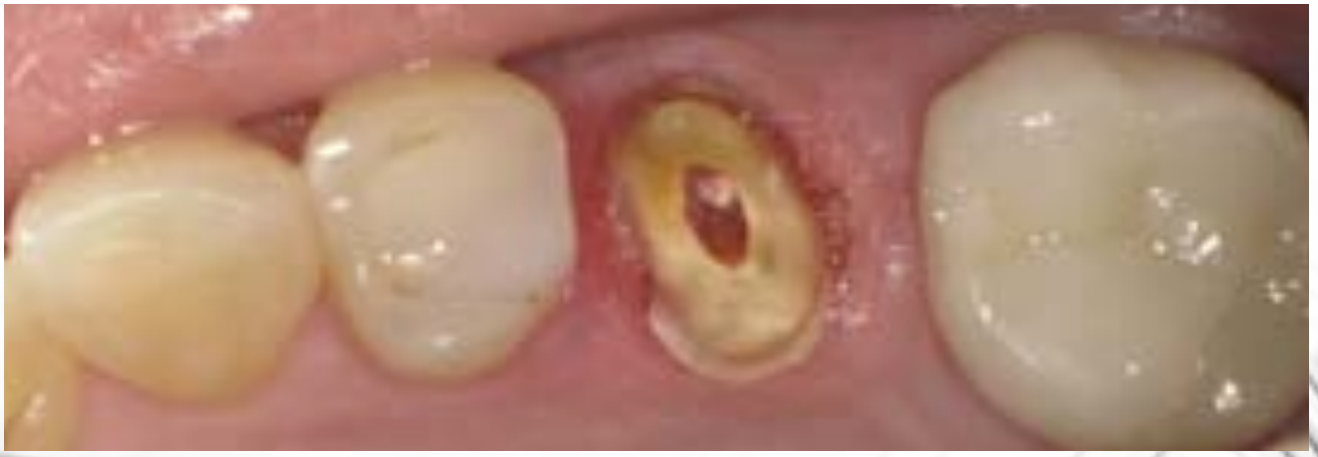

Ivoclean on the posts for 20 seconds
Scrubbing NOT required


Rinsing away....


Air Drying....

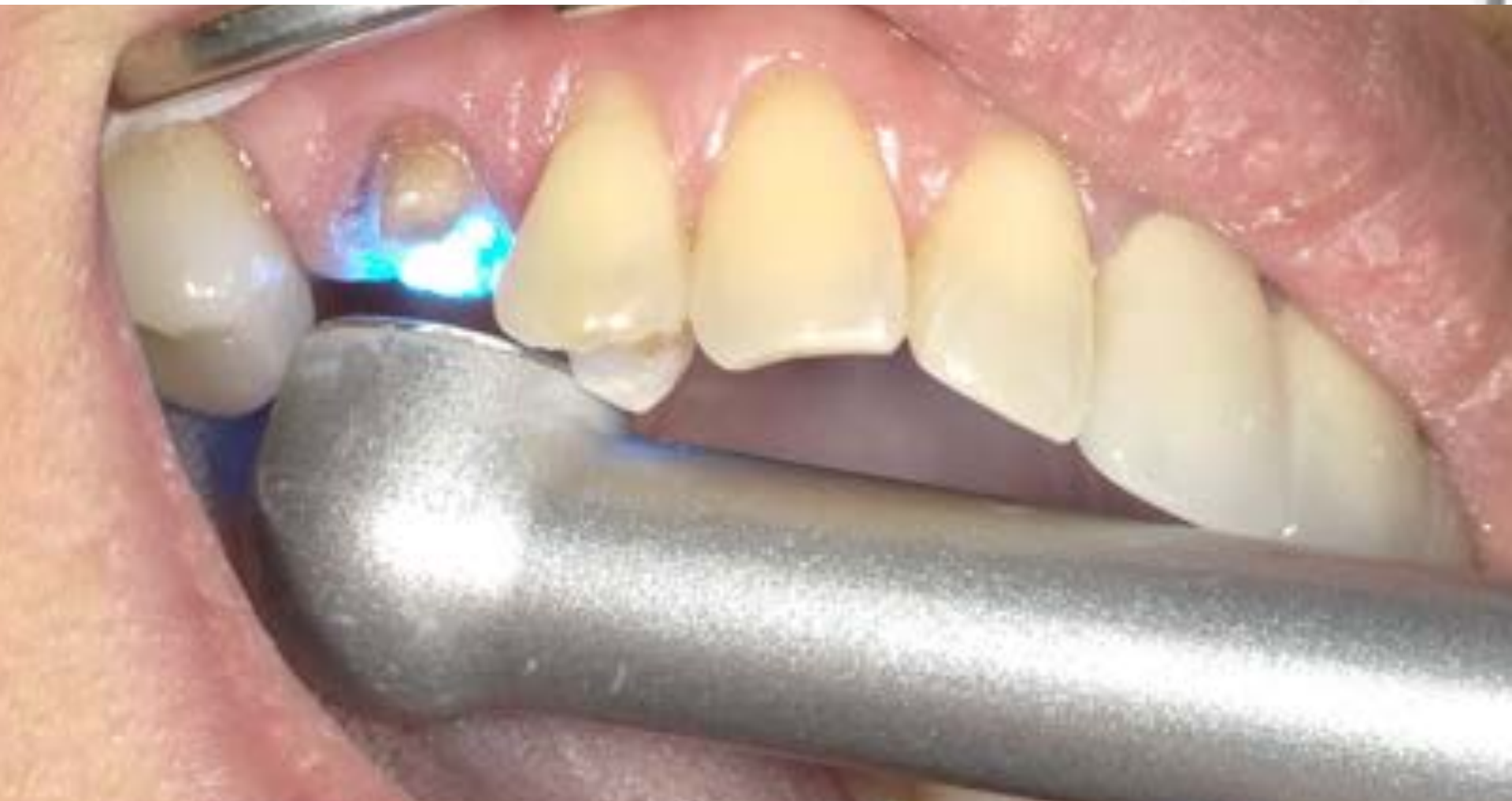
Etching optional for 10 seconds
Placement of Futurabond for 20 seconds…scrubbing not required since etched but if you don't etch, (scrub)





