

laser



international magazine of laser dentistry

3²⁰¹⁷

overview

Laser-supported
restorative dentistry

industry

Laser-assisted direct pulp capping

events

WFLD-ED congress in Thessaloniki



INTRODUCING

GEMINI®

810 + 980 DIODE LASER



DUAL WAVELENGTHS.
ONE OF A KIND.

The Gemini® 810 + 980 diode laser is the first dual-wavelength soft tissue diode laser, as well as the most powerful soft tissue laser available to dentists, which is usable with both wavelengths simultaneously. No matter the procedure, the innovative Gemini® laser makes it faster, smoother, and more efficient.

Bringing laser to sunlight



Dr Dimitris Strakas

Dear colleagues,

Laser dentistry has long ago passed its years of baby steps and we are living the era that laser is already part of modern dentistry modus alongside with other technological innovations and digital technologies. The biggest and oldest scientific community that has united and served laser dentists since 1988 is undoubtedly the World Federation for Laser Dentistry (WFLD). In the heart of this family, the European Division (ED) has a significant part throughout the years. The 6th WFLD European Division Congress is here and the beautiful city of Thessaloniki is waiting to host us in the country of sunlight, Greece.

We are more than delighted to discover that all forces of laser dentistry have contributed to this important scientific event, emphasising the fact that dentists from around the world are eager to participate and discover the latest research and clinical projects from the most prominent opinion leaders. I am feeling also honoured that for the first time all "major" companies in dental laser and restorative field have sponsored this event and their presence will give us the opportunity to have a multicolour "palette" of wavelengths and laser devices in the congress exhibition.

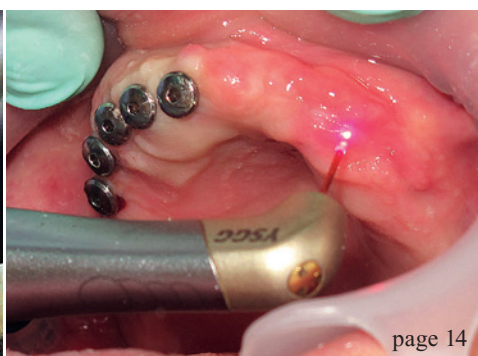
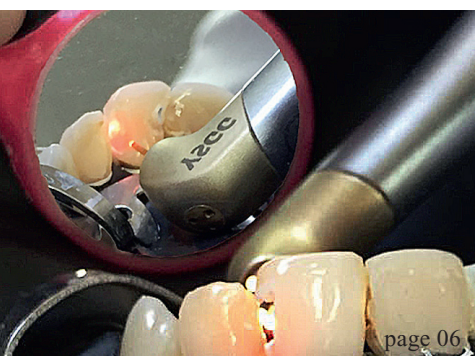
23 sponsors, 25 invited speakers, 70 oral presentations, 30 e-posters, a parallel aesthetic and CAD/CAM congress on Saturday and eight free-of-charge workshops are ensuring a successful and informative meeting. Moreover, the social events such as the Welcome Cocktail on the exhibition area and the Gala Dinner will give you the opportunity to meet and reunite with colleagues from all over the world.

The 6th European Division Congress of the WFLD is opening its doors and welcomes you in the Makedonia Palace hotel of Thessaloniki on 22 and 23 September. You are cordially invited to join us and indulge in two days of science and socialising in the laser dental family.

Let's meet in Thessaloniki! Let's bring laser light to sunlight!

Sincerely,

Dr Dimitris Strakas
Chairman of WFLD-ED



| editorial

- 03 Bringing **laser** to **sunlight**
Dr Dimitris Strakas

| overview

- 06 **Laser-supported** restorative **dentistry**
Prof. Dr Kosmas Tolidis & Dr Dimitris Strakas

| case report

- 12 **Maxillary frenectomy** with a **diode laser**
Dr David L. Hoexter
- 14 **Laser** in **second-stage** implant surgery
Dr Habib F. Zarifeh *et al.*

| industry

- 16 **Laser-assisted** direct **pulp** capping
Pawel Roszkiewicz
- 20 **Using the AdvErL Evo laser**
for endodontic **treatments**
Dr Hans-Willi Herrmann

| practice management

- 26 Successful **communication** in your
daily practice
Dr Anna Maria Yiannikos
- 28 **Laser** as euphemism in **Paediatric Dentistry**
Dr Imneet Madan
- 32 **Fire** safety in **dental** practice
Stuart Collyer

| events

- 34 **WFLD-ED** congress in **Thessaloniki**
Dr Dimitris Strakas & Prof. Dr Kosmas Tolidis

| news

- 24 **manufacturer news**
- 36 **news** international

| DGL

- 39 **Laserlicht** im Land der **Sonne**
Dr. Dimitris Strakas
- 40 **26. DGL Workshop-Kongress**
Dr. Ute Gleiss
- 42 **Laserschutz** für Zahnmediziner
Jiashou (Prof.) Dr. Frank Liebaug, Dr. Ning Wu
- 46 **news** germany

| about the publisher

- 50 imprint



Cover image: © Knot. P. Saengma/Shutterstock.com

The universe at your fingertips.

● LightWalker

The highest technology dental laser system

Supreme clinical results:

- TwinLight® Perio Treatments
- TwinLight® Endo Treatments
- No-sutures soft-tissue surgery
- Patient-friendly conservative dentistry
- Pre-sets for over 40 applications

Unmatched simplicity of use:

- Balanced and weightless OPTOflex® arm
- Nd:YAG handpiece detection system
- Quantum Square Pulse technology for fast minimally invasive treatments
- X-Runner™ - the first digitally controlled Er:YAG dental laser handpiece

Journey into a new dental experience with speed, precision and great results.

Visit www.fotona.com today!



 Fotona App



Laser-supported restorative dentistry

Authors: Prof. Dr Kosmas Tolidis & Dr Dimitris Strakas, Greece

Since the advent of laser in dentistry, one of the most benefited disciplines alongside oral surgery is restorative dentistry.

A plethora of existing wavelengths is providing excellent, but most significantly, essential service in a unique way. Starting from the visible light spectrum (445 nm) going to red (660 to 670 nm), near-infrared (810, 940, 980, 1,064 nm) up to the mid-infrared spectrum (2,780 to 2,940 nm), a variety of clinical situations can be dealt successfully, either with the unique use of laser or a combination of conventional approaches with laser. Numerous devices have been developed, either on a single wavelength or more versatile multiple diode laser devices with two or even three different wavelengths adding ease of use to clinical applications.

The purpose of this paper is to present an overview of laser-supported restorative dentistry, going through the available wavelengths and their different applications and capabilities by using exemplary clinical cases.

The "blue laser"

Recently, Dentsply Sirona introduced the SiroLaser Blue, a three wavelength device (445, 660, 970 nm) aiming to respond to a variety of clinical conditions requiring laser approach. As it is well known from the absorption chart (Fig. 1), 445 nm is being highly absorbed by melanin and haemoglobin establishing this device as a very useful tool for surgery and haemostasis.

In the field of restorative/operative dentistry, minor surgeries in the form of gingival contouring and especially haemostasis are necessary, but a significant use, as it appears from early research data, can also be light curing and energy provision to restorative materials. Composite resins and glass ionomers can be light cured by the SiroLaser Blue device in a very efficient way.

More in particular, conventional glass ionomer can benefit from the energy provided by the laser and increase significantly their surface microhardness and

Thinking ahead. Focused on life.

Gentle on surfaces. Versatile in its use.



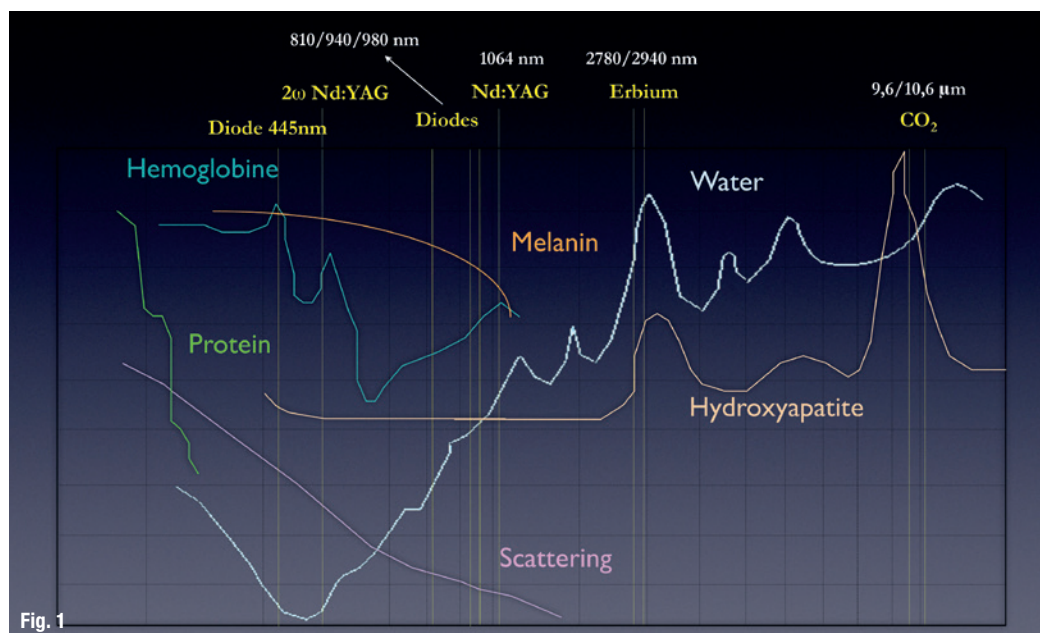
Third-generation laser technology: AdvErL Evo Er:YAG laser

Minimally invasive and flexible to use, the AdvErL Evo Er:YAG laser lets you treat your patients extremely gently, thanks to the third-generation laser technology which enables the maximum absorption of the laser energy by water. It creates micro-explosions that are gentle on the tissue and remove bacteria permanently. This high-tech instrument is thus ideal for a wide range of indications across various disciplines – from periodontics and endodontics to implants. Further advantages include the air and water system integrated into the instruments, the user-friendly interface with large color display, and the ergonomically designed handpiece.
www.morita.com/europe

Visit us on our
booth B7 at WFLD-ED 2017
in Thessaloniki, 22nd – 23rd
September or at
1st International Hard and
Soft Tissue Regeneration
Symposium in Budapest,
27th – 29th October.



Fig. 1: Absorption of the different laser types.



resistance to dissolution. Therefore, alongside surgery, 445 nm has been proven a potent and efficient wavelength when dealing with restorative materials.

The "soft" red

Dentine hypersensitivity

Dentine is a difficult and demanding dental tissue, presenting certain difficulties in its management due to its composite structure character. Alongside this fact, certain clinical entities related to dentine morphology, structure and interrelation with other oral tissues such as the gingiva are the root of difficult to solve clinical problems.

One of the major challenges in contemporary restorative dentistry is managing dentine hypersensitivity. Dentine hypersensitivity is a multifactorial clinical situation that affects a significant number of patients in almost all age groups. A variety of different treatment modalities have been suggested, starting from toothpastes and varnishes, going up to restorative procedures.

Low Level Laser Therapy (LLLT) seems to be a key way to manage these problems, especially in cases where there is no space available for the placement of "permanent" coverings. Patients are coming in, exhibiting different pain levels when thermal stimuli are applied, in particular cold ones.

The application of a "soft" laser (0.2 to 0.5 W, cw) for one to two minutes at the cervical area of each tooth provides an effective treatment in most cases. Certainly, because of the multifactorial character of the problem, there are cases that perhaps would respond positively on a different approach. But laser

is a strong, valid way for dentine hypersensitivity's management.

Dentine disinfection

Following caries excavation, a dental practitioner is faced with dentinal walls still contaminated with remaining bacteria either in a "soft" layer of carious dentine or existing infiltrated inside dentinal tubuli. Light-activated disinfection (LAD) or photo-activated disinfection (PAD) are different names for the same procedure. The foundations of this approach refer to the use of a red laser in conjunction with a blue dye (e.g. toluidine blue or methylene blue).

In principle, the red light activates the dye in order to produce free oxygen radicals, a very potent disinfectant that would disinfect dentinal walls without affecting pulp's vitality or interfering with adhesive procedures and bond strength of contemporary bonding systems and materials. The same method is also being suggested for periodontal pockets and root canal disinfections following similar procedures (Fig. 2).

Subsequently, the red light "soft" laser can be useful in a variety of restorative cases providing either immediate pain relief in some difficult cases, or a safe environment for our restorative materials to function, providing extended longevity of restorations.

The "diode laser"

Diode laser devices at 810, 940 and 980 nm can be also referred to as the "standard" diode devices found in almost every laser equipped dental clinic. These wavelengths are the most common wavelengths



Master of Science (M.Sc.) in Laser in Dentistry

Next Start: **02nd October 2017** | Aachen, Germany | 4 semesters



Become part of the International Dental Elite

- Create new economic potential for your practice
- Two year career-accompanying postgraduate programme at the University of Excellence RWTH Aachen
- Combination of lectures, skill training sessions, live ops, tutorials, and practical workshops
- Internationally accepted and accredited by the German Government, the European Union, the Washington Accord and the Bologna Process
- Science-based and practice-orientated on highest national and international level
- Increased patient satisfaction: minimal contact reduced vibration and pain

**RWTH INTERNATIONAL
ACADEMY
AACHEN UNIVERSITY**

RWTH International Academy
Kackertstraße 10 | 52072 Aachen | Germany
phone +49 241 80 23543 | fax +49 241 80 92525
info@academy.rwth-aachen.de
www.academy.rwth-aachen.de

AALZ

Aachen Dental Laser Center

AALZ GmbH
Pauwelsstraße 17 | 52074 Aachen | Germany
phone +49 241 47 57 13 10 | fax +49 241 47 57 13 29
info@aalz.de
www.aalz.de



PROFESSIONAL EDUCATION PROGRAMMES

Your contact for more information: Leon Vanweersch • vanweersch@aalz.de - www.aalz.de

Fig. 2: Dentine disinfection with the red light revealing contaminated areas.

Fig. 3: The diode laser can be used for the minimal gingival retouch near cavity margins.

Fig. 4: Bleaching with the diode laser in combination with the respective agents and handpieces.

Fig. 5: With the erbium family laser there is no noise, vibration or pressure during the treatment and less need for anaesthesia.



Fig. 2



Fig. 3



Fig. 4

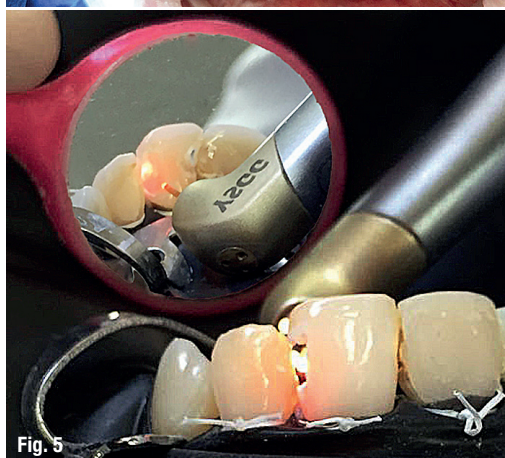


Fig. 5

available in the market, combining the versatile use for a numerous different everyday clinical cases (surgical, endo, perio, bleaching, etc.), with significantly reduced prices compared to other alternatives.

In restorative dentistry in particular, the diode laser can be used for the minimal gingival retouch near cavity margins (Fig. 3), haemostasis and gingival troughing before a restoration or impression taking as well as for bleaching procedures used always in combination with the respective bleaching agents and handpieces (Fig. 4). Especially in cases where gingival and bleeding management is crucial, these devices can provide a safe and predictable result much quicker than conventional approaches. De-

pending on case requirements, a number of different settings should be used.

Decay diagnosis

Concurrently, at the same range of the electromagnetic spectrum and in particular at 655 nm laser caries detection device has been developed. Dental decay lesion's diagnosis and risk evaluation is the corner stone of modern operative dentistry and the minimally-invasive approach. Accurate detection of site, extent and activity of the lesion is of paramount importance, in our effort to provide quality treatment to our patients. DIAGNOdent system utilises the principle of "laser fluorescence" in order to detect and classify decay lesions. Numerous research papers have shown that this is a valid alternative in the caries examination armamentarium. It exhibits clinically adequate ability to "probe" difficult to access areas, such as, pits and fissures and offer practitioners an extra objective aid to examine and evaluate suspicious areas, promoting minimally-invasive restorative treatment.

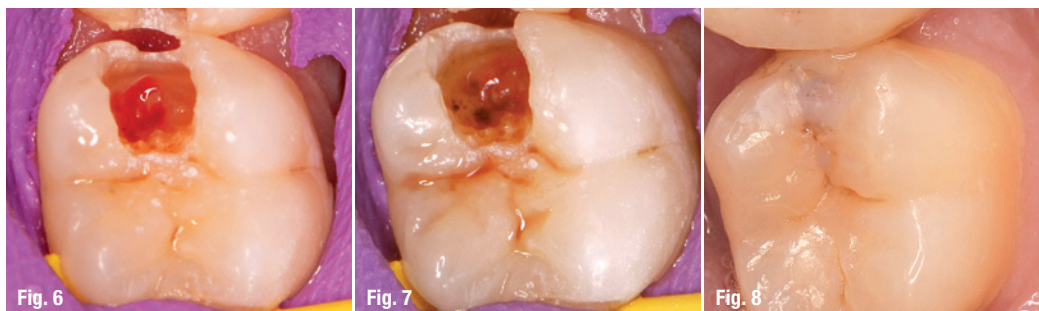
The "erbium family laser"

The erbium family laser devices (Er:YAG and Er,Cr:YSGG) are the protagonists in the restorative dentistry palette. Thus, they can be referred to as the "Swiss Army Knife" as they can perform all needed actions related to procedures in modern restorative dentistry. These results are based on the fact that erbium lasers are highly absorbed in water, a compound existing in variable amounts, in all human tissues.

Their only significant drawback that limits their use in a dental surgery is their relatively elevated price in the market. It goes without saying, of course, that as in all laser instances, prior to the acquisition and use of such devices a proper, well-structured and documented education and training is essential.

The erbium family laser devices can successfully perform all procedures both on soft and hard oral tissues. With the respective parameters and settings, an erbium family laser can manage gingival contouring and modelling (most of the times without the need for anaesthesia) and then proceed to cavity preparation in a clinically acceptable time span.

