

## Manage Perio/soft tissue Patients with Lasers

Dr. Sam Low

[slow@dental.ufl.edu](mailto:slow@dental.ufl.edu)

[www.drsmalow.com](http://www.drsmalow.com)



## Disclosures...

Florida Probe Incorporated  
PerioSciences  
Biolase  
Phillips


### What you will learn....

REVIEW VARIOUS LASER THERAPIES WITH ATTENTION TO BOTH THE PERIO-RESTORATIVE AND PERIODONTITIS INDICATIONS.

DIFFERENTIATE LASER TECHNOLOGIES FOR PERIODONTAL INDICATIONS (SURGICAL AND NON-SURGICAL)

DEVELOP TECHNIQUES FOR INCORPORATING LASER INTO A DENTAL PRACTICE CONSIDERING PATIENT ACCEPTANCE, BILLING CODING

UTILIZE LASER BIO STIMULATION TO ENHANCE WOUND HEALING AND DECREASE PATIENT DISCOMFORT.



Value-Added Services May Be The Revenue Stream You're Overlooking

- Value-added is the additional features or economic value that a company adds to its products and services before offering them to customers.
- Adding value to a product or service helps companies attract more customers, which can boost revenue and profits.
- Value-added is effectively the difference between a product's price to consumers and the cost of producing it.
- Value can be added in several different ways, such as adding a brand name to a generic product

## Need New Patients and More Referrals?

Start Performing Minimally Invasive Periodontal, Implant and Esthetic Procedures Patients Will Love You For.



### Left untreated, serious consequences can occur

Without proper diagnosis and treatment, periodontal disease can lead to...

-  The spread of infection
-  Loss of teeth
-  Surgery

### Healthy mouth, healthy body –

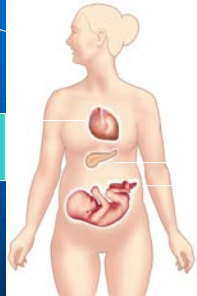
The impact of oral health on overall health

**ENTRY POINT FOR BACTERIA**

Patients with severe periodontal disease may have an increased risk of heart attack or stroke<sup>6,7</sup>

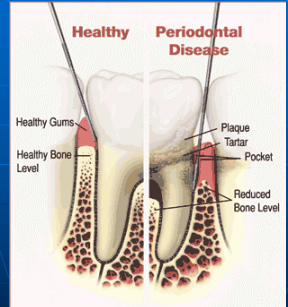
The relationship between periodontal disease and diabetes is bi-directional – diabetes can worsen gum disease and gum disease can make diabetes difficult to control<sup>1-5</sup>

When severe gum disease is present, some pregnant women may be more likely to deliver a pre-term, low-birth-weight baby<sup>1,3</sup>

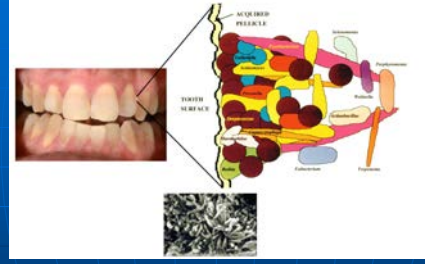


1. Joffe et al. J. Am. Dent. Assoc. 2001;132:875-880.  
2. Lopez et al. J. Periodontol. 2002;73:1313-1324.  
3. Offenbacher S et al. J. Periodontol. 1996;67(Suppl. 1):S1103-1111. 4. Kasperk et al. Clin. Periodontol. 2006;33:246-272. 5. Primmehalli A et al. Oral Diseases. 2005;11:252-256. 6. Quader F et al. J. Periodontol. 2004;75:1046-1053. 7. Scannapieco FA et al. Ann Periodontol. 2002;8:38-53.

### Periodontal Tissues in Health and Disease

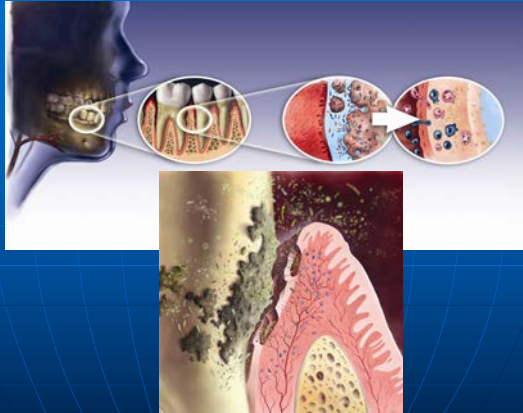


### Dental Plaque – An Oral Biofilm



Bacteria → Biofilm → ~~Plaque/Tartar~~ → ~~Bad Breath~~ → ~~GI/Perio~~ → **Enhanced Oral Health**