Curing Futurabond U is optional and unnecessary

*** if you do cure, add time and direction of light**

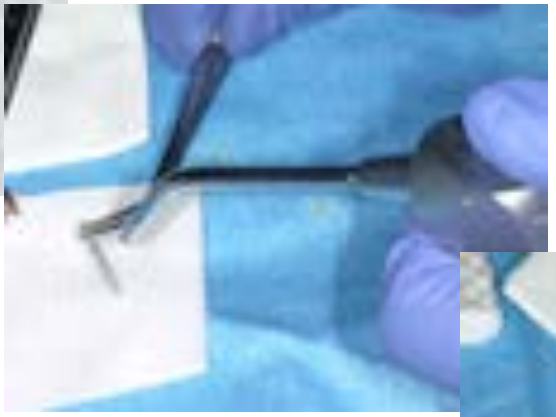


With an All in One system Another wonderful advantage is that it can be used as a light cure/dual cure or self cure without the need of an additional bottle for self cure activation

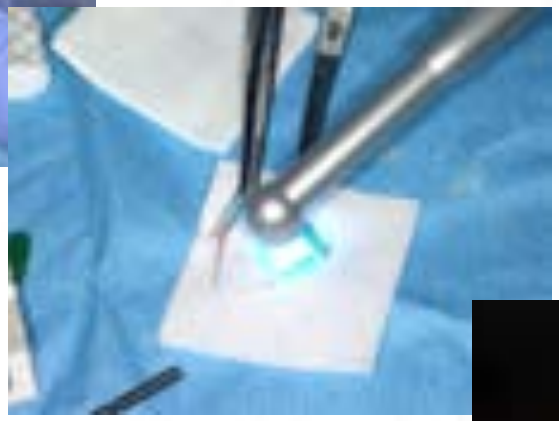
All based on chemistry and it's unique delivery system.

The Steps

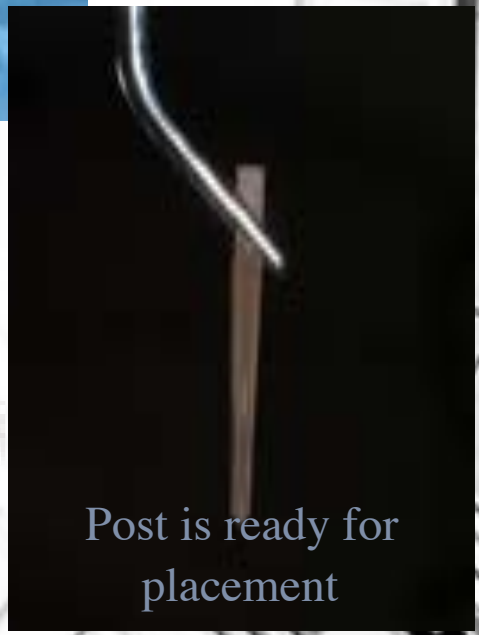
Placement of Bonding Agent onto dried and cleaned post
Silane is optional



Air Only Drying

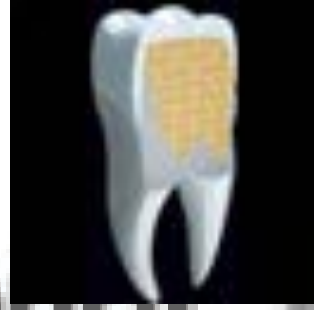


360 light Curing
Rotate the post to Enusre the entire Post is light cured
This is NOT required with Futurabond U



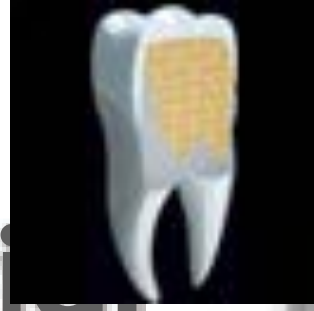
Post is ready for placement

So another core material, why the big deal?



