“Good to Great Dental Hygiene: Antimicrobials in Non-surgical Periodontal Therapy”

Suzanne Newkirk, RDH
Perioscopyprofessionals.com
About Me

✓ Graduated from University of Alaska, Anchorage in 1981
✓ Been an RDH for 33 years
✓ Live in the mountains of north Georgia with hubby of 32 years
1 daughter Marchie, in law school at University of South Carolina
- Seattle Study Club Speaker
- Perioscopy Instructor
- Own and moderate the Perioscopy Users Forum on LinkedIn
- GDHA Chair Governmental Affairs
Learning Objectives

✓ Understand the diagnosing criteria for periodontal case types
✓ Discover how risk factors, host modulation therapy and genetics play a role in treating patients with periodontitis
✓ Realize why the “gold standard” of non-surgical periodontal therapy is still based on the complete removal of the subgingival bacterial bioburden
✓ Learn clearly defined treatment protocols using “Anti-Infective Agents” to decrease the incidence of disease recurrence
Did You Know?

HALF of American adults suffer from GUM DISEASE

47.2% Have periodontitis

THAT'S 64.7 Million Adults 30 years and older

8.7% Mild Periodontitis
30% Moderate Periodontitis
8.5% Severe Periodontitis

Recent research from the Centers for Disease Control indicates that half of U.S. adults have periodontitis – an advanced form of periodontal disease. Learn more »
Great Periodontal Therapy Begins With The Correct Diagnosis
Case Type I Gingivitis

✓ Probing depths 1-3mm with less than 15 sites of BOP for FM periodontal charting
✓ **Gingivitis Infection**: bleeding on 15 or more sites during FM perio charting
✓ May include the presence of hyperplasia
✓ No attachment or bone loss
✓ No mobility
✓ No furcation involvement
CDT1110 for patients with Gingivitis or Gingivitis Infection

- Ultrasonics (or piezo electric scalers) for calculus removal and subgingival biofilm disruption
- May use site specific hand scaling for supragingival stain and hard deposit refinement
- Coronal polish or air polish
- Floss, Rev OHI
- FM povidone-iodine irrigation
- Topical Fluoride Varnish for moderate – high caries risk individuals
- Schedule continuing care. CDT 1110 based on risk
10% Povidone-iodine in Periodontal Tx

- Applied full strength subgingivally into the base of the pocket using a 3-ml endodontic syringe or ultrasonic scaler for a contact time of at least 5 min for the entire mouth
- Generally performed before and after periodontal Tx
Contraindications

- Can give rise to allergic reactions; Ask patients if they are allergic to iodine or shellfish prior to use
- Prolonged iodide intake can inhibit thyroid hormone synthesis; not to be used for routine patient self-care
- Should not be used in patients with thyroid dysfunction, pregnant woman or infants,
Case Type II
Slight Chronic Periodontitis

- Beginning bone loss of 10-20%
- 1-2mm CAL
- Slight mobility may be present
- Furcation limited to Class I
- *Probing depths may range from 4-5mm*
The effectiveness of subgingival scaling and root planing in calculus removal
Rabbani, Ash, Caffesse

- Pockets less than 3 mm were the easiest sites for effective SRP
- Pockets between 3 to 5 mm were more difficult to remove calculus and biofilm
- Pockets deeper than 5 mm were the most difficult...tooth type didn’t influence the results
No More Bloody Prophys

**A typical hygiene appointment**

Visit the dentist.

Bleed profusely.

Out of shame, start flossing.

Give up after two days.

Schedule an appointment 3 months later.

Floss the night before.

Repeat.
Tx Sequencing for Class I-II

• 1st visit — prophylaxis for nonperiodontally involved teeth — CDT 1110 with FM povidone-iodine irrigation, OHI

• 2nd visit — UR/LR periodontal scaling — CDT 4342FM povidone-iodine irrigation

• 3rd visit — UL/LL periodontal scaling — CDT 4342 FM povidone-iodine irrigation

• 4th visit — Periodontal Maintenance (SPT) and FM povidone-iodine irrigation, review OHI and schedule continuing care based on risk — CDT 4910
Case Type III
Moderate Chronic Periodontitis

- Moderate bone loss of 25-30%
- 3-4mm CAL
- Grade 1 mobility may be present
- Furcation up to Class II
- Probing depths may be **5-7mm**
Residual burnished calculus in 100% of pockets and furcations that bleed upon probing
Tx Sequencing for Class III