The cavity preparation is a less frustrating procedure for the patient as it lacks major issues of the conventional approach, for example anaesthesia, noise, vibrations, pressure, etc. (Fig. 5). Even when getting close to the pulp or on minor directly manageable pulp exposures, with the use of the appropriate settings, a pulpal "bandage" can be achieved in a safe way (Figs. 6–8).



Figs. 6–8: With the use of the appropriate settings, a pulpal “bandage” can be achieved in a safe way.

The main characteristics of the cavity are the same as with the conventional approach, rendering possible the restoration with all available restorative techniques and materials. The only significant difference that should be taken into consideration is that laser cavity preparation is a “smear layer free” restoration.

Erbium family laser light is eliminating smear layer on enamel and especially on dentine, and currently this is an issue of research as for the pH of the bonding systems that should be used on such a surface. The findings, so far, suggest that self-adhesive systems exhibit better results than total-etch systems.

Conclusion

In conclusion, laser in dentistry has long now passed adolescence and has entered a period of maturity. Dentists start to appreciate the quality of treatment they can provide to their patients, and applications of diode lasers are growing significantly.

The erbium family lasers are strongly related to price, but still the interest shown proves that when they would become affordable for bigger numbers of practitioners then there would be a generalised use,

something like the introduction of high-speed turbines some decades ago.

Still, we need to stress the point that the use of either diode or erbium or any other type of laser should be founded on a solid, well-structured, documented education and training, assuring the safety of both patients and dental professionals.

contact

Prof. Dr Kosmas Tolidis

DDS, MSc, PhD, LSO
Head of Aesthetic Dentistry Program,
Aristotle University of Thessaloniki
Coordinator of Clinic for Dental Laser Applications,
Aristotle University of Thessaloniki
President of the Hellenic Academy of Laser in Dentistry

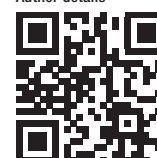
Dr Dimitris Strakas

DDS, MSc, PhD, LSO
Aristotle University of Thessaloniki
Spiridi 28
38221 Volos, Greece
Tel.: +30 24210 32525
www.wfld-thessaloniki2017.com

Author details



Author details



Kurz & bündig

Seit dem Aufkommen von Lasergeräten in der Zahnheilkunde profitiert die Restaurative Zahnheilkunde, neben der Oralchirurgie, am stärksten von dieser Technologie. Eine Vielzahl existierender Wellenlängen liefern einen wichtigen Beitrag für die Arbeit am Patienten. Angefangen bei einem sichtbaren Lichtspektrum (445 nm) über ein Rot- (660–670 nm), Nah-Infrarot- bis hin zu einem mittleren Infrarot-Spektrum (2.780–2.940 nm) können unterschiedliche klinische Situationen erfolgreich behandelt werden – entweder durch die alleinige Verwendung eines Lasers oder eine Kombination aus konventionellen Ansätzen und Laser.

Der Artikel gibt einen Überblick über die unterschiedlichen Lasertypen und -wellenlängen, die in der lasergestützten, Restaurativen Zahnheilkunde eingesetzt werden und erklärt anhand klinischer Fallbeispiele die unterschiedlichen Anwendungsmöglichkeiten. Einer der am meisten genutzten Laser in der dentalen Praxis ist dabei der Diodenlaser. Das vielseitigste, gleichzeitig aber auch teuerste Gerät ist der Erbiumlaser; er gilt als das „Schweizer Taschenmesser“ unter den Lasern. Für welches Gerät sich der Behandler auch entscheidet: Die Autoren betonen, dass in jedem Fall eine solide, gut strukturierte und dokumentierte Ausbildung notwendig ist, um die Sicherheit sowohl von Patient als auch Behandler sicherzustellen.

Maxillary frenectomy with a diode laser

Author: Dr David L. Hoexter, USA

There are many opinions, both in favour of and against, regarding utilisation of lasers in periodontal therapy. There are also many reports of the different surgical techniques utilising sharp metallic instruments for exacting predictable and desired results. The use of a laser to achieve these results does not mean that there are no other efficient, "classical" procedures that would accomplish the goal. Yet, a laser might be a more direct and efficacious path to achieve the same goal, with easier healing and less side effects.

This case presentation allows me to demonstrate the utilisation of a diode laser to allow ease of technique, avoid unnecessary bleeding, avoid the use of sutures (and their removal), and provide a comfortable transition for the patient without swelling or need for a periodontal dressing after the surgery.

Case report

In this presentation, a young female patient presented in my office complaining about her frenum in the maxillary anteriors. She related that it hurt whenever she bit into a firm substance, such as corn on the cob. Her tongue constantly reached to this uncomfortable area, affecting her speech, and she felt pain in her lip when she tried to smile. A few years prior, she had a lot of dentistry done in her maxillary anteriors for aesthetic purposes. She had been aware of and bothered by a natural, large diastema between her

maxillary centrals. The previous dentist had closed the diastemic space between the crowns by overbonding the area, leaving overhanging margins on the mesial of both centrals (Fig. 1). The area now appeared clinically closed, but the constant irritation and bleeding in the area, especially due to the frenum pull, made this teenage patient feel very uncomfortable.

X-rays taken by my office revealed an obvious space, seen as a large radiolucent dark area between both central incisor roots, covered with tissue (Fig. 2). In this case, I made a decision to use a laser to do the frenectomy because of the possibility that a classical approach might result in leaving a large void between the centrals. Moreover, use of a laser allows complete control in this technique to avoid what might otherwise be a devastating disaster. If the natural, large void between the centrals submarginally was to have been exposed, it would have left a vast undesirable, unaesthetic, dark-appearing hole.

Treatment with diode laser

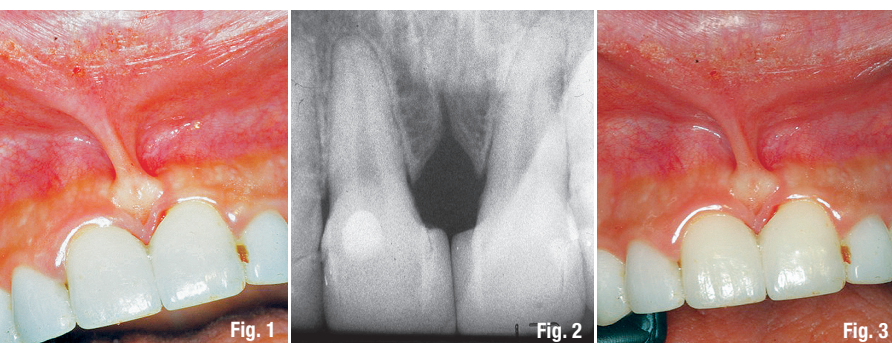
Because this was a surgery that involved only soft-tissue, our choice of lasers is the CO₂, Nd:YAG and diode lasers. Other lasers may be used for both soft- and hard-tissue. I chose to utilise just a tissue laser, and chose a diode laser. This diode laser also offered the use of a disposable tip containing a thin fibre that would transmit the therapeutic treatment. The tip, being disposable, will aid in the consistency of maintenance and hygienic cleansing in and during our treatment.

A standard frenectomy, where we might remove the frenum with a sharp stainless steel instrument, might lead to further complications by exposing the large void pointed out in Figure 2 that is covered by tissue. If the frenum is just incised and removed, the area will have an obvious, huge, dark-appearing void. Yet, the frenum should be removed. The obvious restorative necessities and options were discussed first. This young patient wished to do a little at a time, starting with the frenum removal.

Fig. 1: Pretreatment labial view shows the large maxillary frenum and its large attachment.

Fig. 2: X-ray of same area. Notice the large dark-appearing space between the centrals' roots. Note the large restorations' mesial overhanging margins.

Fig. 3: Another labial pretreatment view.



After local anaesthesia with xylocaine, the frenum was infiltrated, incised from the attachment of the tissue and lip-side of tissue first, rather than incising in the centre of the frenum or separating and detaching the tissue from the side attached to the alveolus. Using the diode laser, the tissue was incised, keeping the field of vision intact and accessible. Continuing movement of the laser tip toward the alveolar-covered tissue allows the trough to be made wider until the desired length is acquired. All of this is accomplished painlessly, without a pool of blood blocking the view.

This laser automatically enhances a clot, allowing not only a view but also a comfortable working environment for the operator as well as a painless one for the patient. The assistant retracts the lip, with the laser allowing complete vision and aiding in curtailing the bleeding. After the tissue is dissected to the desired level, the remaining loose tissue of the frenum is removed using the diode laser, as well. These results leave a slight charring when we wish to control bleeding (Figs. 4 & 5).

Postsurgery

Healing proceeds uneventfully until it is completed and is maintainable (Fig. 6). Once the frenum is removed and healed, the patient is no longer uncomfortable when eating nor is her lip restricted when she desires to smile. The healed area allows the patient to keep the area clean. She is able to reach and floss the mesial aspects, which she couldn't do previously. After completion, she is reminded of the need to correct the restorations of her maxillary anterior teeth and get rid of the obvious overhanging margins.

Conclusion

This particular patient desired a little correction at a time, but, in the meantime, the positive results of the laser treatment made her positive about correcting and improving the aesthetics of her anterior maxillary teeth

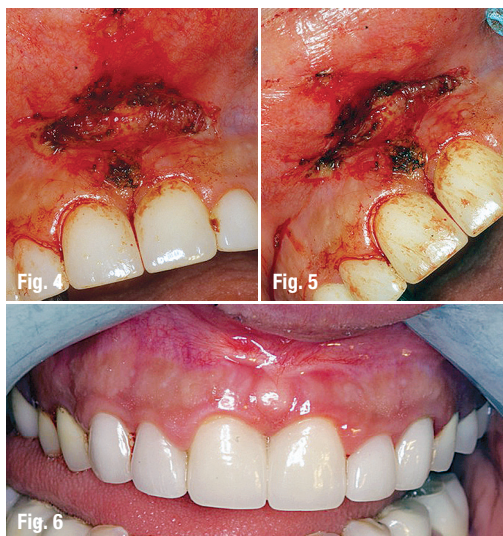


Fig. 4: Initial use of diode laser for releasing the frenum attachment from the lip mucosal side.

Fig. 5: Completed extension using the laser and removal of the rest of the frenum.

Fig. 6: Final completion of healed area, labial view. Notice the healed labial area, minus the large frenum, yet, avoiding the exposure of the large void between the incisors, as seen in the X-ray (Fig. 2) initially.

in the near future. With the use of this diode laser, we are able to remove the frenum attachment from the lip side initially, allowing a predictable approach that helps avoid exposing a large hole in the very front and centre of her smile. This laser treatment and its positive results for her, allowed her to consider future restorative corrections with a positive attitude. In this case, use of the diode laser allowed her smile to be corrected, and changed her discomfort into a comfortable glow.

Editorial Note: This article was first published in Dental Tribune U.S. Edition, Vol. 7, No. 8, August 2012.

contact

Dr David L. Hoexter

DMD, FICD, FACD
Private Practice
654 Madison Ave
New York City, USA
drdavidlh@gmail.com
www.drhoexter.com

Author details



Kurz & bündig

Der Artikel beschreibt den Fall einer jungen Patientin, die zur Behandlung eines Frenums im Oberkieferfrontzahnbereich vorstellig wurde. Wenige Jahre zuvor wurde sie bereits wegen eines Diastema zwischen ihren Oberkieferfrontzähnen behandelt. Der damalige Zahnarzt schloss den diastemischen Spalt zwischen den Kronen durch Bonding, wobei er überhängende Ränder im mesialen Bereich beider Zähne zurückließ. Obwohl das Areal klinisch geschlossen erschien, beeinträchtigte die konstante Reizung und Blutung in diesem Bereich die Patientin sehr. Zur Beseitigung des Frenums wurde statt einer Standard-Frenektomie mit scharfen Edelmetallinstrumenten, die möglicherweise weitere Komplikationen zur Folge gehabt hätte, eine Frenektomie mittels Laser durchgeführt. Hierbei fiel die Wahl auf den Diodenlaser, der sich besonders für die Weichgewebebehandlung eignet. Die Behandlung mit dem Diodenlaser erfolgte schmerzfrei und ohne große Mengen an Blut, die das Sichtfeld des Behandlers blockiert hätten. Das Frenum konnte vollständig entfernt werden und der Heilungsprozess verlief problemlos. Die unkomplizierte Laserbehandlung und das damit verbundene positive Ergebnis ermöglichen der Patientin, auch in Zukunft restaurative Korrekturen in Betracht zu ziehen – mit einer positiven Erwartungshaltung.

Laser in second-stage implant surgery

Authors: Dr Habib F. Zarifeh, M.Sc., Dr Mayssam Bachacha, MS & Dr Monique Hanna, MS, Lebanon

The usage of laser devices has provided less invasive management options for dental procedures. Thereby, the erbium laser is the most used laser in dentistry nowadays. It presents the most application possibilities since it can be used on both soft- and hard-

tissues. When it comes to soft surgery, there are many indications including gingivectomy, gingivoplasty, sulcular debridement of diseased fibrous tissue¹, lesion removal, fibroma removal, tissue retraction, aphthous ulcers, gingival hyperplasia (excision and recontouring), crown lengthening, operculectomy, frenectomy, and photocoagulation.²

In addition, the erbium laser may be used for periodontal procedures³, including laser soft tissue curettage, laser removal of diseased, infected, inflamed or necrotised soft tissue within the periodontal pocket, removal of highly inflamed oedematous tissue affected by bacteria penetration of the pocket lining and junctional epithelium⁴. In this article, we present a case where the Er,Cr:YSGG laser was used in a second-stage dental implant surgery.

Case presentation

A patient presented with dental implants previously inserted in the maxilla. Topical anaesthetic was administered before the procedure for three minutes, second-stage surgery was performed with an Er,Cr:YSGG laser (Waterlase MD, Biolase Technology, Inc., USA), using a Gold handpiece in S contact mode Z6 tip (2.78 µm, 3W, 50 Hz, water 30%, air 15%). The settings for the procedure strictly followed the manufacturer's instructions.

Discussion

Er,Cr:YSGG laser for soft tissue oral surgery is becoming widely used.⁵ Its beneficial effects include sufficient haemostasis, absence of swelling and pain and precise incision margin.⁶

When in contact with the tissue, the laser light can be reflected, scattered, be absorbed, or be transmitted to the surrounding tissues.⁷ The presence of free water molecules in biological tissue are vaporised as they absorb laser energy, causing the increase of intra-tissue pressure, producing vapour within the tissue

Fig. 1: Second-stage surgery on implants in the upper maxillary jaw.

Fig. 2: During laser performance.

Fig. 3: Haemostasis of the implant site 23 after implant removal.





Fig. 4



Fig. 5

Fig. 4: Healing abutments.

Fig. 5: Healing results after five days.

and provoking "micro-explosions" that cause the mechanical breakdown of tissues and physically contribute to the ablation process. The ablated surface exhibits a microstructured appearance with minimal thermal alteration.⁸

In this laser, the photon amplification occurs through a medium of heterogeneous crystal (YSGG). This laser emits photons at 2,780 nm wavelengths and has a pulse duration of 140 to 600 μ s in the repetition rate that can vary from 10 to 50 Hz. The major beneficial properties of lasers are their relatively easier ablation of soft tissues than that of mechanical instruments and their haemostatic and bactericidal effects.

There are two surgical stages for conventional implant dentistry. The first stage consists of performing the implant fixture while the second stage consists in uncovering it. The second stage is less aggressive for the patient comparing to the actual surgery but presents more pain.⁹

Dental implants can be exposed by using scalpel, punch, electro surgery, or laser uncovering that decrease bleeding, swelling, and postoperative discomfort. Electrosurgery has frequently been employed and is capable of easily incising soft tissues with good haemostasis but unwanted thermal damage can cause delayed wound healing.^{10, 11}

The peri-implant soft tissue is of major importance in the upcoming prosthetic stages since the gingival tissue attachment around implants is one of the factors of success of implant rehabilitation, especially in aesthetic areas.¹²

Conclusion

The advantages for laser treatment include technical simplicity, the possibility of obviating local anaesthesia, absence of postoperative pain and oedema as well as predictable results and complete tissue healing in several days, as it will facilitate rapid prosthetic rehabilitation.

contact

Dr Habib F. Zarifeh

DDS, MS in Oral surgery, MSc in Laser dentistry
RWTH Aachen University
Head of Clemenceau Medical Center
dental department affiliated with
Johns Hopkins International
Beirut, Lebanon
info@habibzarifeh.com
info@smileinfinity.com
www.habibzarifeh.com
www.smileinfinity.com

Author details



Kurz & bündig

Die Verwendung von Lasergeräten eröffnet weniger invasive zahnärztliche Behandlungsoptionen. Dabei ist der Erbiumlaser der meistgebrauchte Laser in der modernen Zahnheilkunde, da er sowohl für Hart- als auch Weichgewebe verwendet werden kann und damit eine Vielzahl an Anwendungsmöglichkeiten bietet. In der dentalen Chirurgie lässt sich der Erbiumlaser beispielsweise zur Entfernung krankhaften Gewebes, zur Tumorentfernung, Behandlung aphthöser Geschwüre oder zur Durchführung einer Frenektomie verwenden. Darüber hinaus eignet er sich auch für parodontologische Eingriffe, wie Weichgewebsskürettage, Entfernung von krankem, infiziertem oder nekrotischem Weichgewebe in der Parodontaltasche und zur Entfernung von hochgradig entzündetem, ödematösem Gewebe. Im Fallbericht schildern die Autoren den Einsatz eines Er,Cr:YSGG-Laser in der zweistufigen Implantatchirurgie für eine verbesserte Rehabilitation und Ästhetik.

Laser-assisted direct pulp capping

Author: Paweł Roszkiewicz, Poland

The essence of conservative dentistry is conservative, that is, economical tissue management—for both hard tissues and the protection of the endodontium's vitality. Deep cavities accompanied by pulp exposure are, indeed, a huge challenge for the pulp to preserve its vitality, but also for the dentist and treatment performed to increase, not decrease, the chance to save vital pulp for many years.

In case of very deep cavities, it is oftentimes indicated to perform an endodontic treatment. However, one should remember that the possibilities of contemporary endodontics do not limit to complete cleaning of the root canals system and its tight 3-D filling, but offers other, less radical methods of treatment. Endodontic treatment does not have to be equal with "killing" the tooth. If the image of the pulp seen in the microscope is correct, direct pulp capping performed in aseptic conditions allows to preserve the tooth's vitality.