Visalys Core Material

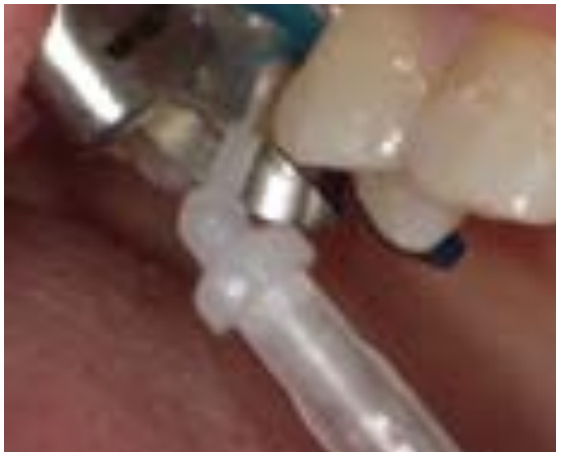
- 95% approval rating giving it the Catapult Vote of Confidence
- Active-Connect-Technology (ACT), which enables this material to fully polymerize and actively bond to all popular adhesives on the market
- This technology also allows it to set in a self cure mode without being interfered with various acidity levels from bonding agents

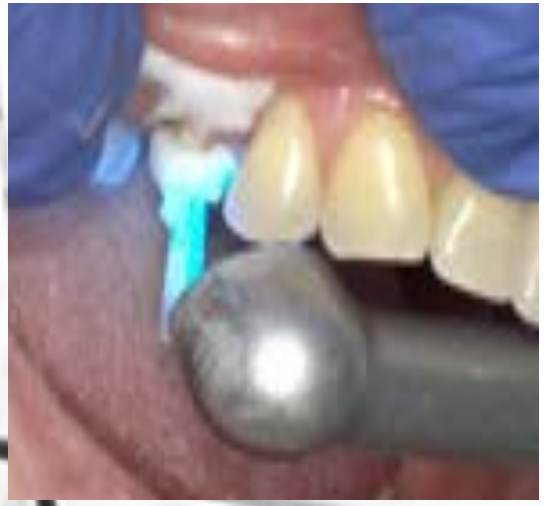


Visalys Core Material

- The material is easily stacked without slumping. 78%
- The material can be easily manipulated. 72%
- The material flows easily within itself. 94%
- The material easily adapts to posts and dentin undercuts without manipulation. 83%
- The material flows void free. 89%
- The material cuts like dentin. 83%
- The viscosity results in ease of extrusion. 100% approval
- Ideal for bulk core placement or for post and core placement

