Optimizing Non-Surgical Periodontal Therapy: Hands-on Workshop

Paul A. Levi Jr., Rui Ma, Robert Rudy
Welcome to the Greater New York Dental Meeting

Greater New York Dental Meeting™
Executive Headquarters
200 West 41st Street, Ste. 1101, New York, NY 10036
Tel. (212) 398-6922, Fax. (212) 398-6934
E-mail: victoria@gnydm.com
www.gnydm.com
Sponsored by New York County & Second District Dental Societies

6 Days of Education Seminars, Hands-on Workshops & Essays
Friday - Wednesday

4 Days of Exhibits
Sunday - Wednesday

COURSE REGISTRATION
Pre-registration is required for all continuing education courses with the exception of the “Live” Dentistry and Affiliated Groups. Your seat will be held for 15 minutes after the start of the course; after that, those without tickets will be seated according to space availability. When the room is filled, no additional people will be admitted due to fire department regulations. If you have not pre-registered, please be prepared to select an alternate session to attend.

Tickets
Tickets are required for all courses excluding Live Dentistry. Tickets for all functions can be purchased at all general registration booths located in the Registration Area on the Upper Level in the Crystal Palace and online.

General Registration Hours
Friday, November 29          12:00 Noon - 4:30 P.M.
Saturday, November 30         8:00 A.M. - 4:30 P.M.
Sunday, December 1 - Tuesday, December 3 
  8:00 A.M. - 5:30 P.M.
Wednesday, December 4       8:00 A.M. - 4:30 P.M.

Exhibit Hall Hours
Sunday, December 1 - Tuesday, December 3
  9:30 A.M. - 5:30 P.M.
Wednesday, December 4 - 9:30 A.M. - 5:00 P.M.

All programs and exhibits are held at the Jacob K. Javits Convention Center (unless otherwise indicated)
11th Avenue between 34th and 39th Street, New York City

Over 1,700 Exhibit Booths

WORLD IMPLANT EXPO

5th Annual Global Orthodontic Conference

3rd Annual Pediatric Dentistry Summit

12th Annual INVISALIGN® - GNYDM EXPO
4 Days of Programming:
Sunday - Wednesday

Botox and Facial Fillers
Seminar & Workshop

Over 1,700 Exhibit Booths

FREE “Live” Dentistry
Hi-Tech 450 Seat Arena

9:45 - 11:45
VOCO America, Inc.
Drs. Ron Kaminer & Marc Geissberger
Restorative

John Quiñones
Monday, December 2nd
12:00 - 2:00 - Ticket 4010
$125.00

Celebrity Luncheon Speaker

3D Printing & Digital Dentistry Conference
Dental Laboratory Technicians Programs
Sleep Apnea Symposium
Oral Cancer Symposium

SUNDAY
9:45 - 11:45
VOCO America, Inc.
Drs. Ron Kaminer & Marc Geissberger
Restorative

MONDAY
9:45 - 11:45
Shofu
Dr. Ron Kaminer
Restorative

TUESDAY
9:45 - 12:00
Millennium
Dr. Sunil D. Thanhik
Laser

WEDNESDAY
9:45 - 12:00
Apa / CareCredit
Drs. Michael Apa
Aesthetic

SUNDAY
1:30 - 2:45
First Fit
Drs. Frederick E. Solomon
Digital

MONDAY
1:30 - 2:45
Shofu
Dr. Ron Kaminer
Restorative

TUESDAY
2:00 - 4:15
Glidewell
Dr. Justin Chi
Digital

WEDNESDAY
2:00 - 4:15
Benco / Vatech
Dr. Aeklayya Panjali
Implant
How do our patients prevent, achieve, or maintain dental health?

Three important factors:
- Patient motivation
- Patient ability and knowledge
- Patient and clinician accessibility to the tooth

Key is motivating your patient to move from Compliance to Concordance.

Books can help to motivate our patients.

