Scientific and Social Program Synopsis

Thursday 06 June 2019
08:00 – 09:00  Congress registration desk open (Auditorium complex – FLOOR 1)
09:00 – 17:00  7th WALED Annual Meeting (Auditorium complex – HALL 2)
09:00 – 09:20  Welcome words by Prof. Norbert Gutknecht and Leon Vanweersch
09:20 – 13:00  Scientific Program (Morning Session)
14:00 – 17:00  Scientific Program (Afternoon Session)
10:00 – 15:00  Pre-Congress Courses and Workshops (Laser Centre – FDM)
15:00 – 17:00  Light Instruments Workshop (HALL 9)
17:30 – 18:30  ISLD ExCo-meeting (HALL 6)
20:00 – 00:00  WALED Get-Together party

Friday 07 June 2019
08:00 – 18:00  Congress registration desk open (Auditorium complex – FLOOR 1)
09:00 – 09:30  Opening ceremony and welcome messages (HALL 1)
09:30 – 10:30  Prof. Norbert Gutknecht Welcome Lecture (HALL 1)
10:30 – 11:00  Scientific Program (HALL 1)
11:30 – 18:30  Scientific Program (HALL 1, 4)
11:30 – 17:30  DGL Scientific Program (in German) (HALL 2)
11:30 – 18:30  BDLS and BAOM Scientific Program (in Bulgarian) (HALL 6)
13:30 – 14:30  ISLD General Assembly (HALL 5)
18:30 – 21:00  Welcome cocktail

Saturday 08 June 2019
09:00 – 18:30  Scientific Program (HALL 1, 4)
09:00 – 18:00  Scientific Program (Oral Presentations) (HALL 6)
11:30 – 13:00  Scientific Program (E-posters presentation) (HALL 6)
14:00 – 18:30  Scientific Program (Oral Presentations) (HALL 1, 4)
20:30 – 00:00  Gala Dinner, Closing Ceremony - Awards - Presentation of next Congress 2020
Committees of the 17th International Congress of ISLD

ISLD EXECUTIVE BOARD
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Honorary Chairmen:
Prof. Stefan Kostianev – Rector of Medical University of Plovdiv
Prof. Georgi Todorov – Dean of Faculty of Dental Medicine, MUP

Team Members
Prof. Ani Belcheva (Plovdiv)
Prof. Vladimir Panov (Varna)
Assoc. Prof. Vesela Stefanova (Plovdiv)
Assoc. Prof. Maria Dancheva (Sofia)
Assoc. Prof. Miglena Balcheva (Varna)
Dr. Janet Dumanova (Plovdiv)
Dr. Bilqosveta Yaneva (Plovdiv)
Dr. Maria Mutatcheva (Plovdiv)
Dr. Elitsa Veneva (Plovdiv)
Dr. Nikolay Nikolov (Plovdiv)
Dr. Mikhail Tanev (Plovdiv)
Dr. Evgenni Mirnov (Sofia)
Dr. Rada Kazakova (Plovdiv)

DGL Organizing Team
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Prof. Dr. Siegfried Jancke
Prof. Stefan Grumer
Prof. Dr. Anton Scelean
Prof. Dr. Baun
Dr. Gabriele Schindler-Hultzsch
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Acknowledgements
The Organisers of the 17th Laser Dentistry World Congress would like to thank the Sponsors for their contribution and support to make this Congress a success.

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LIGHT INSTRUMENTS
RISE ABOVE TECHNOLOGIES

The event is organized in association with the Scientific Research Fund, contract № КФ-06-МНФ/12, for co-financing an international scientific forum on the “10th International Dental Laser Academy”.
DENTARAY

Introducing the 1st and only 9.6μm CO₂ Dental Laser specifically designed for treating hard & soft tissue in the oral cavity.

With the optimal 9.6μm wavelength, combined with high repetition rate, super short pulses and water cooling Dentaray provides a fast, precise and minimally invasive hard tissue ablation without carbonization.

Designed to cover all advantages of the conventional CO₂ lasers, soft tissue procedures can be performed quickly, with less bleeding, resulting in minimum trauma to the treated tissue and less post-operative complications.

Preliminary studies suggest that the 9.6μm wavelength, markedly inhibits caries progression in pits and fissures in comparison to fluoride varnish and successfully inhibits demineralization of teeth enamel.

Your Dental Seal

NEW!

New "Perio Tip" for LiteTouch™

Introducing the brand new “Perio Tip” for LiteTouch™, specifically designed for periodontal and peri-implant therapy, to obtain disinfection and de-contamination of roots and implants.

- The “Perio Tip” is a hollow, conical flexible tip, which allows side-firing of the laser beam. The tip has circumferential spiral slits along its length and is sealed at its far end.

- The new “Perio Tip” delivers the laser energy circumferentially to the infected periodontal tissues and the infected pocket wall. Its kidney-like shape enables optimal adaptation to the root/implant anatomy.

- The New “Perio Tip” can be used for non-surgical removal of sub-gingival deposits and for disinfection in intra-bony defects during surgical procedures.

New "Perio Tip" for LiteTouch™
Get optimal results with the most innovative technology, for treatment of periodontal and peri-implant diseases.

The “Perio Tip” was developed by Prof. Ayala Stabholz, Prof. Adam Stabholz and Light Instruments Ltd.
LiteTouch™: the world’s most versatile non-fiber Er:YAG laser device for soft and hard tissue dental treatments.
To learn more about our innovative technologies please visit: www.light-inst.com
Dear colleagues,

It is a great responsibility and pleasure to take part in the organization of the most important event in the field of Laser Dentistry. Since 2009 Bulgarian Dental Laser Society together with the Medical University of Plovdiv organise Annual Dental Laser Academia and gathers leading practitioners and researchers. In 2019 this tradition will continue with the 17th World Congress of International Society for Laser Dentistry (ISLD).

The Congress integrates five significant events: 17th World Congress of ISLD, 28th DGL Annual Meeting, 10th Anniversary Congress of Bulgarian Dental Laser Society (BDLS), 7th International WALED Congress and the 2nd National Meeting of Bulgarian Association Oral Medicine.

The theme of the congress “Laser Technologies and Translation to Clinical Practice” was chosen to address two major challenges in the field of laser dentistry i.e. the fast progress in new technologies and the barriers to evidence-based application of new discoveries in day to day clinical practice. Within the Congress program, round table debates, workshops and short oral presentations will address cutting edge topics. Several promising new technologies are on the horizon in laser dentistry and this Congress will provide an ideal forum to exchange knowledge related to these innovations in order to advance the field. Educational sessions and practical courses will be offered on pragmatic topics that are of immediate relevance from research and clinical practice perspective to clinicians.

The organizing committee welcomes examples from all parts of the world who kindly accepted to come to Bulgaria and share their experience and expertise!

We thank our invited lecturers, partners and guests from all over Europe and the world, making this event a unique opportunity to meet old friends and a chance to make new ones. To participate is an honor and a privilege, this Congress was a great success and more than 540 participants from 45 countries enjoyed a high level of scientific presentations, warm hospitality and a friendly atmosphere. It was indeed an unforgettable event and an ideal time where the stage was set for the revitalisation of our prestigious Dental Laser Society.

I and many other colleagues representing numerous national dental laser societies were determined to place Plovdiv as an outstanding scientific organisation in laser dentistry. We are encouraged to see more and more new membership applications. The number of colleagues from all over the world, happy to join ISLD, as well as a number of national laser societies that choose to be part of our organization, is constantly growing. I believe that all of us, dental laser users worldwide, can see a bright future for Laser Dentistry.

Your participation in this Congress of the ISLD, the leading World Laser Dentistry Organization in beautiful Plovdiv, the European Capital of Culture for 2019, was unanimously selected as the site for the 17th World Laser Congress of ISLD. The International Society for Laser Dentistry (ISLD) was established in Japan in 1988. In 2018, thirty years later, the ISLD celebrated its Pearl Anniversary during the Laser Dentistry World Congress held in Aachen Germany. The Congress was a great success and more than 540 participants from 45 countries enjoyed a high level of scientific presentations, warm hospitality and a friendly atmosphere. It was indeed an unforgettable event and an ideal time where the stage was set for the revitalisation of our prestigious Dental Laser Society.

I warmly welcome you to the Medical University of Plovdiv, one of the largest and innovative universities in Bulgaria. Plovdiv has a history that 99.9% of the cities in the world can only dream of. It is not only the oldest, but also the most vibrant, artistic and bohemian city in Bulgaria – a city with unique brain power. For this reason it was elected to be the European Capital of Culture in 2019.

Using the language of “Star Wars” movie there will be a “power surge” in Plovdiv on 6th – 8th of June 2019. The Medical University of Plovdiv will host the 17th World Congress of ISLD. This is a great recognition of the achievements of the Academic body of the Medical University of Plovdiv.

As a modern place of science, MU - Plovdiv bundles top-quality researches on an international level in several core fields including Laser Dentistry. A decade of cooperation with partner institutions from Europe and the world have not only led to the establishment of a laser centre at our Faculty of Dental Medicine, but also ensures that the University consistently develops its educational responsibilities.

Nowadays few comparisons could be made with the progress in Dentistry. Laser treatment is used not only in physiotherapy, stones in the urinary tract, gastro-intestinal surgery but also in oral medicine and dentistry.

Today, the globalization of knowledge is not only a trend, but a reality. The same counts for the ISLD open air welcome cocktail event, which we hope will be memorable for all participants.

Watching the effects, the social gathering is very important, and we continue the WALED tradition with our Get-Together event on Thursday evening on 6th of June after the congress day. The same counts for the ISLD open air welcome cocktail event, with the chance for each and every one of you to meet, network and enjoy at the end of the first ISLD congress day. The ISLD gala dinner event will be as always one of the social highlights of these congress days.

Looking forward to welcome you all,

With best regards,

Leon Vanweersch

Vice-Director and Organizing Chairman - WALED ISLD Board Member - Organization Board

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Leon Vanweersch

Vice-Director and Organizing Chairman - WALED ISLD Board Member - Organization Board

Prof. Stefan Kostianev

Rector of the Medical University of Plovdiv

Corr.mem. Prof. Dr. STEFAN KOSTIANEV, DMsc

Rector of the Medical University of Plovdiv
17th Congress of ISLD

JUNE 6-8, 2019, PLOVDIV, BULGARIA

Exhibitors
Floor Plan

Congress Area / Auditorium Complex

Floor 1
Hall 1
Hall 2
Hall 3

Floor 2
Hall 4
Hall 5
Hall 6

Floor 3
Hall 7
Hall 8
Hall 9
### Congress Program

####Thursday 06 June 2019

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<th>Time</th>
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<tr>
<td>08:00 - 17:00</td>
<td>7th WALED Annual Meeting (AUDITORIUM COMPLEX - HALL 2)</td>
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<tr>
<td>09:00 - 17:00</td>
<td>CONGRESS REGISTRATION DESK (AUDITORIUM COMPLEX – FLOOR 1)</td>
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<tr>
<td>09:00 – 09:20</td>
<td>Welcome words by Prof. Norbert Gutknecht (Scientific Chairman) Leon Vanweersch (Organizing Chairman)</td>
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<tr>
<td>09:20 – 10:20</td>
<td>Dr. Maria Pilar Martin Santiago Contributions of the fractional handpiece to orofacial photobiocosmetics</td>
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<tr>
<td>10:20 – 10:50</td>
<td>Dr. Alshaimaa Alanaggar Blow (blue) out the smile</td>
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<tr>
<td>10:50 – 11:20</td>
<td>Dr. Arghavan Farrokhiian Comparing the antifungals effect of a 940nm diode laser with different powers on Candida albicans</td>
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<tr>
<td>11:20 – 11:50</td>
<td>COFFEE BREAK</td>
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<tr>
<td>11:50 – 12:20</td>
<td>Dr. Marwa Taha Laser in the daily pediatric dentistry practice</td>
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<tr>
<td>12:20 – 13:00</td>
<td>Dr. Sara Hassan El-Toukhyy Laser stability in one year follow up, with dermal fillers myomodulation In gummy smile treatment</td>
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<tr>
<td>13:00 – 14:00</td>
<td>LUNCH BREAK</td>
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<tr>
<td>14:00 – 14:45</td>
<td>Prof. Norbert Gutknecht All you need to know about the different CO2 wavelengths</td>
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<tr>
<td>14:45 – 15:30</td>
<td>Assoc. Prof. Rene Franzen Physics quiz: check, control and update your knowledge, and stay ahead of all other laser dentists</td>
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<tr>
<td>15:30 – 16:00</td>
<td>Dr. Ibrahim Samir A novel clinical approach of Diode Laser 980nm in gingival contouring</td>
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<tr>
<td>16:00 – 16:30</td>
<td>Dr. Alina Rotar Digital Science and Diode Laser Therapy: enhancing the quantification of oral inflammation reduction for periodontal patients.</td>
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<tr>
<td>16:30 – 17:00</td>
<td>Dr. Monika Masilionyte Laser assisted endodontics and restorations: save more teeth</td>
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<td>20:00 – 00:00</td>
<td>WALED GET-TOGETHER PARTY</td>
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####Friday 07 June 2019

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<td>08:00 – 18:00</td>
<td>CONGRESS REGISTRATION DESK (AUDITORIUM COMPLEX – FLOOR 1)</td>
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<tr>
<td>09:00 – 09:30</td>
<td>OPENING CEREMONY AND WELCOME MESSAGES Chairpersons: Assoc. Prof. Georgi Tomov and Dr. Blagovesta Yaneva</td>
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<tr>
<td>09:30 – 10:30</td>
<td>WELCOME LECTURE Prof. Norbert Gutknecht What makes the significant differences between a 10.6µm, a 9.6µm CO2 lasers and the Erbium laser wavelengths 2.79µm and 2.94µm on human hard tissue</td>
</tr>
<tr>
<td>10:30 – 11:00</td>
<td>PERIODONTOLOGY Prof. Ayala Stabholz Enlightening the future of laser handling in periodontal and peri-implant disease treatment</td>
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<tr>
<td>11:00 – 11:30</td>
<td>COFFEE BREAK</td>
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<tr>
<td>11:30 – 12:00</td>
<td>ENDODONTICS Chairpersons: Prof. Jean-Paul Rocca and Dr. Adriana Barylyak</td>
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<tr>
<td>12:00 – 12:30</td>
<td>PROFESSORATION Prof. Adam Stabholz Er:YAG Laser Supported Endodontic Treatment, Endodontic Retreatment and Endodontic Surgery</td>
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<tr>
<td>12:30 – 13:00</td>
<td>PROFESSORATION Prof. Roeland De Moor The evolution of the bubble: does it matter?</td>
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<tr>
<td>13:00 – 14:30</td>
<td>LUNCH BREAK</td>
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<tr>
<td>13:30 – 14:30</td>
<td>ISLD GENERAL ASSEMBLY (HALL 5 – FLOOR 2)</td>
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### NEW TECHNOLOGIES AND INOVATIONS