- 1st visit — UR/LR periodontal scaling— CDT 4341, FM povidone-iodine irrigation, ABx may be prescribed based on infection
- 2nd visit — UL/LL periodontal scaling— CDT 4341, FM povidone-iodine irrigation
- 3rd visit — 6 week ITE; FM probe, polish, rev OHI and FM povidone-iodine irrigation
- 4th visit — 6 weeks post ITE provide a Periodontal Maintenance (SPT), FM povidone-iodine irrigation, Rev OHI. Schedule continuing care every based on risk — (no more than every 8-12 weeks ) CDT 4910
Case Type IV

Advanced Chronic or Severe Periodontitis

- Severe bone loss of 40%+
- >5mm CAL
- Grade 2 or 3 mobility
- Class II/III furcation involvement
- Multiple teeth with guarded prognosis
- Probing depths may be greater than 7mm

Non surgical Debridement Is Rarely Effective As A Solo Tx for Case Type IV
Antimicrobial Effects Of Mechanical Debridement

Petersilka, Ehmke, Flemming

- 5-80% of treated roots still harbored residual plaque or calculus
- And the deeper the pockets and furcation involvements, the more deposit was left behind
Tx Sequencing for Class IV

• 1st visit — Systemic Abx, UR/LR periodontal scaling — CDT 4341, FM povidone-iodine irrigation
• 2nd visit — UL/LL periodontal scaling — CDT 4341, FM povidone-iodine irrigation
• 3rd visit — 6 week ITE: FM probe, polish, Review OHI, FM povidone-iodine irrigation
• 4th visit — 4-6 weeks later: SPT, FM povidone-iodine irrigation, OHI. Schedule continuing care every no more than every 8-12 weeks — CDT 4910
Which Tools?

Behavior Modification and OHI with the “3 Step” method
**0.1% Sodium Hypochlorite mixture for mouthwash and irrigation**

- 1 teaspoon (5 ml) household bleach to 16oz water,
- Solution is delivered subgingivally via a commercial oral irrigator at a high pressure setting 3x week,
- As mouthwash 3x week “Rinsing reduces biofilm by 80-fold compared with water”
Using Dilute Sodium Hypochlorite as an anti-infective agent for treating the family

ADA Council on Dental Therapeutics designated 0.1% sodium hypochlorite a ‘mild antiseptic mouth rinse’ and suggests its use for direct application to mucous membranes.

**Contraindications**

- None
- Does not evoke allergic reactions
- Is not a mutagen, carcinogen or teratogen
- Has a century-long safety record
"That's correct, doctor. He claims that the instructions said to squeeze the toothpaste from the bottom."
3 Things To Know Before Beginning Any Periodontal Therapy:

- Objectives
- Limitations
- Expected Results
Objectives of Treatment

- Interrupt the disease process to resolve (and or mediate) the infection and or inflammation
- Reduce Risk
- Maintain or regenerate periodontal/peri-implant support
- Expect treatment to resolve or reduce the periodontal inflammatory disease
Treatment Variables

• Patient responsibility (OH, co-pay,)
• Limitations:
  Tooth and root anatomy
  Severity of the periodontal disease
  Risk
  Operator (the clinician)
• Expected results are not met
Assessment
Risk Factor Management

**Objective**

- minimize the pathological factors
- maximize the protective factors

...to favor prevention

...reverse or arrest disease
When combined Risk and Disease:

- Are distinct entities that provide a more comprehensive description of health status
**Risk:**
- guides preventive treatment or an action plan
- modulates treatment intensity and aggressiveness

**Diagnosis:**
Leads To Reparative Treatment
Risk Factors For Periodontitis
Lifestyle Factors

• Smoking
• Alcohol Consumption
• Poor Nutrition
• Stress
CDC estimates that 74% of all periodontal disease is related to smoking.
Alcohol

Risk for Perio increases to 40% for patients who consume more than 10 drinks per week
How many of you have patients like this?

Poor Nutrition and Stress lowers the body’s immune system to fight disease.
Systemic Conditions: Diabetes Type 1 and 2

- Diabetics are twice as likely to develop perio than those without it.
- The less the metabolic control the faster and greater the disease.

People with diabetes have a 2x greater risk of developing gum disease.
Systemic Conditions: Female Hormones

✔ Menopause
✔ Pregnancy
✔ Puberty

“Fluctuating levels of estrogen can lead to increased gum sensitivity, inflammation and a higher risk of periodontal disease”.