Philosophy:
Uses clear pictures and clear text to educate patients.

Inspired by:
Dr. Irving Glickman

Non-Surgical Control of Periodontal Diseases

Paul A. Levi, Jr.
Robert J. Rudy
Y. Michelle Wong
Daniel H. Coleman
Springer

Would you ignore this?

If you bled from any other part of your body you would do something about it. Yet you suffer from traces of blood when you brush your teeth, risking gum disease and eventual tooth loss. Don't turn a blind eye to bleeding gums. Contact your dentist immediately.

For more information visit www.GUMSMART.co.uk

Flossing your teeth combats gum disease, another source of chronic inflammation.

Techniques that patients are frightened or warned not to achieve.

I WANT YOU TO FLOSS
Always observe your patient before instruction

Technique is what counts!
It is not just the number of times a day that your patient brushes and flosses, it is the effectiveness with the techniques that a patient uses that provides health!

How valuable would a music teacher or a sport coach be if they never listened or observed?

We ask, "How often do you brush and floss your teeth?"
Yet, do we know what techniques they use?

Stationary Bristle Tip (Bass) Technique*
Manual toothbrush or power brush:
1. Aim brush towards the middle of the tooth angled slightly towards the gum crevice.
2. Press the bristles into the gum crevice; vibrate the handle and keep the bristle tips stationary on the tooth in the crevice.

*Adapted for the effect of subgingival inflammation and toothbrush wear using the Stationary Bristle Technique (Bass). Accepted for publication in Oral Health Dentist Pract (2019).

Using a free-standing mirror is invaluable when coaching flossing

Patient proximal tooth/implant therapy

Having a free-standing mirror allows the clinician to have free hands to assist the patient particularly when teaching flossing technique.
We will use the two explorers, the periodontal probe, the Naber's furcation probe and the dental model in the box.

This model is unique as it has a supracrestal attachment apparatus.

Periodontal probe Identification of parts:

Tip
Blade
Shank
Handle

Please hold the UNC periodontal probe

Hold the probe using a modified pen grasp

Controlling the pressure and direction with the middle finger

A finger rest is necessary for stability

How deeply does the probe penetrate?
What does the tip of the probe touch when the probe stops?
Reading your probe
Place your probe in the sulcus of the tooth. Read the millimeters that are visible in contact with the tooth.

32

If the probe hits something hard, it is NOT the attachment.

34

Maintain the probe as parallel to the tooth as possible, with the tip on the tooth surface.

36

Reading your probe for accuracy
If the margin of the gingiva rests between two numbers, read it at the higher number. The epithelial attachment is a glyocalyx (protein) secreted by the epithelial cells.

31

Reading your probe for accuracy
33

We must probe beyond calculus for an accurate measurement
Now probe the mesio-facial of tooth #7.
Correct angulation of the probe for interproximal pocket measurements.

Measuring probing depths interproximally:
- Shorten the probe in order that the tip rests on the epithelial attachment under the contact area.
- The side of the blade rests next to the contact between the two proximal teeth.

The Naber’s furcation probe:
Note that the probes in the kits are marked in 3 mm increments similar to the Marquis probe.

Practice circumferential probing:
- Withdraw the probe from the sulcus to a depth of 2 mm immediately.
- Maintain the probe in the sulcus and measure the deepest depth mesio-occlusal, facial, and disto-occlusal.

Accurate interproximal probing:
- Correct
- Incorrect

Now, practice interproximal probing and we will assist you. Please ask any questions.
An exercise

Answers for the pocket measurements

43

Calculus detection

44

Inserting the TU 17

Please hold and examine this TU 17 explorer

45

46

47

48

On the paper in front of you, please write the probing measurements for teeth #s 3, 9 & 28

44

Please place your periodontal probe and probe tips in the red roll up in the far left hand side slots.
Old Dominion 11/12

Please hold and practice the OD 11/12

The tip of the explorer MUST always be on the tooth or calculus

When exploring, always move the explorer in the direction of the tip

Calculus detection

Please insert the #17 explorer sub gingivally on the distal of teeth #5 7 and 10 and move it with a walking stroke towards the mesial.