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<tbody>
<tr>
<td>14:30 – 15:00</td>
<td>PROFESSORATION Dr. Sapan Mistry Clinical applications of Solea, a 9.3 µm CO2 all-tissue laser</td>
</tr>
<tr>
<td>15:00 – 16:00</td>
<td>ORAL PRESENTATIONS Ana Catarina Nogueira da Silva Adhesion on dentin surfaces prepared with Er,Cr:YSGG laser: is the key in the grape? Ahmed Ibrahim Youssef Efficiency of Er:Cr:YSGG laser in veneers debonding on two types of ceramic materials and cements: pilot study</td>
</tr>
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</table>
**Congress Program**

16:00 - 16:30  **COFFEE BREAK**

**NEW WAVELENGHTS**

**Chairpersons:** Prof. Norbert Gutknecht and Dr. Sharonit Sahar-Helft

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<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speakers</th>
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| 16:30 - 17:00 | **INTRODUCTORY LECTURE** | Patricia Buttler  
Overview of laser scanning microscopy and other optical laboratory techniques for investigations of 9.6 µm CO₂ laser irradiated hard tissue samples |
| 17:00 - 18:30 | **ORAL PRESENTATIONS** | Nora Gutknecht-Schreiber  
New findings regarding 9.6 CO₂ laser bone surgery - a temperature study  
Jancee Anton Vetter  
Application of CO₂ Laser with a wavelength of 9.6µm on pork tubular bone – a pilot study  
Patrick Jansen  
Potential of caries prevention by sealing with a new CO₂ 9.6 µm-laser system – a pilot study  
Enno Brackebusch  
General ablation characteristics in bovine enamel using a newly developed CO₂ laser system at 9600 nm – a pilot study |

18:30 - 21:00  **WELCOME COCKTAIL**
Congress Program

AESTHETIC DENTISTRY

Chairpersons:
Prof. Roly Kornblit and Dr. Ana Catarina da Silva

16:30 - 17:00 PLENARY LECTURE
Dr. Dimitris Strakas
Light and white. Utilizing lasers in dental aesthetics

17:00 - 18:30 ORAL PRESENTATIONS
Mohamed Bahgat, Inas El Zayat, Ahmed Tarek Farouk

Mohamed Bahgat, Inas El Zayat, Ahmed Tarek Farouk
The effect of diode laser internal bleaching protocol on thermal changes color outcomes using different parameters: An in vitro study.

Rada Kazakova
Histological evaluation of gingival tissue after conventional and laser gingivectomy

Mihail Tanev
Local aPDT in the complex treatment of drug-induced gingival hyperplasia

18:30 - 21:00 WELCOME COCKTAIL

Friday 07 June 2019

08:00 - 18:00 CONGRESS REGISTRATION DESK (AUDITORIUM COMPLEX – FLOOR 1)

BDLS Bulgarian Dental Laser Society and BAOM

HALL 6 – FLOOR 2

09:00 - 11:00 OPENING CEREMONY AND WELCOME MESSAGES (HALL 1 - FLOOR 1)

11:00 - 11:30 COFFEE BREAK

ORAL MANIFESTATIONS OF SYSTEMIC DISEASES

Chairpersons:
Prof. Angelina Kisselova-Yaneva and Prof. Zaharii Krastev

11:30 - 12:00 PLENARY LECTURE
Assoc. Prof. Maria Dencheva
Contemporary approach to corrosion potential in the oral cavity

12:00 - 12:30 PLENARY LECTURE
Assoc. Prof. Miglena Balcheva
Contemporary options for pain control in BMS

12:30 - 13:00 PLENARY LECTURE
Prof. Zaharii Krastev
Drugs and Oral medicine

13:00 - 14:30 LUNCH BREAK

13:30 - 14:30 ISLD GENERAL ASSEMBLY (HALL 5 - FLOOR 2)

New diagnostic and treatment modalities in oral medicine
Lasers in oral medicine

Chairpersons:
Assoc. Prof. Miglena Balcheva and Assoc. Prof. Maria Dencheva

14:30 - 15:00 PLENARY LECTURE
Prof. Angelina Kisselova-Yaneva
Practical application of probiotic BioGaia ProDentis in dental medicine

15:00 - 15:30 PLENARY LECTURE
Assoc. Prof. Assya Krasteva
Hand, foot, and mouth disease - what to expect

15:30 - 16:00 PLENARY LECTURE
Dr. Vesselina Bozalieva
Nogier frequencies and their use in LLLT

16:00 - 16:30 COFFEE BREAK
ORAL PRESENTATIONS

Chairperson:
Assoc. Prof. Assya Krasteva and Assoc. Prof. Maria Dencheva

16:30 – 18:30

- **Lilia Kavlakova**
  - Topical therapy with tacrolimus 0.1% ointment for the treatment of gingival erosive lichen planus
- **Atanas Chonin**
  - Assessment of the role of increased corrosion potential and sensitization to metals in patients with burning sensation in the oral cavity
- **Christiana Madjova**
  - Clinical and paraphilical indicators of saliva in the establishment of oral disease
- **Daniel Markov**
  - Leukoplaikia. Evolution in carcinoma-treatment
- **Svetoslav Slavkov**
  - Clinical case of gigantic pleomorphic adenoma of the parotid gland. Challenge in diagnosis and surgical treatment
- **Evgeni Stanev**
  - Clinical case: Oral lesions in a patient with iron deficiency anemia
- **Simeon Chokanov**
  - The effect on oral health in drug abuse
- **Maria Mutafchieva**
  - Molecular disturbances in oral lichen planus - a new viewpoint on the pathogenesis of the disease
- **Yanitza Istatkova**
  - Management of leukokeratosis – clinical cases
- **Yanitza Istatkova**
  - Erythroplakia a flag for oral cancer – difficulty in treatment
- **Evgeni Stanev**
  - Difference in male and female thermoregulation after prick test
- **Aleksandar Georgiev**
  - Implant treatment in patients with underlying diseases

18:30 - 21:00 WELCOME COCKTAIL
## Congress Program

### Saturday 08 June 2019

**PEDIATRIC DENTISTRY**

**Chairpersons:**
Prof. Roly Kornblit and Dr. Youssef Sedky

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| 14:00 - 14:30 | **PLENARY LECTURE**
Prof. Tosun Tosun
Er:YAG in surgical orthodontic treatments |
| 14:30 - 15:00 | **PLENARY LECTURE**
Assoc. Prof. Sirin Guner Onur
Lasers in pediatric dentistry |
| 15:00 - 15:30 | **PLENARY LECTURE**
Assoc. Prof. Konstantinos Arapostathis
Use of technology to reduce dental fear and avoidance for children and adults |
| 15:30 - 16:00 | **PLENARY LECTURE**
Dr. Gabriele Schindler-Hultzsch
New technology and predictable pathways in pediatric oral surgery - minimally invasive laser-assisted pediatric surgery in combination of high-resolution digital volume tomography |

### Saturday 08 June 2019

**ISLD International Society for Laser Dentistry**

**ORTHODONTICS**

**Chairpersons:**
Prof. Ani Belcheva and Dr. Elitsa Veneva

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| 09:00 - 09:30 | **PLENARY LECTURE**
Prof. Tosun Tosun
Er:YAG in surgical orthodontic treatments |
| 09:30 - 10:00 | **PLENARY LECTURE**
Dr. Youssef Sedky
Laser facilitated orthodontics |
| 10:00 - 11:00 | **ORAL PRESENTATIONS**
Lotfi Lazrak
Gummy smile, what performance can bring the SLS: smileology laser surgery? |
|             | Thachaini Balakumar
Er:YAG laser debonding of zirconia brackets. SEM evaluation |
|             | Vasilis Panayioutou
Laser-assisted treatment of a child with hereditary gingival fibromatosis - 2 years follow up |
| 11:00 - 11:30 | **COFFEE BREAK** |

**LASERS-ASSISTED MINIMALY INVASIVE DENTISTRY**

**Chairpersons:**
Assoc. Prof. Vesela Stefanova and Dr. Nadia Bibova

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| 11:30 - 12:00 | **PLENARY LECTURE**
Prof. Roly Kornblit
Minimal invasive aesthetic dentistry by Er:YAG laser |
| 12:00 - 13:00 | **ORAL PRESENTATIONS**
Maria Shindova
Parents’ attitudes towards alternative methods of dental treatment in children |
|             | Mohamed Abdalmoniem
Introducing daily usage of laser dentistry in aesthetics |
|             | Mohamed Mahmoud
The effect of photobiomodulation and laser therapy in management of alveolar osteitis after tooth extraction |
| 13:00 - 14:00 | **LUNCH BREAK** |

**PHYSICS OF LASER AND BASIC SCIENCE**

**Chairpersons:**
Prof. Marcia Marques and Assoc. Prof. Konstantinos Arapostathis

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| 16:00 - 17:00 | **PLENARY LECTURE**
Assoc. Prof. Vesela Stefanova
Invisioning the future of lasers in operative dentistry and endodontics |
| 17:00 - 18:20 | **ORAL PRESENTATIONS**
Maite Moreno
State of the art and future for gingivae stem cell applications |
|             | Ibrahim Samir Abdelmoamen Sayed
Temperature change of neighboring alveolar bone during diode laser gingival recontouring: a preliminary in vitro study |
|             | Rahimy Soorosh
Regrowth of own teeth - the role of laser in stem-cell therapy |
|             | Aghravan Farrokhiyan
Comparing antifungal effect of 940 nm diode laser with different powers on Candida albicans |
| 20:30 - 00:00 | **GALA DINNER EVENT** |

**CLOSING CEREMONY - AWARDS - PRESENTATION OF NEXT CONGRESS 2020**
Saturday 08 June 2019

ISLD International Society for Laser Dentistry

**ORAL SURGERY AND IMPLANTOLOGY**

**Chairpersons:** Prof. Jean-Paul Rocca and Dr. Bogdan Krastev

**HALL 6 – FLOOR 2**

**Saturday 08 June 2019**

**ISLD International Society for Laser Dentistry**

**ORAL PRESENTATIONS**

**09:00 – 11:00**

- **Alejandro Steinman**
  Shorten your rehabilitation times with the ultimate protocol of laser assisted implants

- **Alireza Cyrus Raie**
  The influence of initiation of the tip on the concentration and transmission of the diode laser (940nm) energy at the end of the tip: non-initiated versus pre-initiated tips!

- **Daniel Abousaid**
  Laser-assisted intervention in soft tissue management around dental implant - clinical case

- **Krikor Giragosyan**
  Application of Er-YAG laser in the preparation of bone for autogenous targeted tissue regeneration

- **Darya Alhaidary**
  First investigation of dual wavelength lasers (2780 nm Er,Cr:YSGG and 940nm diode) on implants in a simulating peri-implantitis situation regarding surface morphologies in an in vitro pocket model

- **Ingmar Ingenegeren**
  Full laser sinus lift and simultaneously implantation ten years evaluation

**11:00 - 11:30 COFFEE BREAK**

**E-Poster Sessions (P01-P10)**

**Examination Committee:** Prof. Adam Stabholz and Prof. Ani Belcheva

**11:30 - 13:00 E-POSTERS**

- **Bogdan Krastev**
  Er:YAG laser-assisted apicectomy of endodontically compromised central incisor

- **Christina Karanasiou**
  Crown lengthening utilizing different wavelengths for restorative challenges

- **Marcia Marques**
  Long-term follow-up of medication-related osteonecrosis of the jaws lesions prevented or treated with aPDT and photobiomodulation

- **Evgeniya Popova**
  Thermographic and morphological studies of the effects of diode laser (810 nm) irradiation on root canal walls

- **Maite Moreno**
  Separation process of stem cells (trophoblasts) from gingiva assisted with 904 nm low laser wavelength

**13:00 - 14:00 LUNCH BREAK**

**VARIA**

**Chairpersons:** Prof. Siegfried Jänicke and Dr. Sharonit Sahar-Helft

**14:00 - 16:00 ORAL PRESENTATIONS**

- **Radka Cholakova**
  Assessing the effect of supernumerary teeth on pulpal perfusion of adjacent teeth using laser-doppler flowmetry

- **Evgeniya Popova**
  Influence of diode laser radiation on the apical leakage of endodontically treated teeth

- **Tomaz Ivanusic**
  Laser - the tool for all dentists

- **Eslam Aboubakr All Mohamed**
  Effect of different Er,Cr:YSGG laser parameters on surface conditioning of glass ceramics

- **Imneet Madan**
  Dual wavelengths in pediatric dentistry: a success story of compromised primary teeth

- **Maria Pilar Martin Santiago**
  The contribution of laser to orofacial photobiocosmetics

**16:00 - 16:30 COFFEE BREAK**

**VARIA**

**Chairpersons:** Prof. Carlo Fornaini and Dr. Imneet Madan

**16:30 – 18:00 ORAL PRESENTATIONS**

- **Piotr Roszkiewicz**
  Hard- and soft-tissue management around broken teeth

- **Alshaimaa Alanaggar**
  Blow (blue) out the smile

- **Yuliya Kozlova**
  Application of fluorescent method for evaluation of the hygienic condition of the oral cavity

- **Stefan Schreiber**
  Temperature development during explantation comparing conventional trephine system with innovative laser technique

- **Marwa Taha**
  Laser applications in pediatric dentistry: is it a myth or a magical treatment?