If small serous effusion, small bleeding accompanying possible mechanical injury during cleaning stop by itself thanks to cleaning the chamber with a piece of cotton wool soaked with NaCl, chlorhexidine, or laser-assisted pulp protection, there are good prognosis for biological treatment. If no pulpitis occurs (the application of a rubberdam and Class II to Class I cavities conversion are necessary), when the pulp capping with MTA or Biodentine is performed, the size of pulp exposure (in a reasonable

scope resulting from mechanical aspects) seems to have a secondary meaning. Dried pulp, being a confirmation of its aseptic death, pus leak (at least part of the pulp inflamed), heavy bleeding difficult to stop (strong hyperaemia of the pulp, usually due to the inflammation) are the situations when different treatment protocols need to be used.

Case report

A 35-year-old patient was referred to our clinic because of a deep cavity Class II (M0) in tooth 16. Because of the cavity complexity and a desire to avoid its complication—the pulp exposure, partially cleaned cavity bottom was covered by non-hardening (UltraCal XS) and self-hardening (Ultra-Blend) calcium hydroxide. Then, the cavity was filled with a temporary filling. The patient did not report any pain, and the sensitivity to stimuli was similar to other molars in the maxilla.

Clinical findings

In order to assess the extent of the tooth core damage and its chances for biological treatment, a RTG photo of tooth 16 has been taken (Fig. 1). On the photo we can see the radiological shadow indicating the presence of fillings on the occlusal surface. The radiological shadow in the medial part of the chamber projection, not having its counterpart in this tooth's fillings, requires intraprocedural differentiation by pumping calcium hydroxide or dental dressing into the chamber.

In the chamber projection we can additionally observe thickened tooth structure, which suggests the presence of denticles. Brightness in the area of roots requires the differentiation between irreversible pulpitis and congestion of the pulp as a response to the calcium hydroxide use.

Treatment plan

The reasonable treatment plan included: restoration of the medial wall of the cavity in order to

Fig. 1: RTG image before the treatment.

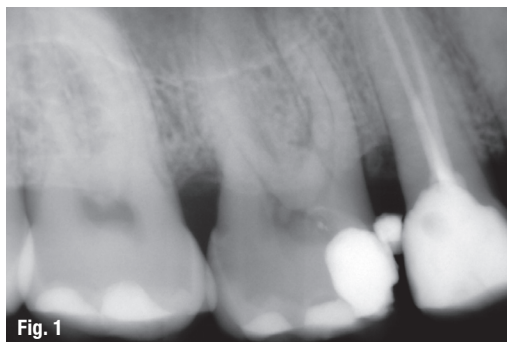




Fig. 2



Fig. 3



Fig. 4



Fig. 5

Laser parameters used during the procedure.

Fig. 2: Cavity preparation.

Fig. 3: Deeper parts with the risk of pulp exposure.

Fig. 4: Laser application to exposed pulp.

Fig. 5: Preparation to the composite restoration.

provide better isolation with the use of the rubberdam before the next stage of the procedure, cleaning the remaining part of the cavity, the conservative restoration with indirect or direct pulp capping if its condition allows for such a procedure, or entering "classical" endodontic treatment, if the tooth will not prognose pulp viability preserving.

Cleaning with laser

In an articaine with epinephrine infiltration anaesthesia, by means of ultrasonic scaler, the temporary filling was partially removed in order to obtain the space required for the conversion the cavity into Class I. Cleaning was continued with the use of Er:YAG laser (LightWalker, Fotona), using the contact contra-angle handpiece H14 with cylindrical optical fibre with a diameter of 1.3 mm. The laser parameters used during the procedure are presented on Figure 2 (cavity preparation) and Figure 5 (surface preparation for reconstruction).

The fibre tip of the contact contra-angle handpiece was carried out at some distance from the surface of the tooth (circa 1 mm). The wall of the cavity was restored with the composite and the self-etching system. After the conversion into Class I cavity and performing the occlusal adjustment, the rubberdam was applied and, from the tooth prepared in such a way, all temporary filling was removed (using the scaler again) revealing the pulp exposure of 1 to 1.5 mm² area in the buccal part of the cavity bottom (Fig. 6). Delicate effusion of the colourless and odourless fluid stopped after two to three min-

utes, confirming the theory about hyperaemia as response to the calcium hydroxide application.

Treatment of hyperaemia

In the first stage of the treatment, the exposure area was skipped, focusing on the remaining fragments of the cavity, continuing to clean it with laser on the previously mentioned parameters (Fig. 2). In order to minimise the laser's impact on the pulp, the deepest parts of the cavity were prepared using the parameters modified to the values presented in Figure 3. Once the dentine surface was cleaned, the inner surface of the filling (unevenness between dental dressing and metal matrix after condensation) was smoothed with the diamond turbine drill.

After preparation of the whole cavity, a piece of the temporary filling previously pressed into the chamber was removed by means of endodontic hand tools (Figs. 6 & 7). The pulp behaviour during the entire visit (correct pink colour of the visible fragment of the pulp, small serous effusion without anaerobic infection after the temporary filling removal, small pulp bleeding after removal of the foreign body from the chamber, and spontaneous termination of effusion and bleeding) resulted in, after the patient gave his consent to the treatment plan, an attempt to biological treatment.

Er:YAG laser was applied on the exposed pulp (parameters shown in Figure 4) with the tip hold in 5 mm distance from the pulp in order to "defocus" the beam (to reduce the intensity of radiation). Then,

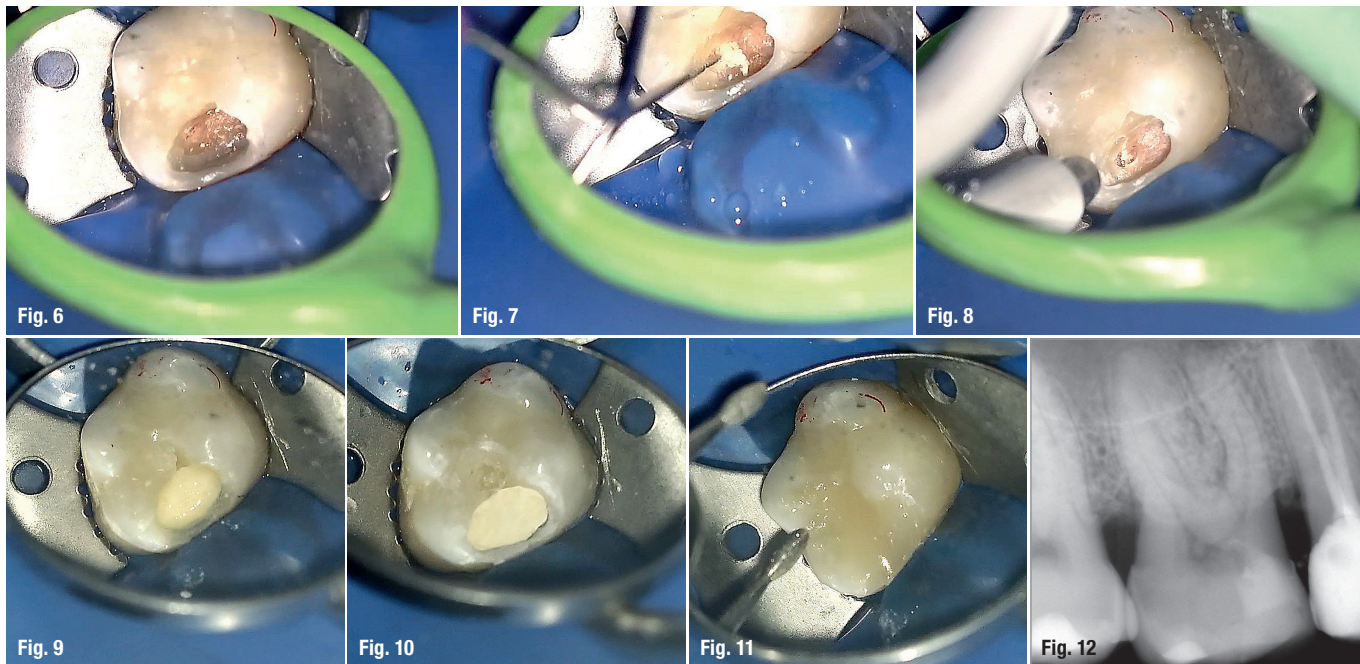


Fig. 6: Pulp exposure after removal of dental dressing.

Fig. 7: Removing the material from the chamber.

Fig. 8: The cavity is ready for the application of Biodentine on the exposed pulp.

Fig. 9: The core of the tooth rebuild with Biodentine. Caries visible on the occlusal surface.

Fig. 10: The tooth is ready for the restoration.

Fig. 11: Preliminary occlusal adjustment of the restoration.

Fig. 12: RTG image after the treatment.

the pulp was covered with Biodentine (Figs. 8–10). After the time necessary for Biodentine to harden, composite reconstruction of the occlusal surface was prepared with the materials formerly used for the reconstruction of the tooth wall (Fig. 11).

Posttreatment

The posttreatment radiographs of the tooth are shown in Figure 12. The behaviour of the pulp during the procedure gave a main reason to qualify it for the conservative treatment and the observation (for about three months). In comparison with analogical cavities treated with the use of Biodentine, but without the use of laser, in the two years' period of observation (with a particular focus on the lack of any ailments and discomfort after the anaesthesia stops), this case allows to expect tooth viability maintenance and the standardisation of the periapical tissues image during the X-ray control.

Conclusion

The use of laser increased control over the cleaning of the most damaged portions of the dentine in order to prevent further exposure, or in case they occur, reduce the associated risk for the pulp. The application of laser in the preparation of the exposed pulp makes reaching the state of homeostasis easier, additionally disinfecting the surface layer of the pulp.

contact

Pawel Roszkiewicz
Dental practice "PLUS"
Brzozowa 41
05-080 Laski, Poland

Author details



Kurz & bündig

Im Fallbericht schildert der Autor die Behandlung einer Kavität der Klasse II mit freiliegender Pulpa unter Anwendung eines Er:YAG-Lasers. Die Kavität an Zahn 16 des 35-jährigen Patienten wurde zunächst mit nicht härtendem und selbsthärtendem Calciumhydroxid abgedeckt und mit einer temporären Füllung verschlossen. Ein OPG im Anschluss offenbarte jedoch eine Auffälligkeit an der Pulpa, welche entweder als irreversible Pulpitis oder eine Reaktion der Pulpa auf das verwendete Calciumhydroxid gedeutet werden konnte.

Die Füllung wurde wieder teilweise entfernt und die Kavität mit dem Laser gesäubert. Wie sich zeigte, war der Grund für die Auffälligkeit im OPG eine Hyperämie infolge einer Reizung durch die Calciumhydroxid-Applikation. Es folgte eine konservative Restaurierung, wobei die Pulpa mit Biodentin überkappt wurde. Im Vergleich mit analogen Kavitätenbehandlungen mittels Biodentin ohne Laserapplikation war es im beschriebenen Fall mit Laser möglich, die Lebensfähigkeit des Zahnes zu bewahren.

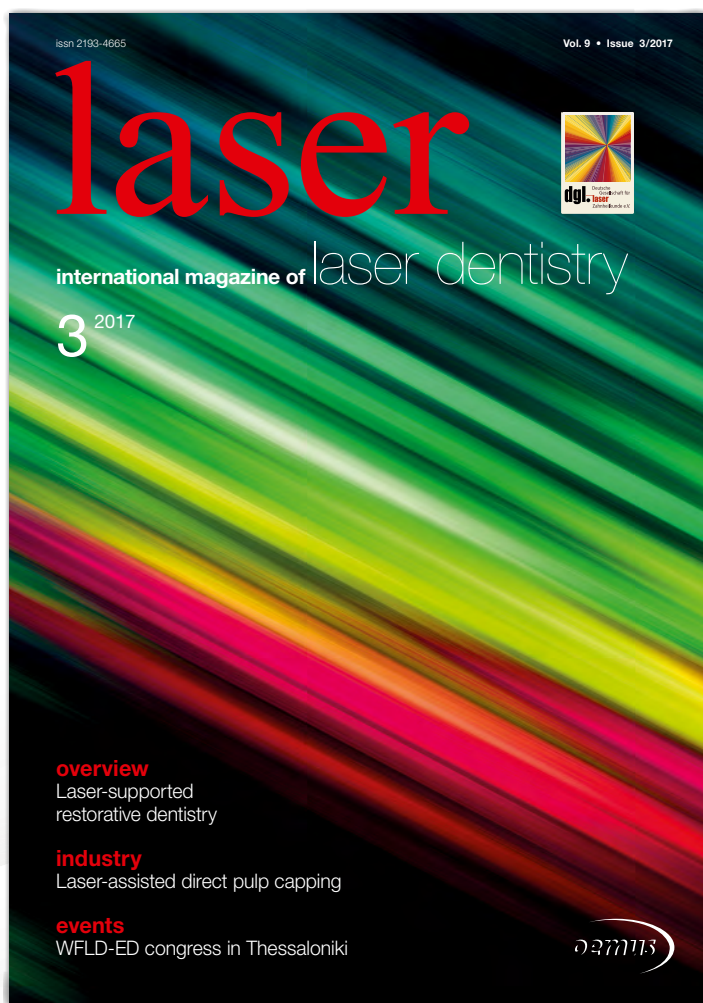
BECOME AN AUTHOR

for laser—international magazine of laser dentistry

Interdisciplinary and close to the market



www.oemus.com



Become part of a successful network and benefit from a wide reach and high level of awareness

Your benefits:

- author's profile at ZWP online
- specimen copies
- offprints
- speaking engagement*



*according to the required profile

Fax to **+49 341 48474-290**

☐ Yes, I want to become an **author** for laser—international magazine of laser dentistry. I would like to submit an article on the following topic:

Please send back your fax form
or contact Mr. **Georg Isbaner**:
g.isbaner@oemus-media.de · Phone: +49 341 48474-123

Last Name, First Name

Street/ZIP/City

Phone/E-Mail

Stamp

laser 3/17

Using the AdvErL Evo laser for endodontic treatments

Author: Dr Hans-Willi Hermann, Germany

Fig. 1: The Morita AdvErL Evo unit from the product group of Er:YAG lasers with an effective wavelength of 2,940 nm.



Fig. 1

Introduction

I used a laser in a dental treatment for the first time in 1991. I was completing my residency and my superior had ordered a Nd:YAG laser to conduct PAR therapies in his practice. But, truth be told, my very first contact with a laser had actually taken place a couple of years previously. In 1988, when I was still a student at the University of Mainz, we were shown a laser made by ADL and told that it was considered to be the future of dental medicine. I was ambivalent about that as I could not see the much praised advantages of using lasers because, contrary to the promises made about the equipment, treatments were neither completely painless nor was the long-term quality of the treatments better.

As a matter of fact, it was evident that treatments using lasers in periodontology and dental surgery took significantly longer than conventional treat-

ment methods. The only positive aspect I was able to discern was faster wound healing.

In my opinion, this justified neither the high purchase price nor operating costs; and, so, I put the question of using a laser in dental medicine to rest as far as my own practice was concerned. And nothing caused me to change my opinion for the next 20 years. The much promoted revolution did not come about, the ever so innovative laser quickly descended to esoteric marketing for dental practices, whose only argument for a laser's *raison d'être* was that it conveyed the image of being a modern dentist.

My only points of contact with the medium were limited to reading endodontic studies within the scope of my own specialised endodontic practice. For the most part, the abstracts confirmed a reduction in bacteria; however, this reduction was not better in practical terms, perhaps even worse, than that achieved with such fundamental measures as irrigating with NaOCl.^{1,2}

Moreover, the side effects of using a laser were mentioned as well, e.g. those caused by an excessive application of heat.³ All in all, I had no reason to concern myself with the use of lasers in endodontics for more than two decades, not to mention investing a considerable amount of money in this type of equipment.

Endodontics, by comparison, experienced enormous progress during this period of time.

The use of nickel-titanium (NiTi) as a material for mechanical root canal instruments revolutionised the preparation procedure and smoothed the path for warm filling techniques. Electrical length measurements, dental microscopes and cone beam computed tomography (CBCT) became established, as did the use of ultrasound for irrigation, preparation of the primary and secondary access cavities, as well as pin/fragment removal. Nonetheless, a critical point throughout this time was the cleaning quality of our preparation methods⁴, which remained an unsolved problem in root canal treatments.

The Morita laser AdvErL Evo

At the annual conference of the German Society for Endodontology and Traumatology (DGET) in Hamburg in 2014, David Jaramillo spoke about the so-called PIPS method using an Er:YAG laser.⁵ It displayed outstanding results regarding the cleaning of root canals and dentinal tubules. This type of laser application, which uses an Erbium:YAG laser with an effective wavelength of 2,940 nm, is no longer based on a direct thermal effect. Instead, endodontic irrigants are activated by small gas bubbles that form at the tip of the laser due to heat. As they move away from the tip, they cool down and collapse quickly. In this way, up to 50 bubbles per second are formed in quick sequence, forming a chain of bubbles that streams through the irrigant, pressing it into the branches of the root canal system and the dentinal tubules. Up until now, this had not been possible in an adequate manner, irrespective of whether activation was initiated with the help of sound, ultrasound or the SAF system.

The micro-explosions are the key element of this new treatment method. Micro-explosions occur when the laser energy is absorbed by water and the volume suddenly increases 800 to 1,000 times. This causes the formation of very small bubbles, micro-bubbles, which collapse again just fractions of seconds later. The thermal effect, which is obligatorily presupposed when a fluid acting as medium, is limited to a micrometer-thin layer on the root canal surface. Therefore, the exposure of tooth substance to excessive thermal effects that has been observed and feared with other laser applications is excluded.

I have been working with the Morita AdvErL Evo (Fig. 1) in my practice since 2015. This laser also is based on the principle of Laser-activated irrigation (LAI) and uses the formation of microbubbles to activate the irrigants, even if the term PIPS is not used for reasons of patent law.

In the course of time, the Morita AdvErL Evo has become an obligatory part of our treatment protocol, especially for the following procedures:

1. Cleaning the access cavity, representation of the root canal entrances.
2. Opening root canals, obtaining patency.
3. Removal of blockages.
4. Cleaning the root canals, removing the smear layer.
5. Removing calcium hydroxide, removing any foreign bodies.

