I became an oral health detective!

We are all oral health detectives!

I became an oral health detective!

Use our detective skills to understand pockets and bleeding.

My hope is that you will find at least one or maybe two ideas from this morning’s presentation that will help you achieve health for your patients with 5mm pockets that bleed.
Do 5mm pockets that bleed add stress to your day?

Learning Objectives

Understand how probing has underestimated the level of periodontal disease
Implement a three-step approach to peri treatment that achieves predictable health
Observe a radical change in instrument design and treatment approaches

Prevalence of Periodontal Disease

CHICAGO—September 21, 2010
The prevalence of periodontal disease in the United States may be significantly higher than originally estimated. Research suggests that the prevalence of periodontal disease may have been underestimated by as much as 50 percent. The implication is that more American adults may suffer from moderate to severe gum disease than previously thought.

American Academy of Periodontology

Underestimation of periodontal disease
Partial-mouth probing vs full-mouth probing

Ramfjord teeth
Mesial surfaces
Selected teeth

Holding the probe parallel to the long axis of the tooth
Is half of your schedule perio procedures?

Or maybe, this is the half of the population that doesn't visit the dental office?

Patient scenario

- Two years since last DH visit
- Scheduled for a “cleaning”
- You review medical history
- Not much supragingival calculus
- Probe parallel to long axis, at the line angles
- Begin instrumentation
  - find 4-5mm in interproximals
  - find subgingival calculus
- Now what? It’s no longer a “cleaning”

Undercover periodontal therapy

providing instrumentation without telling the patient and without charging for it

Probing: Line angle vs interproximal

Aim for the mid-interproximal - col area

Probing: Line angle vs interproximal

Hold side of the probe against the contact
Probing scores can vary 2mm between clinicians
Probe size will also add to that difference

Disease starts interproximally
Communicate this fact to patients
Probe brushing & flossing surfaces separately

Numbers 1 to 3 are healthy
4 and above are not
bleeding points are a sign of infection

Separate prevention from periodontal therapy
Separate health from disease
Learning Objectives

Understand how probing has underestimated the level of periodontal disease

Implement a three-step approach to periodontal treatment that achieves predictable health

Observe a radical change in instrument design and treatment approaches

Three Step Approach

Focus on the cause of the disease

Provide new options for patients for biofilm control

Become an oral health coach

Biofilm and Calculus

Calculus is calcified dental plaque, composed primarily of calcium phosphate mineral salts deposited between and within remnants of formerly viable microorganisms.

Bacterial plaque biofilm covers mineralized calculus deposits.

Subgingival calculus is the result, not the cause of periodontal disease
Calculus is not the cause of periodontitis. It’s the result!

Biofilm and Calculus
Read the Tissues

Can scaling and root planing do more harm than good?

Yes, without daily interproximal oral hygiene and without regular maintenance, scaling and root planing can do more harm than good.

Can scaling and root planing do more harm than good?

Little did we know how our focused care could actually lead to greater attachment loss than no scaling and root planing.
Research is stronger for oral hygiene than for instrumentation

Without instrumentation, 0.1mm of attachment lost/year
Following surgery and poor oral hygiene, 1mm lost/year

Research is stronger for oral hygiene than for instrumentation

- Dental Hygiene maintenance therapy 6, 12, 24 months
- No oral hygiene at maintenance visits
- Temporary improvement in oral hygiene
- After surgery plaque accumulation increased significantly
- Attachment loss
  - 1mm lingually
  - 2mm interdentally

Nyman, E, Lindhe, J, Rosling, B, J Clin Perio 1977

Treating the symptoms not the cause

Biofilm - it's a complex ecosystem worthy of our respect

Too bad plaque biofilm isn’t green!

What do your teeth feel like when you wake up?
Does it feel like the teeth are wearing sweaters?

Does it feels like the army marching through?

Does it feels like the bottom of a bird cage?

Or does it feel just plain fuzzy!