**20:30 - 00:00 GALA DINNER EVENT**

**CLOSING CEREMONY - AWARDS - PRESENTATION OF NEXT CONGRESS 2020**
# Congress Program

## Saturday 08 June 2019

### ISLD International Society for Laser Dentistry

**HALL 4 – FLOOR 2**

#### IMPLANTOLOGY - 1

**Chairpersons:** Dr. Ilay Maden and Dr. Stefan Grumer

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| 09:00 - 09:30 | **PLENARY LECTURE** Prof. Jean-Paul Rocca  
Advanced peri-implantitis: Proposal for a multi wavelength approach |
| 09:30 – 09:50 | **PLENARY LECTURE** Dr. Adriana Barylyak  
Treatment of periimplantitis with using Er:YAG laser in combination with Photodynamic therapy |
| 09:50 - 10:20 | **PLENARY LECTURE**  Dr. David Vincent Diloya  
Benefits of laser therapeutics in periodontics and implantology an evolution towards new less invasive surgical procedures |
| 10:20 – 11:00 | **ORAL PRESENTATIONS** Roman Itelman  
Peri-implantitis therapy by Er:YAG Laser  
Codruta Ciurescu  
Periimplantitis – A different therapeutic approach |
| 11:00 - 11:30 | **COFFEE BREAK** |

#### ENDODONTICS - 2

**Chairpersons:** Assoc. Prof. Georgi Tomov and Dr. Jancee Anton Vetter

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| 11:30 - 12:00 | **PLENARY LECTURE** Dr. Sharonit Sahar-Helft  
Er:YAG in conservative dentistry: burr or no burr? That is the question! |
| 12:00 - 12:30 | **PLENARY LECTURE** Dr. Miguel Martins  
Preserve your patients’ teeth... The powerful and amazing world of endodontic laser practice! |
| 12:30 - 13:10 | **ORAL PRESENTATIONS** Riman Nasher  
Microscopic investigation of the effectiveness of dual wavelength Er,Cr:YSGG and diode 940 nm laser and the XP-Endofinisher in removing the endodontic sealer from dilacerated root canals  
Carolina Isabel Benitez Arevalo  
Laser in endodontics |
| 13:00 - 14:00 | **LUNCH BREAK** |

#### CARIIOLOGY

**Chairpersons:** Dr. Miguel Martins and Dr. Dimitris Strakas

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| 14:00 - 14:30 | **PLENARY LECTURE** Prof. Carlo Fornaini  
Er:YAG in conservative dentistry: burr or no burr? That is the question! |
| 14:30 - 16:00 | **ORAL PRESENTATIONS** Basant El Asaly  
The effect of diode laser 940nm on deep cavities and on S. mutans. Pilot study  
Mohamed Bahgat Abdelhamid, Ola Mohamed Ibrahim Fahmy  
Microbiological assessment of diode laser with different parameters in comparison to chemical disinfection in the management of deep carious lesions  
Sergiu Calancea  
The use of Er:YAG Laser for Minimal Invasive ablation of dental hard tissues  
Elitsa Veneva  
Laser analgesia: Efficacy of a modified protocol for achieving pre-emptive dental analgesia with Er:YAG |
| 16:00 - 16:30 | **COFFEE BREAK** |

#### IMPLANTOLOGY AND PERIODONTOLOGY

**Chairpersons:** Prof. Ayala Stabholz and Dr. Evgeniy Mironov

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<th>Time</th>
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| 16:30 - 17:00 | **PLENARY LECTURE** Dr. Ilay Maden  
Laser treatment of peri-implantitis vs periodontitis; what we see and what we know |
| 17:00 - 17:30 | **PLENARY LECTURE** Dr. Daniela Cvetanovska Stojcheva  
Er:YAG laser-assisted prevention of peri-implantitis in patients with periodontitis |
| 17:30 - 18:00 | **PLENARY LECTURE** Dr. Blagovesta Yaneva  
Er:YAG laser assisted periodontal treatment – reasons for success |
| 18:00 – 18:30 | **ORAL PRESENTATIONS** Carolina Isabel Benitez Arevalo  
Comparative study on Endodontic treatment with and without laser with microbiological control  
Violeta Dogandzhiyska  
Influence of diode laser radiation on the apical leakage of endodontically treated teeth |
| 20:30 - 00:00 | **GALA DINNER EVENT** |

#### CLOSING CEREMONY - AWARDS - PRESENTATION OF NEXT CONGRESS 2020
Tuesday 6 June

Hall 9
15:00

Title:
YAG Laser in Endodontics: A New, Side Firing, Spiral Endo Tip

Is there a way to completely disinfect the endodontic space during root canal treatment?
Can we get rid of the smear layer after chemo-mechanical preparations?
Is it possible to increase success rate of root canal treatments?

Prof. Adam Stabholz, former Dean and Head of the Endodontic Department at the Hebrew University - Hadassah School of Dental Medicine, will answer these questions and more during the workshop.

Auditorium complex, 3rd floor, Hall 9, Medical University of Plovdiv, Bulgaria

For more information contact                     at +359 35 932 26
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WATERLASE TECHNOLOGY FOR DERMATOLOGY AND ESTHETICS

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FEATURES AND BENEFITS:

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+ Safe, effective, in-demand treatment
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+ Quick-treatment time for patient and staff
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+ Fits comfortably and ergonomically in either hand
+ Single-use disposable applicators for patient safety

Visit Booth #7 to learn more.
Mechanical trauma, extreme high temperature and bleedings occur in many surgical procedures when cutting, removing or modelling soft tissue, bone, dentin or enamel.

For many years there have been discussions about the use of different lasers in this areas, gaining different results.

In 1964 the 10.6µm carbon dioxide (CO2) laser was introduced by Patel. It was approved by the FDA in 1984 and afterwards mainly used as an incision tool in different medical fields, as well as in dentistry. The Er:YAG laser wavelength was introduced in dentistry in 1988 and the Er:Cr:YSGG laser in 1995 and approved by the FDA in 1997 and 1998.

Since different CO2 laser wavelengths exist, most of them have different tissue absorptions. The 9.3 µm and 9.6 µm are highly absorbed in hydroxyapatite followed by water with a lower absorption, while the 10.6 µm is highly absorbed in water and has a lower absorption in hydroxyapatite. Similarities are found in the absorptions of the both Mid infrared lasers Er:YAG and Er:Cr:YSGG even though the mode of operation, the active medium and the pumping mechanism are totally different.

Never before in the history of CO2 lasers in dentistry a CO2 laser with a wavelength of 9.6µm has been build exclusively for dentistry. This new wavelength in the field of dentistry will maintain known CO2 treatments, but will also open new indications and treatments on hard tissue as well as on soft tissue.

First investigations on the different tissue surfaces have shown, why this is no longer a hypothesis and why the same naming is not automatically generating same tissue interactions and results.

Laser technology is being developed very quickly, through the years, more experience and knowledge was gained and new laser applications in dentistry were introduced.

Our studies using SEM analysis following debondment and removal of pulp tissue, as well as old gutta percha root canal fillings, could demonstrate heavy smear layers on the wall surfaces of the root canals as well as remnants of the old filling materials in cases of endodontic retratements. The use of Er:YAG laser irradiation in the root canal system enabled a thorough cleansing of the root canal. SEM photographs showed clean root canal walls with open dentinal tubules.

The walls of root canals lased with the Er:YAG laser after biomechanical preparation with NiTi rotary files were cleaner in comparison to root canals that were similarly prepared but not lased.

Also the presence of biofilm in the contaminated root canal system calls for effective means to enable its removal. It will be shown that the laser irradiation could play a paramount role in the fulfilment of this objective. The advantage of the Er:YAG laser to sterilize the bony walls of the crypt following the surgical removal of a periapical lesion will be also discussed.

Clinical cases of endodontic treatment, endodontic retreatment and endodontic surgery with follow-ups, using the Er:YAG laser will be presented and discussed. Cervical Invasive Root Resorption (CIRR) is a clinical entity presenting a considerable challenge to the clinician. A new treatment approach using Er:YAG laser in the reanimation of CIRR will also be presented.

Presence of bacteria on the implant surface may lead to inflammation of the mucous membrane around the implant. For the treatment of periimplantitis it is important to remove bacterial plaque and inflammatory tissues, to protect the surface of the implant. Er: YAG laser is able to remove infected soft and hard tissue around the surface of implants. Since this wavelength is poorly absorbed by the titanium surface of the implant, the temperature around the implant during irradiation does not significantly increase, therefore, does not lead to pyrolytic effects.

Aim: to evaluate the effectiveness of the use of Er: YAG laser in the treatment of peri-implants in combination with photodynamic therapy.

Materials and methods: 25 patients with 42 implants were included. All patients have been diagnosed with peri-implants and were divided into two groups. First group: 10 patients (15 implants) were treated with Er: YAG laser (60 µJ, 10 Hz). Second group: 15 patients (27 implants) were treated with Er: YAG laser in combination with photodynamic therapy (7.3 W, 690-905, 60, in combination with toluidine blue). PDT was used immediately after laser purification and removal of granulation tissue. After that, bone plastics were made on the surface of the implant.

Results and discussion: In both groups, the treatment results were positive. Decreased pocket depth, gum attachment and no bleeding during the examination. In the first group, in 80% of the patients, a complete positive result was evaluated in 5-6 months.
Plenary Speakers

Ani Belcheva

Laser irradiation can greatly improve the acid resistance of sound enamel and prevent surface demineralization. Many studies over the last 20 years have tracked the mechanism of inhibiting demineralization. Thermal laser treatment converts carbonate hydroxyapatite to tooth enamel into less soluble fluorapatite minerals. Chemical inhibitors act by a general ion effect on the surface of the enamel. It is of great importance to determine the wavelengths that would lead to increasing the acid resistance of the enamel. Thermal analysis studies show that there is significant loss of carbonate and water at temperatures between 100 and 400°C. This loss is sufficient to alter the crystal structure of the enamel and to form a cleaner phase, acid-stable form of hydroxyapatite. Laser irradiation can greatly improve the acid resistance of sound enamel and prevent surface demineralization. Thermal laser treatment converts carbonate hydroxyapatite to tooth enamel into less soluble fluorapatite minerals. Chemical inhibitors act by a general ion effect on the surface of the enamel.

Ayala Stabholz

Enlightening the future of laser handling in periodontics and implant disease treatment

Periodontology is a field of dentistry that focuses on treating pathologies of the tissues around natural teeth as well as around implants. Both, periodontitis and peri-implantitis involve infection and inflammation and lead to bone loss around teeth and implants. The primary etiology of these diseases is believed to be the microbial biofilm which accumulates on the tooth and implant surfaces. Therefore, it is natural that the elementary treatment of these pathologies is aimed at eliminating this biofilm. Non-surgical and surgical methods as well as chemical therapy have been developed during the years with different rates of success. Though, the search for new minimally invasive methods that could serve as an alternative or supplement to conventional treatments, continues. Laser technology has gained much interest among clinicians and patients as a new tool for periodontal treatment and this field is growing fast and gains popularity. However, there are still several limitations, weaknesses and queries that need to be addressed and recognized in order to enable optimal treatment outcomes. Adjustments of several laser variables which could optimize treatment sequelae will be discussed.

Assya Krasteva

Hand, foot, and mouth disease - what to expect

Hand, foot, and mouth disease is a common viral illness that usually affects infants and children younger than 5 years old. However, it can sometimes occur in older children and adults. The cause of hand, foot and mouth disease is coxsackievirus A type 16 in most cases, but the infection can also be caused by many other strains of coxsackievirus, fever, mouth sores, and a skin rash. Hand, foot, and mouth disease is characterized by a brief febrile illness, typical vesicular rashes on the palms, soles, or buttocks, and oropharyngeal ulcers. In rare cases, patients may also develop neurological complications, such as encephalomyelitis, aseptic meningitis, and acute flaccid paralysis.

David Dilouya

Benefits of laser therapeutics in periodontics and implantology an evolution towards new less invasive surgical procedures

The purpose of this presentation is to describe the benefits of laser therapy in implantology and periodontics. In implantology in the treatment of implant complications and especially peri-implantitis; in Periodontics in the treatment of aggressive complex periodontitis, offering new perspectives to the smoker; by using new less invasive surgical procedures, laser therapeutics are thus much more than a therapeutic alternative, but the therapeutic choice of first intention, the gold standard, constituting a true innovation and therapeutic evolution.

Dimitris Strakas

Light and White, Utilizing lasers in Dental Aesthetics

A century ago Abbott proposed the combination of hydrogen peroxide and externally applied heat for discolored teeth bleaching. In present day as clinicians we are amidst an increased need of patients for minor or major aesthetic interventions and a great variety of means to achieve this. Lasers, utilize a light of special properties compared to non-coherent natural light, is one of the most modern tools in our inventory. Since lasers have been introduced in the field of teeth bleaching, the process has been reported as safer and more efficient. The Erbium family of lasers only recently was utilized for this purpose. In this presentation we will review the use of laser light in this field of aesthetic procedures. We will analyze the extensive research we have done, regarding the introduction of Er:YSGG in teeth laser-assisted bleaching. Different protocols will be presented and answer the questions of safety and efficiency of the procedure. A variety of materials and methods has been used and this will be highlighted with background analysis, statistical data and photographic documentation. The aim is to comprehend the biophysical background and the essential steps, for a successful laser-assisted aesthetic treatment.

Ilay Maden

Laser treatment of peri-implantitis vs. peri-periodontitis; what we see and what we know

Near and mid-infrared lasers have been used to control periodontitis and peri-implantitis in various ways: in combination with conventional treatment, as a single wavelength, in combination between different wavelengths or applications like photodynamic therapy, with non-surgical and surgical approaches. There are many advantages of using lasers, but we still face challenges and limitations, which seem to be getting less and less. The lecture will discuss these topics with comparison and contrast between periodontitis and peri-implantitis and their treatment.
Implant dental prosthetic rehabilitation requires accurate approach and thorough evaluation of the bone and soft tissue in the target area. Inadequate quality and/or thickness of bone or soft tissue in the site prior to implantation and assist the operation itself.

Cases with implant complications treated by Er:YAG lasers are presented in the lecture, showing possibilities to treat soft and hard tissues with similar results, even the simple, but risky procedure like cleaning the internal surfaces of the implant. Even the simple, but risky procedure like cleaning the internal surfaces of the implant. Even the simple, but risky procedure like cleaning the internal surfaces of the implant.

The influence of pathogenic bacteria on the oral mucosa. Oral mucosal drug delivery is applicable for immediate and controlled release action by preventing first pass metabolism and enzymatic degradation due to GI microbial flora.

Adverse effects of systemic drugs on the oral cavity. The most common clinical presentations of oral mucosal reactions to medications are xerostomia, lichenoid reactions, ulcers, bullous disorders, pigmentation, fibrovascular hyperplasia, white lesions, dysesthesia, osteonecrosis, infection, angioedema, and malignancy. Optimal drug treatment for oral diseases.

Introduction: Treatment of Medication-Related Osteonecrosis of the Jaws (MRONJ) is complex and varied with no effective therapeutic protocol.

Aim: To evaluate a protocol for treating and/or preventing MRONJ lesions based on antimicrobial photodynamic therapy (aPDT) and photobiomodulation therapy (PBMT).

Methods: Patients in use or with history of antire troviral drugs usage were followed up between 2015-2019. MRONJ treatment included preoperative aPDT sessions, as follows: 0.01% methylene blue solution applied inside surgical wound just after necrotic bone removal and after 5 minutes the lesion was irradiated with a 650nm diode laser (660nm, 0.028mW/cm², 0.1W, 3.5W/cm², 900 s per point, 321.5cm², 941 s per point, 3 points and total energy of 27J per session). For MRONJ prevention, immediately after tooth extraction the aPDT was applied inside dental socket and repeated weekly until tissue repair. Antibiotics were administered pre or postoperatively for no longer than 7 days. PBMT (808nm, 0.1W, 0.028 cm², 3.57W/cm², 30 s, 1 cm², 3J per point, 3 points and total energy of 10J per session). For MRONJ prevention, immediately after tooth extraction the aPDT was applied inside dental socket and repeated weekly until tissue repair. Antibiotics were administered pre or postoperatively for no longer than 7 days. PBMT (808nm, 0.1W, 0.028 cm², 3.57W/cm², 30 s, 1 cm², 3J per point, 3 points and total energy of 10J per session).