Visalys Core Material
The Process

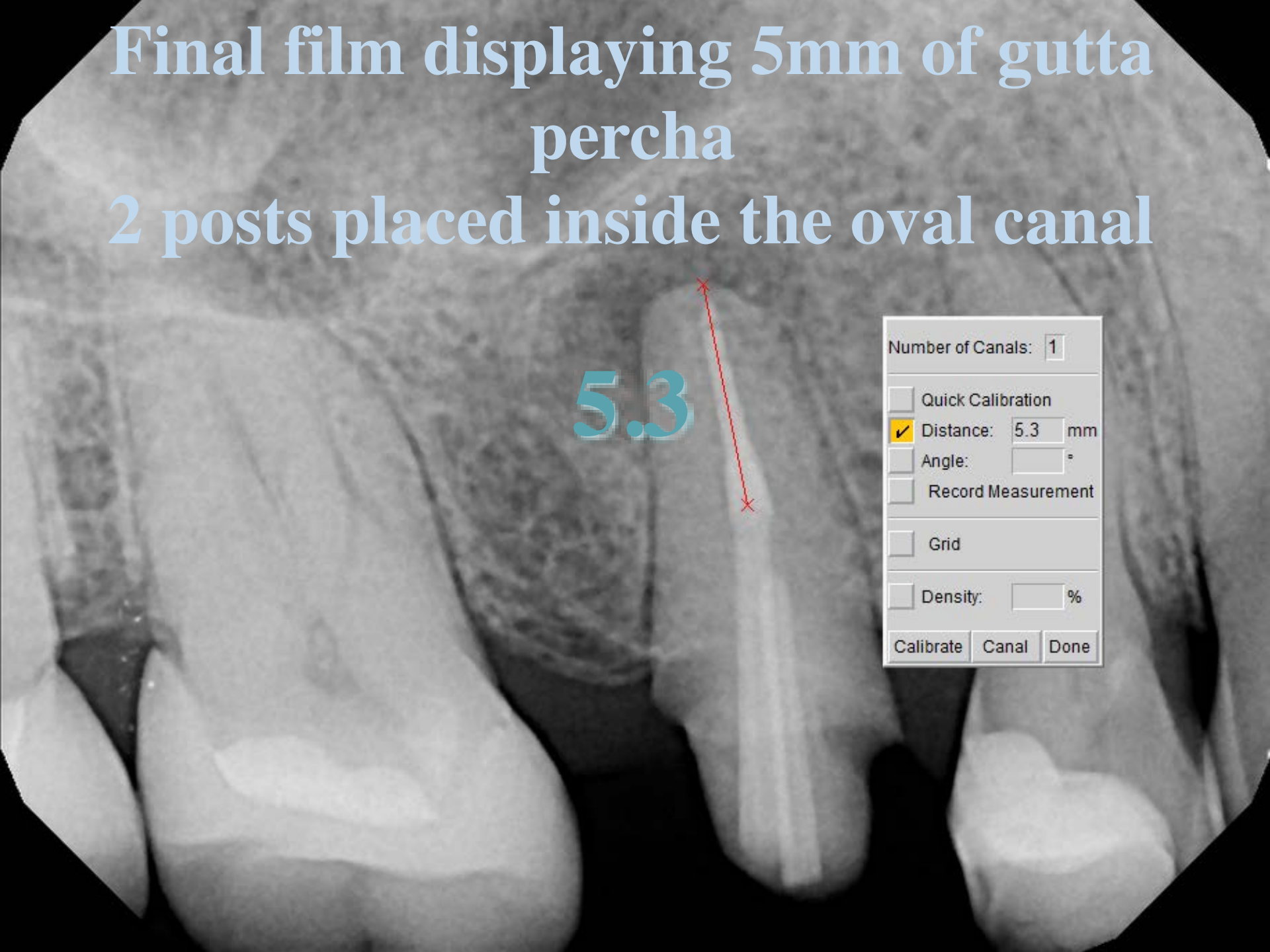




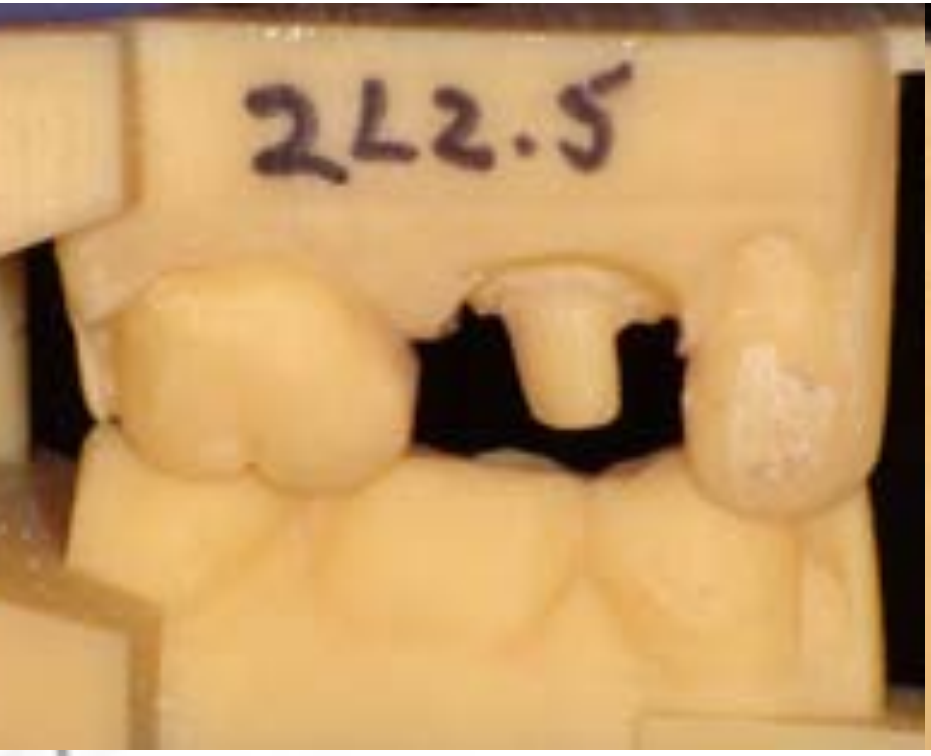
- The Dual Barrel loads directly into a syringe tip that is ideally suited to go to the full length of most post preparations
- The tip then is placed fully into the canal and as you press the syringe, simply backfill slowly
- The larger post is inserted, followed by the smaller post
- 5 seconds to secure the post
- More core is the placed around the posts and another 5-10 seconds of curing 360°to initial set the material
- Full set in 5 minutes