Babies are born nearly germ-free

Bacteria: transferred from parent to child

How do I get bacteria in my mouth?
Bacteria: transferred from parent to child

What happens when it falls on the floor?

Bacteria are spread by the family dog
It's true, moms spit on their kids either directly or on a Kleenex.

Bacteria are spread between partners by kissing.

Troll-Lindén et al. JCP, 1996

**fimbria**

**Biofilm Formation**

**Fibrills**

**Quorum sensing**

**Biofilm Formation**

**Quorum sensing**

**Bacterial Quorum Sensing**

Low Cell Density

High Cell Density

Individual Behaviors

Group Behaviors

Dispersion of planktonic bacteria and biofilm fragments from mature biofilm

Contamination → Colonisation → Biofilm development → Inflammatory host response → Spreading → Systemic infection

Quorum sensing

Reversible → permanent attachment

Bacterial differentiation
1/3 bacteria
2/3 slime - to absorb water and trap particles

Biofilm grows in a fluid environment: saliva and crevicular fluid
Bacterial toxic waste subgingivally includes endotoxins that penetrate pocket walls and trigger the immune response destroying tissue and bone.

Pathogenesis from biofilm to bleeding

Translate cell biology into cartoons

Endotoxin from bacteria
Toxic waste of the bacteria Triggers the immune response

Bacterial endotoxins

Signals alert the immune system

Mast cells around the blood vessels release histamine, causing vasodilation

PMNs are sent to
PMNs release chemical machetes

- MMP
- prostaglandin
- (pre-term birth)
- interleukin
- collagenase

Breakdown of the active transport

Breakdown of GAGS Glue glycosaminoglycans

Breakdown of active the transport system

Krebs Cycle

ATPs

With oxygen - 24-28 ATP molecules from one molecule of glucose converted to pyruvate, plus the 4 molecules from glycolysis.
**Oxygen debt**

No oxygen - 4 molecules of ATP from each glucose molecule in glycolysis

**Limited ATPs of energy requires a big decision**

**Immature epithelial cells**

granulation tissue

**Pathogenesis - Advanced Lesion**

- pocket epithelium
- scar formation in connective tissue
- bone loss
- small band of connective tissue attachment
- capillary formation

**Infection and Inflammation**

Treated

Untreated
Pathogenesis - Gingivitis

8 days of plaque biofilm accumulation with no oral hygiene

Early gingivitis lesion appears

Increased gingival crevicular flow

Bleeding is not normal
It's a sign of infection

WARNING
Ugly biofilm

Biofilm causes ear infections

Non Healing Chronic Wound

After treatment with Xylitol and Lactoferrin

—Courtesy of Montana State University

photos courtesy of Dr. Randall Wolcott

Inflammation closes the eustation tube.
All are biofilm diseases

Biofilm - it's a complex ecosystem worthy of our respect

Would you agree?

The pathogenesis of heart disease

- Leading cause of death in the Western world
- Atherosclerosis - plaque on vessel walls
- Becomes fibrous, obstructs blood flow
- Plaque surface ruptures, allowing leakage
- Leakage is thrombus, blocks there or travels to other blood vessels and blocks

The pathogenesis of diabetes

- A person gets fat - eating sugar and flour
- They become inflamed
- Inflammation causes insulin resistance
- Body has to make more insulin
- Eventually the pancreas stops making insulin and diabetes follows

There is an oral - systemic connection
There is a connection between oral disease and systemic disease.

Oral disease does not cause systemic disease.

The common issue is sugar

The oral systemic link connected to sugar consumption

Dr. Robert Lustig

Dr. Phillipe Hujoel, 2009 JDR

Sugar is the reason gums bleed.

Six animal studies confirm:
In humans, add two sugary drinks per day and increase pocket depth by 0.4mm -1965
The Common Cause Theory
1950-1960
Excessive consumption of fermentable carbohydrates led first to dental diseases and then systemic diseases. Dental disease was an alarm bell for systemic disease.