Results: Thirty-four patients (71 years old on average) were evaluated. Sixteen showed total resolution of lesions after a mean of two postoperative aPDT sessions. None of the patients on the preventive protocol (18 patients) presented signs of MRONJ at least until 6 months. Conclusion: The aPDT and PBMT protocols were effective therapeutic approaches to prevent the development of MRONJ lesions after tooth extraction or to heal existing MRONJ lesions.

The measurement of corrosion potential in the oral cavity is part of the diagnostic algorithm of complex focal diagnostics. It demonstrates the presence of pathogenisation.

All metallic objects in the oral cavity - obstructions, onlays, inlays, edges of metal-ceramic constructions, dentures, metal occlusal stops, metal rings, etc. are subject to measurement. Under the influence of saliva, which is an electrolyte, regardless of its precious nature, the base metal alloys are slowly or rapidly corroded. The process of electrochemical corrosion is associated with electron transfer and the release of corrosion products.

The influence of pathogenisation in this case is seen in two directions - the magnitude of the electricity and the sensitivity of the organism to the separated corrosion products - hardin, which lead to the appearance of various soft tissue reactions and/or the manifestation of allergic reactions.

The presence of pathogenisation is a valid reason for replacement of dental restorations in the oral cavity, but the question is with what?

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The presence of pathogenisation is a valid reason for replacement of dental restorations in the oral cavity, but the question is with what?
Lasers in Endodontics have completely revolutionized the field of endodontics due to several economical and technical constraints. As preservation of natural teeth is nowadays Dentistry ultimate goal, this presentation aims to present how Lasers in Endodontics have completely revolutionized prognosis and outcomes. Lasers, Disinfection, Cleansing, Drainage, Cost-Effectiveness, Painless and Healing... you will acknowledge that technology and biology are indeed a powerful combination!

**Endodontic Laser Practice!**

Patients with history of periodontitis have higher risk for biological complications after getting dental implants, then patients who lost their teeth for another reason. In order to thoroughly treat the periodontal disease prior to dental implants, we have used Er:YAG laser assisted protocols, checked the periopathogens with PCR analysis before and after the Er:YAG laser assisted periodontal treatment and safely placed dental implants. The 5-years follow up of patients with dental implants and history of periodontal disease showed implants survival rate similar to the one of the patients without periodontal diseases, which makes the Er:YAG laser, in a specific protocol, very important tool for preventing peri-implantitis in those patients.

It was only some 10 years ago that activation of irrigation solutions with Er:YAG lasers was introduced. This was the beginning of the era of "laser activated irrigation" (LAI), with a fibre in an irrigation solution and inducing fluid streaming based on the creation of cavitation bubbles. During this decade the technology evolved rapidly. At present two approaches are possible i.e. (1) conventional LAI (with the fibre still in the root canal lumen) and (2) the RIPS/ SWEEPS approach with the fibre in the pulp chamber activating the irrigation solution in the root canal. Thanks to the development of shorter pulse durations, and different cavitation bubble dynamics (single- versus double-pulse regime) enhanced fluid dynamics lead to a better 3D root canal cleaning efficacy. Moreover, laser activated irrigation has now objectively proven its superiority over ultrasonic activation of irrigation solutions, and overcomes the problems of spatial hindrance encountered with instruments and tips vibrating within the confines of the root canal system.

Nowadays, as the esthetic parameters of the smile have become an important issue, aesthetic plays a significant role in modern dentistry. Several features as color, shape, position and teeth length must be considered when it comes to assessing whether a smile is harmonious. Not only the teeth play a role in an aesthetic harmonious smile, but also the gums have an important role. The gummy smile line and the amount of gum exposure are some of the gummy features to be taken in consideration. The Er:YAG laser, that can be applied on hard and soft tissues, is used for the treatment of the teeth and the gums with aesthetic upgrade results, thus, used for the improvement of the smile.

The bio-stimulation effect, the tissue selective ablation, the low penetration deep, the small ablation surfaces and the anti-bacterial feature are only some of the Er:YAG laser properties that guarantees optimal results of the hard and soft tissue Er:YAG laser Minimal Invasive High technology aesthetic treatments. The presentation will include the different clinical applications of Er:YAG Laser in aesthetic dentistry and the scientific evidences that makes it the adapted High-Tech tool for treating hard and soft oral tissues in Aesthetic Dentistry.

Retrograde peri-implantitis (RPI) is termed as a symptomatic periapical lesion, developed after implant placement, while the coronal portion of the implant remains fully osseointegrated. It was initially described in 1992 by MCAlister et al. They described two cases of RPI caused by bacteria remained in the extraction socket. Etiological factors of RPI are divided to those which occur at the time of implant placement and those due to a pre-existing disease. Moreover, infection was described as an etiological factor for RPI. Enterococcus faecalis is the most commonly recovered species from root canals after failed root canal therapy. Complete eradication of bacterial colonization from the complex root canal system is difficult even when state of the art technologies are used nowadays. E. faecalis has the ability to adhere to osseous collagen polymer chains and to remain in a vegetative state. It can be encapsulated in edentulous areas, up to 1 year after the extraction. Therefore, retrograde peri-implantitis can be developed around implants in sites where teeth that were previously endodontically treated were extracted. Er:YAG laser (2.94 micron wave length), has been shown to be very effective due to its real cavitation effect. It has an advantage in disinfecting bacteria which remained in teeth extracted sites where periodical lesions were developed.

The rapid evolution of laser technology offers the possibility of completing several clinical procedures in pediatric dentistry including restorative procedures in primary and permanent teeth, pulp treatments and soft tissue applications. Laser therapy in pediatric dentistry is a choice of treatment which offers a viable alternative to low and high-speed handpieces and surgical procedures. Laser technology can be used for many clinical applications in pediatric dentistry with its many clinical advantages including minimizing discomfort to the patient as well as analgesic, biostimulating and anti-inflammatory effects. It is also very important to make dental experience as comfortable as possible during dental treatment of children. Treating a pediatric patient with dental laser for oral and dental procedure increases patient acceptance and cooperation thus enhancing treatment outcomes. Therefore having a dental experience through the use of a modern laser technology is an efficient preventive and therapeutic approach for the pediatric patients who are the first in the line to receive dental laser treatment. In this presentation we will briefly discuss the use of dental lasers and their various applications in the different fields of pediatric dentistry.
JUNE 6-8, 2019, PLOVDIV, BULGARIA

**Conclusion:**
In clinical studies the literature the erbium laser (Er:YAG wavelength 2940nm) is proven to be a safe in bone ablation. Er:YAG is a choice of preference as a treatment tool in corticotomy being precise in removal of hard tissues, being atrumatic and not increasing edema, swelling and pain postoperatively. In orthodontic treatment plans where corticotomy are needed to avoid the resistance of cortical bone and to accelerate treatment sequences. Er:YAG laser is a suitable surgical device. In this presentation ‘surgically assisted rapid maxillary expansion’; ‘zygomatic advancement’; ‘intermaxillary fixation’; ‘maxillary impactions, gingival overgrowth, and high frenal attachments. Accelerating the rate of orthodontic tooth movement is a marked application for diode laser, its biological effect on molecular messengers bistimulating bone remodeling has been proved clinically and in the literature adding a cornestaone application for laser in orthodontics. Different applications, with cases presentation and literature review and criticism will be presented to critically evaluate Laser Facilitated Orthodontics.

Orthodontics is a discipline dealing with dentofacial aesthetics and function; introducing new treatment modalities utilizing top notch technologies became a mandatory demand to reach such goals. Dental laser is a state-of-the-art adjunctive tool that can be used to optimize different treatment procedures. Different dental laser technologies provide a wide applicability in different orthodontic clinical applications. Laser can be used from the first step of orthodontic brackets bonding, re-bonding to the final step of debonding brackets. Throughout the treatment course, laser can be applied for soft tissue managements associated with orthodontics as in cases of canine impactions, gingival overgrowth, and high frenal attachments. Accelerating the rate of orthodontic tooth movement is a marked application for diode laser, its biological effect on molecular messengers bistimulating bone remodeling has been proved clinically and in the literature adding a cornerstone application for laser in orthodontics. Different applications, with cases presentation and literature review and criticism will be presented to critically evaluate Laser Facilitated Orthodontics.

**Orthodontics**
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**Periodontitis**
Periodontitis is the most common dental disease together with the caries. Its connection with a lot of systemic diseases requires proper diagnostic, treatment and prophylaxis. There are many instruments and therapy options proposed for periodontal treatment. However, all of them have some disadvantages. The Er:YAG laser promises to be applicable in periodontal treatment because of its wavelength of 2940 nm which is absorbed equally well in soft and hard tissues - both components of periodontal complex.

The presentation aims to demonstrate the characteristics of the Er:YAG laser, its potential for periodontal application and the advantages of this wavelength over conventional periodontal treatment. Own and other laboratory and clinical studies will be presented to prove the ability and advantages of the Er:YAG laser alone or as an additional tool in periodontal treatment. Tailing the presentation will give a contemporary insight into the latest studies in the field of Er:YAG laser periodontology.

**Conclusion:**
Er:YAG laser has demonstrated to be a good device in conservative dentistry; it may replace the conventional root filling instruments with several advantages in terms of patient comfort, results, and longevity.
Dental implants are the most recommended method for replacement of missing teeth. Increasing interest in this method of treatment is reflected in the growing number of implants inserted in the subsequent years.

Although the method is safe and predictable some complications like peri-implantitis can appear. There are a lot of different risk factors, which can influence for prevalence of these inflammation. When only soft tissue is affected - it is defined as mucositis, when there is bone defect – then we diagnose peri-implantitis. Different methods of treatment for tissue inflammation around the implant are used, depending on inflammation extent, method availability, type of defect, skills and experience of the dental surgeon.

In recent years, with a view to improving effectiveness and minimizing the invasiveness of peri-implant tissue treatment there is more and more attention given to the possibility of using lasers with different wavelengths. During the lecture the comparison between the two methods of peri-implantitis treatment with the use Nd:YAG and Er:YAG lasers will be presented. The first method - surgical one was performed with opening mucoperiosteal flap to obtain the proper access to the defect. In the second method laser therapy was performed through the pocket, without creating mucoperiosteal flap. The key issue in periimplantitis treatment is conducting the effective decontamination of infected implant surface and eradication of the surrounding inflammation in order to obtain stable condition.

Until no uniform protocol of procedure has been defined which could be considered the best and the most effective one.

Plenary Speakers

Michal Nawrocki

Treatment of periimplantitis - a challenge in nowadays implantology

Sapan Mistry

Clinical applications of Solaia, a 9.3 µm CO₂ all-tissue laser

Konstantinos Arapostathis

Use of technology to reduce dental fear and avoidance for children and adults

Justin Kolnick

Managing Refractory Endodontic Disease with Radial Apical Cleaning, a Laser-Assisted Endodontic Protocol

Angelina Kisselova-Yaneva

Practical aspects of biogena probiotics applications in dental practice

Andreas Braun

Laser in periodontal therapy- not just a gimmick!

Prevalence of dental fear is significant among children, adolescents and adults and it can lead to serious behavioral problems and avoidance of dental treatment. The understanding of dental fear’s mechanism is essential for its early diagnosis and finally the acceptance of dental treatment. Over the last decades, the rapid evolution of technology in dental science has brought new devices and techniques with the aim, among others, to achieve friendly and lightweight dentistry dealing with ensuring or improving the quality of dental care. We will discuss the effect of the new, friendly, alternative devices or techniques for administering anesthesia, cavity preparation, oral surgery and other modalities in dental fear, behavior management and finally acceptance and cooperation.

One of the defining attributes of an astute endodontist is the ability to successfully treat refractory endodontic disease. Refractory disease is defined as disease that is recalcitrant, unresponsive, stubborn, unmanageable or resistant to treatment or cure. While the pathogenesis of refractory endodontic disease is not clearly comprehend, it is highly likely that microbiological and host immune influences play an important role.

Unsuccessful endodontic outcomes are often attributed to persistent infection perpetuated by entombed bacteria or by re-infection of a previously disinfected root canal system. Commonly, via coronal leakage or tooth fracture.

Aim: To present a laser-assisted clinical protocol for the successful management of refractory endodontic disease.

Methods: A treatment protocol, Radial Apical Cleansing, (RAC) is presented for non-surgical management of refractory endodontic disease. The protocol relies primarily on a synergistic effect between Er:YSGG laser irradiation, deep dentin disinfection with 940nm diode and subsequent apical negative pressure irrigation with 6% sodium hypochlorite solution.

Results: The protocol efficacy will be presented via clinical case reports of refractory endodontic disease successfully managed with RAC.

Conclusion: While several studies have focused on identifying root canal microorganisms in recalcitrant cases in an attempt to explain the pathogenesis of refractory disease, it is the contention of this author that RAC is a valuable tool capable of successfully treating the infectious bioburden, irrespective of the makeup of the biofilm itself.

Gum diseases are a major health problem as 60–80% of the population in industrialized countries suffer from gingivitis (bleeding gums) and 10–20% suffers from periodontitis (tooth loss). The oral cavity contains around 800 different species of bacteria and there are more than one billion bacteria on each tooth. Under normal conditions, these are in balance and protect you from illnesses, but when the balance among oral bacteria is disrupted due to inadequate oral hygiene, stress and poor diet plaque forming bacteria can gain the upper hand, causing gum problems.

During the past few years have been developed special probiotic products to maintain balanced oral flora, not only affecting the plaque index and breath odor but also reducing the local inflammation and risk of caries. Biosala ProDents tablets proved to have beneficial effects in gingivitis, periodontitis and some other inflammation conditions both in children and adults.

The removal of parapathogenic biofilm is a fundamental aspect of systematic periodontal therapy. Adjunctive antimicrobial procedures such as laser applications and antimicrobial photodynamic therapy (aPDT) procedures are suggested to improve the therapeutic outcome.

Locally delivered and systemic antibiotics are used to improve periodontal treatment regimens. However, with respect to the possible development of bacterial resistance to antibiotics, the use of these agents should be restricted to specific groups of patients, for example, those with highly active disease or a specific microbiological profile. Lasers and aPDT procedures could be an adjunctive antimicrobial approach for preventive and therapeutic treatment regimens without the disadvantages of antibiotic agents. Development of bacterial resistance has not yet been shown and could not be generated in an experimental study protocol. Conventional laser treatment comprises heat generation and subsequent heat-induced cell death of pathogenic microorganisms. Photodynamic therapy utilizes a photosensitizing agent, which is irradiated with a light source tuned to a wavelength that matches the absorption spectrum of the agent. The subsequent photochemical reaction results in oxygen-mediated destruction of pathogenic bacteria. Sustained exposure of the treated tissue results in breakdown of cellular microstructures and cell death. Several photosensitizers have been shown to be effective against target microorganisms without inducing damage to the host tissues.

