2019 Oregon Dental Conference®
Course Handout

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Course 3126: “The Future Is Now: Let’s Talk Lasers”
Thursday, April 4
1 - 4 pm
Laser Dentistry

Doctor vs Hygiene Laser

Doctor vs Hygiene

The Principals to Know

Doctor: Hot Laser Settings
Hygiene: Warm Laser Settings

Doctor: Initiated Laser Fiber Optic
Hygiene: Bare Laser Fiber Optic

Doctor: Target Tissue Contact
Hygiene: Target Tissue Non-contact
What is the Treatment Called? What Are We Doing?

- **Laser Assisted Periodontal Therapy (LAPT)**
  - SRP Laser protocol to get to the core of the infection. Elimination of the Infection—No Bleeding

- **Disinfection—LBR**
  - Laser Bacterial Reduction

A. Laser Assisted Periodontal Therapy
B. Laser Bacterial Disinfection

Commonly Known as “LBR” is an adjunct to mechanical instrumentation.
Perfect Timing
Laser and Periodontics

The incorporation of laser provides decontamination of the lased site(s) and the initiation of the body’s own immune response

Healing the Periodontal Wound

Reduction in Bleeding Values

96.9% with Laser
66.7% Control Group

Healing the Periodontal Wound

Clinical and Biological Effect With Laser

The by-product of infection is inflammation
The laser energy travels the depth of the pocket

Suppression of infective bacteria
Suppression of inflammation
Reduction in tissue edema
Better blood clot stabilization
Stops further progression of infection and bone loss

6 Month Supression

Significant Prolonged Antibacterial Effect Of Treatment With Diode Laser

The Confusion?
Models of Treatment
What You Need to Know

Wavelength
Mode
Energy

What does the term RADIATION mean?
Energy emitted in the form of WAVES or particles.
**Wavelengths Categorized Into Four Groups**

- Erbium lasers (Er:Cr:YSGG and Er:YAGG) have excellent absorption in apatite crystals and water.
- Carbon Dioxide lasers easily interact with free water molecules in soft tissue as well as vaporizing the intracellular water of pathogens.
- Diode and Nd:YAG wavelengths target inflammatory tissue and pigmented pathogens. Hemoglobin and Melanin.

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**Biologic Rational For Treatment Plan**

**Tissue Quality and Biotype**

- Vascular
- Thermal Conductivity
- Water
- Pigment
- Chromaphore
  - (determines how laser energy interacts with the tissues)

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**Thermal Function of Conductivity**

- Vascular tissue absorbs more heat
- Diode wavelength reacts well with tissue pigment
- Chromophores entities in tissue that absorb light energy

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**LASER MODES**

- Continuous Wave
- Gated Pulsed Mode
- Free-Running Pulsed Mode
Continuous and Pulsed Mode

- 0.26 watt CW = 0.8 w pulsed
- 0.26 watt CW = 1.0 w pulsed
- 0.26 watt CW = 1.2 w pulsed
- 0.26 watt CW = 1.4 w pulsed
- 0.26 watt CW = 1.6 w pulsed

What Settings to Use

- The procedure being conducted, the type of tissue being worked on, the amount of Melanin and Hemoglobin in the tissue and the Wave Length of your Laser will greatly effect your settings and results

Dosimetry

- The amount of measured energy and the amount of applied time will greatly effect your results and outcome to treatment
- Built in timers, counting techniques, and other aids presented (blinking lights, audio beeping, flashing numbers) need to be standardized, understood and utilized in your treatment model so that consistent safe results are achieved

Doctors:
Always begin with the lowest power you can use to remove or modify target tissues

Hygienists:
Select the amount of power specific to the treatment diagnosis of the infection
Fibroma removal

- Before: 3 weeks post op
- Immediately After: 3 weeks
- Two Weeks Later: 3 weeks

Venous lake / superficial hemangioma

- 10 weeks post op

Papillectomy

- Immediate post
Laser Periodontal Treatment Model

- Laser LBR is Adjunctive to Periodontal Therapy
- Laser LBR is Adjunctive to Risk Management Recall
- Laser LBR is Adjunctive to Routine Patient Recare

The total amount of energy for a laser procedure is the function of the extent of the infected soft tissues.
Why the Good Results?

Laser soft-tissue therapy affects a change in the bacterial load in the pocket and leaves a clean, coagulated wound to heal.

Creates new epithelial attachment

Photostimulation increases fibroblastic and osteoblastic activity increasing bone density including possible regeneration of bone in treated areas.
It is the Responsibility of the Dental Hygienist to Know and Interpret their Scope of Practice