Calculus detection

Detect the calculus on the lingual of tooth #22

Maintain the back side of the blade touching the epithelial attachment during the apical stroke as the explorer is walked apico-occlusally towards the mesial or the distal.

Another exercise

Please write “yes or no” for detecting Calculus Teeth #s 12, 19, 25
An exercise

Answers regarding the teeth with calculus

Please place the Naber's probe next to the UNC probe, then the TUP1, #23, and the Old 11/12 in the red cutoff on the left-hand side and return the Kinoshita models to their respective boxes.

Hand instrumentation.

With an accurate diagnosis, thorough instrumentation can be provided.

Examples of instruments that we will discuss in this course

- Sickle scaler
- Universal curette
- Gracey curette

Please remove the next five lavender banded instruments up to the green banded instrument.

Please hold any one of the five instruments vertically with the tip or toe of the lower blade pointing towards you.

Like this!
Lateral surfaces (sides)

Scaling

Instrumentation of the crown and root surfaces of the teeth to remove plaque, calculus, and stains.

Scaling and root planing objectives:
- Remove calculus, plaque and stain from the tooth surfaces
- Achieve a smooth root surface
- Remove all tooth surface as possible to achieve a smooth surface
- Ensure that the patient is as comfortable as possible

Blade angulation for scalers and curettes

The ideal angle of the face of the blade to the tooth for efficient scaling or root planing is 70°.

Root planing

Is done subgingivally with curettes

Root planning: a treatment procedure designed to remove rough surface dentin that is rough, or imregnated with calculus, or contaminated with toxins or microorganisms.

Nomenclature of the blade for any periodontal scaler or curette

American Academy of Periodontology
Glossary of Terms
**Root planing and patient comfort**

> As root planing is done subgingivally, patients must be comfortable!
> This means using local anesthesia either topical or injectable, usually injectable.
> When root planing, it is necessary to access the root to or apical to the epithelial attachment.
> With plaque and calculus on the root there is inflamed sulcular gingiva with ulcerations in the epithelium exposing nerve endings.
> The root has dentinal tubules with nerve fibrils.

---

**Root planing – Where and When**

- Is done during active or maintenance therapy for patients with present or past periodontitis
- Is for the removal of **subgingival** plaque and calculus and cementum to smooth the root surfaces.
- It needs only to be done if the roots are rough regardless of the probing depths

---

**Root planing - Why?**

To achieve a very smooth root surface, coronal cementum is 16-60 microns thick about the thickness of a hair.
When Sharpey's fibers have vacated, they leave rough root surfaces.

---

**Root planing: Limits?**

**General rule:**
- Pockets ≥ 5 mm or greater have a high probability of incomplete root debridement and calculus removal.

---

**The use of gauze when doing scaling and root planing**
The importance of using 2X2 gauze with hand scaling or root planing:
1. Dampen it and roll it tight like a cotton roll
2. Place it in the vestibule facial and lingual of the mandible and facial of the maxilla

More reasons to use 2X2 when doing scaling and root planing:
1. Helps to keep tongue away from work area
2. Retracts lip and cheek
3. Provides access and more visibility

Please hold the H6/7 curved scaler as pictured:
Generally used supragingivally
Good for heavy calculus deposits
Particularly useful just under contact areas for the anterior teeth

Looking at your H6/7 scaler note:
There are two lateral cutting edges.
The tip is never a cutting edge

Perfect site to use a scaler!
Please place the Y-G 7/8 curette on the mesial of tooth #27 or #6.

Tip the handle in order that the blade will create a 70° angle of the face of the blade to the teeth.