In general, the adjunctive use of lasers and aPDT procedures was reported to have a positive effect on treatment outcomes. Thus, it might be possible to improve conventional treatment regimens to enhance the prognosis for clinical long-term success.
Introduction: In pediatric dentistry surgical procedures are difficult to deal with dependent on the age of the child, the compliance and the complexity of the clinical situation. Because of the fear of the pediatric patients and difficult behavioral management during surgery, many kinds of treatment are carried out under general anesthesia.

Aim: Considering the circumstances of general anesthesia for the child, the parents and dentists, an atraumatic approach of an in-office surgical procedures can open new pathways in pediatric therapy. Especially a combined technique with precise diagnostic and gentle, minimally invasive surgical laser treatment make a big step forward in pediatric treatment options.

Methods: Different surgical indications of 10 pediatric patients were examined and planned with the help of digital volume tomography. The indications ranged from mesiodens, multiple odontomes, tooth anomalies, supernumerary incisors, uncovering of retained teeth of children aged between 5,5 and 12 years who were examined and treated under local anesthesia and Er,Cr:YSGG laser (2780nm) with 2,25 -2,75 W, 60 µs, 50 Hz, air 20%, water 40%.

Results and conclusion: All pediatric patients could be treated properly, fast, without pain and good behavioral outcome. Patients described no or only slight postoperative pain. Patients and parent comfort and satisfaction was high. Considering the circumstances of surgical procedures and general anesthesia, the new combination of high-resolution 3D-diagnostic, digital planning and minimally invasive laser treatment opens new predictable treatment options in the future for clinical practice in pediatric dentistry which were untreatable conventionally before. More studies have to underlie the implication of this procedure.

Nogier frequencies and their use in LLLT

The cell is the basic constituent of living tissue and it reacts well to the external stimuli of laser light. Laser light acts on the cell's metabolism and environment. The electromagnetic field induced by coherent emission of the photons composing the laser beam appears to have an action on the membrane polarity of the cells. This facilitates intercellular exchanges, which promotes repolarization and the return of sick or injured cells to cellular homeostasis. In addition to providing light energy, the cell is also submitted to laser irradiation with repetition frequencies. The work conducted by Dr Paul Nogier showed that some frequencies present undeniable effects both for diagnosis and treatment. These frequencies are called “Nogier frequencies” and their use in LLLT will be discussed in this lecture.

Plenary Speakers

Gabriele Schindler-Hultzsch
New technology and predictable pathways in pediatric oral surgery in combination of high-resolution digital volume tomography

Vesselina Bozalieva
Nogier frequencies and their use in LLLT

Plenary Speakers

09 Юни гр. Пловдив Практически курс с лектори: д-р Илай Маден, д-р Дмитрий Малев, д-р Томаш Иванушич
07 Септември гр. София Приложението на Er:YAG и Er:Tm:YAG в стоматологията
03-06 Октомври гр. София Sofia Dental Meeting
05-06 Октомври гр. София Global Aesthetics Academy
Международна академия за естетика, гинекология и стоматология
09-10 Ноември Словения Практически курс с лазерна система Fotona Light Walker

Fotona

ПРОГРАМА
за практически обучения 2019 г.

LightWalker - Nd:YAG и Er:YAG в един лазер

Предимствата на лазерната система включват:
- мікрохірургічна стоматологія – більш природно і безболово вивільнення на коронках м'якого епідермального шару
- відновлення тканин в стоматологічних інсулерах
- пародонтологія – вивільнення на заблокувані зуби, вивільнення з брусь медіоти і збільшення його
- перетворення тканин, утворення нових тканин, збільшення нових тканин, збільшення нових тканин
- протезування – зведення на шкірні шари, збільшення нових тканин

Мобільна система фотон з лазерною системою Fotona Light Walker

Global Aesthetics

Мобільна система фотон з лазерною системою Fotona Light Walker

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Мобільна система фотон з лазерною системою Fotona Light Walker

Global Aesthetics

Мобільна система фотон з лазерною системою Fotona Light Walker
Alina Rotar

Digital Science and Diode Laser Therapy: enhancing the quantification of oral inflammation reduction for periodontal patients

Introduction and aim: Providing a virtual environment upon high quality impressions (facility of intraoral scanners), we become able to compile data regarding dental arches and soft tissues. Removing microbial biofilm, calculus, and deposits, maintaining a biologically compatible surface represent main objectives of periodontal therapy. Digital reproducibility might support translation and quantification of periodontal inflammation reduction, after diode laser therapy.

Methods: Developed for non-surgical periodontal treatment approach comprise SiroLas Blue - 970nm Diode laser (class IV) - preset: Power 15 W, Frequency 100Hz, Duty Cycle 75%, Fiber Tip 320um, 3 Shape Trios - digital intraoral scanner (IOS). First session: digital impression (IOS), periodontal charting (Florida Probe System), removing supra-gingival calculus, professional cleaning, instructing the patient for improving oral hygiene. Second session: digital impression (IOS), periodontal charting (Florida Probe System), removing supra-gingival calculus, professional cleaning, instructing the patient for improving oral hygiene. Third session: digital impression (IOS), periodontal charting (Florida Probe System), removing supra-gingival calculus, professional cleaning, instructing the patient for improving oral hygiene. Fourth session: reevaluation phase after using the two adhesives tested.

Results: During non-surgical treatment and diode laser irradiation the use of digital impression, virtual models allows immediate measurements, evaluation of the soft periodontal tissues.

Conclusions: capturing high quality impression might be sufficient to superimposed different oral scans, in order to evaluate the extent of inflammation deviation/reduction after diode laser therapy. Driving innovation requires more scientifically proven protocols, well designed step-by-step process, several specific kinds of software.

Ana Catarina Nogueira da Silva

Adhesion on dentin surfaces prepared with Er:Cr:YSGG laser: is the key in the Grape?

The pranothycyanidin (PA)-rich grape seed extract (GSE) is a collagen cross-linking agent that can perform a chemical bond with the dentin’s collagen. The objective of this study was to evaluate the influence on shear bond strength (SBS) of the pre-conditioning of GSE, on human dentin surfaces conditioned with Er:Cr:YSGG laser. The sample consisted of 64 non-carious human teeth, divided into eight groups, four groups conditioned with Er:Cr:YSGG laser (4.5W, 50 Hz, 50 µs, 70%air, 30%water) and four prepared with conventional methods (control). In both groups, a GSE solution was applied before using the two adhesives tested. Clearfil® SE Bond (CSE) and Scotchbond™ Universal (SU). Subsequently, a SBS test, scanning electron microscopy, and a statistical analysis, were performed. In the laser groups, the best SBS mean (20.08 ± 4.01 MPa) was achieved in the group treated with CSE and CSE. The control group with the application of CSE showed the highest SBS mean (24.27 ± 10.28 MPa), and the group treated with laser and SU showed the lowest SBS mean (12.94 ± 6.51 MPa). Between these two groups there was a statistically significant difference (p < 0.05), however, this was not observed among the laser or control groups. The type of dentin surface preparation can influence the SBS. The CSE showed better SBS in laser and control groups. The presence of GSE did not improve the adhesion on surfaces conditioned with laser, but more studies should be carried out in the future to confirm this conclusion.

Ana C. Silva, Paulo Melo, João Ferreira, Sofia Oliveira, Norbert Gutknecht

Ahmed Ibrahim Youssef

Efficiency of Er:Cr:YSGG laser in veneers debonding on two types of ceramic materials and cements: pilot study

In the last decade, the patients seeking smile makeover had drastically increased, thus, ceramic veneers have become more popular due to their superior aesthetic appearance. The porcelain veneers usually adhesively cemented, which makes their removal a challenging process. There are certain risks associated with conventional methods, as harming the underlying tooth structure due to lack of color contrast, making removal and remake a more frustrating process. To overcome these limitations, the laser technology was introduced as more a comfortable and conservative technique, showing favorable results. Thus, the current study might be of value.

The purpose: to evaluate the debonding efficiency of Er:Cr:YSGG (using turbo hand piece) through bonded feldspathic and lithium disilicate discs by two different adhesive cements, light and dual cured cement for debonding.

Materials and Methods: 40 freshly extracted central incisors were used in the study and divided into two groups according to material of choice and types of adhesive cement into Group (A) lithium disilicate and Group (B) feldspathic porcelain and each group will be subdivided into two subgroups according to cement used Subgroup (i) light cured resin cement and Subgroup (ii) dual cured resin cement and Er:Cr:YSGG (turbo handpiece) was used on all subgroups. Scanning electron microscope was used to evaluate the surface topography. Data was analyzed statistically.

Patricia Buttler

Overview of laser scanning microscopy and other optical laboratory techniques for investigations of 9.6 µm CO2 laser irradiated hard tissue samples

Different techniques exist in a scientific laboratory regarding the evaluation of laser irradiated surfaces. The aim of a particular study determines which kind of evaluation is chosen for a given group of specimens.

In our CO2 laser research group at RWTH Aachen University the needed investigations are decided by the doctorate candidates involved in the research projects. Common approaches involve teeth and bone specimens that are cut by a diamond band saw and irradiated under experiment-specific conditions. Usually after irradiation the sample is divided into three parts. One part is embedded in resin. Subsequently it is cut and polished for histological examination. The second part is prepared for electron microscopy. The third part is investigated by different optical means.

Here, we use optical microscopy and laser scanning microscopy in order to assess the nature of the irradiated surfaces. In this presentation, beside the well-known microscopy, we focus on the function of the laser scanning microscopy and its advantages in higher accuracy, sharper images, simple specimen preparation and lower costs. A big advantage is the possibility of viewing the samples after irrigation without further processing.

Patricia Buttler, Jancee Anton Vetter, Enno Breckelschuch, Nora Gutknecht-Schreiber, Patrick Jansen, Sarah Michael, Rene Franzen, Norbert Gutknecht

Nora Gutknecht-Schreiber

New findings regarding 9.6 CO2 laser bone surgery - a temperature study

Introduction: Nowadays, the usage of Lasers in different medical areas is very popular. It is commonly used in ophthalmology or dermatology and even in other surgical operating fields. Due to its hemostatic and aspecific properties as well as precise cutting. Lasers have gained more and more attention. But a Laser does not equal a Laser. There are many different products, each working with different wavelengths on the market. The aim of a working with a Laser should be to know the correct wavelength for the right indication. Due to different disadvantages, like thermal damage, it is most important to choose a Laser with a suitable wavelength for medical purposes.

In the following study a new innovative prototype laser system from Dentaray was tested regarding the thermal behavior applied on a human femur. The prototype is a CO2 Laser with a wavelength of 9600nm.

Material and Methods: Our research was performed by choosing ten different areas on a human femur bone in which the temperature during the cutting process was measured. Each area was prepared in the same way. Three small canals were drilled with a distance of 0.5 mm, next to the planned laser cut, to place the thermo couples for temperature measurement. Those thermo couples have been covered by a thermo paste and sealed by wax. An additional thermo couple was placed in the water bath to control the water temperature at a constant temperature of 37.0 degrees. The recording of the temperature was done by a computer program in the form of a temperature diagram.

All laser cuts were performed free handed while the femur was fixed inside the water bath. The laser applications were made with the following parameters: Pulse energy, 91.92; Pulse duration: 700 micro seconds; Frequency: 100Hz.

The laser hand piece was used free handed in a distance range approximately 1cm towards the bone surface. In addition, water spray was used.

Results: All measurements done during the laser cutting on the femur showed a significant decrease of temperature in the bone structure. The temperature decrease was given in a range of 26 degree Celsius.

Conclusion: On analyzing the results of our study it was found, that no temperature raise in the bone during the laser cutting process of the femur bone with the 9.6 CO2 laser was found. The temperature of the bone tissue even decreased due to the specific ablation mechanism of the 9.6 CO2 laser in hard tissue. So it can be clearly stated, that even when using the highest output power possible in this device all our records showed clearly that there was no thermal damage to the surrounding tissue found.

Nora Gutknecht-Schreiber, Stefan Schreiber, Jancee Anton Vetter, Enno Breckelschuch, Patricia Buttler, Rene Franzen, Andreas Peschter, Norbert Gutknecht

JUNE 6-8, 2019, PLOVDIV, BULGARIA
General ablation characteristics in bovine enamel using a newly developed CO2 laser system at 9600 nm – a pilot study

CO2 lasers theoretically have a great potential in both hard and soft tissue, due to their high absorption in both water and hydroxyapatite. Acting in accordance to this principle, Israeli company Dentaray designed a new CO2 laser system to establish it as an ‘all-tissue-CO2-laser’ by introduction of a wavelength of 9600 nm. This pilot study aimed to investigate the system’s general ablation characteristics in bovine enamel at certain settings.

20 bovine incisors were selected, cut and ground plane (n=10). Two groups with different displayed parameter values were formed. The waterspray-cooled samples were continuously passed through the laser beam in a pendulum motion at a fixed speed by a computer-controlled scanning stage at an 10 mm distance to the laser. Samples were then examined by stereomicroscope and laser scanning microscope.

Resulting cavities showed mainly consistent depths. Depending on the settings, slight or no surface disintegration was found. Preparation depth was found to be the greatest next to the margins while being the lowest at the cavities’ centers, forming an arch-like shape.

Power measurements performed after each sample irradiation showed beginning phase changes which can be contributed to alpha-tricalcium phosphate. In conclusion we can say that the tested parameters can be potential sealing parameters but further studies are necessary to check their suitability.

Enno Brackebusch, Patrick Jansen, Jancee Anton Vetter, Nora Gutknecht-Schroeder, Sarah Michael, Patricia Butler-Bücher, Rene Franzén, Norbert Gutknecht

Potential of caries prevention by sealing with a new CO2 9,6 µm laser system – a pilot study

Prevention, e.g. through fissure or pit sealing, is an important procedure to protect dental hard tissues. A new CO2 laser system (I=9.6 µm; prototype stadium) will soon be available on the market (Dentaray). The aim of the present pilot study was to check if there are suitable parameters of the new laser system for preventive applications.