Although the manufacturer offers a large selection of laser tips, two different tips have proven particularly well suited for endodontic treatments

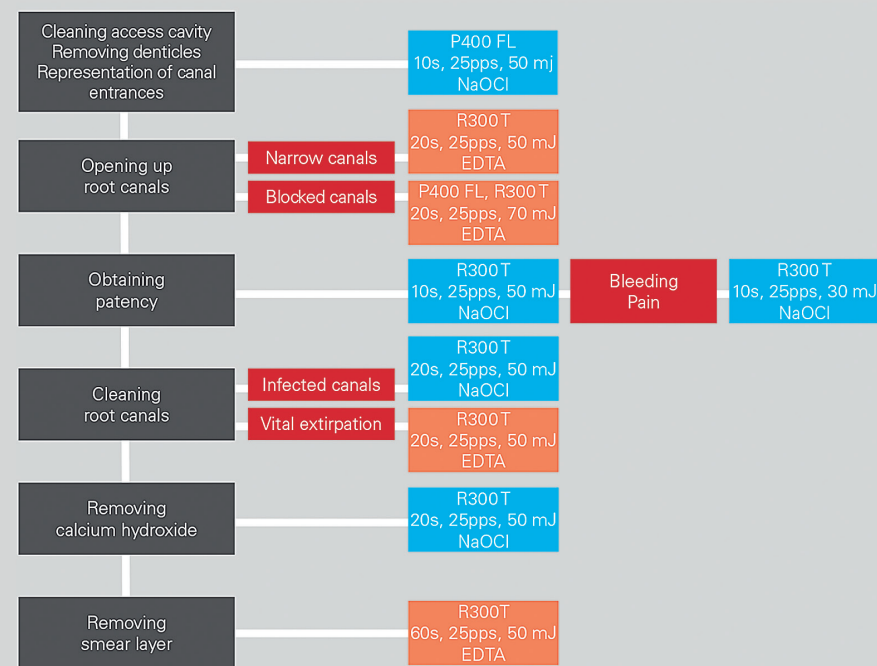


Fig. 2

and are used as part of my workflow (Fig. 2) in every endodontic treatment. The P400FL tip (Fig. 3) is designed for cleaning the trepanation cavity. Furthermore, in view of its diameter of 0.4 mm, length of 13 mm and curved attachment, it allows instrumentation of the coronal and, if necessary, middle sections of the root canal. The R300T tip (Fig. 4), which has a diameter of 0.3 mm and a length of 16 mm, can be used for accessing deeper areas of the root canal after preparation has been completed.

Clinical workflow of LAI within the scope of endodontic treatments

Below I would like to describe in detail a clinical workflow:

1. Cleaning the access cavity, representation of the root canal entrances

After the initial dental trepanation, the P400FL tip with 25 pps and 70 mJ is used. Dentine splinters, which are pressed into the innumerable cracks and pores during the preparation of the access cavity and cannot be removed by conventional irrigation methods, can be removed in this way. After just a few seconds, the laser will have cleaned the access cavity

Fig. 2: Clinical workflow of LAI within the scope of endodontic procedures.

Fig. 3: The P400FL tip primarily is used for cleaning the endodontic access cavity as well as the upper and middle sections of the canal.

Fig. 4: The R300T tip can also be used deeper in the root canal and is helpful when cleaning the middle and apical sections of the canal.

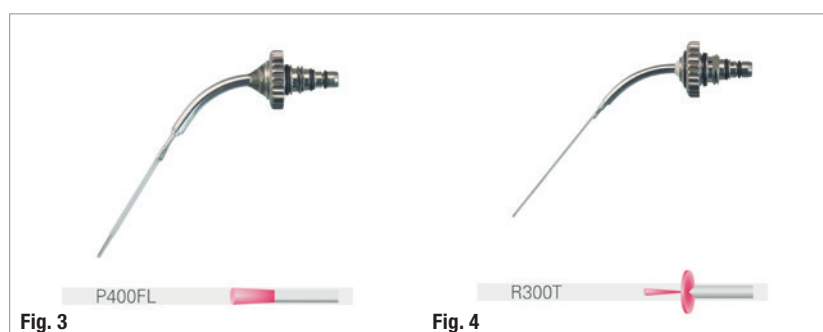


Fig. 3

Fig. 4

(Figs. 5 & 6). Any denticles will be detached from the soft tissue surrounding them and rinsed out, any soft- and hard-tissue will be removed from occult canal entrances, making them visible and penetrable.

2. Opening root canals, obtaining patency

Using Morita's AdvErL Evo will prove its worth particularly in very narrow canals, which involve a high risk of iatrogenic blockage. Morita's AdvErL Evo will rinse out the canals. Whereas the P400FL tip (25 pps, 50 mJ) is used before the initial opening, the R300T tip (25 pps, 50 mJ) is used for 20 seconds respectively after the coronal preparation of root canals. In this way, it will be significantly easier and foreseeable to open up root canals completely with thin manual instruments or mechanical glide-path instruments up to the foramen apicale within the meaning of the 'patency' concept. If the irrigation solution exhibits slightly red colouring, this indicates that there may be a patency. If there is stronger bleeding, even if it stops on its own just a short time after the laser instrument is used, the energy parameter should be reduced from 50 to 30 mJ. In the same way, periapical sensations of pain, which may occur sporadically to a minor degree, can be considered a sign that patency has been achieved and the energy parameter should be reduced to 30 mJ.

3. Removal of blockages

If there are any blockages, as can frequently be the case in revisions of the root canal filling, the P400FL and R300T tips are used at 25 pps and 70 mJ and, if necessary, with several irrigation cycles of 20 seconds respectively.

4. Cleaning the root canals, removing the smear layer

Following the initial opening of the root canals and the use of mechanical nickel-titanium instruments to complete the root canal preparation, if necessary also intermittently during the preparation, Morita's AdvErL Evo laser is used to remove the smear layer analogous to conventional irrigation of the root canals with irrigation solutions, ultrasound or sound-activated irrigation.

Then the R300T tip with 25 pps and 50 mJ is used. The cloudiness of the irrigation solution after activation and the removal by rinsing of suspended particles clearly demonstrates the efficiency of the measures taken. This is particularly impressive if the conventional irrigating methods mentioned above were applied for the recommended duration in the root canal and, nonetheless, the laser still removes a smear layer from the root canal when it is applied afterwards. The cloudiness of the irrigation solution is a good indication for determining the duration of irrigation, which can be ended when the irrigation solution that is transported out of the root canal seems to be clear. As a rule, this should be the case after about 15–20 seconds.

In the event of bacterial infections, 3 % NaOCl is used for the LAI; in the case of vital extirpation, 17 % EDTA should be used.

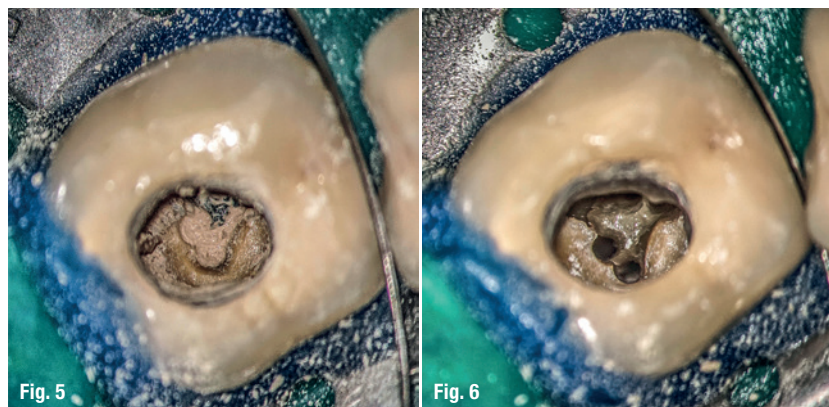
5. Removing calcium hydroxide, removing any foreign bodies

As helpful as calcium hydroxide may be when it is used as an agent for disinfecting bacterially infected root canals, it is also difficult to completely remove this pasty material from root canals. Within the scope of endodontic treatments, I insert calcium hydroxide in the root canals as a medicinal filling after the mechanical preparation has been completed but before the root canal filling is inserted. It remains there for several days; in the case of large apical bright spots, it may stay 12 to 16 weeks so that we can verify by means of X-rays that reossification, a visible sign of healing, has started before we fill the root canal.

Before filling the root canal (Figs. 7–9), the calcium hydroxide has to be removed from the root canals. To this end, the mechanical apical master file is used to proceed up to 1 mm before reaching the working length to be able to remove as much of the pasty calcium hydroxide as possible by using the instrument's spiral-shaped teeth like a screw conveyor.

This is followed by a sound-activated irrigation using an EDDY attachment (VDW). Each root canal is rinsed for one minute with EDTA irrigation solution and sound activation. Afterwards, an XP-endo shaper instrument (FKG Dentaire) is used up to 1 mm before reaching the working length; however, the instrument is used less for preparation than for cleaning the walls of the canals mechanically. It seems reasonable to expect that there would be no more calcium hydroxide after such a time- and material-intensive manner of proceeding. So, it is highly impressive when Morita's AdvErL Evo laser transports a surprisingly large quantity of remaining calcium hydroxide out of the root canals. It is equally impressive to see that irrigating with Morita's AdvErL

Figs. 5 & 6: The endodontic access cavity can be cleaned efficiently with Morita's AdvErL Evo.





Figs. 7–9: Side canals and ramifications that became visible in radiographs demonstrate how effectively root canals and even very fine structures can be cleaned within the course of a root canal treatment.

Evo laser may, in certain cases, even bring to light fractured foreign bodies such as fragments of instruments or irrigation tips as well as old filling material hidden in the depths of the root canals.

Summary and evaluation

Progress in endodontics can be measured by the circumstance whether procedures are simplified or more cost-effective than previously. Or whether one can do something better. The Morita AdvErL Evo laser helps us improve our treatment in the different stages of a root canal procedure described above. Although I still take a negative standpoint towards many statements made about the use of lasers, I have a positive opinion about using an Er:YAG laser for LAI.

Critical aspects are the purchase price and the operating costs. The Morita AdvErL Evo laser is equipped with comparably fracture-proof attachments; although this property is desired for the product, it is not necessarily a matter of course in view of the alternatives that are available. Nonetheless, it must be borne in mind that the laser attachments, being the tools that they are, are subject to wear and, hence, have a limited service life. For this reason, the purchase price, operating costs and time involved, need to be taken into consideration when putting to-

gether a viable economic concept. Unfortunately, private health insurance schemes frequently refuse to pay for LAI treatments, even though German legislation added such innovative measures to the Schedule of Fees for Dentists. Of course, this is nothing new. For years, private health insurance companies refused to assume the material costs for disposable mechanical NiTi instruments or the costs for using a dental microscope within the scope of endodontic treatments. We can only hope that legislation will support the use of LAI in the near future. Irrespective of that, the practical benefits provided by Morita's AdvErL Evo laser are evident. For this reason, using the Morita AdvErL Evo laser for LAI has proven its worth as a meaningful and, hence, indispensable treatment measure in all different phases of root canal treatments and my endodontic work.

contact

Dr Hans-Willi Herrmann

Specialist for Endodontics of the
German Society of Endodontics
Specialist for Endodontics of the
German Society of Conservative Dentistry
Certified Member of the European Society
of Endodontology

Author details



Kurz & bündig

Gegenüber konventionellen Methoden, die in der Endodontie bisher Verwendung fanden, schien der teure Laser für den Autor nie einen Mehrwert zu bieten. In den vergangenen zwei Jahrzehnten hatte sich auf dem Gebiet der Endodontie auch viel getan: NiTi als Material für mechanische Wurzelkanalinstrumente revolutionierten die Bearbeitungsprozeduren, auch die elektronische Längenmessung, dentale Mikroskopie, DVT und Ultraschall wurden etabliert. Ein weiterhin ungelöstes Problem stellte allerdings immer noch die Reinigungsqualität der Präparationsverfahren bei Wurzelkanalbehandlungen dar. 2014 kam der Autor mit der sogenannten PIPS-Methode in Kontakt, bei der ein Er:YAG-Laser zum Einsatz kommt. Diese Laseranwendung basiert nicht auf dem bis dahin gängigen thermalen Effekt, sondern auf Mikroexplosionen: Elektromagnetische Strahlung wird mit einer Wellenlänge von 2.940 nm, welche ideal durch Wasser absorbiert wird, emittiert. Der Laserstrahl regt die Wassermoleküle an, wodurch diese ihr Volumen stark vergrößern und Mikroexplosionen erzeugen. Auf diese Weise ist eine minimalinvasive und hitzearme Behandlung möglich. Seit 2015 arbeitet der Autor nun mit dem Morita AdvErL Evo, welcher auf dem beschriebenen LAI-Prinzip (Laser-activated irrigation) beruht. Besonders bei der Reinigung von Zugangskavitäten, der Eröffnung von Wurzelkanälen, der Entfernung von Verstopfungen, der Reinigung von Wurzelkanälen sowie bei der Beseitigung von Calciumhydroxid und Fremdkörpern hat sich dieser Er:YAG-Laser bewährt und ist ein hilfreiches Werkzeug in seiner endodontischen Arbeit geworden.

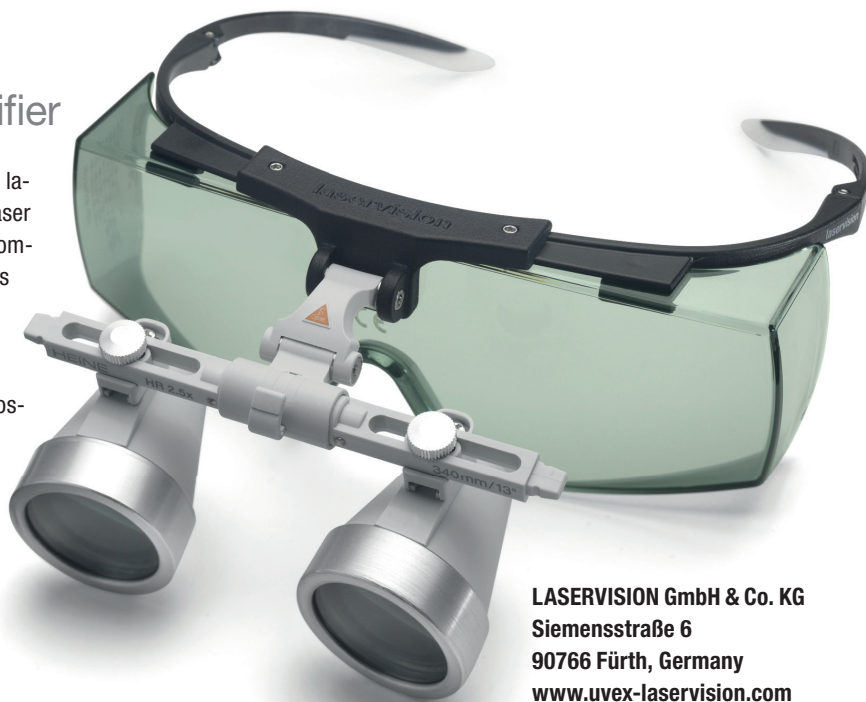
laservision

Laser safety goggle with magnifier

Especially within dentistry and its modern dental therapies laser safety magnifiers are necessary for absolutely precise laser treatments. The new laser safety magnifier eyewear F27 combines the well-known goggle F22 with magnifiers of a famous and popular manufacturer supported by a special developed laservision adapter. The lenses can be individually adjusted and matched to the pupil distance. Due to the large number of available laser safety filters for this eyewear it hence is possible to support almost every laser safety treatment with a suitable magnifier.

In particular, the combination with the HR2.5x/340, 420 or 520 mm binocular magnifier nearly all micro-laser treatments within the dental or dermatological range can be covered.

More information regarding this product can be found on the website: uvex-laservision.com or at your local laservision distributor or laservision directly.



LASERVISION GmbH & Co. KG
Siemensstraße 6
90766 Fürth, Germany
www.uvex-laservision.com

Ultradent Products

Increasing treatment quality with two wavelengths

Ultradent Products Gemini 810 + 980 diode laser is the first and most powerful diode laser for soft tissue treatment with two wavelengths. The Gemini can use both wavelengths simultaneously: this dual wavelength technology combines melanin absorption at a wavelength of 810 nm and water absorption at a wavelength of 980 nm. With an output of 20 watts, short but efficient power phases are possible allowing the soft tissue to effectively cool down during the procedure. Thus, super-pulsed energy reduces thermal damage and increases patient comfort, as a result of reduced bleeding, inflammation and pain, less need for sutures and a faster healing process.

The illuminated handpiece tip improves the practitioners view of the surgical field. The Gemini fibre tips are pre-activated and may be bent to the required shape. With its wireless Bluetooth foot switch the compact device provides a maximum of flexibility. The innovative design incorporating a transparent electroluminescent display does not only look good but is at the same time very practical: the 19 pre-set programmes may be selected directly. The displayed parameters can be altered when necessary.

Dentists can benefit from the innovative Gemini 810+980 diode laser as it increases the quality and comfort of soft tissue surgery and with this achieves a higher patient satisfaction.

Ultradent Products GmbH
Am Westhover Berg 30
51149 Cologne, Germany
www.ultradent.com



SUBSCRIBE NOW!

ceramic implants—international magazine of ceramic implant technology

Interdisciplinary, transparent & market orientated

ONLINE
SUBSCRIPTION HERE



www.oemus-shop.de



stay updated:

research

**How to successfully
place ceramic implants**

event

**6th IAOCI World Congress
in Miami**

interview

**“Metal-free restorations are
medically relevant”**

Fax: **+49 341 48474-290**

I would like to subscribe for the following journals:

- ☐ ceramic implants—international magazine of
ceramic implant technology 2 issues p.a. € 30*
- ☐ implants—international magazine of oral implantology 4 issues p.a. € 44*

Terms & Conditions: The subscription may be cancelled in written form without due justification within 14 days of order by contacting OEMUS MEDIA AG, Holbeinstraße 29, 04229 Leipzig, Germany. Dispatching notification in good time will suffice. The subscription is automatically extended by another twelve months if it is not cancelled in written form 6 weeks prior to the end of the reference period.

* All prices include VAT, shipping and handling (within Germany).

Last Name, First Name

Company

Street

ZIP/City/Country

E-Mail

Signature

Credit Card Number

Expiration Date

Security Code

Successful communication in your daily practice

Part III: Millennial patients

Author: Dr Anna Maria Yiannikos, Germany & Cyprus

Welcome to the 3rd part of the series "Successful communication in your daily practice". The series that includes the most popular and challenging scenarios that might occur in your dental practice and teaches you, how to deal with them so that your patients always leave your practice feeling: "My dentist is THE BEST!" Each individual article of this series will teach you a new specialised protocol that you can easily use, customise and adapt from the same day on to your own dental clinic's requirements and needs.



Millennial patients

Let's start with today's challenging topic which is... how to attract, communicate and retain millennial patients, who are our present and future patients! I will show you 7 crucial steps to always have in mind when dealing with millennial patients.

First, who are the millennials? Millennials are those patients that were born between 1980 and 2000, in fact, the patients that are from 17 to 37 years old. Because patients that belong to this age group are our present and future clients, let's start examining how to attract them to come to our dental offices!