Two researchers - Cleave and Yudkin postulated that excessive consumption of fermentable carbohydrates led first to dental diseases and then systemic diseases. Dental disease was an alarm bell for systemic disease.

“The research on coronary heart disease has convinced me beyond doubt that sugar plays a considerable part in this terrifying modern epidemic.”
—Yudkin, 1972b
John Yudkin (1910-1995) was a British physiologist and nutritionist, and the founding Professor of the Dept. of Nutrition at Queen Elizabeth College, London.

"From an evolutionary point of view, the refined carbohydrates, both on account of the magnitude and the recentness of the alterations, are always the foods most likely to be at fault (for the diseases of civilization), and not the fats."

— Cleave, 1975

Cleave’s interest focussed on preventive medicine. He observed harmful effects of overconsumption of refined carbohydrates (sugar and refined flour) which he called The Saccharine Disease. This did not occur in wild creatures or among primitive people living on traditional unrefined food.

Thomas L. Cleave, 1906-1983

They considered refined carbohydrates (white flour and sugar) to be the most transformed or refined food, and therefore the most dangerous.

The Common Cause Theory
flour and sugar caused both dental and systemic diseases

The opposing theory
Fat was the culprit
Ancel Keys, 1904-2004

He was a scientist, who studied business, political science, zoology and oceanography. He researched starvation, created K-rations for the military and with his wife, popularized the Mediterranean Diet.

Saturated fat made you fat and caused heart disease

He postulated that fats cause systemic disease, thus advocating a diet high in fermentable carbohydrates instead. The Low-Fat Diet.

Dental disease considered a local infection to be treated/prevented with fluoride, OHI, filings, sealants, etc.

From his perspective, fermentable carbohydrates were no longer considered the cause of heart disease. Fat was the cause!
Ancel Keys cheated!
He selected data from only 6 countries to create a linear relationship.

Data was collected from 22 countries!

Not only did Ancel Keys cheat on the research, he was a bully!

He bullied other professionals.

The Common Cause Theory

“My research on coronary heart disease has convinced me beyond doubt that sugar plays a considerable part in this terrifying modern epidemic.”

—Yudkin, 1972b

Ancel Keys destroyed the careers of both Cleave and Yudkin

The evidence for sucrose as the “greatest killer” in Western societies is “utter nonsense” and “would never pass an acceptable term paper in an undergraduate course in home economics.” Ancel Keys, 1975

Saturated fat made you fat and caused heart disease

Dental disease was simply a necessary side effect for the greater good of preventing heart disease by decreasing fats and increasing sugars.
The Caries Research Foundation (CRF)  
Sugar Industry  
Dental Association

It’s not about reducing sugar in the diet - all about improving oral hygiene!

Based on the Low Fat Diet
- No more steak, bacon, butter, eggs or cheese
- Take fat out of processed food and add sugar

Based on the Low Fat Diet
- No more steak, bacon, butter, eggs or cheese
- Take fat out of processed food and add sugar

Standard American Diet (SAD)
Increased risk of cancer, heart disease, stroke, intestinal disorders – just about any illness – the standard American Diet has them all.

High in unhealthy fats: hydrogenated, poly-unsaturated  
Low in fiber  
High in processed foods  
Low in complex carbohydrates  
Low in plant-based foods

People don’t know how much sugar they eat
People don’t know how much sugar they eat

Sugar consumption:
1822 — 45 grams per day, 1/8th to 1/4 cup (1.6 oz)
2012 — 152 grams per day, 3/4 cup (5.4 oz)
130 pounds per year/person!