Ten ground polished bovine teeth were used (n=10). The irradiations were performed using two parameters with different energies on the polished, buccal enamel surfaces (display values): P7 and P14. With the scanner system of the laser, water cooling, a distance of 10mm, without any motion of the handpiece and 5s exposure circa 5-7 nearly round spots (diameter: circa 3mm each) per tooth were possible. Of one exemplary sample per parameter stereomicroscopic and laserscanning microscopic images, including surface roughness measurements, were taken. Irradiated enamel was scraped off the blocks and pulverised to grain size of ≤45µm. The obtained powders were subjected to XRD analysis (2θ range: 5°-70°, CuKa, 40kV, 40mA, step size: 0.01°, counting time: 96s, Bragg-Brentano).

The images showed a glassy surface without carbonizations and an increased surface roughness (P7: Rq=3.85µm; P14: Rq=3.06µm). The XRD analysis showed beginning phase changes which can be contributed to alpha-tricalcium phosphate.

In conclusion we can say that the tested parameters can be potential sealing parameters but further studies are necessary to check their suitability.

Patrick Jansen, Enno Brackebusch, Jancee Anton Vetter, Nora Gutknecht-Schroeder, Sarah Michael, Patricia Butler-Bücher, Rene Franzén, Norbert Gutknecht

Histological improvement in oral lichen planus following LLLT

OLP is a chronic inflammatory disease in which T-lymphocytes destroy the basal keratinocytes. This immune aggression results in the occurrence of hyperkeratotic plaque, painful atrophic and erosive fields or blisters. LLLT is considered a justified treatment modality in this patients since it provides analgesic and anti-inflammatory effects.

Aim: The aim of this study is to evaluate the expression of pro-apoptotic, anti-apoptotic and proliferation markers in OLP lesions in order to highlight their potential role in the pathogenesis of the disease.

Material and methods: Twenty patients with OLP underwent LLLT with diode laser (808nm), (0,50W, 30, 12J/cm2), 3 times weekly for a month. The clinical scores of the lesions and pain level were recorded before and after therapy, using Thongprasem sign scoring and VAS respectively.

Biopsies were taken before and after therapy to establish histological diagnosis and to reveal tissue changes following laser irradiation. The levels of pro-inflammatory cytokines in unstimulated whole saliva from all patients were measured using ELISA and were compared with C-LULA ELISA.

Results: The pain level and clinical scores of the lesions decreased significantly. Correlations of the pathological processes in tunica epithelialis were characterized by necrosis of the epidermal-dermal attachment, increased proliferation in the prescapular forms and partial reduction of the hyperplastic processes in the keratotic forms. Additionally, a dramatic increase to complete resolution of the inflammatory infiltrate, was revealed after therapy. There was no evidence of OLP-mediated apoptosis.

The observed decreased levels of p63, bcl-2 and Ki-67 suggested thinning of the epithelium and erosions.

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Maria Mutafchieva, Milena Dragovanova-Filipova, Plamen Zagorchev, Georgi Tomorov

Molecular disturbances in oral lichen planus – a new viewpoint on the pathogenesis of the disease

Introduction: OLP is a chronic inflammatory disease and pathogenesis of which remain uncertain. It is considered that T-lymphocytes induce apoptosis of basal keratinocytes. However, recent reports demonstrated that epithelial cells in OLP do not predominantly develop apoptosis but rather cycle arrest and show an increased proliferation rate.

Aim: The aim of this study is to evaluate the expression of pro-apoptotic, anti-apoptotic and proliferation markers in OLP lesions in order to highlight their potential role in the pathogenesis of the disease.

Material and methods: The immunohistochemical method was used to detect p63, p53, bcl-2 and Ki-67 in biopsies taken from 20 patients with OLP and 10 healthy volunteers. The reaction intensity was measured using a semi-quantitative scale. Correlations among immunohistochemical parameters were tested by Spearman correlation test.

Results: The expression of p63 was significantly reduced in OLP lesions as compared with the healthy epithelium. 55% of OLP specimens were p53 negative and there was no significant difference in the levels of this marker with that in the control group. OLP lesions demonstrated lower staining for bcl-2 and Ki-67 in comparison with the healthy controls. Significant associations were found between expressions of p63 and Ki-67 and between p53 and p63.

Discussion: P63-deficiency is likely to be an important molecular mechanism in the pathogenesis of OLP, resulting in cell proliferation and thereby inducing cycle arrest. There was no evidence of p53-mediated apoptosis.

The observed decreased levels of p63, bcl-2 and Ki-67 suggested thinning of the epithelium and erosions.

Maria Mutafchieva, Milena Dragovanova-Filipova, Plamen Zagorchev, Georgi Tomorov

Analysis of CO2 Laser with a wavelength of 9.6µm on pork tubular bone – a pilot study

The application of lasers on bone can have hematostatic and aspastic advantages. Precision and clean cuts can also be achieved compared to conventional surgical and dental instruments. For this application a suitable laser without causing thermal side effects is necessary. In the following pilot study a new laser system with a wavelength of 9.6 µm (Dentaray) was tested regarding the applicability for cutting tubular bone.

Twelve pork ribs specimen (n=4) were used in this study. To test the effect on bone surface, the samples were firstly cut into 10mm to each other (table speed: 3mm/s; water cooling was applied; 4 repetitions in a line with a length of 3mm).

With an additional parameter a specimen was cut into 2 parts to analyze the cross-sectional areas. This was done free handed. The samples were then analyzed with a stereo, laser scanning microscope and SEM.

The images show a sharply limited cut, which varies in depth according to the different parameters. No carbonizations were observed. SEM images showed areas with coating of molten and re-solidified material. Based on the results of the preliminary tests it was stated that the new laser system has great potential for bone cutting. However, further studies are necessary to test the clinical applicability.

Jancee Anton Vetter, Enno Brackebusch, Nora Gutknecht-Schroeder, Patrick Jansen, Sareh Michael, Patricia Butler-Bücher, Rene Franzén, Norbert Gutknecht

Evaluation of Post-Endodontic Pain Control using Low-Level Laser Therapy in Comparison to Intracanal Cryotherapy: A Randomized Placebo-controlled Clinical Trial

Introduction: One of the most important aspects of endodontic treatment is pain management. Postoperative pain after endodontic treatment is a frequent complication. According to a systematic review, the frequency of endodontic postoperative pain is between 3% and 18% of patients.

Aim: In this clinical trial, we are evaluating the effect of low-level laser therapy (LLLT) and intra canal cryotherapy on postoperative pain in molar teeth with symptomatic apical periodontitis.

Methods: Ninety five patients were included in the study according to the inclusion and exclusion criteria. The patients were randomly distributed into 5 groups using a Web program as follows: control (no intervention), placebo (mock laser therapy), LLLT, cryotherapy and a combination of both. Postoperative pain levels after 6 hrs, 12 hrs, on 2nd day and 5th day were assessed and postoperative percussion pain levels on the visual analog scale were recorded.

Ahmed Ibrahim Khalaf, Ahmed Mustafa Onbeshy, Yousef Wael
Microbiological Assessment of Diode Laser with different parameters in comparison to Chemical Disinfection in the management of Deep Carious Lesions

Management of carious lesions has been changing significantly because of improved understanding of the caries process. Different new conservative approaches have been introduced in the management of deep carious lesions. Diode laser has shown promising results in cavity disinfection and biomodulation of odontoblastic-like cells. Thus, the current study might be of value.

Purpose: to evaluate the antimicrobial effect of Diode laser with different parameters in comparison to chemical disinfection in the management of deep carious lesions.

Materials and methods: 40 dentinal samples were collected from deep carious lesions and divided according to dentinal sample disinfection protocol into 4 equal groups (n=10). Group 1: Diode laser disinfection of dentinal sample with an output power of 0.1 watt. Group 2: Diode laser disinfection of dentinal sample with an output power of 0.5 watt. Group 3: Diode laser disinfection of dentinal sample with an output power of 1 watt. Group 4: Chemical disinfection of dentinal sample using 2% chlorhexidine. Microbiological Assessment of dentinal samples was performed before and after disinfection by inoculation of the samples on blood agar for total viable count, on the mitsu salivarius agar, a selective medium for Streptococcus mutans, and Rogosa agar medium for lactobacilli. Colony forming units were counted using a colony counter. Data was analyzed statistically.


Abstract: the aim of the study is to evaluate the effect of application of lasers in bleaching on the color change of non-vital anterior teeth in comparison to carbamide peroxide.

Materials and methods: 40 freshly extracted maxillary incisors were stained artificially using black tea. Teeth were then divided randomly into 4 groups (n=10). Group 1: application of carbamide peroxide and sealed with temporary restoration for 7 days as a control group. Group 2: application of 35% H2O2 internally followed by laser activation then sealed with a temporary restoration for 7 days. Group 3: application of 35% H2O2 internally followed by laser activation then immediate color change assessment. Group 4: application of 35% H2O2 internally and externally followed by laser activation then immediate color change assessment.

Results: the color of all teeth will be measured after staining as a baseline and after different treatments using a digital spectrophotometer (Easyshade Advance 4.0), and the collected data will be analyzed statistically. The same protocols will be applied clinically to assess the clinical efficiency of the proposed protocols.

Histological evaluation of gingival tissue after conventional and laser givectomy

Background: Various instruments can be used for the purpose of givectomy – a commonly performed procedure in everyday clinical practice.

Aim: To evaluate and compare histologically the gingival cut surface after givectomy with 6 different surgical instruments – a surgical scalpel, an Er:YAG laser, a CO2 laser, a ceramic bur, an electrosurgical device, and a diode laser.

Materials and methods: Givectomy using the above listed instruments was performed on 18 patients. The histological samples excised with a surgical scalpel were assigned as a control group and the other five types – as test groups. The following histological parameters were measured: coagulation layer thickness (in µm), presence or absence of a microscopic rupture and presence or absence of hemostasis in-depth.

Results: The best instrument of the above listed ones which demonstrated excellent results is the CO2 laser. The Er:YAG laser leads to a thin coagulation layer and lack of hemostasis in-depth. The diode laser samples have the widest coagulation layer, which is an advantage from a clinical point of view. Electrocautery proved to be as effective as the diode laser, but it should not be used around metal restorations. The ceramic bur causes less pronounced hemostasis in-depth.

Conclusions: Contemporary dentistry offers a wide variety of givectomy methods that can be successfully applied in the everyday practice. Thorou gh knowledge of different means, their advantages and disadvantages are essential to obtaining the optimal result depending on the clinical case.

Drug-induced gingival hyperplasia

Introduction: Management of gingival lesions of oral lichen planus is one of the main challenges of oral medicine, primarily because of their chronic nature. Treatment options are numerous, including both topical and systemic agents. Although topical corticosteroids are first-line therapies, they often lead to local and systemic adverse effects. Recent studies have shown that tacrolimus ointment 0.1% is an efficacious and well-tolerated topical therapy for gingival erosive lichen planus that causes few local side effects.

Aim: The aim of this poster is to evaluate the clinical efficiency of topical therapy with tacrolimus 0.1% ointment in patients with gingival erosive lichen planus.

Methods and materials: A 39 year old female with complaints of soreness and burning sensation in the gums. Preliminary impressions were taken for making individual custom trays. The patient was instructed to coat all internal surfaces with 0.1% tacrolimus ointment (Protopic) and to insert the trays twice daily, 20 minutes each time. Treatment period was two weeks.

Results: Physical examination demonstrated a reduction in lesion surface area and patient had no complaints.

Conclusion: Topical therapy with tacrolimus 0.1% ointment is a safe and very effective treatment approach for gingival erosive lichen planus and deserves further investigations.
Oral Presentations

**Assessment of the role of increased corrosion potential and sensitization to metals in patients with burning sensation in the oral cavity**

**Introduction:** Oral burning is a symptom with many different etiological factors. Among the reasons for such condition can be sensitization to the components in dental alloys. The local toxic effect of the released ions resulting from the corrosion of metal objects is another etiological factor.

**Aim:** To assess the role of increased corrosion potential and sensitization to dental alloys in oral burning.

**Materials and Methods:** 43 patients who had complaints of burning in the oral cavity were included in the study. After history taking, clinical examination, skin allergy testing, corrosion potentials were measured. Allergy testing was done with a “Dental Screening Series” of hapten in the composition of dental alloys. The corrosion potential was measured using a “Dentotest six” apparatus, observing the requirements for the patients not to have eaten and conducted oral hygiene.

**Results:** The surveyed were 81.4% women and 18.6% man. The average age of the study group was 59.3 ± 15.9 years. Six (33.3%) of the patients were sensitized to dental alloy components. Increased corrosion potential values were measured in 39 (90.7%) patients.

**Conclusion:** The obtained results show the influence of increased corrosion potential as a factor in the aetiology of burning sensation in the mouth.

Iliana Stoerev, Atanas Chonin

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**Clinical and paraclinical indicators of saliva in the establishment of oral disease**

**Introduction:** Saliva is a biological fluid formed in the oral cavity. For medical purposes, it is obtained in a non-invasive way, making it the preferred material for research. It constantly "wipes" the oral cavity and strives to cope with the over-changing oral environment.

**Aim:** Our goal is to use saliva as a diagnostic fluid that offers different advantages over blood samples. Saliva is also ideal for screening large populations, because it provides a cost-effective approach.

**Methods:** Through critical analysis of available literature and our research we show that saliva is an easily accessible biomaterial. It offers a number of diagnostic advantages - it can easily be assembled, no special device is needed, and contains components from the serum. A number of biological parameters can be examined through saliva.

**Results and Discussion:** Saliva has a unique composition and includes a large number of inorganic and organic compounds. It performs multilateral functions, but in addition to its role in controlling and/or modifying the oxidative damage in the oral cavity, it plays a first line of defense, including oxidative stress. For its part, the oral cavity, in which saliva is secreted, is a very complex and unique biocystem, thanks to its dual function. Studies indicate it as the only place in the human body where the mineralized tissue is exposed to the external environment, and complex interactions between the different surfaces occur: on the one hand, the soft and hard tissues of the individual, and on the other - food, air and microorganisms.

Christiana Madjova, Simeon Chokanov

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**Leukoplakia. Evolution in carcinoma- treatment**

**Oral leukoplakia is a white lesion usually not associated with other condition. It can be scraped, cause no pain. This premalignant lesion has a malignant transformation rate of 0.13% to 34% depending on which site of the mouth is found. Most leukoplakia patches are noncancerous (benign), though some show early signs of cancer. Although the cause of leukoplakia is unknown, chronic irritation, such as from tobacco use, including smoking and chewing, appears to be responsible for most cases. Often, regular users of smokeless tobacco products eventually develop leukoplakia where they hold the tobacco against their cheeks. Other causes may include chronic irritation from: jagged, broken or sharp teeth rubbing on tongue surfaces, broken or ill-fitting dentures, long-term alcohol use. After a biopsy is performed lesion without dysplasia may be followed up in time, others are excised.**

Daniel Markov

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**Clinical case of gigantic pleomorphic adenoma of the parotid gland. Challenge in diagnosis and surgical treatment**

**Maxillo facial region may be affected by inflammatory, traumatic, anocological and other processes. The main section of the specialty is maxillofacial oncology. One of its features is the development of tumors characteristic of the maxillo-facial area only. These are the tumors of the salivary glands. Engaging an anatomical area usually leads to disturbances in the boundary areas. On the other hand, surgical interventions in oncology surgery should be radical and ablative. Observing this basic rule in conducting surgical treatment in patients with salivary gland tumors, especially their malignant variants, often there are severe functional, aesthetic and, last but not least, psychosocial problems. We present to you a difficult case of parotid gland tumor developed for more than 20 years, challenging is as a diagnosis and surgical treatment.**

Svetoslav Slavkov

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**The effect on oral health in drug abuse**

**Introduction:** Drug abuse is rising worldwide and its effect on oral health is long term. Increasingly various medical specialists are engaged in preventive and therapeutic activities related to patients dependent on substances. The professional training and awareness of individual doctors is at a different level. This necessitates a summary of the problem and the associated oral and general-pathological pathology.