Signal Molecules



# Host Modulation!

## Data Collection

- ➔ Radiographic Exam
- ➔ Probing
- ➔ Tissue Characteristics
- ➔ Mobility

Main Chart

### Lasers

Fields of application in medicine

Neurosurgery CO <sub>2</sub> , Nd:YAG	Ophthalmology Ar, Kr, excimer, Ho:YAG, Er:YAG, Nd:YAG
ENT Nd:YAG, CO <sub>2</sub> , Er:YAG	Dentistry Nd:YAG, Er:YAG, Er, Cr:YSGG, CO <sub>2</sub> , Ar, diode
Pneumology Nd:YAG	Cardiology Nd:YAG
Gastroenterology Nd:YAG, Ar	Urology Nd:YAG, alexandrite, CO <sub>2</sub> , Er:YAG
Oncology Nd:YAG, CO <sub>2</sub> , dye	Orthopedics Ho:YAG, CO <sub>2</sub> , Er:YAG, Nd:YAG
Gynecology Nd:YAG, CO <sub>2</sub> , Er:YAG	Dermatology Alexandrite, Ar, Er:YAG, excimer, dye, CO <sub>2</sub> , Kr, Krypton, Nd:YAG
Angioplasty Nd:YAG, Er:YAG, dye	

Basics | Wavelengths | Product info | Indications

## Ordinary Light

- Many Colors - Wavelengths
- Unorganized - Incoherent

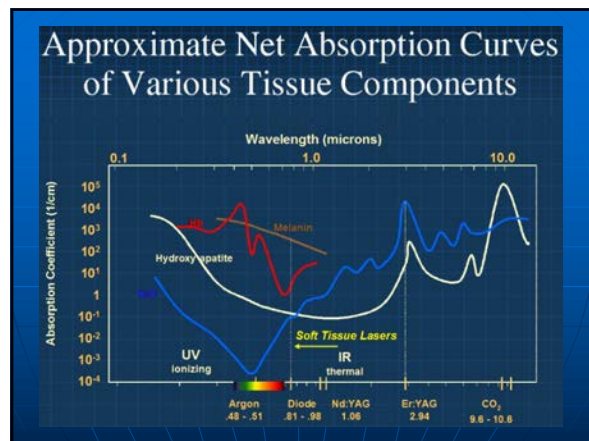
## Typical Laser Oscillator

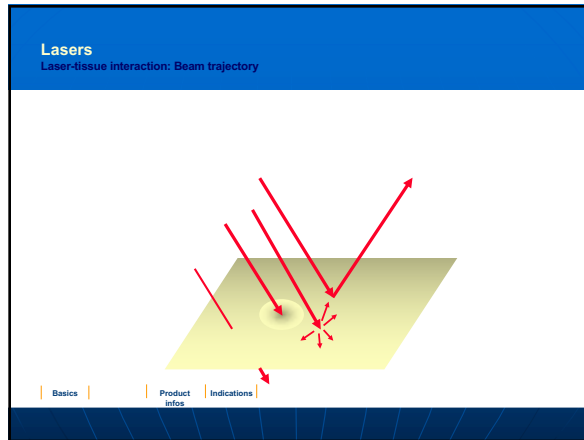
1. Excitation source (such as a solid-state semi-conductor)

2. Lasing medium (such as an AlGaAs rod)

3a. 100% High Reflecting Rear Mirror (HR)

3b. Partially Reflecting Output Coupler (OC)





## Laser Parameters

1. Radiation wavelength

- Soft tissue coagulation is much better with Er:Cr:YSGG vs. Er:YAG (less bleeding)
- Safe distance to point into the eye\*:  
- Waterlase: 5cm  
\*) Always wear eye safety glasses

BIOLASE

## Laser Safety

No  
Compromises



- ## Antibacterial...
- Bio-films
  - Bacteriocidal

## Soft Tissue

- Decontaminate
- De-epithelialize
- Degranulate
- Denature proteins
- Gingivectomy
- Inhibit epithelial migration...clot establishment

## Hard tissue

- Tooth
  - Cementum
  - Calculus
  - Dentin
- Bone
  - Removes
  - Biostimulates

## Access

- Hemostasis
- Visualize site

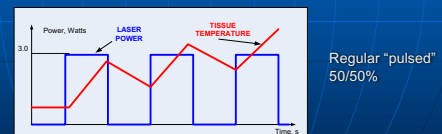
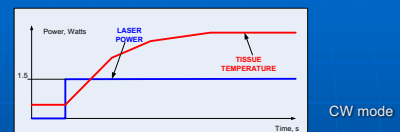
## Diode lasers



## Diode Soft-Tissue Lasers

- Advantages:
  - Can cut and coagulate gingiva with virtually no bleeding or collateral damage to healthy tissue
  - Some cases - topical anesthetic is sufficient for a pain free procedure
  - Surgical precision
  - Little to no postoperative discomfort and a short healing time

## Pulsed Mode



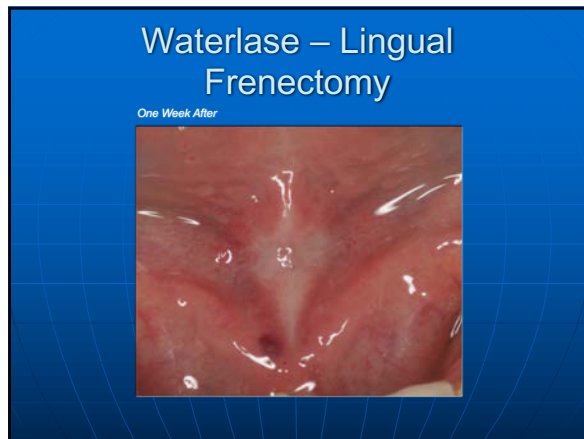
frenectomy

Waterlase – Maxillary Frenectomy



what is ankyloglossia?