7 steps to attract millennials

In the following, I will teach you 7 steps of how to attract millennials to come to your dental practice.

Step 1: Have a unique and intense online presence

The world wide web is an essential part of the millennials' life. With this in mind, you should spend some time in creating a unique and attracting website and actively serve your social media channels. The millennial patients are highly attracted by promo actions, they love to check reviews, read about your CSR (Corporate Social Responsibility) and your philanthropic activities. Also be aware to have a clear differentiation point and description of your services—they pay a huge attention to all these tools and points!

Step 2: Have a service-fighter

A service-fighter is a treatment, like for example home bleaching, which is offered at the lowest price in the market. This will help you to attract the interest of those for whom price is very essential.

Step 3: Be honest and keep it short

While treating a millennial patient always remember to be honest, informative and brief! Millennials hate it when you fool around with them. Also be as informative as possible while in the same time keep it short. Millennials are used to getting concentrated information and thus they will double check what you are telling them. They may have already googled it before they came to you!

It is also helpful to use some trigger words like flexible, community, dynamic, friendly, stimulating, environment. For example, you can say: "Our clinic is environmentally friendly." They will respect and appreciate that because they are highly environmentally conscious themselves!

Step 4: Have a millennial employee

If you do not belong to the millennials' age group, it is of advantage to have at least one employee of your team who does. You will see: Your millennial patients will feel more comfortable to ask him or her possible questions instead of you—and this is a fact!

Step 5: Use loyalty programmes

Millennials want to identify themselves with their surroundings. This affects above all their health suppliers, amongst them you as their dentist! With loyalty programmes you can offer them the possibility to specially connect with your practice. Thereby, it is a good idea to add your clinic's loyalty programme to your clinic's mobile application (if you have one). They will just love it as their mobile phones are their whole life and something they always carry with them!

Step 6: No face-to-face communication to follow-up

After a successful treatment, avoid to make a lot of follow-up appointments with face-to-face communication. Millennials rather love it short and simple, as we have already learnt above. So better send them an

e-mail, SMS, WhatsApp or messenger with a brief but at the same time detailed message about their current health status and further treatment options.

Step 7: Be fast

When you respond to your millennial patients, be fast! Since they have grown up in a world where information is available in only short time, being fast is notable and very important for them!

Just do it!

Imagine working for the next years and still have a "full house" clinic because you know how to deal with your millennial patients! Isn't this just fabulous?

In the next issue of laser magazine, I will present to you the fourth part of this unique new series of communication concepts that will teach you how to promote a service and/or technology before you apply it in practice—5 unique steps that will guarantee the increase of your patients' interest!

Until then, remember that you are not only the dentist of your clinic, but also the manager and leader. You can always send me your questions and request for more information and guidance at dba@yiannikosdental.com or via our website www.dbamastership.com. Looking forward to our next trip of business growth and educational development! _

contact



Dr Anna Maria Yiannikos

Adjunct Faculty Member of AALZ
at RWTH Aachen
University Campus, Germany
DDS, LSO, MSc, MBA
dba@yiannikosdental.com
www.dbamastership.com

Author details



Kurz & bündig

Millennials (17- bis 37-Jährige) sind die Patienten der Gegenwart und Zukunft. Im dritten Teil ihrer Serie erklärt Dr. Yiannikos in 7 Schritten, wie Praxisbetreiber diese Patientengruppe erfolgreich ansprechen. Der erste Schritt führt über eine ansprechende Website und umfassende Präsenz in Social-Media-Kanälen. Denn das World Wide Web ist ein essenzieller Bestandteil ihrer Lebenswelt. Im zweiten Schritt empfiehlt die Autorin, einen speziellen Service (z. B. Home-Bleaching) zum günstigsten, am Markt erhältlichen Preis anzubieten. Ehrlich, informativ und auf den Punkt gebracht – diese drei Eigenschaften schätzen Millennials sehr und sollten bei der Behandlung unbedingt beachtet werden. Auch von Vorteil ist es, wenn in der Praxis Mitarbeiter aus der Altersgruppe sind. Denn oftmals richten Millennials sich mit Fragen lieber an ihre Altersgenossen. In Schritt 5 empfiehlt die Autorin, Bonusprogramme der Praxis mit der mobilen App (wenn vorhanden) zu verknüpfen. Nach einer erfolgreichen Behandlung informiert die Praxis Patienten dieser Altersgruppe besser per E-Mail, SMS, WhatsApp oder Messenger über das weitere Vorgehen, statt Face-to-face-Kommunikation. Dabei sollte sie schnell sein! Denn Millennials finden es wichtig und bemerkenswert, schnelle Rückmeldungen zu bekommen.

Laser as euphemism in Paediatric Dentistry

Author: Dr Imneet Madan, UAE

As per the American Academy of Paediatric Dentistry (AAPD), dental care is considered to be medically necessary in order to prevent and eliminate orofacial diseases, infections and pain. Anxiety towards dental appointments has always been considered natural and unavoidable. Keeping in mind this nature of apprehension time and time again, several methods of behaviour guidance have been introduced in order to alleviate anxiety, provide dental treatment safely and instil a positive dental attitude for lifetime.

What is dental fear?

Dental fear is defined as the specific anxiety which is the predisposition for a negative experience in the dental surgery.¹ Dental fear in simple terms is described as the fear that any child would feel towards its dentist, dental treatment or dental appointment in general. Dental fear has been known to have several roots of origin.

Parental influence is one of the many factors that influence children's behaviour at the dental office. A positive parental attitude established in early life can directly bring in a positive attitude for the kids. According to the AAPD guidelines, every child should have the first dental check-up at the age when the first tooth erupts. This establishes a first contact with the dental healthcare provider. Early appointments also help to prevent the onset of a dental disease, thereby decreasing the treatment needs and opportunities for negative experiences.

Parents who have had multiple dental problems and negative experience at the dentist generally transpire these fears onto the kids subconsciously and sometimes knowingly. When kids finally arrive at the dental office,

they have a pre-formed image of the experience which then decides their level of cooperation.

Types of dental fear

What gets measured, gets modified and corrected. Keeping the same principles in mind, dental fear has been graded by different rating scales. The most commonly used in the common practice is the Frankl Behaviour Rating Scale. The Frankl Behaviour Rating Scale grades fear as follows:

1. Definitely negative: refuses treatment, cries forcefully, extremely negative behaviour associated with fear.
2. Negative: reluctant to accept treatment. Slight negativism.
3. Positive: accepts treatment, can become uncooperative if experiences something negative.
4. Definitely positive: unique behaviour, looks forward to the treatment.



Another commonly used behaviour rating method is by following clinical gradation:

- Cooperative
- Uncooperative
- Apprehensive
- Fearful
- Obstinate

The American Academy outlines several ethical behaviour management techniques. Apart from using these methods of behaviour management, one of the basic principles that can be kept in mind is effective and positive result oriented communication. The first step to gain the child's cooperation is to develop a proper rapport in the first appointment. We generally use a special child friendly language in order to gain the attention and interest of the child in concern. This special language of paediatrics is referred to as "euphemisms".

Commonly used euphemisms are:

- Laser: magic popping light
- Needle: sleepy juice
- Numbness: magic balloon
- Cotton roll: cotton pillow
- Handpiece: tickle brush
- Suction: vacuum cleaner/sucker/Mr. Thirsty
- X-ray: marshmallow picture
- Mouth prop: tooth clip

Dental fear

Fear is one of the most constant limitations in the paediatric practice. Children's fear can sometimes have a rational explanation and sometimes occur for incomprehensible reasons. The solid foundation of a rapport between child and paediatric dentist depends on the actual acknowledgement of the child's fear. When we know that fear exists, the best way to overcome is to face it and resolve the cause.

Children's fear of dentistry is generally related to the words, tools, idea and concept of treatment. By keeping the first appointments only for check-up, X-rays and cleaning, we are able to understand the treatment needs, and the coping ability of the child. The child is made aware of what the next steps can be in the language of euphemisms. This way they go with the eye opener of awareness of what to expect in the next appointment. In case of long treatment appointments, generally the mornings are preferred as children are more fresh and receptive to instructions then.

Phobia of needles

Children generally associate dental appointments with vaccination appointments with doctors. They are highly phobic about needles. Any treatment can be a nightmare with the underlying fear of needles. The contemporary form of dentistry is laser dentistry, which is needle free and child friendly.

How does laser replace needles?

In case of fillings, the need for numbing is completely ruled

out as the Erbium laser is a non-contact procedure. Since there is no actual contact of tooth and laser, there is no vibration or pressure on the tooth as in case of drilling. This exempts the need for anaesthesia.

In a pre-procedural appointment, when the kids are informed about playing Star Wars with sugar bugs and not using any "injections", their fear factor gets significantly reduced. This helps them to overcome the picture of dentistry as presumed before.

During the procedure, no numbing can help children to remain relatively relaxed, get the procedure done and leave the practice after a short appointment with no sensation of numbness afterwards. They can eat fifteen to twenty minutes afterwards and parents do not have to worry about traumatic lip or cheek bites.

What procedures can be done without anaesthesia?

Regular restorative dentistry including all types of cavities can be done easily without any need for injections. Pulp therapy such as pulpotomy, direct or indirect pulp-capping procedures and pulpectomy can be performed with intrapulpal anaesthesia after pulp exposure. In cases, where the child does exhibit apprehensive behaviour, minor infiltrations can be used.

Laser sealants have become quite popular in the practice with a success rate much higher than the normal sealants. The Erbium laser is used at Bond prep: 3.35 Hz. This causes a slight enamel abrasion in order to allow for a better mechanical bond between seal and tooth surface. The normal cover period that I consider in the practice for seals done this way is about two years. The Erbium laser also helps to anaesthetise teeth externally. This itself can help to take away the initial fear and get the procedure started.

How does this benefit appointment durations?

The appointment durations are much reduced as there is no waiting period for anaesthesia. In addition, multiple quadrant dentistry can be performed at the same time. One appointment can be easily followed by further consultations if needed with other specialists as the numbness barrier is removed.

How does laser increase the value of time and chair occupancy?

Since the chairside time per patient can be reduced with the use of laser, this certainly increases the value of the practice as more patients can be accommodated in the fixed duration of hours.

Parental acceptance of laser vs drill

From the private practice point of view, lasers are accepted in more than 90% of all cases when proposed as treatment alternative. The cost difference between a conventional drill and laser have been kept at about 35%. This enables more and more families to avail the benefits of lasers for their little ones.

Cost benefit ratio

Even though lasers have been always looked up as an expensive and add-on tool in many private practices, the advantages of lasers do certify the actual return on investment from the very first year of the investment. This increases the overall profit margin for the company and thereby making lasers the all round win situation for investor, dentist and certainly for the patient.

Conclusion

In current times, we have come a long way doing painless, needle-free dentistry. The bottom-line of non-threatening and non-invasive dental care nevertheless remains at high-end prevention. The very fact that the huge segment of child population does have healthy teeth, does signify that dental disease can be well avoided. The regular presence of children in the practice, dietary advice and both primary and secondary levels of defence should be looked at.

Anxious children have been found to have a higher risk of developing dental caries. To establish a healthy foundation of paediatric surgery visitors, we must work to convert dentally anxious children to cooperative dental patients. In order to accomplish this, we need to commit ourselves to provide them with positive experiences. The dental personnel should be highly able to weigh benefits of a treatment vs psychological consequences of invasive dental treatments. While ruling out needles and numbness from the practice, lasers do make the practice of Paediatric Dentistry much more welcoming to families.

In conclusion, lasers as euphemisms are, indeed, a great behaviour modification tool. An overall holistic approach with lasers does help to evade the fear factor from children's mind, keeping dental appointments simple for families.

Literature

1. Aartman IH, van Everdingen T, Hoogstraten J, Schuur AH. Self-report measurements of dental anxiety and fear in children: a critical assessment. 1998 ASDC Dent Child.

contact

Dr Imneet Madan

Specialist Pediatric Dentist
MSc Lasers Dentistry (Germany)
MDS Pediatric Dentistry
MBA (Hospital Management)
Children's Dental Center, Dubai
Villa 1020 Al Wasl Road, Umm Suqeim 1
Dubai, United Arab Emirates
Tel.: +971 506823462
imneet.madan@yahoo.com
www.drmichaels.com

Author details



Kurz & bündig

Angst ist einer der konstantesten Faktoren, welcher die zahnärztliche Behandlung von Kindern behindert. Gründe für eine Zahnarztangst können unterschiedlicher Natur sein. Oftmals ist es der Einfluss der Eltern, der das kindliche Verhalten in der Zahnarztpraxis positiv oder negativ beeinflusst. Mit verschiedenen Methoden der Verhaltensführung lässt sich die kindliche Angst jedoch mildern. In einer ersten „Kennenlernen“-Sitzung wird zunächst mittels Euphemismen eine positive, lösungsorientierte Kommunikation etabliert. So wird aus der Nadel „Schlafsaft“ oder aus dem Absauggerät „Staubsauger“. Positive Erfahrungen sorgen dann dafür, dass Kinder eine dauerhaft positive Einstellung zum Zahnarzt entwickeln können. Vor allem der Laser als „magisches Licht“ stellt dabei ein hilfreiches Tool innerhalb der Kinderzahnheilkunde dar. Er ersetzt den Bohrer und beseitigt damit eine wichtige Quelle kindlicher Zahnarztangst.

Return address:

Deutsche Gesellschaft für Laserzahnheilkunde e.V.
c/o Universitätsklinikum Aachen
Klinik für Zahnerhaltung
Pauwelsstraße 30
52074 Aachen, Germany

Tel.: +49 241 8088164
Fax: +49 241 803388164
Credit institute: Sparkasse Aachen
IBAN: DE56 3905 0000 0042 0339 44
BIC: AACSD33

Membership application form



Name/title: _____

Surname: _____

Date of birth: _____

Approbation: _____

Status: ☐ self-employed ☐ employed ☐ civil servant ☐ student ☐ dental assistant

Address:

Street: _____ Phone: _____

ZIP/city: _____ Fax: _____

Country: _____ E-Mail: _____

With the application for membership I ensure that

☐ I am owning an own practice since _____ and are working with the laser type _____ (exact name).

☐ I am employed at the practice _____

☐ I am employed at the University _____

I apply for membership in the German Association of Laser Dentistry (Deutsche Gesellschaft für Laserzahnheilkunde e.V.)

Place, date

Signature

Annual fee: for voting members with direct debit € 150

In case of no direct debit authorisation, an administration charge of € 31 p.a. becomes due.

DIRECT DEBIT AUTHORISATION

I agree that the members fee is debited from my bank account

Name: _____ IBAN: _____

BIC: _____ Credit institute: _____

Signature of account holder

This declaration is valid until written notice of its revocation

Fire safety in dental practice

Author: Stuart Collyer, UK



© Artem Rudik/Shutterstock.com

Being a dentist, you will be familiar with the need to carry out regular checks on your patients to spot potential problems before they become major ones. This preventative approach should be applied to your fire safety procedures and equipment too. Just like any other business, complying with fire safety regulations is an obligation. By carrying out a fire risk assessment, you can secure the longevity of your business by reducing the likelihood of a fire starting, as well as preparing for the worst.

In fact, studies have shown that over 70 per cent of businesses that have been involved in a major fire either do not reopen or subsequently fail within three years. Fire prevention is far easier than trying to recover from a fire. More importantly, a fire risk assessment ensures the safety of your staff and patients. Thankfully, fully meeting the regulations is not as difficult as one might expect, but failing to do so comes with the risk of a large fine and even a prison sentence.

The five stages of a fire risk assessment

By completing a fire risk assessment, you will gain a full understanding of your business in terms of the activities that are carried out and the risks present. By going through the five steps, you will have made your dental surgery safer and compliant.

Step 1: Identify all potential combustibles and possible sources of ignition.

Step 2: Consider all the relevant people who are at greatest risk from fire.

Step 3: Remove or reduce the risks of fire as far as possible and take precautions.

Step 4: Prepare for an emergency with fire safety equipment, by providing correct training and by having a plan of which everyone is aware.

Step 5: Record any findings and regularly review the assessment to keep it up to date.

The risk assessment should be recorded at all stages, including the actions you have taken along the way. If you hire five or more members of staff, it is a requirement to have written proof that you have fulfilled your duty as a responsible business owner.

Dental practice fire hazards

For a fire to burn, it needs heat, fuel and oxygen. With one or more of those elements removed, a fire is instantly less likely to break out. Therefore, you need to identify those items that can burn and potential sources of a fire and keep them separated. Possible sources that can cause a fire are radiographic and other electrical equipment when they overheat, are misused or are faulty. This can be avoided with regular inspection and servicing by professionals. Heaters, cooking equipment and smoking materials are other risks. There is also the possibility of arson.

When looking around for potential fuel sources, there are many to consider, including medical supplies, toiletries, aerosols, furniture, clothing, cleaning products, and waste. In a dental practice, the oxygen stored in cylinders can be a fire and explosion risk if damaged or used incorrectly. It is therefore important to take particular care in their use and storage.

Identify those at risk

The next step is to consider the people who could potentially be present on your premises at the time of a fire. Of course, this includes staff and patients, but also take into consideration agency staff, contractors and other visitors to your practice. There may be particular individuals who would need assistance in making a swift escape in an emergency. Those with mobility issues, such as the elderly and disabled, are particularly at risk, as are children. Think specifi-

cally about the best way of getting those people safely down any stairs. You may find that an evacuation chair is vital, as is training staff in how to use such equipment.

Evaluate and act

Having now identified all of the potential problems and hazards that are present in your dental surgery, you can now take the relevant action to take precautions to reduce those risks as far as practically possible. The most reliable solution is installing fire detectors throughout the building and using smoke and heat detectors, along with call points, as part of a fire alarm system. When the alarm sounds, fire exit signs will then direct people to safety while emergency lighting illuminates that route to keep people safe, no matter what.

Having the correct fire extinguishing equipment installed throughout the premises is one of the best ways you can prepare. Fire blankets in the kitchen area will help tackle small fires with little mess or hassle, while fire extinguishers are best in waiting rooms, corridors, offices and treatment rooms. Water extinguishers are suitable for general fires, including paper, cardboard, rubbish and furnishings, whereas foam extinguishers can be used for flammable liquids. Powder extinguishers are versatile, lighter and safe to use around electrical equipment and flammable liquid and gas. However, they can affect visibility and breathing, so should be mitigated by a health and safety risk assessment if specified for indoor use. On electrical equipment, carbon dioxide extinguishers are the safest method and will prevent further damage to the electronics.

