Soft Tissue Lasers

Practical Applications and Results

Michael Koceja, DDS
Camas, Washington, USA
I would like to acknowledge your contributions and commitment to serving our communities.
What is Everyday Dentistry?
How can we improve the Dental care we provide to our patients on a daily basis?
How is Dentistry changing?
- Technology is improving Dental care

- Cosmetic procedures are increasing

- People are more knowledgeable of Dental procedures
before
after
What is your view of how dentistry is progressing?

Are you seeing more patients?

Are you providing more services?

How do you perceive Technology?
Some Questions to Ask

• Is your practice successful?
  Was incorporating technology part of your success?

• When would be a better time to incorporate technology that differentiates your practice and positions your practice for the future?

• How can we provide better care to our patients?
How could you make your practice more successful?

• See more patients
• Do more procedures on each patient
• Have more fun
• Provide better care for your patients
• Try new technologies
With Technology
What type of laser is right for you?

- Er,Cr:YSGG
- Nd:YAG
- Er:YAG
- Diode
Questions to Ask

• Fact: Lasers *have* become a part of dentistry

• What do you know about Lasers?
• What do you want to learn?
• Can your practice benefit from Laser Technology?
• Would Lasers help you do better dentistry?
• What is holding you back from incorporating Laser Technology into your practice?
More questions to ask?

- What does a dentist expect laser technology to do for their practice?
- How can we tailor laser technology to our office and practice style?
- How can we educate our patients?
What makes a Dentist successful?

• Training
• Training
• Training
• Training
What makes a Laser Dentist successful?

• Training
• Training
• Training
Luke Skywalker Yoda Koceja
Born Oct. 28th 2008
Laser Technology

• This is Different
• This is Better
• This is not Rocket Science
The meaning of LASER

- L = light
- A = amplification by
- S = stimulated
- E = emission of
- R = radiation

First postulated by Albert Einstein
Absorption Rates

• Different lasers are absorbed at varying rates in specific tissue types
• Main targets of the ErCrYSGG and ErYAG is water and hydroxyapatite
• Main targets of diode lasers is melanin and hemoglobin
Stimulated Emission in Lasers

The atoms of the active medium are stimulated to emit light.

High Voltage Power Supply

100% Reflective Mirror

98% Reflective Mirror

Beam output

Active Medium in the laser

atoms

cathode

anode
Laser Safety

- ANZI Z136.3-1988, OSHA, Laser safety office
- Wavelength specific eyewear
- Know you NOHD
- Difference from radiography
- Always use the lowest power necessary
Energy, Pulse Menu, *ezlase™*

Beep – 3 levels
Aiming – 5 levels

3 pages, 15 pre-sets

©2008 Michael Koceja DDS, Inc. No unauthorized reproduction. All rights reserved.
Tissue Effects

To get an overall effect on tissues, all of the following factors come into play:
1. Power density (watts per cm squared)
2. Cooling of tissue
3. Duration of exposure to laser
4. Specific wavelength
5. Emission mode
6. Tissue characteristics
What can you utilize a soft tissue laser for?
Soft Tissue Indications

- Hemostasis
- Crown troughing
- Sulcular debridement
- Gingivectomy/gingivoplasty
- Frenectomy/frenotomy
- Implant recovery
- Excisional/incisional biopsies
- Aphthous Ulcer
Soft Tissue Indications

• Extremely beneficial in treating subgingival decay
• TMJ treatment and pain management therapy
• Whitening
Non Surgical Laser-Assisted Periodontal Treatment?
Clinical Studies

Perio Articles and Implant Uncovering Article

Utilizing Lasers in Dental Hygiene

Combined with scaling and root planing
Benefits of Laser Periodontal treatment

- Non surgical treatment
- Higher Patient acceptance
- Motivates your Patients to become part of their treatment
- Increased hygiene production

Better Results
Lasers can differentiate your Practice
Your practice is already differentiated

- Dentally compromised patients
- Medically compromised patients
- Unique patient population
- Challenges in patient education
Differentiate

- Do procedures you haven’t done in the past
- Do procedures in office that you may not be able to refer
- Do procedures better and more comfortable for your patient than the Dentist next door
- Increases patient referrals
Diode vs. Electrosurgery

- Can use diode around metal
- Has zone of necrosis only 3-5 cells deep
- Perio applications
- Whitens teeth
- Desensitizes teeth
- Herpetic and aphthous ulcer treatment
- Marketing benefits
Commit