### D7960 frenulectomy

Surgical removal or release of mucosal and muscle elements of a buccal, labial or lingual frenum that is associated with a pathological condition, or interferes with proper oral development or treatment.

\$494   \$510   \$525



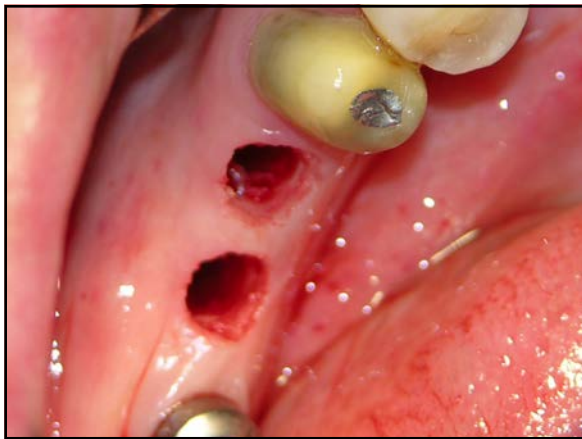
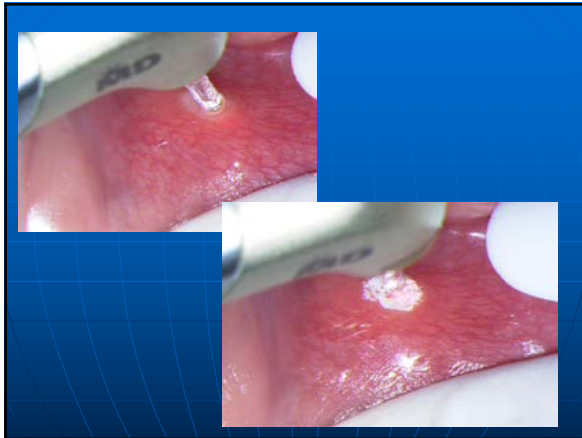
troughing crown preps



cosmetic gingival depigmentation  
(gum bleaching)







### Biostimulation....

- Enhance angiogenesis
- Collagen formation
- Osteoblastic
- Fibroblastic

### Effects of LLLT

- Reduction of bad inflammation
- Regeneration of connective tissue
- Factor of energy power and time over a spot size
- Frequency can be a factor

### Whitening & Temporary Pain Relief



20-Minute Whitening

Achieve up to 10 shades of whitening with available handpiece and gel kit



Cost for DTHP?

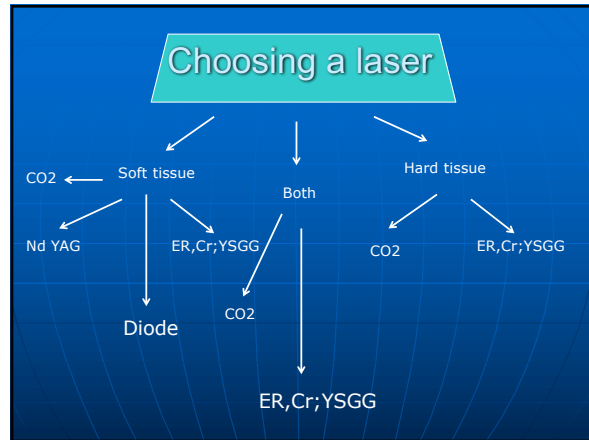


Temporary Pain Relief

Treat TMJ and other myofascial disorders with available Deep Tissue Handpiece

### TMD Clinical Treatment Protocol

Trigger point  
Joint  
Temporals region  
Joint region  
Masseter region



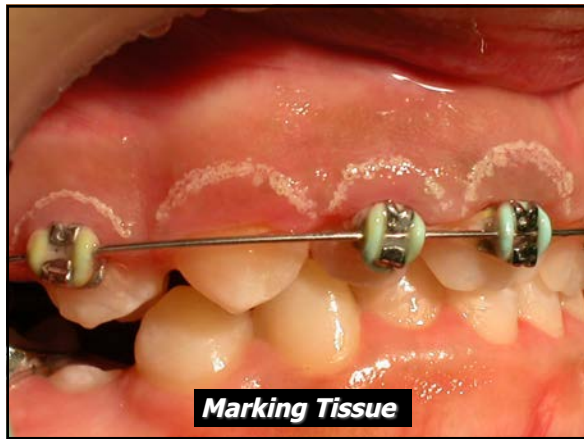
- ### Hard tissue
- **Tooth**
    - Cementum
    - Calculus
    - Dentin
  - **Bone**
    - Removes
    - Biostimulates