Blade actions (strokes)

Practice the strokes on the molars and anterior teeth.

Vertical stroke
Oblique stroke
Horizontal stroke

The toe points apically.

Drawings courtesy of Dr. Stephen Cornstock.

Use the Y-G 7/8 on all the anterior teeth then do the posterior teeth.

70° angle

Try all of the strokes: horizontal, oblique and apico-occlusal.

Please hold the three Gracey curettes

What surfaces of the teeth were they designed to be used?

Gracey Curets
- Gracey 1/2, 7/8 (mesial and distal anterior teeth)
- Gracey 11/12 (mesial posterior teeth)
- Gracey 13/14 (distal posterior teeth)

Gracey site specific curettes

- Very useful for fine subgingival root planing.
- Large variety of styles each of which is designed to root plane or scale all root surfaces.

Site specific Gracey curette

There are two cutting edges: the lateral edge and the toe.
Determining the cutting edge of any Gracey curette

Please do this now:

Hold ANY Gracey curette vertically and look at the inferior (lower) blade with the toe pointed towards you.

Like this

Gracey #13/14 curette

Determining the cutting edge of a Gracey Curette

Site/area specific

Gracey Curette

When the terminal shank of any Gracey curette is held perpendicular to the floor, then the cutting edge slopes towards the floor.

Universal vs. Gracey curette

Please compare the Y-G 7/8 with a Gracey curette

The face of a universal curette is 90° to the terminal shank.

The face of a Gracey curette is offset by 120° to the terminal shank.

The many areas of use for a Gracey curette

The TERMINAL SHANK of any Gracey curette should be maintained PARALLEL to the tooth surface that is being scaled using any stroke (vertical, oblique, horizontal) and root planed so that the blade will be 70° to the tooth.

This means that any Gracey may be used to scale or root plane any surface where the terminal shank can be maintained parallel to the tooth surface being treated.

Area/site specific Gracey curette (13/14)

The practice of using the Gracey curette 1/2

1) Place a Gracey 1/2 curette on the mesial of tooth #27 and use a vertical stroke.
2) Practice the interproximal and facial of the anterior teeth.
3) Next use it with a horizontal stroke for the facial and lingual of the posterior teeth.
The practice of using the Gracey curette 11/12

1) Place the Gracey 11/12 curette on the mesial of the tooth, 30 degrees to the vertical stroke.
2) Then use it with a horizontal stroke for 40 seconds and lingual to the contact point.
3) Now do a vertical stroke for the mesial of all the teeth.

Calculi removal combined with the patient's daily plaque removal will yield...

Healthy results!

Specialized hand instruments
The shape of the blade becomes distorted when the wrong edge of a Gracey curette is sharpened or the toe is not rounded.

Do not sharpen this edge  

The curette can become like a scaler and can seriously damage the subgingival root surface.

When to sharpen hand instruments...

- **Always** before they are to be used
- **When they become dull** during use

The cutting edges to sharpen

- Sickle scalers (2)
- Universal curettes (3)
- Gracey Curettes (2)

Please take and hold your H 6/7 scaler

Place it on the corner of a desk, counter, or table that has a barrier. The tip of the blade should point towards you with the face of the blade parallel to the table top. The instrument should be held firmly against the corner with your non-dominant hand.

How to evaluate sharpness

**Reflected light:**
A sharp cutting edge will not reflect light. A dull edge shows a bright line of reflected light coursing the length of the blade.

**Test stick:**
A sharp instrument "bites" (catches) into the acrylic stick.

**Use it:**
As you are working you will know when the instrument is dull due to loss of efficiency.
Sharpening technique:

"Stationary instrument moving stone"

Please return the four instruments and the test stick to the roll-ups in this order:

Power instrumentation

- Ultrasonics
  - Role
  - Types
  - Technique
- Air Polishing
  - New Paradigms
- Implant Maintenance
  - Protocols when and how

Power instrumentation

When you see this...