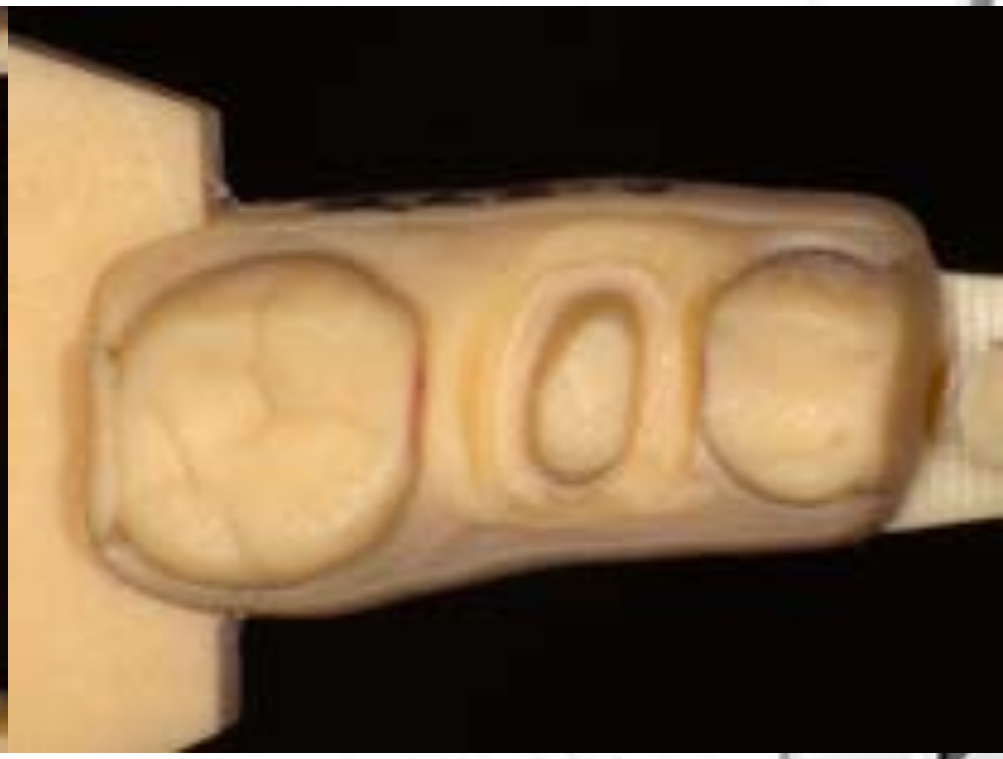

Final Views of 2 posts bonded into 1 oval car
Note the void free core

Final film displaying 5mm of gutta percha
2 posts placed inside the oval canal



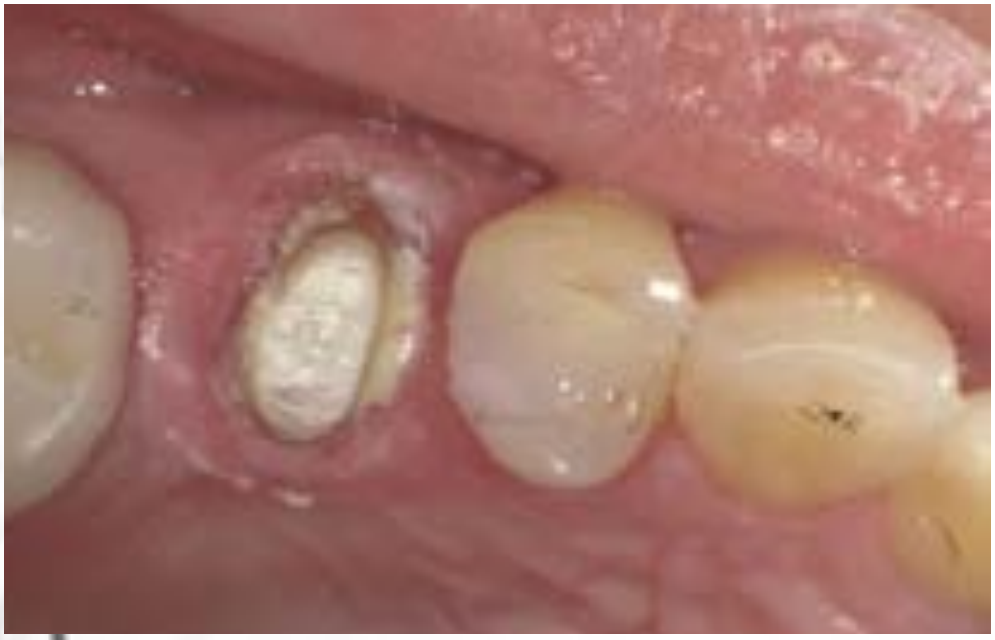
SLA model from TruDef Scan