### Offer More Minimally-Invasive Procedures

- Restorative
- Periodontitis
- Implants & Implantitis
- Esthetics

- ### Benefits of Lasers in Hard Tissues
- Local anesthetic may not be necessary in limited conditions
  - Precision and control
  - No vibration - preserve tooth structure (no microfractures)
  - Conservative preparations
-

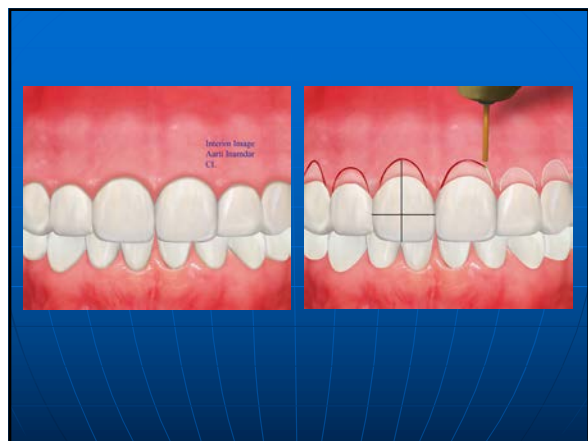


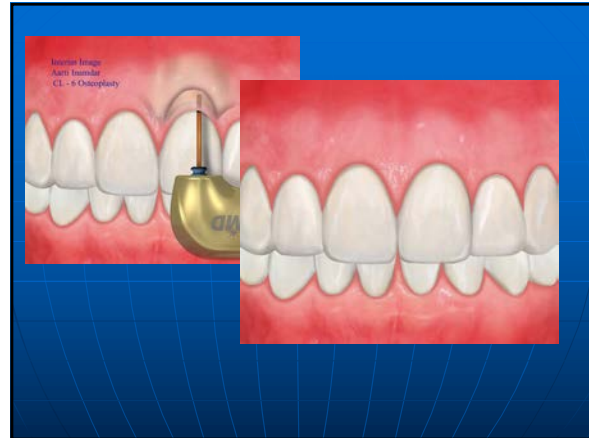
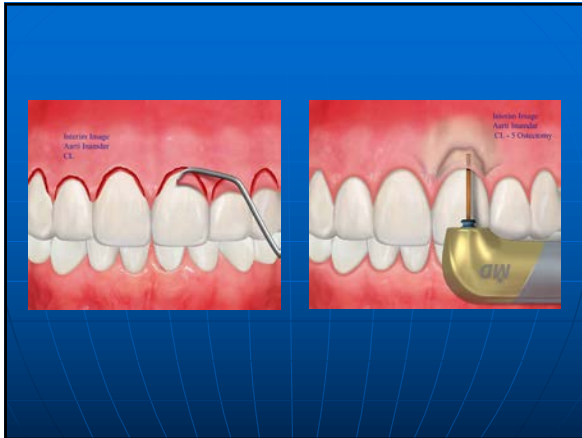
**D4210**  
**Gingivectomy or gingivoplasty** – four or more contiguous teeth or tooth bounded spaces per quadrant

**D4211**  
**Gingivectomy or gingivoplasty** – one to three contiguous teeth or tooth bounded spaces per quadrant

It is performed to eliminate suprabony pockets or to restore normal architecture when gingival enlargements or asymmetrical or unaesthetic topography is evident with normal bony configuration.

\$241   \$249   \$256





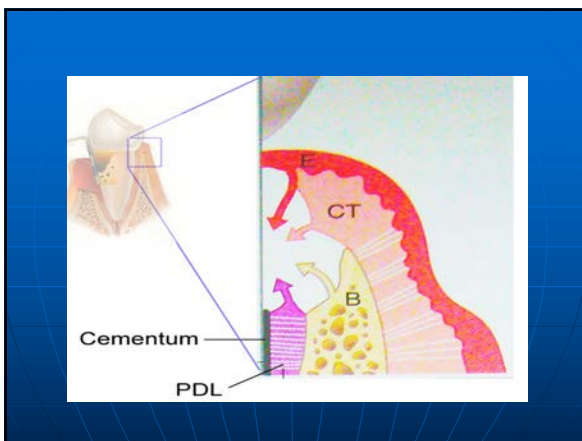
**D4249 clinical crown lengthening – hard tissue**

Allow a restorative procedure on a tooth with little or no tooth structure exposed to the oral cavity. Crown lengthening requires reflection of a full thickness flap and removal of bone, altering the crown to root ratio. It is performed in a healthy periodontal environment