You might need this!
**POWER vs HAND**

- No significant difference between hand or ultrasonic scaling regarding calculus/plaque removal
- Ultrasonics can be superior to hand instruments in access to furcations and grooves
- Standard ultrasonic and micro-ultrasonic inserts were able to reach and deblase the apical plaque border of pockets ranging from 4 to 7 mm

**POWER vs HAND**

- Differences in smoothness between power and hand scaling appears to have no effect on resolution of inflammation
- There could be 20% to 50% time reduction with ultrasonics
- No sharpening needed with ultrasonics
- The combination of ultrasonics and hand instrumentation is more effective than either technique alone

**Access with power**

- Thin tips; large variety with power
- Effective in anatomically difficult access areas
- Concavities, root proximity,
- Deep narrow pockets, at CEJ
- Effective in Class II and III furcations

**Comparison of instrument tip thickness**

- Piezoelectric insert
- Magnetostriuctive insert

**Ease of use**

- Less technically demanding than hand instrumentation
- Effective with light pressure
- Reduced fatigue
- Reduced time
- Increased stain removal
- No sharpening necessary

**Antimicrobial**

- Lavage: flushes pocket
- Cavitron: may disrupt the bacterial cell wall
- Acoustic microstreaming/turbulence

---

**POWER vs HAND**

**Reduced tissue damage**
- Less destructive to root surfaces (Ultrasonics do not root plane)
- Less soft tissue damage
- Can work coronal-apically

**Disadvantages of power instrumentation**
- Loss of tactile sensitivity with power
- Aerosol carries bacteria and blood
- Patient comfort (sensitivity, water, noise)
- Changing tips is more time consuming than changing a hand instrument
- Cost is greater with power instruments

---

**Types of Ultrasonics Scalers**

- **Magnetostrictive**
- **Piezoelectric**

---

**Magnetostrictive ultrasonic scalers**

**Characteristics**
- 25-30K Cycles Per Seconds
- Electric/alternating magnetic fields
- Elliptical motion
- All tip surfaces active

---

**Piezoelectric ultrasonic scalers**

**Characteristics of piezoelectric ultrasonic scalers**
- 27-50K CPS
- Electric deformation of quartz or ceramic discs within the handpiece
- Linear motion of the tip
- Sides of tip most active
Tips on Tips

Tips wear!
- 1 mm of wear = 25% loss of power
- 2 mm of wear = 50% loss

Power instrumentation technique
Adapt the tip similar to periodontal probe
Correct adaptation

Power instrumentation technique
Incorrect adaptation

Ultrasonic instrumentation technique vs. hand curette
- Constant light contact with tooth
- Constant movement of tip
- Sweeping, overlapped strokes with light pressure
Ultrasonic instrumentation technique
- Systematically cover entire surface of tooth by cross hatching
- Can remove deposits in a coronal-apical manner
- Avoid using end of tip
- Avoid keeping tip stationary

Air Polishing: History
- Abrasive slurry of particles propelled by pressurized air and water
- First used in dentistry in 1945 with aluminum oxide particles for cavity preparation
- Air polishing with Sodium Bicarbonate NaHCO₃ introduced in the late 1970's
- Primarily used for supragingival stain and plaque removal

Air Polishing: Expanding Uses/Changing Paradigms
- Subgingival plaque removal
- Pan-implant mucositis treatment
- Peri-implantitis treatment
- Dogs - hypersensitivity treatment

Air Polishing: History
- Additional powders introduced:
  - Calcium Carbonate: CaCO₃
  - Calcium Sodium Phosphosilicate: CaNa06PsI
  - Aluminum Trihydroxide: ALOH₃
  - Glycine Powder introduced in 2001
  - Erythritol Powder-2013
New Paradigm in Air Polishing with the introduction of Glycine Powder

