

laser

the international C.E. magazine of laser dentistry

3²⁰¹¹



_earn C.E. credit

From everyday dentistry to advanced photoacoustic endodontic applications

_trends

Diode lasers for periodontal treatment: The story continues

_case report

Technology-enhanced caries detection and treatment options

Three



Fortune Management
Practice Analysis
\$1,500.00 value

A collage of dental education materials. On the left, there are several books and three CDs. One book is titled 'Everything Marketing: A Practical Guide for the Dental Professional' by Fred Joyal. In the center, there are three CDs with a blue and white design. To the right, there is a book titled 'MASTERS OF LASER DENTISTRY' with a subtitle 'LASERS IN SURGERY AND HYGIENE' and a badge indicating '8 CE CREDITS'. Next to the book is a small image of a dental procedure. On the far right, there is a certificate or document.

Fortune Management
Practice Analysis
\$1,500.00 value



Hands-on Seminar
\$695.00 value

Fortune Management
Practice Analysis
\$1,500.00 value



* Offer Expires 12/31/2011. USA Orders Only. Cannot be combined with any other existing offers. While supplies last. © 2011 AMD LASERS. All Rights Reserved.

AMD LASERS® is More Than Just Lasers.

NEW

Bendable Disposable Tips



We now offer bendable disposable tips, providing better control and access with your Picasso laser.



Dr. David Hornbrook

"You could pay more but you won't get more. This should be your new laser."



Dr. Larry Rosenthal

"This Picasso is a remarkable, affordable instrument for soft-tissue surgery and a must-have in my esthetic practice."

iCLE Laser Certification



AMD LASERS provides laser certification with every purchase of a Picasso laser. Certification is provided through DVD, online, and hands-on training, providing you the learning experience that you are looking for.



Dr. Louis Malcmacher

"User friendly, priced perfectly."

Teeth Whitening



Picasso delivers a brighter smile in just one visit with state-of-the-art dental laser technology and advanced whitening gel.



iPad App



AMD LASERS is the only laser company with an iPad app. This app provides you all the resources you need for your Picasso at your fingertips. For a limited time, if you purchase three Picasso Lites, we will give you an iPad with our app for FREE!

MASTERS OF LASER DENTISTRY

Join our team of clinical educators and learn first-hand about the enormous benefits of diode lasers in an all-new learning environment. By the end of the course, participants will gain insight into laser physics, theory, safety, the essential procedures you'll want to master with your diode, and how to implement and market the laser effectively to your patients. To learn more visit www.amdlasers.com/masters



Expand your horizons with *laser*



Torsten Oemus, Publisher
Dental Tribune International

The amount of new information available in the dental field about new products, techniques and research data is astounding. Running a practice and seeing patients leaves little time for catching up on the latest clinical news and product information. Thus, we hope *laser* will not only be a welcome respite for those rare chunks of time you can devote to leisurely reading, but one that provides a practical return on your investment by providing information that you can actually put to immediate use.

For this issue of the U.S. edition of *laser*, we've assembled a collection of articles from some of the most respected names in laser dentistry. These expert clinicians are sharing their knowledge and expertise with you.

Within this issue you can read a report from Dr. Fay Goldstep and Dr. George Freedman on using diode lasers for periodontal treatment; an article by Dr. Michele Baffi Diniz, Dr. Jonas Almeida Rodrigues and Dr. Adrian Lussi on technology-enhanced caries detection and treatment options; a case report by Dr. Gabriele Schindler-Hultzsich on a laser-assisted frenectomy in pediatric dentistry; an article by Dr. Giuseppe Iaria, Dr. Rolando Crippa, Dr. Giovanni Olivi, Dr. Matteo Iaria and Dr. Stefano Benedicenti on the use of the Er,Cr:YSGG and Er:YAG lasers in restorative dentistry; and a case report by Dr. Georg Bach on a diode-laser-assisted combination therapy of a lip haemangioma.