Humans do not need sugar
No physical need to consume sugar

Nearly every packaged food contains sugar
- sucrose
- high fructose corn syrup
- dextrose
- honey
- maple syrup

61 Names for Sugar
- Agave nectar
- Barbados sugar
- Barley malt
- Barley malt syrup
- Beet sugar
- Brown sugar
- Buttered syrup
- Cane juice
- Cane juice crystals
- Cane sugar
- Caramel
- Carob syrup
- Castor sugar
- Coconut palm sugar
- Coconut sugar
- Confectioner's sugar
- Corn sweetener
- Corn syrup
- Corn syrup solids
- Date sugar
- Dehydrated cane juice
- Demerara sugar
- Dextrin
- Dextrose
- Evaporated cane juice
- Free-flowing brown sugars
- Fructose
- Fruit juice
- Fruit juice concentrate
- Glucose
- Glucose solids
- Golden sugar
- Golden syrup
- Grape sugar
- HFCS (High-Fructose Corn Syrup)
- Honey
- Icing sugar
- Invert sugar
- Malt sugar
- Maltodextrin
- Maltol
- Maltose
- Mannose
- Maple syrup
- Molasses
- Muscovado
- Palm sugar
- Panocha
- Powdered sugar

Foods containing sugar that will surprise you
- Bacon
- Green Beans
- Table Salt
- Tomato Sauce
- What else…?
Nutritional Coaching

- Grass fed, organic beef
- Free range, organic chicken
- Organic dairy products
- Sustainable farming
- Real food, not processed

If patients with 5mm bleeding pockets don’t want to clean between their teeth, simply cut out all added sugar!

2009 - Stone Age Diet - Switzerland

10 subjects in a controlled Stone Age environment

Provided a small supply of whole grain barley, wheat and spelt, some salt, herbs, honey, milk and meat from domestic goats and hens.

Not enough food for the 4 week study

They foraged for berries, edible plants and fishing

2009 - Stone Age Diet

- No oral hygiene products or tools
- Stone Age clothes, tools and huts
- Filmed for a TV special
- Sports medicine physicians monitored
- Dental examinations before and after

Would you agree we need to eliminate added sugar from our diet?

2009 - Stone Age Diet

- Plaque increased, as expected
- Surprised by reduction in gingivitis & probing depths
- Bleeding upon probing reduced from 35% to 13%
- Bacteria changed to a balance favoring health rather than disease
Learn more about sugar and fat

- *The Big Fat Surprise*, Nina Teicholz
- *Why We Get Fat*, Gary Taubes
- *The Great Cholesterol Con*, Malcolm Kendrick

... but we need an alternative to sugar for the occasional sweet.

Xylitol the good sugar

**Best alternative**

- Looks and tastes like “sugar”
- broad category: carbohydrate
- narrow category: polyol
- 2.4 calories per gram
- 40% fewer calories than other carbohydrates

Biggest Game Changer in DH?

Reduces plaque biofilm by 50%!
Doesn’t feed bacteria
Reduces acid production
Enhances remineralization

Xylitol the good sugar

- Discovered in 1891 by German & French chemists
- Benefits remained dormant for several decades
- Xylitol production began at the Finnish Sugar Co., Ltd.
- 1960 for diabetics, 1970 for caries prevention

Xylitol the good sugar

- Crystaline carbohydrate
- Found in tree bark, plants, fruits and vegetables
- The body makes 5-10 grams of xylitol every day
Xylitol the good sugar

• Most common source today is corn cobs and corn stalks
• Xlear/Spry products are natural and non-GMO
• They contain no corn

Xylitol the good sugar

• Side Effects
  • dangerous for dogs
    • drop in blood sugar
    • liver damage

Never give your pets:
* chocolate, coffee, caffeine
* alcohol
* avocado
* macadamia nuts
* grapes and raisins
* yeast dough
* raw or undercooked meat, eggs
* onions, garlic and chives
* milk

Xylitol the good sugar

• Chocolate, grapes & raisins are also dangerous for dogs

Xylitol the good sugar

• Under nourished dogs are at greatest risk
• Xylitol triggers release of insulin in dogs
• Remedy: give them sugar
• Take them to the vet - the vet will give IV glucose