- Introduced in 2001
- Amino Acid, water soluble, non-toxic
- Small particles 20-65 microns
- Less abrasive than NaHCO₃
- Antimicrobial activity
- More effective biofilm removal than hand instruments
- New subgingival delivery systems

Glycine Powder causes minimal abrasion

- Small particle size: 20-65 microns vs 250 microns for NaHCO₃
- Minimal abrasion to root surface
- Minimal abrasion to restorative materials
- Minimal soft tissue damage
- Insignificant abrasion on titanium surfaces

Air Polishing Biofilm Removal following 5 seconds of treatment

Air polishing will NOT remove calculus

What Limited the use of Air Polishing in Periodontal Treatment?

- Aerosol (infection; air emphysema/embolism)
- High Na content contraindicated in certain patients (hypertension, renal deficiency)
- Not effective on calculus removal
- Messy, poor taste, expense

Glycine Air Polishing

- Less than 5 cases of air emphysema reported over a ten year span—all resolved in 3-5 days
- No sodium disadvantages
- High Volume Evacuation and antimicrobial rinse minimizes infective aerosol

EMS glycine vs rubber cup polishing

ARTIFICIAL SIMULATION OF BIOFILM

COMPARISON BETWEEN RUBBER CUP WITH POLISHING PASTE
AIR FLOW® POWDER PLUS SYRTHESOL (CRM)
**Cumulative Implant Maintenance Protocol at least every 3 months**

- **1 mm, No Bleeding on Probing (BoP):**
  - Gentle probing to resistance (Coronal aspects of the epithelial attachment)
  - Evaluation of plaque levels/inflammation/BoP/Sup
  - Polish (rubber cup and/or Air polish with Glycine
  - Observe hygiene techniques
- **4 mm, No BoP, No suppuration:**
  - ADD: Mechanical Debridement — cassettes, ultrasonics, air polisher

*Adapted from Dr. Paul Fischer protocol*

---

**0.25% Sodium Hypochlorite (NaOCl) for Chemical Irrigation**

Mix: 5 ml (Teaspoon) of 6% NaOCl (household bleach) in 125 ml (4oz) of water

Our standard size rinsing cup holds 156 ml (5oz) of liquid

- Irrigate before start, during, and after debridement (3X)
- New solution for each patient; as it loses potency after 24 hours

---

**Cumulative Implant Maintenance Protocol at least every 3 months**

- **4 mm w/ BoP or > 5 mm w/ BoP**
  - ADD: NaOCl/H2O2 irrigation before, during and after debridement
  - 0.25% Sodium hypochlorite (NaOCl) for Chemical Irrigation

- Potent antiseptic and disinfectant
- Naturally occurring in neutrophils, macrophages and monocytes
- Accepted as a safe mouth rinse by the ADA
- Does not corrode titanium
- Do not combine NaOCl with Chlorhexidine

*Adapted from Dr. Paul Fischer protocol*

---

**Conclusion**

A comprehensive maintenance program is the key to successful periodontal therapy

---

**The maintenance visit**

- **General assessment:** Med. History, BP, observe plaque removal techniques
- **Intra Oral Exam:** Oral health exam, caries, probing depths, BoP
- **Plaque removal technique instruction**
- **Mechanical Therapy:** Plaque, calculus, stain removal
- **Determine interval length for next hygiene therapy**
  - Establish realistic treatment goals
  - Would periodontal surgery be beneficial?
The power of non-surgical periodontal therapy

Active periodontal therapy
Case report: 4 1/2 years
The **Goal** today's workshop was...

to help provide each of you with some new knowledge and a review of the already known concepts and skills to assist your patients in reaching excellence in **dental and general health**

**Who bears the responsibility for dental/medical health?**

*Our responsibility is to do more than clean teeth*

![We all do!](image)

Preventative treatment for health

---

**Thank You!**

Dental health can only be achieved and maintained by the patient's daily hygiene treatment and regular professional dental hygiene therapy visits.