Each extinguisher needs to be partnered with an extinguisher identification sign and should be commissioned upon installation and then serviced annually by a trained professional.

Record, plan, inform, instruct and train

In order to deal with any fire situation, you need to have an emergency plan. This means that all staff will know what to do and ensure the premises are safely evacuated. Further ensure all new staff are informed of this and that it is easily accessible for anyone to view.

You will need to select at least a few members of staff you trust to take on fire warden responsibilities. Once they have received the appropriate training, you should then have plenty to ensure there is always a fire warden present in spite of sickness and holidays. The purpose of fire wardens is to help educate the other staff, besides taking charge in the event of an emergency. Their training will help them to act appropriately and calmly in a fire situation and to oversee the evacuation. They will also be on hand to help you with your fire safety duties, such as performing visual checks of equipment and leading fire drills to test the effectiveness of your procedures, and to help familiarise staff with the plan.

Lastly, inform all staff on how to use the fire extinguishing equipment in your surgery.

Review

A risk assessment is never finished, and you should constantly monitor what you are doing to see how effectively the risks are being controlled. It also needs updating should there be a change in building layout or the activities that are carried out. Acquiring a new piece of equipment may seem like just a small change, but together, a few small changes can have a significant effect. That is why many fire services recommend reviewing the assessment at least once a year so you know it is up to date. The ultimate responsibility for complying with special fire safety regulations falls to the owner of the dental practice. He or she can either carry out the fire risk assessment himself or herself or ask a competent individual to assist. Many business owners choose to hire professional risk assessors to complete it on their behalf. This not only saves them time and effort, but also gives them the peace of mind that it has been done correctly and that no risks have been overlooked.

contact

Stuart Collyer

Professional Writer

United Kingdom

stuart@fireprotectiononline.co.uk

www.fireprotectiononline.co.uk

Author details



Kurz & bündig

Als Zahnarzt ist man es gewohnt, regelmäßige Checks bei Patienten durchzuführen, um etwaige Probleme frühzeitig zu erkennen und zu behandeln. Ein solch präventiver Ansatz sollte auch beim Thema Brandschutz angewendet werden. In fünf Stufen beschreibt der Autor, wie sich das Brandrisiko in der Zahnarztpraxis effektiv bewerten lässt.



Fig. 1

© Ververidis Vasilis/Shutterstock.com

WFLD-ED congress in Thessaloniki

Authors: Dr Dimitris Strakas & Prof. Dr Kosmas Tolidis, Greece

Thessaloniki, the second biggest city of Greece is ready to host the 6th edition of the European Division Congress of the World Federation for Laser Dentistry (WFLD-ED). The fully renovated five-star hotel Makedonia Palace (Fig. 1) is hosting our event and it is ready to welcome all our participants. And we are happy to say that our European Congress has become a world event, as already our registrations involve a big number of colleagues from 33 countries!

Scientific programme

The congress programme will open on Friday 22 September on 9 a.m. (registration desk will be open from 8 a.m., please be on time). Our scientific pro-

gramme will cover all aspects of laser dentistry by our prominent speakers.

After the congress opening, Prof. Dr Norbert Gutknecht will be starting the lectures with a presentation about peri-implantitis—the “Tsunami” in future dental diseases. Hereby, he will discuss the question whether the laser is giving dentistry a problem-based solution. Prof. Kenji Yoshida subsequently refers on the history and development of the World Federation of Laser Dentistry. In the following, the congress programme will be two-pronged leaving the participants to be spoilt for choice. Participants will have the great opportunity to listen to various renowned experts in the field of laser dentistry

which are amongst others Prof. Adam Stabholz, Dr Miguel Martins, Dr Rene Franzen or Dr Kinga Grzech-Lesniak.

On Saturday, Prof. Samir Nammour will be opening the second congress day by analysing surgical protocols for the management of oral leukoplakia by means of laser beam and its limitations. Dr Jaana Sippus will then go on with a presentation on deep disinfection and tubular smear layer removal with Er:YAG laser.

In total, we will have the opportunity to scientifically indulge ourselves through the presentations of 25 invited speakers, 60 oral presentations and 30 e-poster presentations. Moreover, there will be ten hours of hands-on and workshops by different companies in satellite rooms.

Apart from our two laser days, a parallel programme on aesthetic dentistry and CAD/CAM will be running on Saturday 23 September with a number of specialists on the field as keynote lecturers.

The main scientific programme can be found online: www.wfld-thessaloniki2017.com

Social programme

Our social programme is also very exciting with the Welcome Cocktail afternoon on Friday 22 September at 7.30 p.m. at the exhibition hall of our congress, where we can socialise and visit our sponsor's booths. Moreover, the official Gala Dinner of the congress will be held on Saturday 23 September at 8.30 p.m. at the exceptional ALLEGRO BAR of the M2 music hall of Thessaloniki. A true Greek night with many surprises and music is awaiting us here!

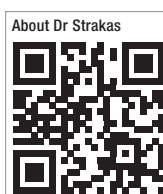


Furthermore, we are proud and honoured to have the biggest ever exhibition show in the history of the European Division Congresses. The palette of the exhibitors is truly representing the "World Leaders" in laser and restorative dentistry, covering the full spectrum of wavelengths available in the market. We are thankful to all of them, but mostly to our Platinum Sponsor, Light Instruments (Fig. 2).

Do not miss the chance to join the biggest event in laser and aesthetic dentistry for 2017. We are confident that you will enjoy a high-standard scientific programme, at a stunning location, in a beautiful and vivid city.

Let's meet in Thessaloniki!

Let's bring laser light to sunlight! _



contact

WFLD-ED

World Federation for Laser Dentistry
secretariat@wfld-thessaloniki2017.com
www.wfld-thessaloniki2017.com



Fig. 1: The five-star hotel Makedonia Palace is hosting the event.

Fig. 2: Sponsor list of the 6th edition of WFLD-ED, which is evidently the most successful in the history of European Division Congresses.

Ultradent CEO called Americans to Turn backs on the Trump presidency



CEO and founder of Ultradent Dr Dan Fischer has written an open letter calling on Americans to turn their backs on the Trump presidency. In response to Trump's reaction to the tragic events in Charlottesville, Virginia, on 12 and 13 August, the full-page letter in USA TODAY has caused the already maxed-out political turmoil to spill over into the dental industry.

In his opening sentence, Fischer wrote: "As the founder and CEO of Ultradent Products, Inc., a proud American manufacturer that employs over 1,400 Americans and exports 65% of what we manufacture, I feel it is my duty and obligation to make my voice heard." Pointing to Ultradent's core company values of "integrity, quality, care, innovation and hard work" as guiding his leadership of the company, Fischer felt compelled to voice his disapproval at what he describes as an "out of control" Trump, going as far to say "should I ever find myself in the presence of Donald Trump, I will literally turn my back to him." This call to action from Fisher has not been met with open arms from all corners of dentistry. Some loyal Trump supporters working in the industry suggested via Facebook that Americans and dentists turn their backs on Ultradent Products.

In the letter, now published on turnyourbacks.org, Fischer concludes by writing: "For those of you who support this person or who don't feel comfortable that it is correct to 'turn your back,' you too are my fellow Americans, and I equally defend your right to freedom of speech. Do as your conscience dictates."

Artificial sweeteners linked to Weight gain, heart disease and other health issues

According to a recent study released by the Canadian Medical Association, artificial sweeteners may not be as healthy alternative as first thought. In a systematic review of 37 studies that followed over 400,000 people for an average of 10 years, the researchers aimed to find out about negative long-term effects on weight gain and heart disease in people who consumed artificial sweeteners. Initial results did not show a consistent effect on weight loss, while the longer observational studies showed a link between the consumption of artificial sweeteners and relatively



higher risks of weight gain and obesity, high blood pressure, diabetes, heart disease and other health issues. Nevertheless, lead author and assistant professor Dr Meghan Azad said, "Caution is warranted until the long-term health effects of artificial sweeteners are fully characterised."

First generation graduates

LA&HA Master's Programme

This year, the first generation graduated the LA&HA Master's Programme in Laser Dentistry. The programme is an educational curriculum designed by the Laser and Health Academy to provide participants with a comprehensive level of knowledge about laser use in dentistry, with an overview of laser applications, laser physics, safety and hands-on practical work.

This year's graduating class has eight laser enthusiasts from six different countries. Some of the students were new to lasers, while others had already been working with lasers for several years.

A total of five separate modules are required for completion of the programme, giving participants the skills needed for using a laser system in the dental office.

There is strong interest from dental experts worldwide for the LA&HA Master's Programme, knowing that an in-depth knowledge of laser use is essential for running a successful dental practice. The next modules are in full swing. For dates go to www.fotona.com.

Source: Fotona d.o.o.



Fossilised teeth cast doubt over

Humans' arrival in South East Asia

South East Asia is a key region for understanding the human dispersal out of Africa and down to Australia. According to recent fossil teeth findings by researchers from the University of Queensland in Brisbane and Macquarie University in Sydney, this migration towards Australia may have occurred 20,000 years earlier than previously thought. In a video posted online, the scientists follow the footsteps of Eugène Dubois, the paleoanthropologist famous for his discovery of "Java Man" (*Homo erectus*). In the Sumatran region of Indonesia, they reenter a cave site called Lida Ajer, where in the late 1800s the Dutchman collected fossil teeth from other hominins.

According to Dr Gilbert Price of the University of Queensland's School of Earth and Environmental Sciences, Dubois's recovery of the human teeth was in itself very interesting, but no one had spent much time trying to determine its significance. However, after an in-depth documentation of the cave and reanalysis of the specimens using a new dating programme, it was confirmed that the teeth came from modern humans, *Homo sapiens*, and most interestingly that they dated to as long as 73,000 years ago.

In a twist that may become a contentious topic at a later date, the findings from the study also suggest humans could have potentially made the crossing to Australia even earlier than the accepted 60,000 to 65,000 years ago.



© Tanya Smith and Rokus Awe Due

Prevention before intervention in the

Oral care of older patients



© George Rudy/Shutterstock.com

In light of the ageing population, dentists need to be aware of the risks of multifactorial oral health problems in elderly patients. A recent article has recommended a maximum interception approach involving all members of the healthcare team and promoting evidence-based self-care.

Dental professionals must be prepared for the sheer number of older patients, especially among the baby boomers (the generation born between 1946 and 1964), retaining their natural teeth for longer, stated article author Prof. Laurence J. Walsh, University of Queensland, Australia. Particular problems include root surface caries in patients with a strong history of coronal caries and those who suddenly develop salivary hypofunction. Furthermore, elderly patients suffer from more chronic diseases and are medically more complex.

Older patients sometimes cannot maintain sufficient oral health, owing to a decline of fine motor skills and reduced sight. Hence, Walsh advised a multidisciplinary approach with doctors, nurses and carers working together to provide good oral health for patients living in long-term care facilities. A key message must promote oral health as part of overall health, he said.

AD

laservision

**Lasersafe Binocular Loupes
Laser Safety Eyewear
Patients Eyewear**



30
years

**MADE IN
GERMANY**

WE PROTECT YOUR EYES

uvex-laservision.de

BESTELLSERVICE

Jahrbuch Laserzahnmedizin 2017

Interdisziplinär und nah am Markt

BESTELLUNG AUCH
ONLINE MÖGLICH



www.oemus-shop.de



**Lesen Sie im aktuellen
Jahrbuch folgende Themen:**

Klinische Fallberichte

Aktuelle Forschungslage

Gesamtübersicht Dentallasermarkt

Vorstellung Dentallaser/
Photodynamische Systeme

49 €*

Fax an +49 341 48474-290

Senden Sie mir folgende Jahrbücher zum angegebenen Preis zu:

(Bitte Jahrbücher auswählen und Anzahl eintragen.)

_____ Jahrbuch Laserzahnmedizin 2017	49,– Euro*
_____ Digitale Dentale Technologien 2017	49,– Euro*
_____ Endodontie 2017	49,– Euro*
_____ Prävention & Mundhygiene 2017	49,– Euro*
_____ Implantologie 2017	69,– Euro*

*Preise verstehen sich zzgl. MwSt. und Versandkosten. Entsigelte Ware ist vom Umtausch ausgeschlossen.

Name / Vorname

Telefon / E-Mail

Unterschrift

Stempel

laser 3/17

Laserlicht im Land der Sonne



Dr. Dimitris Strakas

Liebe Kolleginnen und Kollegen,

die Laserzahnheilkunde hat ihre Kinderjahre längst hinter sich gelassen, und heute leben wir in einer Zeit, in der der Laser – neben anderen technischen Innovationen und digitaler Technologien – ein fester Bestandteil moderner Zahnmedizin ist. Die wohl größte und älteste wissenschaftliche Gesellschaft ist dabei die World Federation for Laser Dentistry (WFLD). Bereits seit 1988 verbindet und betreut sie Zahnärzte auf dem Gebiet der Laserzahnheilkunde. Im Herzen dieser Familie steht die Europäische Division (ED), die über alle Jahre hinweg eine bedeutende Rolle gespielt hat. Nun findet der bereits 6. WFLD-ED Kongress statt, welcher in diesem Jahr in der wunderschönen Stadt Thessaloniki im Land der Sonne, in Griechenland, zu Gast ist.

Wir sind mehr als erfreut über die Feststellung, dass anlässlich dieses wichtigen wissenschaftlichen Ereignisses alle Kräfte aus der Laserzahnheilkunde mitwirken. Damit wird einmal mehr die Tatsache unterstrichen, wie bestrebt Zahnärzte aus aller Welt sind, an aktuellen Forschungen und klinischen Projekten der prominentesten Meinungsführer auf diesem Gebiet teilzuhaben und diese kennenzulernen. Darüber hinaus fühle ich mich sehr geehrt, dass zum allerersten Mal sämtliche „Haupt“-Unternehmen innerhalb der Laserzahnmedizin und Restaurativen Zahnheilkunde als Sponsor auf diesem Event vertreten sind. Ihre Teilnahme an der Kongressausstellung gibt uns die Gelegenheit, eine vielfarbige Palette an Wellenlängen und Lasergeräten zu erleben.

23 Sponsoren, 25 geladene Referenten, 70 mündliche Präsentationen, 30 E-Poster, ein paralleler Ästhetik- und CAD/CAM-Kongress am Samstag und acht kostenfreie Workshops stellen ein erfolgreiches und informatives Treffen sicher. Auch für das soziale Miteinander gibt es genug Raum: Beim Welcome Cocktail in der Ausstellung und dem Gala Dinner gibt es viele Möglichkeiten, Kollegen aus der ganzen Welt kennenzulernen und sich mit ihnen auszutauschen.

Am 22. und 23. September 2017 öffnet der 6. WFLD-ED Kongress seine Türen im Hotel Makedonia Palace in Thessaloniki und lädt Sie herzlich dazu ein, an diesen zwei Tagen in die farbenreiche Welt der zahnärztlichen Laser-Familie einzutauchen.

Herzliche Grüße

Dr. Dimitris Strakas
Vorsitzender der WFLD-ED



26. DGL Workshop-Kongress

Autorin: Dr. Ute Gleiss

Dem vielfachen Wunsch entsprechend, doch wieder einmal einen Kongress in Aachen besuchen zu können, fand der diesjährige Workshop-Kongress der Deutschen Gesellschaft für Laserzahnheilkunde (DGL e.V.) am 23. Juni 2017 im Universitätsklinikum Aachen statt.

Prof. Dr. Norbert Gutknecht eröffnete den Kongress mit einer Erläuterung der innovativen Idee zum Workshop. Kontrastierend zum klassischen Kongresskonzept stand hier der anwendungsspezifische, benutzerfreundliche Aspekt im Vordergrund. Am Vormittag sollte zunächst die Vorstellung der theoretischen Grundlagen spezieller Lasersysteme erfolgen, für den Nachmittag waren dann praktische Übungen und Demonstrationen an den entsprechenden Lasersystemen mit den jeweiligen Referenten geplant.

Der Masterstudiengang „Lasers in Dentistry“ an der RWTH Aachen, der tags zuvor stattgefunden hatte, parallel zur Kongressvorbereitung. Herausgestellt wurde weiterhin die Einbindung der DGL in die DGZMK (Deutsche Gesellschaft für Zahn-, Mund- und Kieferheilkunde) mit einer eigenen Sektion und einem eigenen Kongress. In diesem Zusammenhang verwies der Präsident auch noch einmal auf die durchaus sehr erfolgreiche Präsentation der Gesellschaft im Rahmen des Frankfurter Zahnärztetages im Herbst 2016.

Theoretische Grundlagen

Nach der Eröffnungsrede begann der Kongress mit den Vorstellungen der theoretischen Grundlagen. Hierzu referierte zunächst Dr. Johannes-Simon Wenzler über die klinisch relevanten Indikationen für den Einsatz des 445, 660 und 970 nm-Diodenlasers. Am Nachmittag konnten sich die Teilnehmer dann in einem Hands-on-Kurs selbst an dem SiroLaser der Firma Dentsply Sirona versuchen. Besonders interessant erschienen hier auch die guten Studienergebnisse der 445 nm-Wellenlänge im endodontischen Bereich.

Dr. Detlef Klotz referierte im Anschluss über den Einsatz des 2.940 nm-Erbium:YAG-Lasers. Er verstand es, dass ungemein breite Einsatzspektrum des Er:YAG-Lasers umfassend darzustellen. Am Nachmittag führte er einen vielbeachteten praktischen Teil an einem Er:YAG-Laser der Firma Morita durch.

Dr. Gabriele Schindler-Hultzsich erarbeitete die klinisch relevanten Indikationen für den Einsatz des 940 nm-Diodenlasers und des 2.790 nm-Erbium, Chromium:YSGG-Lasers. Es imponierten hier die vielfältigen Einsatzmöglichkeiten sowie ihr spezielles Vorgehen im Bereich der Kinderzahnheilkunde. Am Nachmittag erfolgte eine intensive Vertiefung der Thematik sowie entsprechende Übungen an den Lasern WaterLase iPlus und EPIC der Firma Biolase.

Abb. 1: Dr. Stefan Grümer sprach über die vielfältigen Einsatzgebiete des 810 nm-Diodenlasers.

Darüber hinaus berichtete Prof. Gutknecht über die erfolgreiche Re-Evaluierung und Re-Akkreditie-



Abb. 1



Abb. 2



Abb. 3

In seinem gewohnt kurzweiligen und mitreißenden Vortragsstil sprach Dr. Stefan Grümer als letzter Redner des Vormittags über die vielfältigen Einsatzgebiete des 810 nm-Diodenlasers. Er erarbeitete hier nicht nur sehr übersichtlich alle Grundlagen, sondern konnte durch seinen reichhaltigen Erfahrungsschatz auch eine vielfältige Auswahl an Falldokumentationen präsentieren und nahm darüber hinaus Bezug auf die neu auf dem Markt befindlichen Geräte, wie z.B. den SOLASE.