Xylitol the good sugar

• Side Effects
  • gastric upset when eaten in large amounts too quickly

Xylitol the good sugar

• Side Effects
  • digested as a fiber
  • pulls water out of tissue cells, thus diarrhea
Xylitol the good sugar

- Glycemic level of 7
- High GI (70 and above)
  - Glucose 100
  - Table sugar 68
- Medium GI (45 to 69)
  - Honey 55
  - Fructose 19
- Low GI (30 and under)
  - Xylitol 7


- Does not raise insulin levels
- Does not use insulin for metabolism
- Safe for diabetics

Xylitol supplies a steady flow of energy

**Blood Sugar Response**

- Glucose
- Xylitol

Diabetic Friendly, Low Glycemic Index

- Xylitol the good sugar

- How it works
  - 5 carbon, not 6 carbon like sorbitol, mannitol, maltitol
  - Passes through bacterial membrane; not metabolized
  - Bacteria uses energy to pump the xylitol molecule out

Xylitol prevents biofilm formation

- How it works
  - Bacteria like acid environment
  - When bacteria cannot make acids
    - cannot stick to each other or the teeth
    - bacterial communication disturbed
    - biofilm structure is compromised
  - Bacteria slide down the digestive & nasal tracks

Metabolism and Communication
Xylitol breaks up established biofilm

1970 xylitol containing caramels, sweet rolls and beverages reduced 4-day plaque mass by 50%

1972 similar results after a 5-day study, dental students, no oral hygiene - SIMILAR RESULTS

Two-year meal replacement study - 85% reduction in caries
- Difficult study to undertake and monitor

Three test groups:
Xylitol
Fructose
Sucrose

Turku Sugar Studies

6.7 grams vs 67 grams resulted in 85% reduction in caries incidence compared to sucrose group

900 articles published about xylitol
- Elevates the pH of the mouth
- Encourages growth of good bacteria
- Discourages acid producing bacteria

The cause of 5mm pockets that bleed

Fermentable carbohydrate diet

Biofilm ➔ Infection ➔ Systemic ➔ Inflammation
Three Step Approach

Focus on the cause of the disease

Provide new options for patients for biofilm control

Become an oral health coach

Options for biofilm control

- Cut out added sugars
- Xylitol to replace sugar
- Interdental brushes, picks, sticks, etc
- Water Flossing
- Dry Toothbrushing

Time to “Toss the Floss”

Are brushing and flossing working for your patients?
Tossing flossing?
Robert H. Shmerling, MD
Editor, Harvard Health Publications

Feeling Guilty About Not Flossing?
Maybe There’s No Need

Haven’t flossed lately? Don’t feel too bad: Evidence for the benefits of flossing is ‘weak, very unreliable’
Associated Press

Guilty No More: Flossing Doesn’t Work
An AP investigation finds weak evidence that flossing helps.
WILL GREENBERGAUG
2016

Flossing for the management of periodontal diseases and dental caries in adults
Dario Sambunjak, Jason W Nickerson, Tina Poklepovic, Trevor M Johnson, Pauline Imai, Peter Tugwell, Helen V Worthington
First published: 7 December 2011

There is some evidence from twelve studies that flossing in addition to toothbrushing reduces gingivitis compared to toothbrushing alone. There is weak, very unreliable evidence from 10 studies that flossing plus toothbrushing may be associated with a small reduction in plaque at 1 and 3 months.

No studies reported the effectiveness of flossing plus toothbrushing for preventing dental caries in adults

Flossing teeth can do more harm than good if not performed correctly, expert claims
Less than a fifth of people floss regularly, Professor Robin Seymour claims
Friday 16 October 2015
New study calls flossing your teeth a waste of time
Flossing your teeth is overrated, new research says; it has little effect on reducing tooth decay and gum disease. Matt Lauer thinks most people say the floss 10 times more than they actually do.