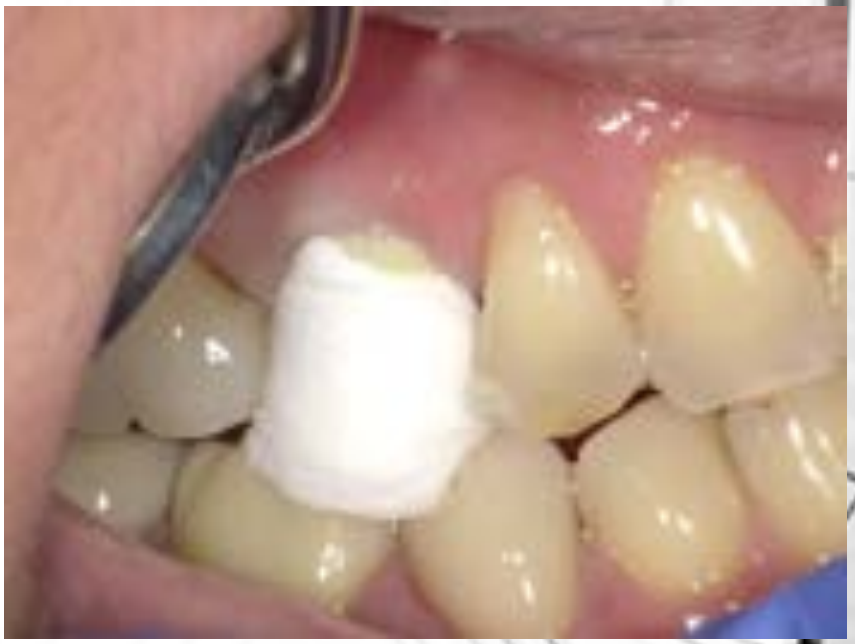


At Delivery if Bleeding exists…

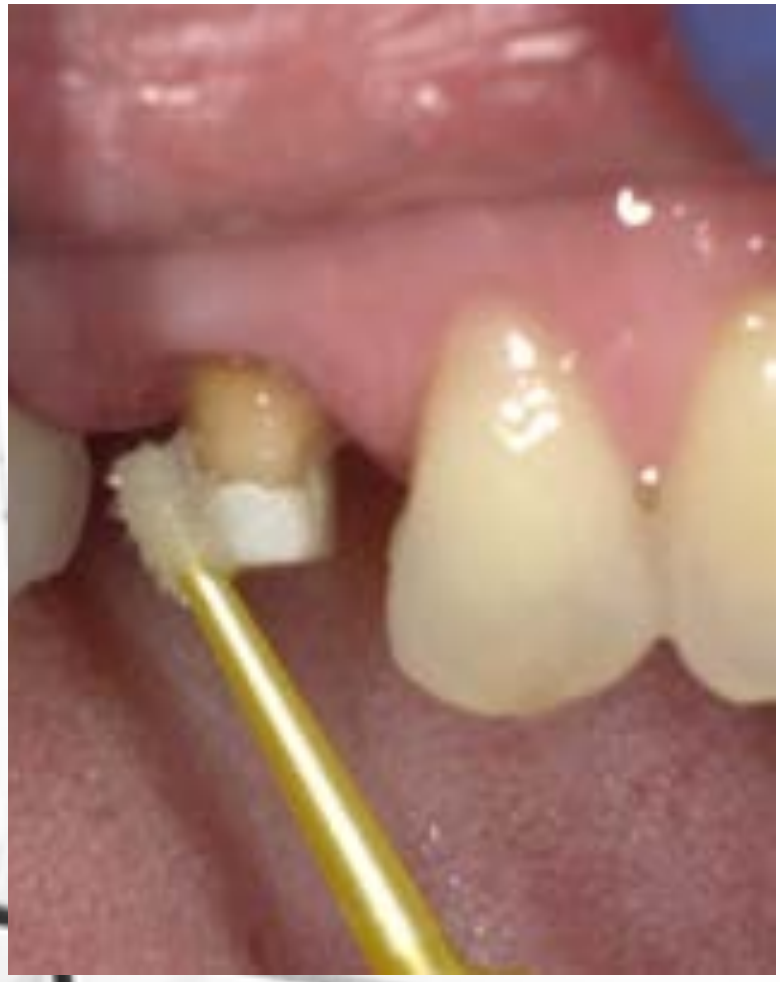
Traxodent Paste
Rinsed after 2 minutes

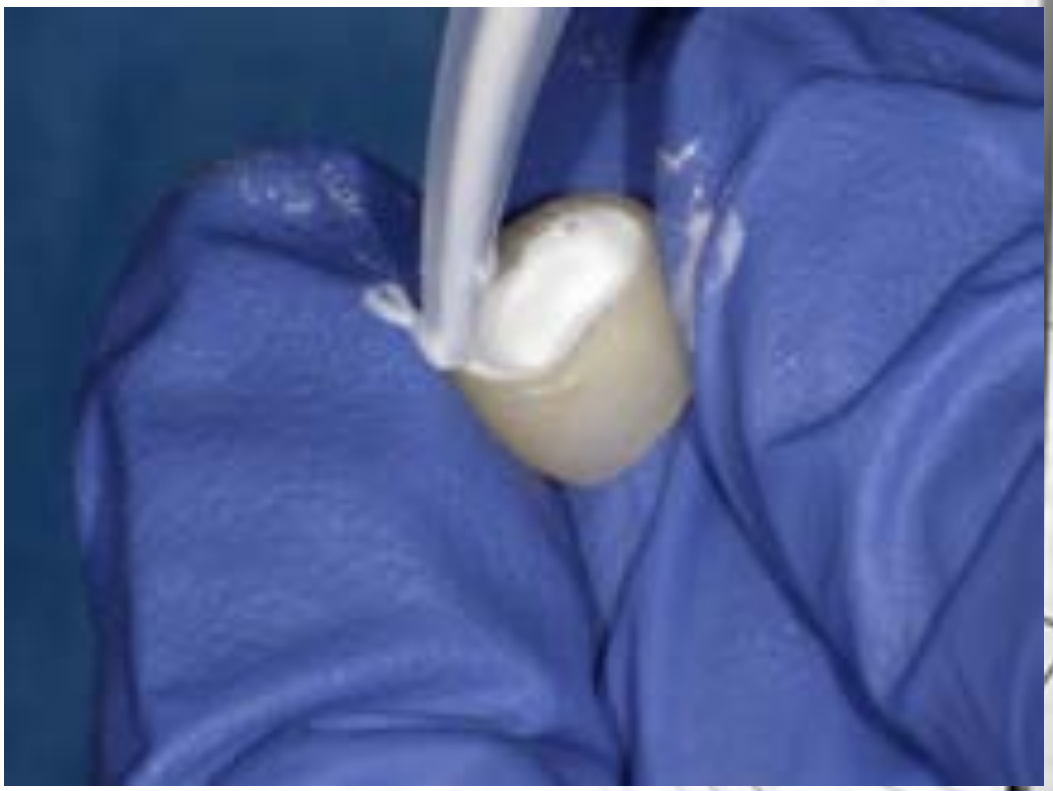


Traxodent Cap



2% Chlorhexidine to cleanse the tooth and Ceramir placement