\$683   \$705   \$726

**Rationale for pocket reduction surgery....**

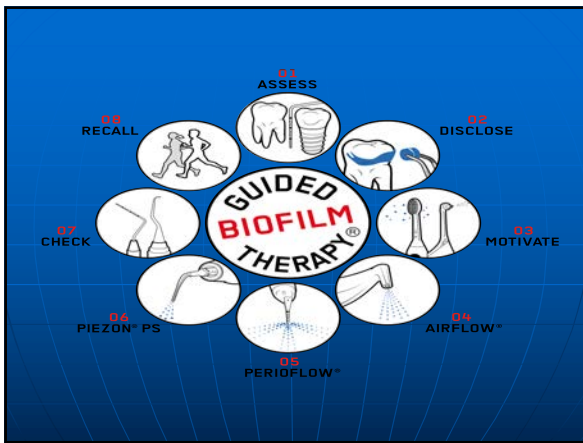
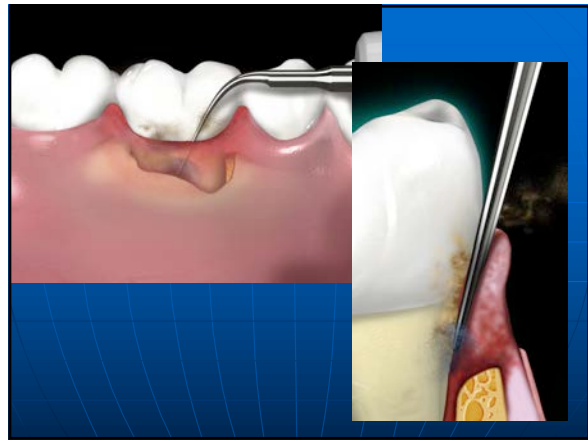
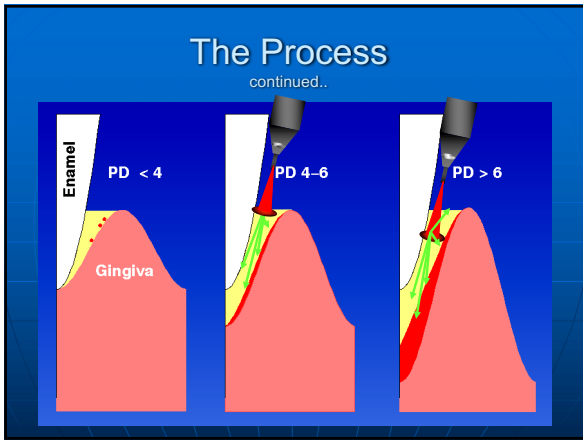
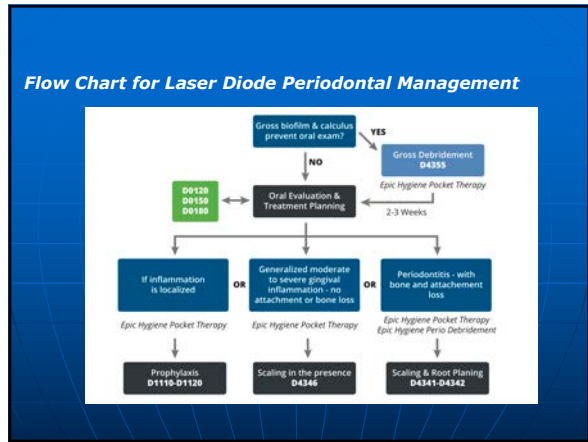
- Access to the sulcus by both the clinician and the patient
- Modify habitat for periodontal pathogens
- Decrease quantity/quality of host inflammatory cells



**Introducing Epic Hygiene \***



**By Hygienists, For Hygienists:**  
 Just the hygiene procedures you need, pre-programmed and ready to go! **Pocket Therapy, Perio Debridement, Aphthous** and **Herpetic** management and **Hemostasis**

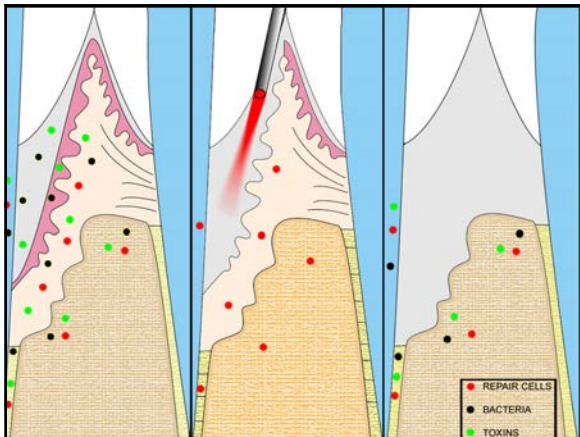


### laser bacterial reduction rationale

- We know that diode lasers are antibacterial
- Takes only a few minutes to complete a full mouth
- Periodontal pathogens are pigmented in the presence of disease, but all are susceptible to the absorption of diode wavelength
- Does not rely on patient compliance
- Reduce or eliminate cross-