Neuer DGL-Vorstand

Eingebunden in diesen Workshop-Kongress war auch die DGL-Mitgliederversammlung mit den anstehenden Vorstandswahlen. Nachdem die Vorstandsmitglieder ihre Berichte abgegeben und ihre Ämter niedergelegt hatten, wurde unter der Leitung des zeitlichen Vorsitzenden Dr. Kampf die Vorstandswahl durchgeführt. DGL-Geschäftsstellenleiterin Frau Speck fungierte als Wahlhelferin.

Der neue Vorstand setzt sich nach der Wahl nun wie folgt zusammen:

Präsident: Prof. Dr. Norbert Gutknecht

Vizepräsident: Dr. Detlef Klotz

Generalsekretär: Prof. Dr. Dr. Siegfried Jänicke

Schatzmeister: Dr. Stefan Grümer

Vertreter Praktikerbeirat: Dr. Thorsten Kleinert

Vertreter wissenschaftlicher Beirat:

Prof. Dr. Andreas Braun

Freies Vorstandsmitglied:

Prof. Dr. Anton Sculean, Dr. Gabi Schindler-Hultzsich

Workshops

Nach der Mittagspause wurden drei Gruppen gebildet, um an den praktischen Workshops teilnehmen zu können. Die Gruppen rotierten im Stundenrhythmus, sodass jeder Teilnehmer an jeder Demonstration

und Übung teilnehmen konnte. Trotz vorangeschrittener Stunde war der Vortragsraum auch in den Abendstunden des Kongresstages bis auf den letzten Platz – und darüber hinaus – gefüllt.

Dr. Rene Franzen berichtete über die Neuerungen im Bereich Lasersicherheit. Er referierte zielorientiert und kurzweilig über die neuen Vorgaben und gab den Teilnehmern anschließend alle relevanten Dokumente zum Herunterladen direkt mit auf den Weg. In seiner einzigartigen Vortragsweise verstand er es, ein trockenes Thema witzig und praxisorientiert aufzubereiten.

Zum Abschluss des Kongresses referierte Dr. Detlef Klotz über die Neuerungen in der Abrechnung. Auch dieser Vortrag fand sehr reges Interesse, auch wenn sich aufgrund der fortgeschrittenen Stunde und der Begrenztheit der Vortragszeit nicht alle Details vollumfänglich abarbeiten ließen.

Insgesamt ist das Konzept der Verknüpfung von Theorie und Praxis bei den Teilnehmern sehr gut angekommen. Dank der ständigen Präsenz der Referenten und Firmen sowie einer freundschaftlichen und kollegialen Atmosphäre konnten mehr als einmal Fragestellungen direkt beantwortet und eine Vielzahl neuer Ideen und Anregungen mit auf den Weg gegeben werden. Der Wunsch nach einer Wiederholung eines Kongresses in dieser Form wurde vielfach geäußert.

Kontakt

**Deutsche Gesellschaft für
Lasierzahnheilkunde e.V. (DGL)**

Pauwelsstraße 30

52074 Aachen

Tel.: 0241 8088164

sekretariat@dgl-online.de

www.dgl-online.de

Infos zur Fachgesellschaft



Abb. 2: DGL-Vorstand (v.l.):

Dr. Thorsten Kleinert, Dr. Detlef Klotz, Prof. Dr. Norbert Gutknecht, Dr. Gabriele Schindler-Hultzsich, Dr. Stefan Grümer und Prof. Dr. Dr. Siegfried Jänicke.

Abb. 3: Dr. Stefan Grümer (2.v.l.) und Prof. Dr. Gutknecht (2.v.r.) mit dem Sirona-Team.



Laserschutz für Zahnmediziner

Autoren: Jiaoshou (Prof.) Dr. Frank Liebaug, Dr. Ning Wu

In den letzten 50 Jahren hat die Entwicklung von Dentallasersystemen dem niedergelassenen Zahnarzt für Therapie und Diagnostik erhebliche Fortschritte beschert. Die Einsatzmöglichkeiten sind nicht mehr nur auf die Weichgewebechirurgie begrenzt, sondern umfassen auch Hartgewebearbeitung, Kariesdetektion und -monitoring sowie Parodontitis- und Periimplantitistherapie.

Minimalinvasive Behandlungstechniken sind durch die derzeit in Deutschland erhältlichen Lasersysteme erst möglich geworden. Durch sachkundigen Einsatz von lasergeeigneten Wellenlängen können Behandlungsergebnisse in der Zahnmedizin optimiert und die Patientenzufriedenheit erhöht werden. Für den Einsatz des Lasers durch den Zahnarzt wird in § 2(2) Medizinprodukte-Betreiberverordnung der Nachweis der entsprechenden Fachkunde beim Betreiben eines Lasergerätes (aktives Medizinprodukt) verlangt.

Zum Betrieb von Lasergeräten in den Behandlungsräumen ist laut Unfallverhütungsvorschrift BGV B2 „Laserstrahlung“ (vormals VBG 93) bzw. OStrV die Bestellung eines Laserschutzbeauftragten nötig. Seit dem 30.11.2016 ist die neue, aktualisierte OStrV in Kraft!

Der „neue“ Laserschutzbeauftragte

Die OStrV „Verordnung zum Schutz der Beschäftigten vor Gefährdungen durch künstliche optische Strahlung (Arbeitsschutzverordnung zu künstlicher optischer Strahlung – OStrV)“ stellt die gesetzliche Grundlage für den Laserschutz in Kliniken und Zahnarztpraxen dar. Diese Richtlinie wurde bereits am 27. Juli 2010 mit der „Verordnung zum Schutz der Beschäftigten vor Gefährdungen durch künstliche optische Strahlung (OStrV)“ durch die Bundesregierung in deutsches Recht umgesetzt. Sie umfasst sowohl die direkten Gefährdungen der Beschäftigten als Folge direkter Einwirkung der am Arbeitsplatz durch den Arbeitsprozess auftretenden, künstlichen optischen Strahlung (Gefährdungen von Augen und Haut) als auch die sich dabei ergebenden indirekten Gefährdungen. Indirekte Gefährdungen können zum Beispiel als Folge von Reflektionen (Blendwirkung) oder durch Strahlung entstandener Gase, Dämpfe, Stäube, Nebel und explosionsfähiger Gemische auftreten.

Wesentliches Merkmal dieser Verordnung ist in § 5 die Einführung sogenannter „Fachkundiger Personen“, die die notwendigen Gefährdungsbeurteilungen erstellen sollen. Außerdem sind Laserschutzbeauftragte schriftlich zu bestellen.

§ 5 OStrV – Fachkundige Personen, Laserschutzbeauftragter

(1) Der Arbeitgeber hat sicherzustellen, dass die Gefährdungsbeurteilung, die Messungen und die Berechnungen nur von fachkundigen Personen durchgeführt werden. Verfügt der Arbeitgeber nicht selbst über die entsprechenden Kenntnisse, hat er sich fachkundig beraten zu lassen.

(2) Vor der Aufnahme des Betriebs von Lasereinrichtungen der Klassen 3R, 3B und 4 hat der Arbeitgeber, sofern er nicht selbst über die erforderlichen Fachkenntnisse verfügt, einen Laserschutzbeauftragten schriftlich zu bestellen. [...] Die fachliche Qualifikation ist durch die erfolgreiche Teilnahme an einem Lehrgang nachzuweisen [...]. Der Laserschutzbeauftragte hat folgende Aufgaben:

1. die Unterstützung des Arbeitgebers [...] bei der Durchführung der notwendigen Schutzmaßnahmen nach § 7;
2. die Gewährleistung des sicheren Betriebs von Lasern nach Satz 1.

Bei der Wahrnehmung seiner Aufgaben arbeitet der Laserschutzbeauftragte in größeren Einrichtungen mit der Fachkraft für Arbeitssicherheit und dem Betriebsarzt zusammen. Die wesentlichen Änderungen für die Aufgaben des Laserschutzbeauftragten sind wie folgt:

- Die Laserschutzbeauftragten sind nun per Verordnung verpflichtet, an der Erstellung der Gefährdungsbeurteilung mitzuwirken. Hierfür sind umfangreiche Kenntnisse erforderlich.
- Die Laserschutzbeauftragten haben ab sofort die Sicherheit der Lasereinrichtung zu gewährleisten. Dies bedeutet mehr Verantwortung als früher.
- Die Laserschutzbeauftragten müssen sich regelmäßig weiterbilden.
- Laserschutzbeauftragte, die bis dato nur nach der DGUV Vorschrift 11 (BGV B2) ausgebildet wurden, müssen ebenfalls an einem Auffrischkurs teilnehmen.
- Die Begrifflichkeit der „Sachkunde“ wurde in „Fachkenntnisse“ geändert.



Abb. 1

Einsteigerkurs „Laser in der Zahnmedizin“

Der firmen- und markenunabhängige Einsteigerkurs „Laser in der Zahnmedizin“ des Ellen Laser Zentrum Mitte vermittelt die für den Umgang mit dem Laser notwendige Fachkunde und bietet die Qualifikation zum „Laserschutzbeauftragten“ nach der o.g. aktualisierten Arbeitsschutzverordnung zu künstlicher optischer Strahlung – OStrV. Die Seminare richten sich damit sowohl an den interessierten Zahnarzt, der sich einen Überblick über den Einsatz von Lasern in der Zahnheilkunde und Medizin verschaffen möchte, als auch an diejenigen, die bereits einen Laser in ihrer Praxis oder Klinik haben.

Der vor einer Kaufentscheidung stehende Kollege erhält somit die Basis, um Herstellerangaben besser bewerten zu können und den passenden Dental-laser, insbesondere die passende Wellenlänge, für sein Therapiespektrum auszusuchen. In vielen klinischen Fallbeispielen wird im Laufe des Seminars das theoretische Wissen veranschaulicht und step-by-step weitergegeben. Dabei werden Erfahrungen aus über 20 Jahren Lasermedizin in der eigenen

Abb. 1: Der Einsteigerkurs „Laser in der Zahnmedizin“ des Ellen Laser Zentrum Mitte ermöglicht die Qualifikation zum „Laserschutzbeauftragten“ nach der aktualisierten OStrV.



Abb. 2



Abb. 3

Abb. 2: Patientenbehandlung live und mit Kollegeneinbeziehung.

Abb. 3: Therapiekonzepte werden erklärt und kollegial diskutiert, Geräte im Hands-on-Training getestet.



Praxis vermittelt und evidenzbasierte Studienergebnisse internationaler Forschungseinrichtungen vorgestellt und unter den Kollegen diskutiert.

Im praktischen Teil liegen die Schwerpunkte im Kennenlernen verschiedener dentaltypischer Lasersysteme, deren Bedienung und ihrer Wirkung auf Hart- und Weichgewebe. Dies erfolgt in Form eines „Hands-on-Trainings“ zum Beurteilen der charakteristischen Gewebewirkungen durch den jeweiligen Seminarteilnehmer selbst. Die für den Zahnarzt typischen Anwendungsfelder, wie z. B. Kavitätenpräparation, Kariesentfernung, Einsatz unterschiedlicher Lasersysteme in Endodontie und Parodontologie sowie die zahnärztliche Chirurgie, werden während der Live-Behandlungen demonstriert und können von den Teilnehmern im praktischen Arbeitskurs an Zahn-, Schweinekiefer- und Gewebepreparaten selbst ausprobiert werden.

Kurstermine „Laser und Laserschutz“ im Ellen Laser Zentrum Mitte:

Herbstsemester 2017

21. Oktober 2017 · 18. November 2017

Frühjahrssemester 2018

12./13. Januar 2018:

(Anwendertreffen und Fortgeschrittenenkurs Teil 1)

10. März 2018 · 09. Juni 2018 · 07. Juli 2018

Es erfolgt eine schriftliche Lernerfolgskontrolle der sicherheitsrelevanten Kursinhalte. Für die erfolgreiche Teilnahme werden je nach Kursinhalt und -länge Fortbildungspunkte vergeben. Die erfolgreiche Teilnahme wird durch das Zertifikat „Laserschutzbeauftragter“ bestätigt. Möglicherweise erhält der fachkundige Kollege durch die im Workshop durchgeführten Live-OPs oder Hands-on-Übungen auch Anregungen, um sein Behandlungsspektrum zu erweitern oder erst zum individuellen Praxiskonzept zu finden.

Diese Weiterbildungsveranstaltungen entsprechen dem Inhalt nach den Leitsätzen und Empfehlungen der Kassenzahnärztlichen Bundesvereinigung (KZBV) vom 23.09.2005 einschließlich der Punktebewertungsempfehlung des Beirates Fortbildung der BZÄK und DGZMK.

Ausweitung der Ausbildungsinhalte

Seit diesem Jahr haben wir die Ausbildungsinhalte für das gesamte zahnärztliche Behandlungsteam mit Zahnmedizinischen Fachangestellten und Zahntechnikern ausgeweitet. Teamfortbildung ist längst kein Geheimnis mehr, sondern ein Erfolgsrezept, zumal heute einzelne Leistungen an fortgebildete Personen delegierbar sind. Auch Anwendertreffen und Kurse für Fortgeschrittene zu speziellen Themen der Lasermedizin sind bereits geplant, denn wer einmal mit dem Laser behandelt hat, der wird die „Faszination Laser“ zur Verbesserung seiner Patientenbehandlung nicht mehr missen möchten.

Kontakt

Jiaoshou (Prof.)

Dr. med. Frank Liebaug

Prof. Universität Shandong, China
Ellen Laser Zentrum Mitte
Arzbergstraße 30
98587 Steinbach-Hallenberg
info@ellen-institute.com
www.ellen-institute.com

Infos zum Autor





CROIXTURE

PROFESSIONAL MEDICAL COUTURE



NEW COLLECTION

EXPERIENCE OUR ENTIRE COLLECTION AT WWW.CROIXTURE.COM

Zu wenig Schlaf sorgt für

Erhöhte Risikobereitschaft



© pathdoc/Shutterstock.com

Junge Erwachsene haben ein natürliches Schlafbedürfnis von durchschnittlich rund 9 Stunden pro Tag, bei älteren Erwachsenen sind es um die 7,5 Stunden. Schlafen aber beispielsweise junge Erwachsene weniger als 8 Stunden pro Nacht, führt dies vermehrt zu Aufmerksamkeitsdefiziten.

Forschende der Universität Zürich und des Universitätsklinikums Zürich haben nun eine weitere kritische Konsequenz von chronischem Schlafmangel identifiziert: eine erhöhte Risikobereitschaft. Die Wissenschaftler untersuchten das Risikoverhalten von 14 gesunden männlichen Studenten im Alter von 18 bis 28 Jahren. Während eine einzelne Nacht ohne Schlaf keinen Einfluss auf die Risikobereitschaft hatte, verhielten sich 11 von 14 Studienteilnehmern während einer Woche mit reduzierter Schlafdauer (5 Stunden pro Nacht) signifikant risikoreicher. Bedenklich ist insbesondere ein weiterer Befund: Die Studenten schätzten ihr Risikoverhalten gleich ein wie unter regulären Schlafbedingungen.

Die Forschenden weisen zudem erstmals nach, dass eine niedrige Schlafentiefe im rechten präfrontalen Kortex direkt mit vermehrtem Risikoverhalten zusammenhängt.

Quelle: Universität Zürich

Abschluss in Zahnmedizin verspricht

Das höchste Einstiegsgehalt

Die Onlinejobbörse StepStone veröffentlichte kürzlich einen aktuellen Gehaltsreport für Absolventen – mit guten Aussichten für Medizin- und Zahnmedizinstudenten.

Den präsentierten Zahlen liegen Befragungen im Zeitraum 2014 bis 2016 unter 150.000 Fach- und Führungskräften zugrunde. Berücksichtigt wurden die Daten von Absolventen bzw. Berufseinsteigern mit akademischer Ausbildung und maximal zwei Jahren Berufserfahrung.

Am höchsten sind demnach die Einstiegsgehälter in den Regionen Baden-Württemberg, Bayern und Hessen. Zwischen 45.000 und 46.999 Euro Bruttojahresgehalt wandern hier in die Lohn-tüte der Absolventen. Wer mit einem Topgehalt ins Berufsleben einsteigen will, ist mit einem



© Pixel Embargo/Shutterstock.com

Abschluss in Medizin oder Zahnmedizin auf dem ersten Rang in puncto Einstiegsgehalt (50.170 Euro) ganz vorne dabei – Kopf an Kopf mit den Absolventen in Wirtschaftsingenieurwesen (48.238 Euro) und Naturwissenschaften (Biologie, Chemie, Pharmazie, Physik; 48.071 Euro).

Quelle: StepStone

Zahnärzte bewerten ihre

Wirtschaftliche Lage optimistisch

Die Ärzte in Deutschland beurteilen ihre wirtschaftliche Lage und Zukunft wieder zurückhaltender als in den Vorjahren: Der aktuelle Medizinklimaindex (MKI), den die Stiftung Gesundheit halbjährlich erhebt, bleibt mit -2,7 Punkten deutlich hinter den Frühjahrswerten der vergangenen Jahre zurück (2014: +2,7; 2015: +6,2; 2016: +0,2). Auch im Vergleich zum üblicherweise niedrigeren Herbst-Index konnte der MKI lediglich um einen Prozentpunkt zulegen. In den Vorjahren lagen die Steigerungsraten zwischen 5,3 und 9,8 Punkten. Betrachtet man die Indizes der einzel-

nen Fachgruppen, zeigt sich ein uneinheitliches Bild: So beurteilen Hausärzte und Zahnärzte ihre aktuelle wirtschaftliche Lage sowie die Aussichten für die kommenden sechs Monate klar optimistisch (+6,3/+5,6). Auch der Index der Fachärzte liegt zwar noch immer im negativen Bereich, sank jedoch von -11,2 auf -7,2. Dagegen verschlechterte sich der Wert bei den Psychologischen Psychotherapeuten abermals und erreichte mit -18,9 seinen niedrigsten Stand seit Beginn der Erhebung.