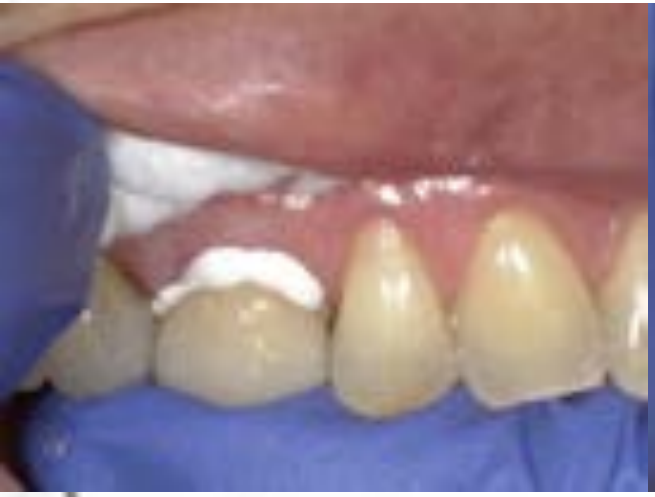


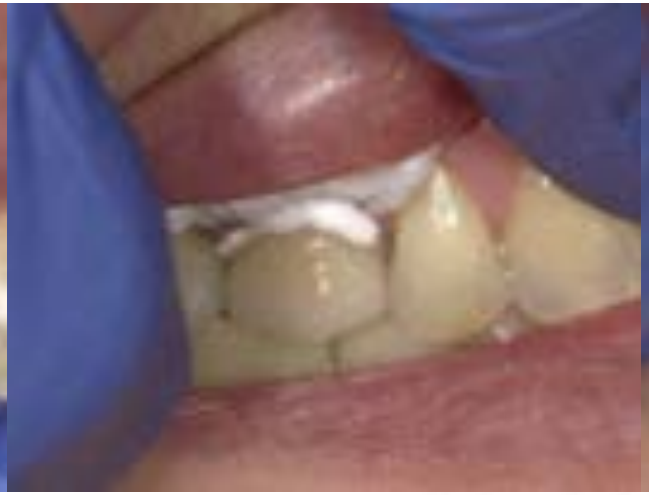


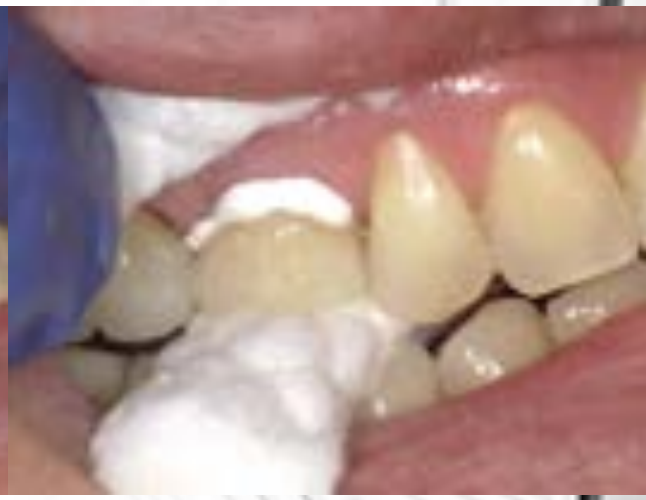
Cementation Technique

360°extrusion of cement followed by holding the crown down

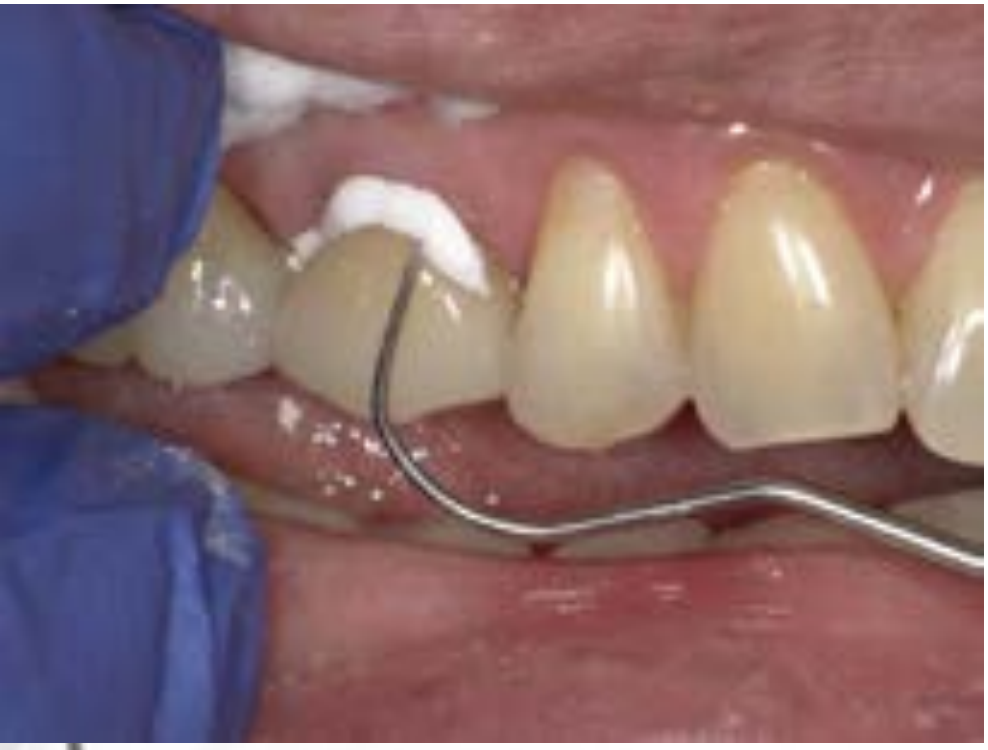