“Periodontitis and its Relation to Hormonal Changes” by Charlene Krejci, DDS, MSD
Systemic Conditions Compromising the Body's Immune System

- Cancer
- AIDS
- Autoimmune diseases such as:
  - Crohn’s disease
  - Rheumatoid arthritis
  - Multiple Sclerosis
  - Lupus
  - Sjögren’s
Medications

✓ Birth control pills/ hormone replacement therapy
✓ Antidepressants
✓ Heart medications/hypertensive meds/ calcium channel blockers
✓ Chemotherapy medicines for cancer treatment (which lower the immune system response)
✓ Medicines used to treat AIDS
✓ Immunosuppressant medicines
Dry Mouth affects 1 in 4 patients

1000+ prescription and OTC drugs are associated with Xerostomia (Dry Mouth)

- Antihistamines
- Antidepressants
- Antihypertensives
- Decongestants
- Painkillers
- Diuretics
- Tranquilizers
Other Factors

✓ Age:
   Above age 65, 70.1% of adults have some form of periodontal disease

✓ Genetic Factors

✓ Personal Oral hygiene/habitual mouth breather

✓ Restorations with subgingival margins

✓ Occlusal trauma, tooth position

✓ Socioeconomic status
The role of Inflammation
• **Yesterday:** Researchers believed that attachment loss in periodontal disease was caused by the bacteria in plaque.

• **Today:** Researchers have determined that attachment loss in periodontal disease *is caused by the inflammatory response to the bacteria in plaque.*
Periostat: Host Modulation Therapy

- The first FDA approved systemic drug for host modulation
- “Sub antimicrobial dose” antibiotic—does not cause Abx resistance
- 20mg Doxycycline 2x daily taken on an empty stomach
On a hereditary level, not everyone is genetically susceptible to periodontitis.

Specific genetic markers associated with increased IL-1 production are “a strong indicator of susceptibility to severe periodontitis in adults.”
Interleukin-1 genotype

- People with the IL 1 are 7X more likely to develop advanced periodontal disease than the general population.
- This genotype occurs in 30% of the population.
The ADA code is D0421 "Genetic Test for susceptibility to oral diseases."

Interleukin Genetics “PerioPredict”
Other Factors Affecting Treatment Outcomes
Factors Affecting Mechanical Therapy (SRP)

- Time
- Instruments
- Anesthetic
A little over your budget... but this tooth has five cusps, a private furca and plenty of pits and fissures for the kids to play in!
Root Morphology Considerations

Root morphology:

✓ bi and tri-furcated teeth
✓ concavities
✓ line angles
✓ depressions
✓ developmental grooves
Instrumentation Limitations

- Amount and tenacity of the deposit
- Location of deposit
- Access for instruments such as:
  - narrow deep pockets
  - curved roots
  - close root proximity
  - over contoured restorations
  - distals of second or third molars
“A clinical evaluation of hand instruments and ultrasonic instruments on subgingival debridement with unmodified and modified ultrasonic inserts” by MR Dragoo

“L and R curved ultrasonic inserts reached farthest into the pocket compared to straight US inserts and hand instruments in pockets 5 to 8mm
Anatomical Considerations, Etc

- small mouth
- muscular tongues
- tight cheeks and lips
- gaggers
- patient cooperation

“You’re teeth look great. But it looks like we need to extract your tongue.”
Current evidence suggests that therapies intended to arrest and control periodontitis depend primarily on effective root debridement.

ADA Council on Scientific Affairs
The Dental Endoscope

- A miniaturized fiberoptic camera attached to a tiny probe less than one millimeter in diameter and then placed below the gum line.
- Images immediately displayed on a chair side monitor and magnified from 24 to 48 times.
- Allows clinicians to diagnose and treat below the gumline.
MCU

Base

Self-contained water unit

Fiberoptic

2 foot pedals
The MCU
Fiberoptic And Sterile Sheath
Right and left Explorers are used to visualize all areas of the teeth.
Explorer Tip

- Cone Socket
- Tissue Retraction Shield
The “shield” retracts soft tissue from the camera lens, creating a visual access space to the root surface.
What Magnification Looks Like

SIMULATED SCOPE IMAGE

METAL SHIELD

ENAMEL

CEJ

CALCULUS

INFECTED TISSUE
The Camera Becomes the Eyes

Like with the dental mirror, the camera is moved around the tooth, except it is in the pocket.
2 Handed Perioscopy: View And Instrument Simultaneously
Technique In Action
Automate Debridement

✓ Using powered instrumentation only
Candidates for Perioscopy

- Patients who have had initial therapy and have sites that don’t respond
- Patients with localized moderate and advanced periodontal disease who present with pockets 4mm and above
- Chronically inflamed, or increasing pocket depths found during periodontal maintenance
- Patients resistant to surgical therapy, or cannot afford to see a specialist
Effective Instrumentation:

✓ “Requires skill, patience, and dedication to technique”

✓ There is no shortcut for successful therapy—whether an ultrasonic scaler, hand instruments, or a combination of the two is used
Recommendations when Instrumenting

- Wear loupes with a headlight
- Use a chair with arm rests
- Think ergonomics
- Practice patience while thinking of root morphology and tip adaptation
“Anti-Infective Agents in Periodontal Treatment”

“Low-cost Periodontal Therapy”

Jorgen Slots, DDS, DMD, PhD, MBA
“Systemic antibiotics affect organisms outside the reach of instruments, or topical anti-infective chemotherapeutics”

Combination Antibiotics in Periodontics

✓ Takes advantage of different mechanisms of action to expand the spectrum of antimicrobial activity

✓ The most common antibiotic combination in periodontics is Amoxicillin-metronidazole (250 mg amoxicillin-375 mg metronidazole, 3 times daily for 8 days)*

Anti-Infective Agents in Periodontal Treatment
Jorgen Slots, DDS, DMD, PhD, MBA
Case # 1

Perioscopy; SRP with the dental endoscope and adjunctive systemic azithromycin
“Cleaning and Disinfecting”
by Dr. John Kwan

Pockets # 29-31

Notice the calculus mesial #’s 30, 31

Pre-Tx PD: 4 – 11 mm
18 Months Post TX
Probing depths # 29-31  2-5mm

Post Tx PD: 3-5 mm      Great bone fill M #’s 30, 31
Locally Administered Antimicrobials: Arestin and Atridox

Used:
✓ In combination with SRP
✓ Post SRP in pockets not resolving
✓ In patients with chronic periodontitis, especially those at risk for disease progression
Most frequently used LAA is Arestin

Minocycline hydrochloride Microspheres
1 mg is indicated as an adjunct to SRP procedures for reduction of pocket depths ≥5 mm in patients with adult periodontitis
Case #2

SRP with the dental endoscope with adjunctive subantimicrobial dose Doxycycline (SDD) and Arestin
#26 D by Dr. David Trylovich DDS, MS and Shelly Andreoli, RDH

# 26: 12mm DF and DL    BOP, Class II mobility
3 Years Post TX

PD# 26: 2mm DF and DL  Great bone fill
Antiseptic Agents in the Treatment of Periodontal Disease

“Antibiotic-resistant bacteria has created interest in using inexpensive, safe, and highly bactericidal/virucidal antiseptics in periodontal therapy”

Jorgen Slots, DDS, DMD, PhD, MBA
Has Antibacterial, Antifungal and Antiviral properties: Kills all major periodontopathic bacteria within 15 to 30 seconds

Anti-Infective Agents in Periodontal Treatment
Jorgen Slots, DDS, DMD, PhD, MBA
September 15, 2011
For use in ultrasonic scalers

- 10% Povidone-iodine full strength or diluted by mixing 1 part solution with 9 parts (or less) water
- FM mouth periodontal irrigation with povidone-iodine has “medication expenses” of less than 20 cents per application
Case #3

Perioscopy with adjunctive systemic Antibiotic Amox/Metronidazole and 10% povidone-iodine irrigation
Non-surgical Tx with PI Irrigation
Rx: Amox and Metronidazole

Pre Tx: 10mm
6 months later: 5mm

Dr. Richard Longbottom and Wendy Williams, RDH
2 years Post Tx:
*PD now 3mm*
**Radiographic Bone Fill**
*clinical case studies indicate that lasers used **adjunctively** with scaling *may improve* tissue healing by bactericidal and detoxification effects
Case #4

Dental endoscopy with adjunctive systemic azithromycin Abx and LPD (laser pocket disinfection) using an Nd:YAG dental laser
Pre Tx: X-Rays and Photo
PD: 7mm Facial and lingual #’s 9-11
3 Years Post Tx: PD 4mm ML #11 all other pockets are 2-3mm
What was the Commonality of all 4 cases?

✓ All 4 cases were treated endoscopically for meticulous instrumentation

**Conclusion:**

SRP for the disruption and removal of subgingival bio-burden continues to be the “gold standard” of non-surgical periodontal therapy regardless of what adjuncts are used.
5 Critical Steps for Improving Patient Outcomes

1. Make an accurate diagnosis
2. Schedule appropriate time commensurate to the level of disease *and use anesthetic*
3. Concentrate on root morphology while instrumenting
4. Use anti-infective agents in therapy and OH to decrease the incidence of disease recurrence

5. *Love what you are doing and let it show*
thank you.