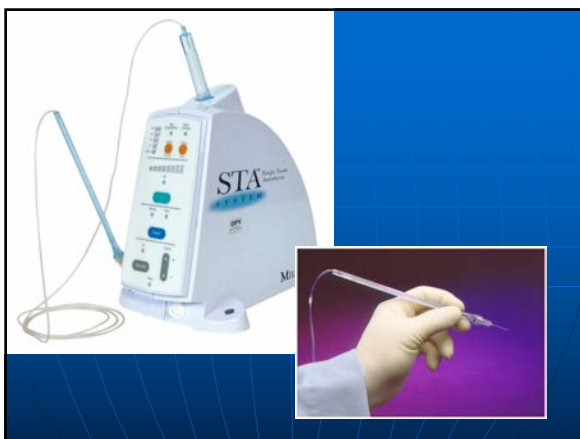
### justification for LBR

- After LBR, it has been shown to take between 4-6 weeks time for bacteria to recolonize to pre-LBR levels.
- The justification is to kill bacteria BEFORE the patient experiences a loss of attachment, as breakdown can begin at any time.
- If presented properly, LBR gives patients more opportunities to experience laser dentistry and another reason to promote your dental practice.



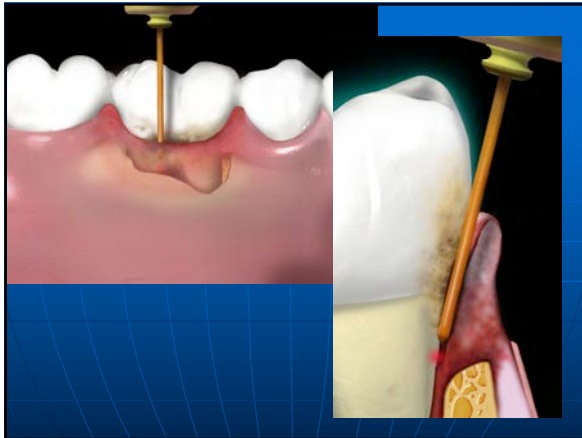
### Steps in non surgical laser perio procedure

- Anesthesia
  - No compromises for patient comfort
  - More inflammation , the deeper the pocket , the more local over topical
  - TAC 20 ( Best Topical Ever Co.)



### Steps in non surgical laser perio procedure

- Laser Bacterial Reduction
  - 0.5 watt
  - Un initiated tip
  - Continuous setting (CW)



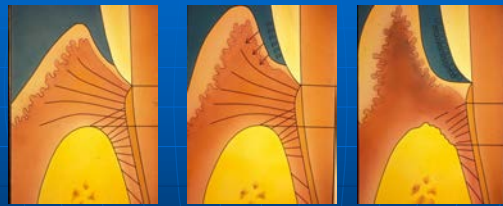
## Steps in non surgical laser perio procedure