Quelle: Stiftung Gesundheit

© Leremy/Shutterstock.com



Antikorruptionsgesetz sorgt weiterhin für

Verunsicherung innerhalb der Zahnärzteschaft

Am 4. Juni 2016 trat das Gesetz zur Bekämpfung von Korruption im Gesundheitswesen, kurz Antikorruptionsgesetz, in Kraft. Zwar haben Verbände und Kammern ihre Mitglieder seinerzeit ausreichend über die neue Gesetzgebung informiert, dennoch, so scheint es, ist die Verunsicherung innerhalb der Branche nach wie vor groß. Grund: Zwar waren jegliche Handlungen, die der Vorteilsnahme und Vorteilsgewährung dienten, schon seit jeher verboten, unter Strafe jedoch stehen sie erst seit einem Jahr. Für Zahnärzte und Zahntechniker bedeutet das, dass Verstöße, ob wissentlich oder unwissentlich, eine andere Qualität erfahren. Es gilt die alte Weisheit: Unwissenheit schützt vor Strafe nicht. Entsprechend groß sind die Befürchtungen, schuldlos, beziehungsweise unbeabsichtigt, gegen das Gesetz zu verstoßen.



© r.classen/Shutterstock.com

Dies bestätigt auch Werner Vogl, Fachanwalt für Medizinrecht. Vogl hält Vorträge zum Antikorruptionsgesetz auf Fachmessen wie der „id infotage dental“ am 14. Oktober in München. Er kennt die Fragen von Zahnmedizinern und -technikern nur allzu gut. „Die Branche ist aufgeschreckt“, so der Göppinger Fachanwalt. „Vor allem bezüglich der Zusammenarbeit zwischen Zahnärzten und Dentallaboren herrschen viele Unklarheiten, ebenso im Bereich der Anbahnung von Kooperationen zwischen Laboren und Zahnarztpraxen.“

Zahnärzte und Zahntechniker, die sich umfangreich bei Werner Vogl über das Antikorruptionsgesetz informieren möchten, haben dazu am 14. Oktober auf der Fachmesse „id infotage dental“ die Gelegenheit. Um 12 und um 14 Uhr referiert Vogl in der „dental arena“ und beantwortet alle wichtigen Fragen zum Thema.

Quelle: Fachausstellungen Heckmann

Schneider BluLase

Endodontitis
Periimplantitis
Parodontitis

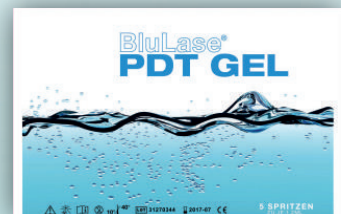
Diodenlaser BluLase 810nm

Mit integrierter PDT Funktion



- Umfangreiches Zubehör
- Breites Indikationsspektrum
- Vorprogrammierte Indikationen
- Chirurgie bis 7 Watt

Kostenfreie
Einweisung und
Seminar für
Zahnarzt
und Helferlin!*



Photodynamische Therapie
schont das gesunde Gewebe
und wirkt effektiv bei Bakterien.

Hier erfahren Sie mehr: www.schneiderblulase.com

Kontakt
Schneider Dental
Muscherstraße 8
92367 Pilsach

E-Mail: info@schneiderblulase.com
Tel.: + 49 (0) 9181 - 304 03
Fax: + 49 (0) 9181 - 446 25

* Bei Kauf eines Schneider Dental- Produktes.

Arztbewertungsportale sind wichtiges Bindeglied zwischen Arzt und Patient



Arztbewertungsportale sind das wichtigste Bindeglied zwischen Arzt und Patient, da sie ihnen helfen, zueinanderzufinden. Das ist das zentrale Ergebnis einer Umfrage von jameda, Deutschlands größtem Arztbewertungsportal. Demnach suchen 65 Prozent der Patienten auf Arztbewertungsportalen nach dem passenden Arzt. Damit sind diese noch vor dem Rat von Freunden und Familie (61 %) die wichtigste Quelle zur Arztsuche. Nach den Freunden und der Familie (67 %) stellen die Portale darüber hinaus auch eine vertrauenswürdige Quelle in Arztfragen dar: Jeder Zweite vertraut der Meinung anderer Patienten auf Arztbewertungsportalen. Besonders schätzen Patienten die leichte Auffindbarkeit relevanter Informationen (66 %) und die damit verbundene Möglichkeit, den passenden Arzt zu finden (64 %).

Ärzte nutzen Arztbewertungsportale für ihr Praxismarketing und als Feedback-Kanal. Bewertungsportale helfen Ärzten dabei, Patienten auf ihre Praxis aufmerksam zu machen: Rund zwei Drittel der Ärzte schätzen an Arztbewertungsportalen die erhöhte Sichtbarkeit ihrer Praxis im Internet, die Hälfte die Möglichkeit der Patientenakquise sowie das Patienten-Feedback. Zudem sind fast alle Ärzte (92 %) der Meinung, dass Patientenbewertungen zur Verbesserung der medizinischen Leistung in der Praxis beitragen. Zwei Dritteln hilft das Feedback auf Arztbewertungsportalen dabei, die Bedürfnisse ihrer Patienten besser zu verstehen und darauf einzugehen.

Quelle: jameda GmbH

aPDT führt zum schonenden Zelltod krankmachender Keime

Diodenlaser in der Zahnmedizin stellen eine hervorragende Ergänzung für den zahnärztlichen Alltag dar. Wichtig ist dabei eine intuitive und einfache Bedienung. Das Unternehmen BluLase bietet hier eine Kombination von Diodenlaser und Photosensitizer an, welche den schnellen und unkomplizierten Einstieg erlaubt.

Die antibakterielle photodynamische Therapie ist ein etabliertes Verfahren zur Behandlung verschiedener Krankheitsbilder. Das Grundprinzip der aPDT: Laserlicht einer festgelegten Wellenlänge aktiviert einen spezifischen Farbstoff, genannt Photosensitizer, mit maximaler Absorption im Bereich dieser Laserwellenlänge, und regt damit die Bildung von reaktivem Sauerstoff (ROS, reactive oxygen species) an. Im Rahmen des „therapeutischen Fensters“ erfolgt dann die antibakterielle Wirkung auf den entzündungsauslösenden, anaeroben subgingivalen Biofilm. ROS schädigen die Bakterienzellen durch Oxidation lebenswichtiger Zellbestandteile und führen damit unmittelbar zur Nekrose und Apoptose



der behandelten Krankheitserreger. Der Zelltod erfolgt durch „oxidativen Stress“ in wenigen Sekundenbruchteilen und weitaus schonender als mit der konventionellen Antibiotikatherapie. Auch aus diesem Grund stößt die Anwendung der aPDT bei der Behandlung von infektiösen Erkrankungen auf breites Interesse. Zudem ist die aPDT (bis 500 mW) nach aktueller Gesetzeslage an qualifizierte Mitarbeiter delegierbar. Mehr Infos unter: www.schneiderblulase.com

Quelle: Schneider Dental

Einfühlsame Ärzte sind Die besseren Ärzte

Fühlen sich Patienten verstanden, haben sie weniger Schmerzen, sind zufriedener und nehmen Medikamente zuverlässiger ein. Dabei werden Ärzte vor allem dann als einfühlsam wahrgenommen, wenn sie Verständnis äußern und bei ihren Empfehlungen die Patientenbedürfnisse berücksichtigen. Dies ist das Ergebnis einer wissenschaftlichen Analyse von Patientenbewertungen aus 64 Studien. Je länger das Gespräch zwischen

Arzt und Patient geht, desto wohler fühlen sich Patienten. Stress durch bürokratische Arbeiten und langjährige berufliche Praxis verringern jedoch das Einfühlungsvermögen einiger Ärzte. Ärzte in Australien, den USA und Großbritannien werden zudem am empathischsten bewertet. Deutschland liegt im Mittelfeld.

Quelle: Hochschule Coburg



Antwort:

Deutsche Gesellschaft für Laserzahnheilkunde e.V.
c/o Universitätsklinikum Aachen
Klinik für Zahnerhaltung
Pauwelsstraße 30
52074 Aachen

Tel.: 0241 8088164
Fax: 0241 803388164
E-Mail: sekretariat@dgl-online.de
Bank: Sparkasse Aachen
IBAN: DE56 3905 0000 0042 0339 44
BIC: AACSD33

Aufnahmeantrag

Name/Titel: _____
Vorname: _____
Geb.-Datum: _____
Approbation: _____

Status: ☐ selbstständig ☐ angestellt ☐ Beamter ☐ Student ☐ ZMF/ZA

Adresse:

Straße: _____ Telefon: _____
PLZ/Ort: _____ Fax: _____
Land: _____ E-Mail: _____



Aufgrund des bestehenden Assoziationsvertrages zwischen der DGL und der DGZMK fällt zusätzlich ein reduzierter Jahresbeitrag für die DGZMK an (85,00 € p.a., falls Sie noch nicht Mitglied der DGZMK sind). Der Beitragseinzug erfolgt durch die DGZMK-Geschäftsstelle, Liesegangstr. 17a, 40211 Düsseldorf. Sie werden hierfür angeschrieben.

Mit der Stellung dieses Aufnahmeantrages versichere ich, dass ich

- ☐ seit dem _____ in der eigenen Praxis
mit einem Laser des Typs _____ arbeite (genaue Bezeichnung).
☐ in der Praxis _____ beschäftigt bin.
☐ in der Abt. der Universität _____ beschäftigt bin.

Ich beantrage die Aufnahme in die Deutsche Gesellschaft für Laserzahnheilkunde e.V.

Ort, Datum

vollständige Unterschrift

Jahresbeitrag: Für stimmberechtigte Mitglieder bei Bankeinzug 150,00 €.

Sofern keine Einzugsermächtigung gewünscht wird, wird ein Verwaltungsbeitrag von 31,00 € p.a. fällig.

EINZUGSERMÄCHTIGUNG

Ich bin einverstanden, dass der DGL-Mitgliedsbeitrag von meinem Konto abgebucht wird.

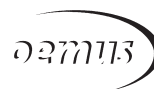
Name: _____ IBAN: _____
BIC: _____ Geldinstitut: _____

Unterschrift des Kto.-Inhabers

Diese Erklärung gilt bis auf schriftlichen Widerruf

laser

international magazine of laser dentistry



Publisher

Torsten R. Oemus
oemus@oemus-media.de

CEO

Ingolf Döbbecke
doebbecke@oemus-media.de

Members of the Board

Jürgen Isbaner
isbaner@oemus-media.de

Lutz V. Hiller

hiller@oemus-media.de

Editor in Chief

Norbert Gutknecht
ngutknecht@ukaachen.de

Coeeditors in Chief

Samir Nammour
Matthias Frentzen

Managing Editors

Georg Bach
Leon Vanweersch

Division Editors

Umberto Romeo
European Division

Melissa Marchesan
North American Division

Carlos de Paula Eduardo
South American Division

Toni Zeinoun
Middle East & Africa Division

Ambrose Chan
Asia & Pacific Division

Senior Editors

Aldo Brugneira Junior
Kenji Yoshida
Lynn Powell
Dimitris Strakas
Adam Stabholz
Marcia Martins Marques

Editorial Board

Peter Steen Hansen, Aisha Sultan,
Ahmed A Hassan, Antonis Kallis,
Dimitris Strakas, Kenneth Luk, Mukul Jain,
Reza Fekrazad, Sharonit Sahar-Helft,
Lajos Gaspar, Paolo Vescovi, Ilay Maden,
Jaana Sippus, Hideaki Suda, Ki-Suk Kim,
Miguel Martins, Aslihan Üsümez,
Liang Ling Seow, Shaymant Singh Makhan,
Enrique Trevino, Blanca de Grande,
José Correia de Campos, Carmen Todea,
Saleh Ghabban, Stephen Hsu, Antoni Espana Tost,
Josep Arnabat, Alaa Sultan, Leif Berven,
Evgeniy Mironov, Ahmed Abdullah, Boris Gaspirc,
Peter Fahlstedt, Ali Saad Alghamdi, Alireza Fallah,
Michel Vock, Hsin-Cheng Liu, Sajee Sattayut,
Anna-Maria Yannikos, Ryan Seto, Joyce Fong,
Iris Brader, Masoud Mojahedi, Gerd Volland,
Gabriele Schindler, Ralf Borchers, Stefan Grüner,
Joachim Schiffer, Detlef Klotz, Jörg Meister,
Rene Franzen, Andreas Braun,
Sabine Sennhenn-Kirchner, Siegfried Jänicke,
Olaf Oberhofer, Thorsten Kleinert

Editorial Office

Georg Isbaner
g.isbaner@oemus-media.de

Katrin Maiterth
k.maiterth@oemus-media.de

Product Manager

Timo Krause
t.krause@oemus-media.de

Executive Producer

Gernot Meyer
meyer@oemus-media.de

Designer

Sandra Ehnert
s.ehnert@oemus-media.de

Theresa Weise

t.weise@oemus-media.de

Customer Service

Marius Mezger
m.mezger@oemus-media.de

Published by

Oemus Media AG
Holbeinstraße 29, 04229 Leipzig, Germany
Tel.: +49 341 48474-0
Fax: +49 341 48474-290
kontakt@oemus-media.de
www.oemus.com

Printed by

Silber Druck oHG
Am Waldstrauch 1, 34266 Niestetal, Germany

laser international magazine of laser dentistry
is published in cooperation with the World
Federation for Laser Dentistry (WFLD).

WFLD Headquarters

University of Aachen Medical Faculty
Clinic of Conservative Dentistry
Pauwelsstr. 30, 52074 Aachen, Germany
Tel.: +49 241 808964
Fax: +49 241 803389644
ngutknecht@ukaachen.de
www.wfld-org.info

www.laser-magazine.com

Copyright Regulations

laser international magazine of laser dentistry is published by OEMUS MEDIA AG and will appear in 2017 with one issue every quarter. The magazine and all articles and illustrations therein are protected by copyright. Any utilisation without the prior consent of editor and publisher is inadmissible and liable to prosecution. This applies in particular to duplicate copies, translations, microfilms, and storage and processing in electronic systems. Reproductions, including extracts, may only be made with the permission of the publisher. Given no statement to the contrary, any submissions to the editorial department are understood to be in agreement with a full or partial publishing of said submission. The editorial department reserves the right to check all submitted articles for formal errors and factual authority, and to make amendments if necessary. No responsibility shall be taken for unsolicited books and manuscripts. Articles bearing symbols other than that of the editorial department, or which are distinguished by the name of the author, represent the opinion of the afore-mentioned, and do not have to comply with the views of OEMUS MEDIA AG. Responsibility for such articles shall be borne by the author. Responsibility for advertisements and other specially labelled items shall not be borne by the editorial department. Likewise, no responsibility shall be assumed for information published about associations, companies and commercial markets. All cases of consequential liability arising from inaccurate or faulty representation are excluded. General terms and conditions apply, legal venue is Leipzig, Germany.

SUBSCRIBE NOW!

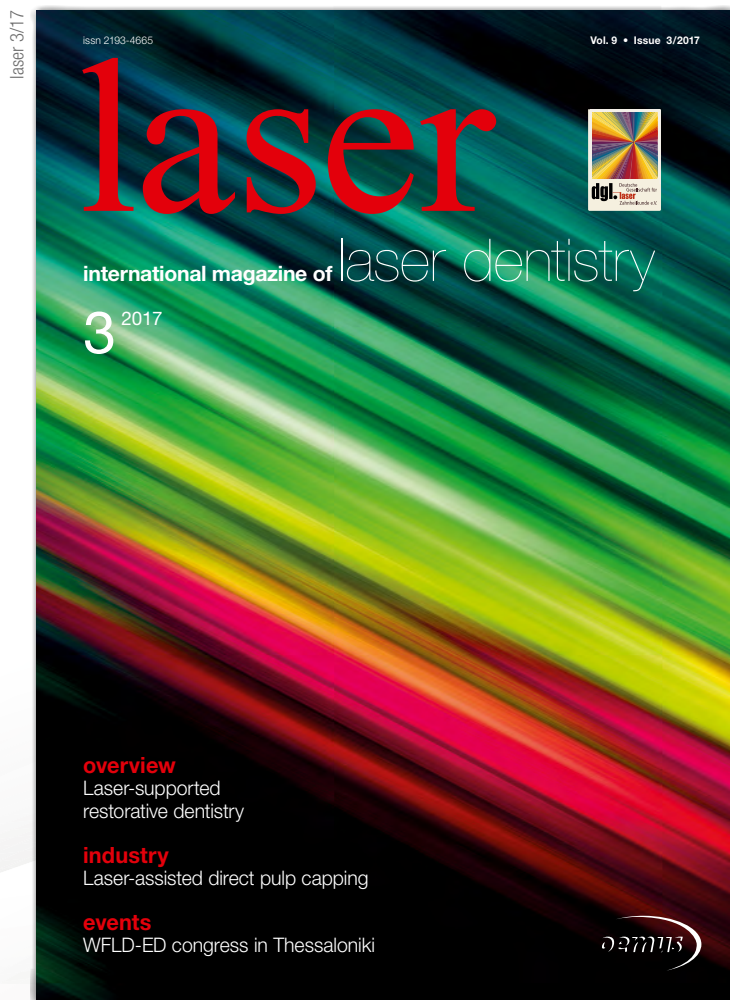
laser—international magazine of laser dentistry

Interdisciplinary, transparent & market orientated

ONLINE
SUBSCRIPTION HERE



www.oemus-shop.de



Fax: +49 341 48474-290

I would like to subscribe for the following journals:

- ☐ laser—international magazine of laser dentistry 4 issues p.a. € 44*
- ☐ implants—international magazine of oral implantology 4 issues p.a. € 44*
- ☐ ceramic implants—international magazine of oral ceramic implant technology 2 issues p.a. € 30*

Terms & Conditions: The subscription may be cancelled in written form without due justification within 14 days of order by contacting OEMUS MEDIA AG, Holbeinstraße 29, 04229 Leipzig, Germany. Dispatching notification in good time will suffice. The subscription is automatically extended by another twelve months if it is not cancelled in written form 6 weeks prior to the end of the reference period.

* All prices include VAT, shipping and handling (within Germany).

Last Name, First Name

Company

Street

ZIP/City/Country

E-Mail

Signature

Credit Card Number

Expiration Date

Security Code

OEMUS MEDIA AG

Holbeinstraße 29 · 04229 Leipzig · Germany · Phone: +49 341 48474-201 · grasse@oemus-media.de

A.R.C.
LASER

enlighten your surgery.

FOX & EmunDo®

YOUR HEALTH | STARTS IN THE MOUTH

**Photo Thermal Therapy
with EmunDo® is the
ultimate perio concept**

- ▶ Treat and cure
Periodontitis without
antibiotics
- ▶ Complete bacteria
elimination with a pure
thermal effect
- ▶ Save implants – the best
option for periimplantitis



We have them all!

www.arclaser.com/dental



EmunDo
THE MODERN PTT