Flossing is difficult
Flossing removes only 18-35% of interproximal plaque (Ong, 1990, J of CP)
Only 13% of adults and 6% of kids floss daily
No benefit over brushing alone

Flossing Compliance is Poor
18 out of 258 reported daily flossing
Any gains seen at 2 weeks - lost at 4 weeks
No evidence of the Hawthorne Effect
Instruction alone doesn’t work

CONCLUSIONS
While flossing with any type of floss is substantiated within this literature as an effective method of interproximal plaque removal, for some clients and/or for certain oral sites, other methods of interdental cleansing are warranted.
CONCLUSIONS
While flossing with any type of floss is substantiated within this literature as an effective method of interproximal plaque removal, for some clients and/or for certain oral sites, other methods of interdental cleansing are warranted.

Flossing will not prevent caries at the contact area. The caries process begins just below the contact - not at the contact.

Concavities are Difficult to Reach

Brushes bend for easier access
Alternatives
Start Cleaning Between

Alternatives
Start Cleaning Between

Start Cleaning In Between

Easy Pick

Have I convinced you there is more to interdental cleaning than floss?
Water Flossing

Oral Irrigation
Cutler et al, 2000 - Study Design

- 52 subjects with 4 - 7 mm pockets and BOP randomized into 3 groups
- A: Cessation of ROH - 14 days
- B: No modification of ROH - 14 days
- C: Water irrigation plus ROH - 14 days

Outcome measures:
PI, GI, PPD, CAL, BOP

Cutler et al, 2000 - Results

“The addition of oral irrigation with water to the subjects’ routine oral hygiene (ROH) for 14 days resulted in a significant reduction in PPD, BOP, GI, and PI at interproximal sites with mild to moderate (4 - 7 mm) periodontal disease”

Floss with water
Sonicare Air Floss

Floss with water
Sonicare Air Floss

Found Superior
If patients are flossing effectively, support them and encourage them to continue.

Those who do no interdental cleaning, offer two alternatives to floss and let them choose which one they want to use.

Why do we teach toothbrushing first?

- When disease is between the teeth?

Brushing times 38 to 60 seconds
- Erratic pattern of brushing
  ✓ Returning several times to starting place
- Rarely brushing lingual surfaces
  ✓ If so - only 10% of time spent on linguals

MacGregor, Rugg-Gunn JPR 1979 14:225-230

Dry Brush Inside First

✓ Reduced lingual calculus 63%
✓ Reduced lingual bleeding 55%

O’Hehir, Suvan, JADA 1998 129:614
Most people brush with their eyes closed DROOLING and DAY DREAMING.

30 seconds seems like 3 minutes.

#1 People brush longer without toothpaste

Toothpaste makes so many bubbles, you can’t see what you’re doing.

#2 People brush more evenly around the mouth

Toothpaste flavor and wetting agents numb your tongue so your teeth feel clean when they really aren’t.

#3 People have a way to measure plaque removal with the tongue

Use water with sonic toothbrushes

Better than toothpaste

Offer patients choices - to make their own plan

Options for biofilm control

- Cut out added sugars
- Xylitol to replace sugar
- Interdental brushes, picks, sticks, etc
- Water Flossing
- Dry Toothbrushing
Three Step Approach

Focus on the cause of the disease

Provide new options for patients for biofilm control

Become an oral health coach

Do you ever feel like a science professor talking to your patients?

The story just gets longer and longer

Do you see patients like this...

After repeated OHI
Skip the brush and floss speech -
Let’s change our words

Explaining science to patients -
Let’s change our words

I’M BLIND,
PLEASE HELP.

It’s a beautiful
day and I
can’t see it.

You have gum disease,
brush and floss

Skip the Speech!
To add emotion,
reveal secrets instead!
Reveal Secrets Instead!

Find a problem the patient wants to solve, then offer a secret and ask if they want to know what it is.

- Lingual calculus removal with sharp tools?
- Bleeding gums?
- Fresh breath?

Ask permission to provide education.