But there's more. Every issue of *laser* magazine also contains a C.E. component. So, by reading the article on periodontal surgery by Dr. Elena Speranza Moll, and the article on the use of dual wavelength lasers by Dr. Lawrence Kotlow, Dr. Enrico DiVito and Dr. Giovanni Olivi, and then taking a short online quiz about these articles at www.DTStudyClub.com, you will gain one ADA CERP-certified C.E. credit.

Keep in mind that because *laser* is a quarterly magazine, you can actually chisel four C.E. credits per year out of your already busy life without the lost revenue and time away from your practice.

To learn more about how you can take advantage of this C.E. opportunity, visit www.DTStudyClub.com. Annual subscribers to the magazine (\$50) need only register at the Dental Tribune Study Club website to access these C.E. materials free of charge. Non-subscribers may take the C.E. quiz after registering on the DT Study Club website and paying a nominal fee.

I know that taking time away from your practice to pursue C.E. credits is costly in terms of lost revenue and time, and that is another reason *laser* is such a valuable publication.

I hope you enjoy this issue of *laser* and that you get the most out of it.

Sincerely,

Torsten Oemus
Publisher

Technology **4** Medicine™

LIGHTWALKER®

Hard & Soft All Tissue Laser

Visit Us at the
American Dental
Association (ADA)
Booth #3142
October 10-12, 2011
Las Vegas, NV

Greater New York
Dental Meeting
Booth #4010
November 27-30, 2011
New York, NY

**Visit us & receive the New
LightWalker Tote Bag!**



Dentistry Today
"Top 100 Products for 2011"

949.276.6650

t4med.com





C.E. articles

- 08 ER,Cr:YSGG **laser-assisted GTR** in periodontal surgery
_Elena Speranze Moll, DDS
- 13 From everyday dentistry to advanced photoacoustic endodontic applications (PIPS):
Er:YAG & Nd:YAG dual-wavelength laser
_Lawrence Kotlow, DDS, Enrico DiVito, DDS & Giovanni Olivi, MD, DDS

trends

- 18 Diode lasers for **periodontal treatment**: The story continues
_Fay Goldstep, DMD & George Freedman, DDS

case reports

- 27 Technology-enhanced **caries detection and treatment** options
_Michele Baffi Diniz, DDS, MSc, PhD, Jonas Almeida Rodrigues, DDS, MSc, Dr med dent, PhD & Prof Adrian Lussi, Dr med dent, diplom chem
- 32 Laser-assisted **frenectomy** in pediatric dentistry
_Gabriele Schindler-Hultsch, MSc, DDS

user report

- 36 Use of the ER,Cr:YSGG and Er:YAG lasers in **restorative dentistry**
_Giuseppe Iaria, Dr Prof, DMD, DDS, Rolando Crippa, Dr Prof, DMD, DDS, Giovanni Olivi, Dr Prof, DMD, DDS, Matteo Iaria, DDS (expected) & Stefano Benedicenti, Prof, DDS

clinical technique

- 42 **Diode-laser-assisted combination therapy** of a lip haemangioma
_George Bach, Dr med dent

events

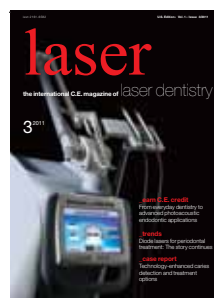
- 47 Yankee Dental Congress 2012: 'Ride the **Wave to Success** in Dentistry'

industry

- 48 Philips Discus Dental: NV **Microlaser**

about the publisher

- 49 _submissions
- 50 _imprint



on the cover

Cover image provided by Technology4Medicine



The Dual Wavelength *waterlase***iPlus*[™]

Advancing Laser Technology to Its Ultimate

EASY TO USE GRAPHICAL USER INTERFACE

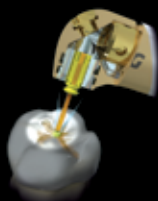
For example, performing a Class I Cavity Prep the iPlus[™] is as easy as 1,2,3...