**Aim:** The main aim of this work is to study the most frequent drug abuse effects on oral health and how to manage with patients in those conditions.

**Methods:** A critical analysis of available scientific literature was made for the last 10 years. We analyzed and compared the results of articles, published in PubMed, Google Scholar, PubMed Central and Science Direct.

**Results and Discussion:** Despite the fact that oral health is important, it is very often neglected. The oral pathology that occurs in drug abusers depends on the type of drug, the drug dose and individual patient differences. Some conditions like: poor oral hygiene, xerostomia, caries, dental erosion, periodontal diseases, gingival hyperplasia could be linked to drug abusers. Very often these patients have dental phobia and don’t think that oral health is their priority.

**Conclusion:** Drug abusers are patients who have more dental problems. Dentists can help treat prevent problems to become irreversible. In treatment of those patients should be used a multidisciplinary approach.

Simeon Chokanov, Christiana Madjova

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**Erythroplakia a flag for oral cancer - difficulty in treatment**

Premalignant squamous lesions of the oral cavity are areas of altered epithelium that are at an increased risk for progression to squamous cell carcinoma. The most common of these lesions is squamous dysplasia in association with leukoplakia and erythroplakia.

An erythroplakia is a fiery red patch that cannot be classified as another entity. Far less common than leukoplakia, erythroplakia has a much greater probability (9%) of showing signs of dysplasia or malignancy at the time of diagnosis. Such lesions have a flat, mucosal, velvety appearance and may be spckled with white spots representing foci of keratosis.

Management of oral erythroplakia focuses on the prevention of malignant transformation and early detection of occult malignancy. In view of the high malignant potential of these lesions, the recommended treatment is surgical excision, including laser. However, even after surgical excision, the recurrences and development of malignancy at the same site are high.

Y. Istatkova, D. Markov, A. Krasteva

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**Oral Presentations**

Atanas Chonin

Christiana Madjova

Simeon Chokanov

Yanita Istatkova

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Oral Presentations

17th Congress of ISLD

Yanitsa Istatkova

Management of leukokeratosis – clinical cases.
Oral leukokeratosis is the most common potentially malignant lesion that cannot be characterized as any other definable lesion; some oral leukokeratosis will transform into cancer.
Leukokeratosis is often associated with tobacco smoking or chewing, although idiopathic forms are not rare.
The role of alcohol, viruses and systemic conditions needs further investigation.
Preventing this is critical because rates of oral cancer survival longer than five years after diagnosis are low.
Surgical interventions, including laser therapy and cryotherapy are methods of choice. The included trials tested and a range of medical and complementary treatments; in particular, vitamin A and retinoids, beta carotene or carotenoids, non-steroidal anti-inflammatory drugs, specifically ketorolac and celecoxib; herbal extracts, including tea components, and oral lesions. Laboratory tests show decreased levels of ferritin, haemoglobin, MCV, MCH; and increased levels of: transferrin, RDW-CV (Red blood cell distribution width). We present a patient with burning sensation and ulcers in the mouth due to iron deficiency.
Case: The patient is a 77-year-old male from Sofia, with pale skin. He looks tired and his motions are slow. Status: St. maxillar. Laboratory tests: iron – 11.2 µmol (10.6 – 28.2); Hgb – 87 g/L (140-160); MCV – 87.2 fL (82.00-95.00); MCH – 2.88 g/dL (3.28-4.40); HCT – 0.286 (0.40-0.54); MCHV – 87.2 fL (82.00-95.00); MCH – 26.9 g/L (27.00-33.00); RDW-CV – 18.9% (11.5-14.5). Treatment plan: Maltofer tabl. 100mg/0.35mg 3 tablets per day. Results: (11.5-14.5). Treatment plan: Maltofer tabl. 3 tablets/day. Results: The patient has anemia. The patient has a burning sensation, changed taste, and problems with eating. Status: intraoral. Conclusions: The thermoregulation is the internal thermoregulation is one temperature within certain boundaries. Thermoregulation is the process of maintaining a constant body temperature despite changes in the external environment.

Eugeni Stanev

Difference in male and female thermoregulation after prick test
Introduction: Thermoregulation is the ability of an organism to keep its body temperature within certain boundaries. The internal thermoregulation is one of the aspects of homeostasis. During Prick test we have inflammation which increases the temperature of the skin. With thermoscan we can analyze these temperature changes in the areas where it is performed. Methods and materials: A group of 100 patients – 50 male (50%) and 50 female (50%) were included. All were examined for hypersensitivity to the local anaesthetic Emla, together with a positive and negative control. Temperature changes of the skin were examined with FLIR A320 thermocamera and the FLIR Reporter Professional software 2013 – application used to process the thermocamera images and data. There were performed two thermal pictures of the skin - before and 20 minutes after the test. Results: The T-test statistic method shows that there is no significant difference between male and female temperature of the skin before the test is performed. In the area of the tested allergen (P=0.074), the negative control (P=0.265) and the positive control (P=0.635). The same statistic test shows significant difference between male and female in the tested allergen (P<0.001), the negative control (P=0.001) and the positive control (P=0.006). Conclusions: The thermoregulation processes in reactions with increase of the temperature are different in male and female. This is true for temperature rise due to small inflammations (negative control, negative reactions to allergen) and due to stronger inflammations (positive control). Evgeni Stanev, Maria Dencheva

Evgeni Stanev

Clinical case: Oral lesions in a patient with iron deficiency anemia
Introduction: The iron deficiency anemia is caused by lack of iron in the body. The symptoms are pallor, fatigue, weakness and oral lesions. Laboratory tests show decreased levels of ferritin, haemoglobin, MCV, MCH; and increased levels of: transferrin, RDW-CV (Red blood cell distribution width). We present a patient with burning sensation and ulcers in the mouth due to iron deficiency.
Case: The patient is a 77-year-old male from Sofia, with pale skin. He looks tired and his motions are slow. Status: St. maxillar. Laboratory tests: iron – 11.2 µmol (10.6 – 28.2); Hgb – 87 g/L (140-160); MCV – 87.2 fL (82.00-95.00); MCH – 2.88 g/dL (3.28-4.40); HCT – 0.286 (0.40-0.54); MCHV – 87.2 fL (82.00-95.00); MCH – 26.9 g/L (27.00-33.00); RDW-CV – 18.9% (11.5-14.5). Treatment plan: Maltofer tabl. 100mg/0.35mg 3 tablets per day. Results: (11.5-14.5). Treatment plan: Maltofer tabl. 3 tablets/day. Results: The patient has anemia. The patient has a burning sensation, changed taste, and problems with eating. Status: intraoral. Conclusions: The thermoregulation is the internal thermoregulation is one temperature within certain boundaries. Thermoregulation is the process of maintaining a constant body temperature despite changes in the external environment.

Eugeni Stanev

Thermoregulation

Evgeni Stanev

Implant treatment in patients with underlying diseases
Dental implant surgery has developed to a widely used procedure for dental rehabilitation and it is a secure and predictable procedure. Local and systemic risk factors can result in higher failure rates. Diabetes mellitus is and cardiovascular diseases are chronic diseases that cause multifarious side effects. Diabetes as a relative contraindication for implant surgery is controversially discussed. Because of the increasing number of patients suffering from diabetes, there are more diabetic patients demanding implant procedures. The rate of implant failures and anticoagulants is a relative contraindication for surgical procedures. We aimed to answer the question “Do diabetic patients with dental implants have a higher complication rate in comparison to healthy controls?” and “Do we have to replace or stop the anticoagulant therapy before dental implant treatment?”. We conclude that patients with poorly controlled diabetes suffer from impaired ossointegration, elevated risk of peri-implantitis, and higher level of implant failure. The influence of duration of the disease is not fully clear. The supportive administration of antibiotics and chlorhexidine seems to improve implant success. When diabetes is under good control, implant procedures are safe and predictable with a complication rate similar to that of healthy patients. We conclude that patients on anticoagulant therapy with INR up to 3 do not have to stop or replace medications for minor dental implant procedures.

Aleskander Georgiev, Miglena Balcheva

Evgeni Stanev

Tissue reactions

Aleskander Georgiev

Gummy smile, what performance can bring the SLS: smileology laser surgery?
Introduction: The exaggerated contraction of the elevator muscle of upper lip and wing of nose can uncover excessively the teeth and gums giving way to an unsightly smile, says “Gummy smile”. Aim: Orthodontists by improving anterior teeth; periodontists by performing gingivectomy/gingivoplasty; maxillofacial surgeons by impacting the maxilla in order to reduce the anterior maxillary height; all try to remedy this unacceptable situation according to the fields of activity of each. Currently the dentist has skills advantages, which will allow him to achieve new approaches in the management of gingival smile, including the SLS.
Methods: After aesthetic study, a virtual and anaesthesia simulation are achieved to the patient to get his approbation about the project. Then, a reverse vestibuloplasty is performed with a diode laser or Er: YSGG laser. An alveolar mucosa strip is removed without bleeding in a minimally invasive way.
Results: P-value was calculated. Wider upper incisors were observed after the laser-assisted debonding. The teeth were slightly shorter and smaller and not so inflamed. Sensation and the patient eats normally. Status: St. maxillar.
Conclusions: We confirmed that modern dentistry must open up to new techniques like laser! We will be able to optimize the integration of the patient into a society that cares more about the beauty of everyone. After all, Aristotle said: “Beauty is the best introduction in society.”

Lotfi Lazrak

EY:YAG Laser Debonding of Zirconia Brackets: SEM evaluation
Introduction: Removal of orthodontic brackets with conventional debonding eliers may result in enamel cracks. To avoid damage to the enamel surface and effectively remove zirconia brackets, EY:YAG laser has been introduced for debonding. EY:YAG laser (wavelength 2940 nm) has a high absorbance coefficient in water. Energy transfers into heat within the monomer of the binding agent, it is vaporized, and the brackets are separated from the enamel surface. The aim of this study is to evaluate the enamel surface after bracket removal using EY:YAG laser.
Materials and methods: A total of 20 brackets were bonded to 20 caries-free premolars extracted for orthodontic indications. Brackets were irradiated with EY:YAG laser (Lite touch, Light instruments, 3 with a wavelength of 2940 nm at a power of 3W, energy 200 mJ, frequency 20Hz, tip diameter 1.3 mm, water cooling 20 mL, and time of irradiation 10 sec. Debonding was made by scanning the four edges of each bracket consecutively. The irradiation was at a distance of 1 mm from the bracket with a constant movement. The damage in tooth enamel surface was evaluated and measured using scanning electron microscope Philips515.
Results: SEM analysis revealed no cracks, crazes or melting on the enamel surface after laser-assisted debonding.
Conclusions: EY:YAG laser-assisted debonding is an effective approach for brackets removal. It is a safe method and helps to protect the enamel surface.
Thachaini Balakumar, Ani Belcheva, Georgi Tomov, Kristina Mihailova
Laser-assisted treatment of a child with hereditary gingival fibromatosis - 2 years follow-up

Introduction: Gingival fibromatosis is a rare group of disorders that develop as slowly progressive, local or diffuse enlargements within marginal and attached gingiva or interdental papilla. In severe cases, the excess tissue may cover the crowns of the teeth, causing functional, aesthetic, and periodontal problems. Hereditary gingival fibromatosis can occur as an isolated condition or as part of a genetic syndrome. The diagnosis is mainly made on the basis of the patient’s history and clinical features, and on histopathological evaluation of affected gingiva. The pathologic manifestation of gingival fibromatosis comprises excessive accumulation of extracellular matrix proteins, in which interactions between gingival cells and the extracellular matrix are weakened as epithelial cells transdifferentiate into fibrogenic fibroblast-like cells.

Case report: This clinical case represents a 15 years old boy who came at the Laser center for treatment of his teeth and gums. He complained he cannot brush his teeth because of the bleeding and presence of primary teeth and missing permanent teeth. After thorough history taken from his grandfather and clinical examination the boy was diagnosed with hereditary fibromatosis. The excisional biopsy by Er:Yag laser confirmed the diagnosis. Treatment plan included uncover of the impacted permanent teeth with the laser, extraction of the primary teeth, oral hygiene motivation and orthodontic treatment for establishment of occlusion. Two years of treatment and regular follow-ups bring the successful outcome of this difficult and complicated case.

Conclusions: Er:Yag laser removal of the overgrowning gingival tissue in combination with orthodontic treatment seems an effective decision for treatment of a child with hereditary gingival fibromatosis.

Oral Presentations

Vasilis Panaiotou, Georgi Tomov, Ani Belcheva
Parents’ attitudes towards alternative methods of dental treatment in children

Introduction: As the applications of dental lasers in pediatric dentistry expand, parents’ worries regarding the safety and effectiveness of this method compared to conventional rotary treatment increase. Parents’ attitudes towards the new alternative methods for caries removal are essential for the choice of treatment technology and dental team for the dental care of their children. Aim: To investigate the attitudes of parents towards lasers as an alternative method of dental treatment in children and the influence of education and socioeconomic status on parental acceptability of it.

Material and methods: The study was conducted among 88 parents, randomly selected during treatment visit of their children at the Department of Pediatric Dentistry, Plovdiv. An interview was performed to gather information about their education, socioeconomic status and desire to be present/absent in the dentist’s office.

Results: Most parents (70.88%) preferred to stay with their child in the dentist’s office when laser was the therapy of choice for treatment. When conventional treatment was used, the proportions of parents who wanted to be present with their child for care (51.54%) and be absent (48.46%) are equal. The analysis indicated direct relationship between parents’ high educational level and high family socioeconomic status and their desire to be present in the dentist’s office.

Conclusion: Although the expanding use of lasers for the treatment of pediatric patients, for parents this alternative method remains unknown. Therefore, providing additional information by dentists, health organizations and promotion programs would be valuable for parents’ oral health literacy.