After about 15 seconds, have the patient bite down to confirm occlusion and then once confirmed, cotton rolls or wood sticks

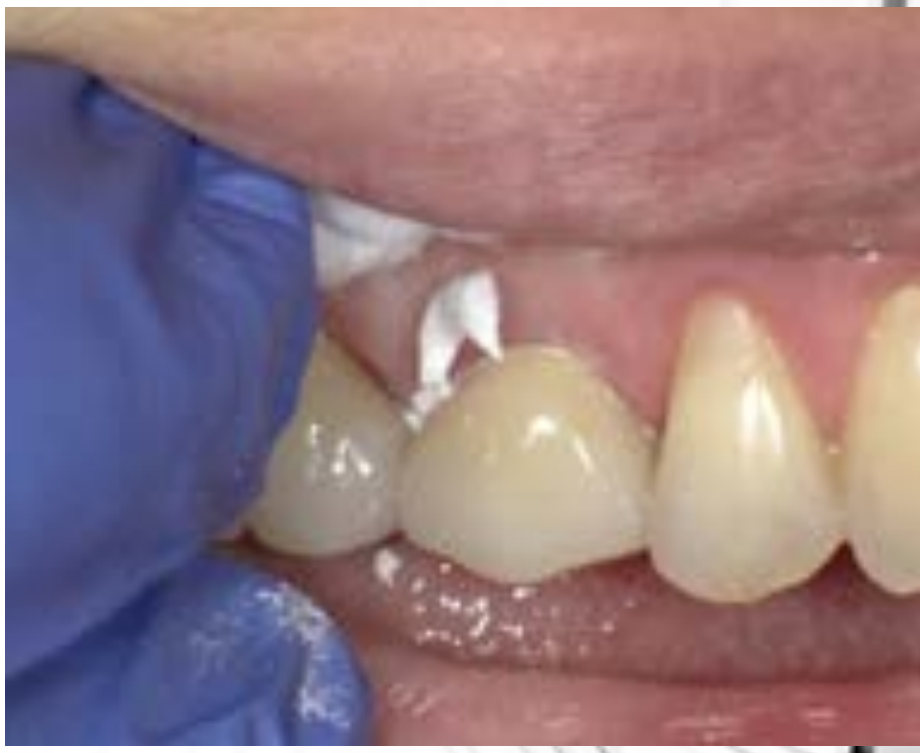






At the 3 minute mark:
Clean up
Double Knotted Floss
Pull Up to the gum and pull out





Final