- Step 1** Select "Restorative" from the first screen
 - Step 2** Choose "Class I" from the next screen that appears automatically
 - Step 3** Specify any other concerns such as patient sensitivity or bond strength
- That's it! Step on the foot pedal, and start working with no shot, no drill!*



BREAKS THE DENTAL SPEED BARRIER

- ⊕ Faster than the drill, without the delay of anesthetic
- ⊕ Patented laser technology delivers 10 watts of power
- ⊕ Up to 100 pulses/sec. for superior soft-tissue cutting
- ⊕ Enables multi-quadrant same-day procedures



ENABLES PAINLESS BIOLOGICAL DENTISTRY

- ⊕ Painless — no shot necessary
- ⊕ No micro-fractures or thermal damage
- ⊕ No cross contamination as with bur
- ⊕ More precise, minimally invasive

iLASE[™] 940nm DIODE LASER DOCKING STATION

- ⊕ Adds dual wavelength versatility and convenience
- ⊕ First totally wireless dental laser
- ⊕ 5 Watts peak power with ComfortPulse[™]
- ⊕ Battery operated with finger switch activation
- ⊕ Exclusive bendable tips in many diameters & lengths
- ⊕ Single use for NO cross contamination



*Roger P. Levin, DDS
Founder and CEO of Levin Group, Inc.*

PROVIDES GREAT RETURN ON INVESTMENT

- ⊕ "A fantastic tool to increase production!"
— Roger Levin
- ⊕ Increases treatment acceptance of day-to-day restorative cases
- ⊕ Attracts new patients
- ⊕ Increases productivity and enables new procedures

Er,Cr:YSGG laser-assisted GTR in periodontal surgery

Author_ Elena Speranza Moll, DDS

_c.e. credit part 1

This article qualifies for C.E. credit. To take the C.E. quiz, log on to www.dtstudyclub.com.

_Abstract

Objectives: This case report describes the application of an Er,Cr:YSGG laser in regenerative periodontal surgical therapy.

Materials and methods: A patient with extensive periodontal tissue breakdown is treated with an Er,Cr:YSGG laser for granulation tissue removal, bone decorticalization and root decontamination. In the regenerative procedure, demineralized bovine bone mineral and collagen membranes were used.

The following clinical parameters were recorded at baseline, three months, six months, one year, two years and five years: plaque index (PI), bleeding on probing (BOP), periodontal pocket probing

depth (PPD), recession (REC), clinical attachment level (CAL).

Results: The operated sites demonstrated uneventful healing. Radiographically, remineralization was observed at six months. At a one year follow-up, significant probing pocket depth reductions and clinical attachment level gains were registered.

Conclusion: In this report, it may be acknowledged that the Er,Cr:YSGG laser could be applied for debridement and decontamination of both the root and the bone defect in guided tissue-regeneration procedures. Further investigation is needed to identify in which treatment protocol in periodontology the Er,Cr:YSGG laser can be integrated and with which benefits.

(Photos/Provided by
Dr. Elena Speranza Moll)