• To do better Dentistry everyday
• Better Dentistry equates to more productive use of time
• Better use time equates to greater efficiency
Commit

• To change the perception of Dentistry
• Changing the education process for your patients
• Change their lives
Commit

• To provide the best in cutting edge technology available for Dentistry
Commit

• To change your office and invigorate your staff
• Show them the benefits of laser technology
• Improving the overall general health of your patients
Incorporate
Incorporate

- Into multiple procedures per patient everyday
- Increase procedures per appointment
- Increase efficiency
- Your staff must be part of incorporating this technology
Incorporate

Into all aspects of

“Everyday Dentistry”
Ortho Induced Hyperplasia
Tooth Exposure For Bracket Placement
Operculectomy
Restorative Indications
Existing Denture Patients
Incorporate

• The laser that fits your needs.
• There are numerous lasers available.
Incorporate

• Pain management treatment into your practice
LLLT
Low Level Laser Therapy
ezlase 940 nm

Therapeutic Indications

- FDA cleared indications
  - Temporary relief of minor muscle and joint pain and stiffness
  - Temporary relaxation of muscle
  - Temporary increase in local blood circulation
- Applicable Dental Procedures
  - TMJ Arthralgia (treatment of the Joint)
  - Myofacial Pain related to TMJ (treatment of the muscle related to painful trigger point)
  - Muscle relaxation related to pain and muscle stiffness after dental procedures or in general
ezlase 940 nm

Surgical vs. Therapeutic Effects

**Surgical**

A *concentrated* beam of energy is delivered to tissue via a small diameter 200-400 µm fiber tip, and upon contact tissue is vaporized and removed.

**Therapeutic**

A *diffused* beam of energy size 35 x 8 mm is delivered to the tissue site over a period of time. The level of laser energy is low enough to have a therapeutic effect *without any tissue destruction.*
Therapeutic Mechanisms of Action

- Increased micro-circulation in tissue
- Photo-activation of inactive enzymes (catalysts) present in painful muscle cells
- Improved cellular functions through increase of ATP (fuel for the cell) production in cells
**TMJ Clinical Protocol – Therapeutic Settings**

- Laser Coverage Area = 2.80 cm² (35 x 8 mm)
- Exposure Time (t) = 1 min and up to 10 min

<table>
<thead>
<tr>
<th>Method</th>
<th>Contact Mode</th>
<th>Power Setting (P)</th>
<th>Power Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>contact</td>
<td>2.0 - 2.5 W</td>
<td>0.71 - 0.89 W/cm²</td>
</tr>
<tr>
<td>2</td>
<td>Contact/non-contact</td>
<td>4.0 - 4.5 W</td>
<td>1.43 - 1.61 W/cm²</td>
</tr>
<tr>
<td>3</td>
<td>non-contact</td>
<td>5.0 - 5.5 W</td>
<td>1.79 – 1.96 W/cm²</td>
</tr>
</tbody>
</table>

- Settings vary depending on the type of skin and patient response
- Start at the lowest recommended setting (power and exposure time), and increase as necessary
- Therapeutic energies applied to any muscle or joint are measured in “Dose of energy”

The formula to calculate the Dose is as follows: \( \text{Dose [J]} = P (W) \times t (s) \)
Treatment of Painful Trigger Points (Myofacial Pain)
- Palpate masseter and temporalis to identify painful trigger points; mark each point with a small dot and the covered area.
- VAS Pain measurements for each point pre- and post-

Treatment of the Joint (TMJ Arthralgia)
- Treat the joint at the three locations provided in the image to the right
Therapeutic Applications - Clinical Benefits

- Progressive/immediate relief of pain
- Reduction in muscle tenderness and stiffness
- Improved functionality of the affected
- Improve quality of life
- Gentle to tissue in comparison to other alternatives such as steroid injections, or appliances such as mouth guards
In Office Whitening

- 12 shades
- No Sensitivity
- Works every time
Before
Laser Whitening

• Differences from past in-office whitening
• Advantages of laser application
  » Time
  » Penetration
  » Tissue Interaction

• Advantages to patient
  » Time
  » Sensitivity
  » Results
Finally…

• How would you like dentistry performed on you and your family?

• With outdated technology or with the most advanced, comfortable technology that is available today?

• Use technology to educate and motivate your patients

Provide a higher quality of care
Thank You
For your time and attention

Michael Koceja DDS
760-500-6189
mkoceja@comcast.net