Open Questions

- Ask questions without an obvious answer
  - “Have you been flossing?” Not open. You already know the answer.

Open Questions

- Ask questions without an obvious answer
  Instead ask:
  “What do you do to clean between your teeth?”

Open Questions

- Ask questions without an obvious answer
  Instead ask:
  “What do you do to clean between your teeth?”

Clinician - Patient Interaction

On a scale of 1-10, how healthy is your mouth?

If the answer is 6, our natural instinct is to want them move to 7
Clinician - Patient Interaction

On a scale of 1-10, how healthy is your mouth?

Instead, ask them why they are not a 5?
What moved them from 5 to 6?

Three Step Approach

Focus on the cause of the disease

Provide new options for patients for biofilm control

Become an oral health coach

Learning Objectives

Understand how probing has underestimated the level of periodontal disease

Implement a three-step approach to perio treatment that achieves predictable health

Observe a radical change in instrument design and treatment approaches

Secrets and open questions...

- Are rewarding
- Reduce stress
- Are more likely to achieve behavior change

Three Step Approach

Focus on the cause of the disease

Provide new options for patients for biofilm control

Become an oral health coach

Learning Objectives

Understand how probing has underestimated the level of periodontal disease

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Observe a radical change in instrument design and treatment approaches
Curettes are designed for open flap surgery.

Instruments designed to reach interproximal areas

Problem
blade too big for subgingival space
off-set blade harms tissue

This is why we use power scalers more.
Easier access.

New Instrument Design
Use a push or pull stroke in all directions - vertical, horizontal or oblique

New Instrument Design
Less tissue distention and more comfortable for the patient during and after procedure

New Instrument Design
Small blade reaches deep narrow defects
Instruments designed to reach interproximal areas

The O’Hehir Curettes

Scoops not Scalers

PDT makes them with improved design

• Entire rim of blade provides cutting edge
• Use a push or pull stroke in all directions - vertical, horizontal or oblique

Scoop Design
Paradise Dental Technology (PDT)

Young MD from Calcutta

Future Dental Hygiene Visits

Air Polishing with Glycine

Removal of subgingival biofilm

80% less abrasive, safe & comfortable

The researcher behind glycine powder

Dr. Thomas Flemmig
He was intrigued by the effects of sodium bicarbonate on subgingival biofilm, but a gentler powder was needed.
Introduced in the 1970s
First used with sodium bicarbonate for stain removal

Scientific evidence shows it is safe, effective and 3 times faster than rubber cup polishing

Despite the evidence, DH schools still favor rubber cup polishing

Air Polishing with Glycine
First two studies: standard nozzle significantly lower bacterial counts compared to hand instruments

Air Polishing with Glycine
First two studies: patients preferred air polishing with glycine over hand instruments - more gentle and comfortable

Air Polishing with Glycine
How long per surface?
First guess, 5 seconds per surface = 9 minutes for full mouth
More research, that can now be cut to 2.5 seconds per surface
Compared to Power Scaler
Air polisher is more effective for biofilm removal than a power scaler.
Power scaler tip needs to overlap each stroke.
Air polisher reaches a broader area.

Air Polishing with Glycine
Subgingival polishing
Reaches 9mm
Safe on root surfaces
Effective biofilm removal

Air Polishing with Glycine
Feels like a water spray - even on the tongue

Incidence of air emphysema with air polishing is 1 in 666,666
Very Safe

Glycine powder is 5 times less abrasive than sodium bicarbonate
30 publications showing safety

How will glycine powder be used?
Polishing first to remove biofilm. Then easier to remove subgingival calculus
Air polishing with glycine powder is widely accepted in Europe.

May be harder to break the habits of American RDHs.
Learning Objectives

Understand how probing has underestimated the level of periodontal disease

Implement a three-step approach to periodontal treatment that achieves predictable health

Observe a radical change in instrument design and treatment approaches

Achieve health in 5mm pockets that bleed

Thank you!