### ◆ Sulcular debridement

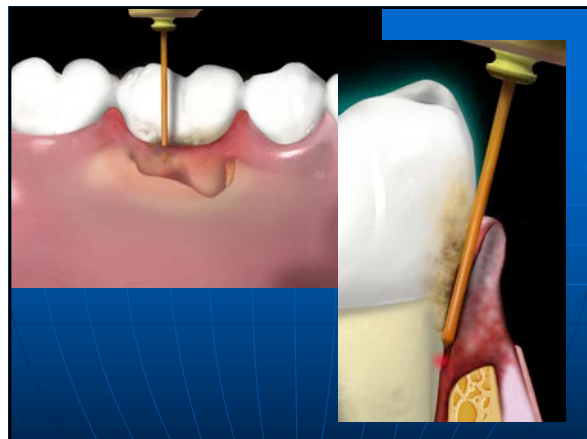
- Pulsed
- 1 watt
- initiated

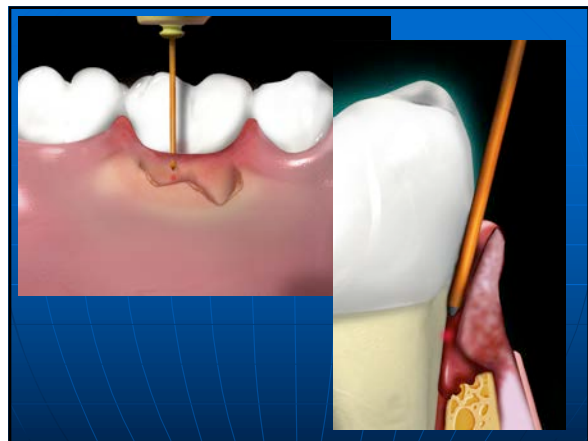
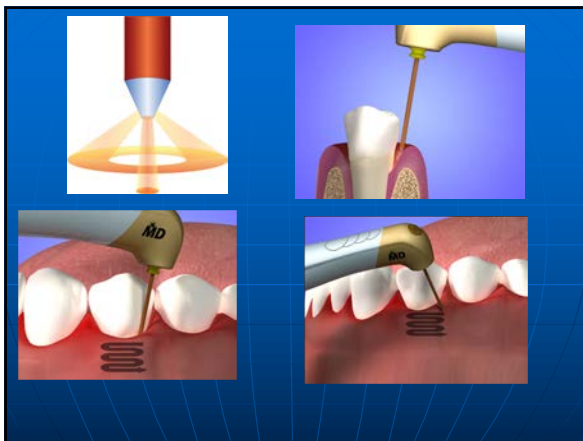
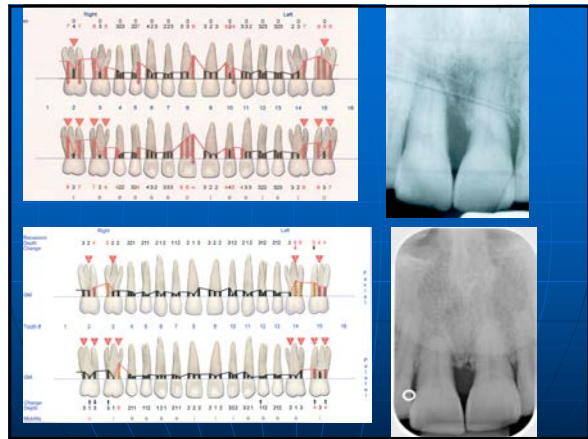
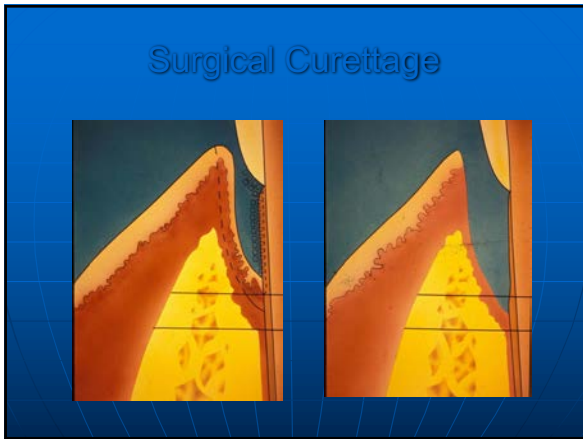
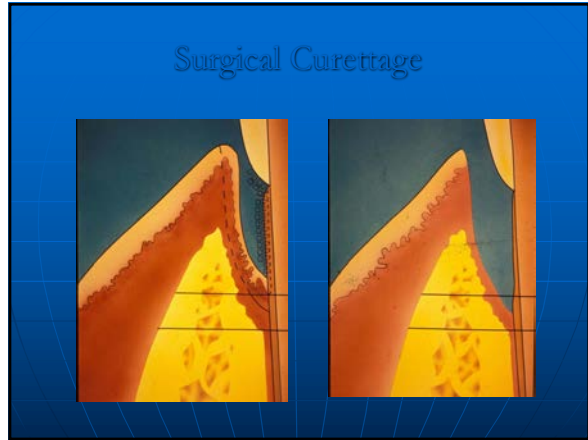
## effects of lasing the pocket

- Tissue Disinfection
- Cauterization of Free Nerve Endings
- Sealing of Lymphatics
- Dental Desensitization
- Achieving Hemostasis
- Tissue loosens, allowing for 'pocket flap'
- Denature calculus? Is easier to remove
- Can see down root surface to locate calculus