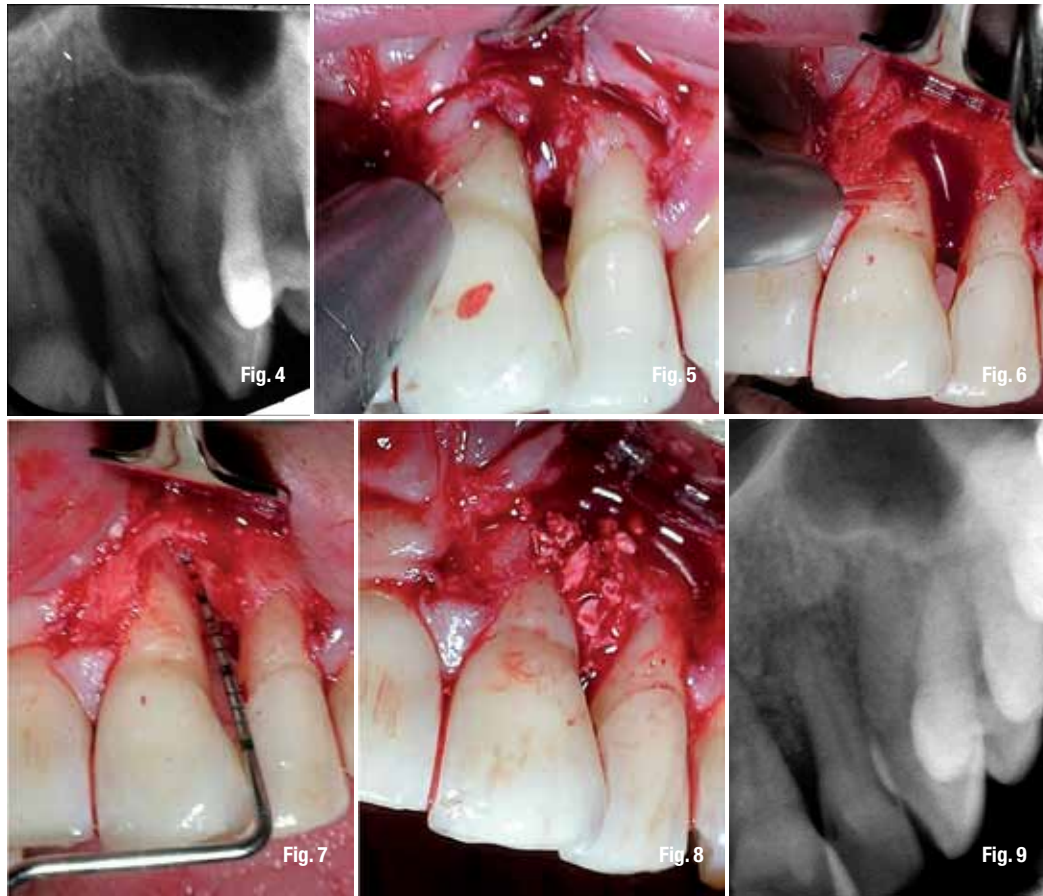
Fig. 1



Fig. 2



Fig. 3



Background

The application of laser in periodontology is widely discussed, especially as several laser systems with their specific wavelength have a different impact on periodontal tissues. Excellent knowledge of laser applications is essential, which requires the operator to endure a learning curve to avoid adverse effects.

During laser irradiation, the power settings play a significant role and must be regulated appropriately in order to avoid detrimental effects to the irradiated tissues (Ishikawa I. 2002).

Periodontal tissue destruction is treated according to the type of defect and the location, posterior or anterior, in the mouth.

Regenerative therapy is indicated in case of intra-osseous defects of which the radiographic angle and number of walls determine which kind of procedure needs to be applied and which kind of materials need to be used. The difficulty of guided tissue regeneration and other treatments of the periodontium lies in the fact that we are dealing with roots, which have an avascular surface in which both the multiple specialized cell types and the microbial environment are involved in all healing processes of the periodontal ligament.

Materials and methods

The Er,Cr:YSGG laser (Biolase, Inc.; San Clemente, Calif.) with a 2,780 nm wavelength, in the far-infrared spectrum, is a class 4 laser, with a pulse repetition rate of 10 Hz to 50 Hz and power output from 0.25 to 8 watt, and pulse energy of 300 mJ. The flexible optical trunk fiber is connected to a straight or angled handpiece.

The laser beam is accompanied by a water and air spray. The water/air spray represents a hydrating and cooling agent reducing thermal effects. Both air and water settings can be modified from 0–100 percent. Radiation of the Er,Cr:YSGG laser is absorbed mainly by water and calcium hydroxyapatite.

With a pulse duration of 90 or 150 μ sec, the Er,Cr:YSGG laser has a high ablation efficiency and low thermal impact on the surrounding tissues (Straßl, 2004) "Comparison of the emission characteristics of three erbium laser systems – a physical case report." (JOLA 2004).

A 44-year-old female patient with incidental, severe adult periodontitis (Vd Velden U., 2005). Medical conditions and lifestyle: The patient was a non-smoker and she suffered from severe II grade obesity (BMI 35–39.9) and stress. Family history was positive for periodontitis.