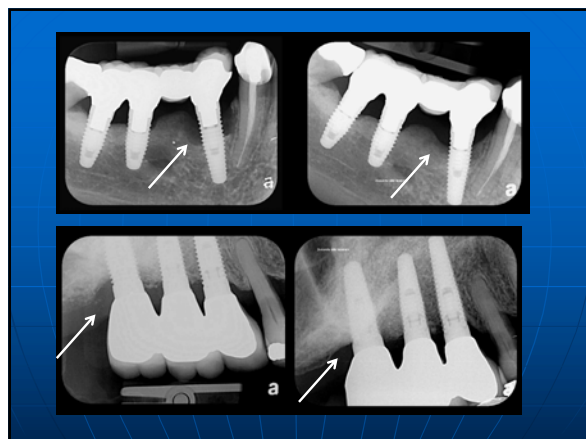
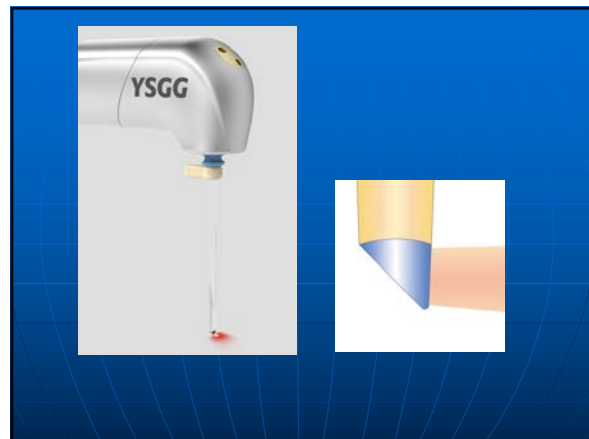
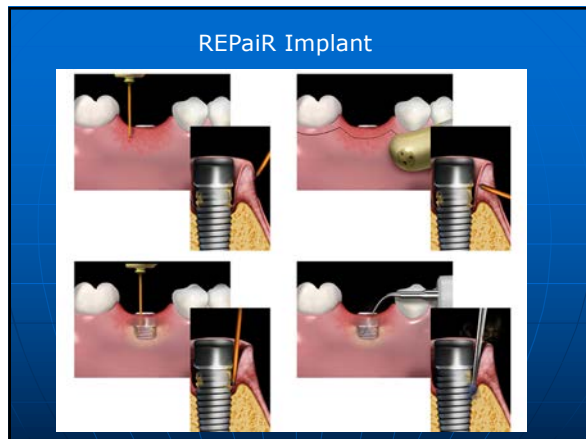
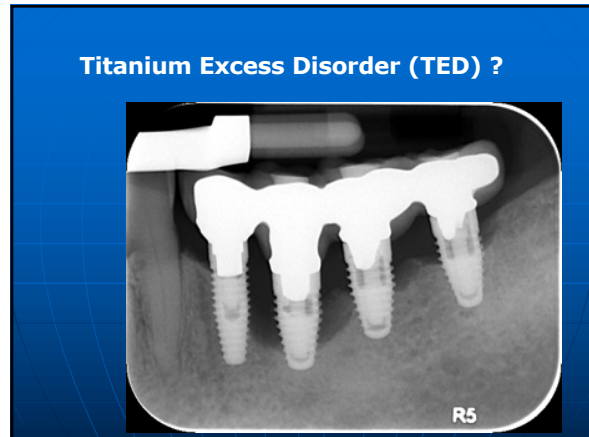
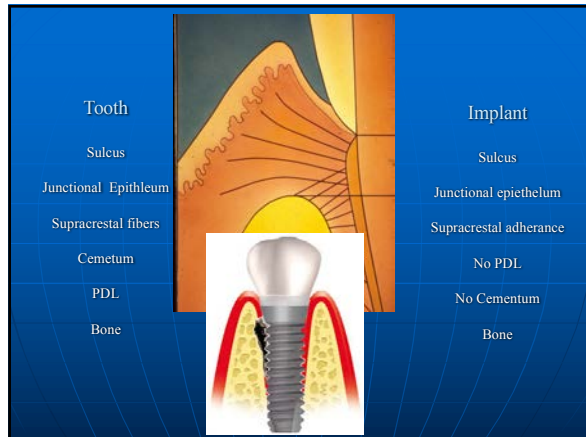


## Surgical Curettage









### Chlorhexidine Kills

Fibroblast death. 1

Inhibitory effect of chlorhexidine on healing wounds. 2

Chlorhexidine applied to surgical site prior to wound closure can have serious toxic effects on gingival fibroblasts and negatively affects wound healing. 3

1) Toxicol Appl Pharmacol, 2009, Faria, et. al.; *Chlorhexidine-induced apoptosis or necrosis of fibroblasts: A role for endoplasmic reticulum stress*

2) Int. J. Morphol, 2006, Salami, et. al.; *A comparison of the Effect of Chlorhexidine, Topical Normal Saline on Healing Wounds*

3) J Periodontol, 1999, Mariotti, et. al.; *Chlorhexidine-induced changes to human gingival collagen and non-collagen protein production*



### Topical Antioxidants: Clinical Applications

- Gingivitis/Periodontitis
- Migratory Glossitis
- Xerostomia
- Oral Lichen Planus
- Wound Healing
- Bleaching Injury
- Nicotine Users
- Bisphosphonate-Related Osteonecrosis

PERIOSCIENCES



### Antioxidant Technology

**Key Ingredients**  
Antioxidants Ferulic acid and Phloretin  
Menthol, Thymol, and Essential Oils  
Xylitol

www.Periosciences.com  
**800.915.8110**

Daily Topical Application

Frederick T. Hawthorne  
Editor

## Minimally Invasive Surgery

Evolution of Operative Techniques, Safety and Effectiveness and Long-Term Clinical Outcomes

**ZIMMER MIS TOTAL HIP REPLACEMENT PROCEDURE**

- Traditional Incision 25-30cm
- Zimmer MIS Mini-Incision 6-8cm
- Zimmer MIS 2-Incision 4-5cm each

**Vein Harvesting**

- Open Method
- Endoscopic Harvesting Method

### Why would a dentist want a laser for periodontal therapy

1. Implant market is shrinking
2. Today's practice must add technology
3. Ability to manage periodontal disease with minimally invasive procedures
4. Success is creating a practice niche and marketing such to the patients.
5. ONE MUST HAVE A STRAETEGY TO COMPETE!

- “The goal of my practice is simply to help my patients retain their teeth all of their lives if possible.....  
In maximum comfort, function, health, and esthetics”

**Dr. L. D. Pankey**



## For additional contact information

Sam Low:  
[slow@dental.ufl.edu](mailto:slow@dental.ufl.edu)

[www.dr.samlow.com](http://www.dr.samlow.com)