Shindova Maria, Belcheva Ani
Introducing daily usage of laser dentistry in aesthetics

Different dental laser wavelengths have impacted our daily dental procedures becoming day to day routine. Enhancing the spectrum of differential services in respect to patients’ high aesthetic demands nowadays, ranging from simple gingival troughing, teeth shade whitening, gummmyn smile correction and even adjunct treatments as frenectomies and elimination of gingival hyper trophies with orthodontic treatment, or crown lengthening for prosthetic work and smile design. A case presentation using Er:1550G (2780nm) and Diode (940 nm), with followups after procedures.

Mohamed Abdalimnen
The effect of photobiomodulation and laser therapy in the management of alveolar osteitis after tooth extraction

Abstract: Introduction: This scoping review evaluate the effect of photobiomodulation and laser therapy in the treatment of alveolar ostetitis (dry socket) after tooth extraction.

Material and methods: The search strategy was carried out only on MEDLINE/PUBMED database, up to June 2017, were adapted according to the database with five different searches.

Results: The result was three prospective randomized clinical studies, it was conducted on systematically healthy adult human, photobiomodulation and laser therapy was used on 105 patients from a total of 224 patients, age varied in range of approximately 30 years, patients were both males and females. The type of laser used in three studied has varied wavelengths from 660nm to 2780nm, the most common used was diode laser with 808nm and 810nm wavelength. The laser power used vary from 0.1W to 1W. All laser treated groups showed positive effect compared to other groups and there was no adverse or negative effect reported.

Conclusion: Within the limitation of this review, PBMT and laser therapy showed significant and faster decreasing in pain, swelling and increasing in healing process in treatment of Alveolar ostesitis (AO) after tooth extraction, irrigation to remove the debris from dry socket plays an important role in treatment of AO in any type of treatment chosen. Further clinical studies should be made not only to come with a PBMT and laser therapy protocol for treatment of AO but also for its prevention after tooth extraction and promote healing of extraction socket after any tooth extraction.

Mohamed Mahmoud
Material and methods: sectioned mandibles from freshly sacrificed sheep kept in saline are the samples. The samples were randomly divided into six groups I - VI. Diode lasers are utilized to do soft tissue recontouring in the labial soft tissue of the mandibular while the laser beam is attached to the alveolar bone crest to measure temperature change during laser irradiation. 980 nm diode laser is used in groups I, II and 940 nm diode laser is used in groups IV, V, VI. Groups I, IV parameters are 2w peak power, continuous wave (CW), 300 µm initiated tip in contact mode. Groups II, III parameters are 2w peak power, chopped mode, 300 µm chopped mode, 50% duty cycle, 300 µm non-initiated tip in contact mode. Groups IV, V parameters are 2w peak power, CW, 300 µm non-initiated tip in contact mode.

Ibrahim Samir
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Ibrahim Samir, Youssouf Sedky, Amr Essat
STATE of the art and future for Gingivae Stem cell applications

Introduction: Stem cell regenerative medicine and dentistry are in conjunction within the universe of personalized treatments for different health problems. There is less morbidity to obtain gingival tissue and process it in vitro to separate trophoblasts (pluripotent stem cells).

Aim: Compare a faster separation process of trophoblasts from gingiva assisted with low laser irradiation of 940nm from studies done elsewhere.

Methods: Three tissue samples of gingiva were obtained with a tissue punch of 2.5 mm. after subjected to irradiation with 904 nm wavelength, for 30 seconds, at 4000 Hz, 5 Watts (Laserheal Mod. RVT 106 UP, Maxics.) to biostimulate and disflect tissues with a distance of 1.5 cm, at 6 Jules/cm². In biochemistry laboratory were immediately placed in a 6 cm round cell well, 45 minutes previously coated. The tissue was covered with Dubelco’s Modified Eagle Medium (DMEM) and supplemented with 10% fetal bovine serum (FBS) and antibiotics 50 units/ml penicillin. The samples were incubated at 37°C and 5% de CO2. Medium was changed every third day. Only one of the samples was irradiated, once in 10 minutes with 904 nm wavelength, for 15 seconds, at 2000 Hz, 5 Watts with 3 Jules/ for 15 sec.

Results: Immunohistochemistry analysis showed MSSEC and NCSC, or trophoblasts separated faster and increasing in healing process in treatment of Alveolar osteitis (dry socket). A preliminary in Vitro study for photobiomodulation and laser gingival recontouring: A preliminary in vitro study

Studies have showed that temperature around 50°C is a critical temperature level where alkaline phosphatase undergoes denaturation. Studies also showed that bone necrosis may result even if the denaturation temperature of alkaline phosphatase is not exceeded. Eriksson and Albrektsson found that 47°C is the potter temperatur for the occurrence of morphologically evident bone tissue damage.

Aim: This study aims to evaluate the safety of diode laser usage on alveolar bone during neighboring soft tissue recontouring.

Material and methods: sectioned mandibles from freshly sacrificed sheep kept in saline are the samples. The samples were randomly divided into six groups I - VI. Diode lasers are utilized to do soft tissue recontouring in the labial soft tissue of the mandibular teeth. While the laser beam is attached to the alveolar bone crest to measure temperature change during laser irradiation. 980 nm diode laser is used in groups I, II, III and 940 nm diode laser is used in groups IV, V, VI. Groups I, IV parameters are 2w peak power, continuous wave (CW), 300 µm non-initiated tip in contact mode. Groups II, III parameters are 2w peak power, chopped mode, 50% duty cycle, 300 µm non-initiated tip in contact mode. Groups IV, V parameters are 2w peak power, CW, 300 µm non-initiated tip in contact mode.

Maite Moreno
Introducing daily usage of laser dentistry in aesthetics

Different dental laser wavelengths have impacted our daily dental procedures becoming day to day routine. Enhancing the spectrum of differential services in respect to patients’ high aesthetic demands nowadays, ranging from simple gingival troughing, teeth shade whitening, gummmyn smile correction and even adjunct treatments as frenectomies and elimination of gingival hyper trophies with orthodontic treatment, or crown lengthening for prosthetic work and smile design. A case presentation using Er:1550G (2780nm) and Diode (940 nm), with followups after procedures.

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Rahimy Soorosh
Arghavan Farrokhi

Regrowth of own teeth - the role of Laser in Stem-cell therapy
Introduction: Even with good oral hygiene, it is not always possible to prevent tooth decay and periodontal disease, and teeth may sometimes need to be extracted. Scientists are already working on the idea that patients no longer have to adapt to fillings, implants, crowns or prostheses, but naturally regrow completely new teeth by using Laser in Stem-cell therapy.

Materials and methods: PubMed search of articles containing the terms: Laser, Stem cells, regrowth, teeth were performed.
Results: In a study performed by the University of Cambridge (UK), dentists drilled holes in the maxilla of rats and the pulp was irradiated with a low-energy, pulsed laser. The Laser-light pulses stimulate the stem cells for the production of dentin. The laser light causes the formation of oxygen molecules in the dentin, activating a growth stimulator (TGf-β1) which excites the stem cells to form new hard tissue material. In another study performed by researchers from Columbia University in New York, stem cells were used for the renewal of different dental materials.
Lost teeth were used to form a model of degradable polymers based on an imprint of the old tooth. This model was implanted and stimulated with Laser-light and growth factors. These factors caused the formation of oxygen molecules in the dentin, activating a growth stimulator (TGf-β1) which excited the stem cells to form new hard tissue material.

In another study performed by researchers from Columbia University in New York, stem cells were used for the renewal of different dental materials. Lost teeth were used to form a model of degradable polymers based on an imprint of the old tooth. This model was implanted and stimulated with Laser-light and growth factors. These factors caused the formation of oxygen molecules in the dentin, activating a growth stimulator (TGf-β1) which excited the stem cells to form new hard tissue material.

Conclusion: After comparing these two articles, Laser-stem-cell therapy in mice and humans shows a lot of potential, but the results could only be achieved under certain conditions in the laboratory. More studies are needed.

Soroush RAHMY, Nikos WERNER, Malvin WERNER

Shorten your rehabilitation times with the ultimate protocol of LASER ASSISTED IMPLANTS*. New Tailormade Protocol of Placing Dental Implants Laser Assisted
Our research was focused to find best method of implant placement. We made the ostectomy to place the implants with laser technology, mixing laser and drilling technology or by standard drilling in more than 20 cases of older adults with edentulous lower jaw. In all the clinical cases the ostectomy in 43 was made with ERBIUM CROME YSGG LASER in 42 a mix protocol and in 33 with traditional drilling technology. 60 days later we measured the three identical implants with OSSTELS and find very similar results between 43 a 42 better than 33.
We decided to deepen the investigation and describe a new Tailormade protocol combining the best of LASER and drilling technology in implant placement with excellent clinical results by speeding up the recovery of soft and hard tissue.

Conclusions: Using this protocol standard titanium implants were suitable for loading in just 8 weeks or less.

Alejandro Steinman

The influence of initiation of the tip on the concentration and transmission of the Diode laser (940nm) energy at the end of the tip: Non-initiated versus pre-initiated tips
Introduction: The diode lasers are used in different fields of dentistry, especially surgery. To create an effective cut with less side effects, the laser energy must be concentrated on the end of the laser tip. This can be achieved by initiating the tip.
Aim: The aim of this study is to show the amount of the diode laser (940nm) energy that is concentrated at the end of the pre-initiated and manually initiated tips.
Methods: Two groups of non-initiated (EP1-3mm) and pre-initiated (EP1-3mm and EP4-4mm) tips for Epic-Y were tested on a power meter with the settings of 1W (real power), before and after initiation and after cutting with tissue (3W continuous mode).

Results: On the power meter non-initiated tips (EP1-3mm, EP4-4mm and EP4-7mm) showed the device setting respectively, and after initiation, 0.3W, 0.41W and 0.45W, and after cutting the tissue (in vitro), 0.35W, 0.40W, 0.68W and 0.35W.
Pre-initiated tips (EP1-3mm and EP4-4mm) showed 0.4W, 0.27W and 0.32W before and after 0.43W 0.37W and 0.27W after cutting (in vitro).
Conclusion: The initiation of the tips concentrates the energy, but not totally, a percentage is transmitted. Non-initiated tips showed in average 39.5% and 66.7% and pre-initiated tips showed in average 49% and 52.6% transmission of energy before and after cutting.

Alireza Cyrus Raie

Laser-assisted intervention in soft tissue management around dental implant - Clinical Case
Introduction: The width and thickness of the attached gingiva is essential for the function of peri-implant tissues, adequate maintenance and aesthetic effect. Many surgical methods have been developed to increase the attached gingiva and the biological width. Some of the temporomandibular joints include the use of lasers, biolaminar grafts, PRF and flap repositioning.
Aim: The clinical case demonstrates a method of dental implant treatment in an area of high aesthetic value and soft tissue insufficiency.
Materials and methods: A bilaminar technique was used to increase the width of the attached gingiva and the biological width by a coronally positioned flap in partial thickness by the Zucchelli method from vestibular and palatal by Razzza. We used a palatal soft tissue graft partially deepithelized with ER-YAG laser (5.40W; 18Hz; 300ms). An autogenous PRF membrane is placed over the cover screw and the donor area.

Results: Four weeks after surgery, the implant was uncovered with a CO2 laser (implant second surgery. 3W). Three weeks later the gingival former was removed, an adequate biological width in the vestibular zone was established and the marginal edge was on horizontal level with that of the adjacent teeth. After placing the supra-construction the dental deficit was restored with high aesthetics.

Conclusions: The soft tissue management in implantological treatment is important for the clinical success of dental implants and the maintenance of the attached gingiva. The use of lasers combined with the other soft tissue techniques such as PRF membranes accentuates their advantages such as better visualization of the surgical field, reducing the bleeding, which often results in decrease in the duration of a certain procedure. Furthermore, improved wound debridement and stimulation of osteoblast proliferation can be observed.

Purpose: Presentation of clinical cases in which we utilize the advantages of ER-YAG lasers for the purposes of guided tissue regeneration. Demineralized dentin matrix was derived from patients own teeth with the use of Auto-Tuff Bone Graft System.

Materials and methods: Patients with jaw lesions originating from chronic inflammatory and cystic processes as well as peri-implants. Subsequent to the removal of the pathological processes, curettage of the bone is performed with the use of ER-YAG laser. Henceforth the bone defects are filled with demineralized dentin matrix and the graft is coated with PRF membranes.

Results: Acceleration and stimulation of bone healing can be observed. The grafting material volume loss is within the range of 10%.

Conclusion: ER-YAG lasers insures excellent bone debridement properties and stimulates the soft tissue activity which leads to rapid bone growth with satisfying density characteristics.

Abousaid D. Avenon R. Hristozov D. Nachkov I. Slamonov N. Vealee C.

Application of Er-YAG laser in the preparation of bone for autogenous targeted tissue regeneration

Introduction: Over the course of recent years Er-YAG Lasers are used progressively in the fields of oral surgery and implantology. Many recent studies accentuate their advantages such as better visualization of the surgical field, reducing the bleeding, which often results in decrease in the duration of a certain procedure. Furthermore, improved wound debridement and stimulation of osteoblast proliferation can be observed.

Purpose: Presentation of clinical cases in which we utilize the advantages of ER-YAG lasers for the purposes of guided tissue regeneration. Demineralized dentin matrix was derived from patients own teeth with the use of Auto-Tuff Bone Graft System.

Materials and methods: Patients with jaw lesions originating from chronic inflammatory and cystic processes as well as peri-implants. Subsequent to the removal of the pathological processes, curettage of the bone is performed with the use of ER-YAG laser. Henceforth the bone defects are filled with demineralized dentin matrix and the graft is coated with PRF membranes.

Results: Acceleration and stimulation of bone healing can be observed. The grafting material volume loss is within the range of 10%.

Conclusion: ER-YAG lasers insures excellent bone debridement properties and stimulates the soft tissue activity which leads to rapid bone growth with satisfying density characteristics.

Kanazi Mirko, Kojic M., Kojic Goran, Ripace N., Ripace A.

Nikolay Kanazirski

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Kanazirski NIKOLAY KIRIKOV, Kanazirski Petiya

55
Implant surface decontamination. Dual wavelength protocol is a safe tool for it can be concluded that the use of the laser-doppler flowmetry (LDF) is a current non-invasive method for studying the pulpal blood-flow. Aim of this study is investigating the effect ST have on pulpal perfusion of adjacent teeth using LDF.

Materials and methods: Thirty-three patients with radiographical evidence of ST received LDF to the normal teeth located mesially and distally of the supernumerary tooth - 66 teeth. In cases of maxillectomies we deemed the left central incisor as laterally localized, and the right central incisor as mesially localized. Root development of teeth of interest was assessed radiographically in accordance with Demirjan’s method.

Results: Average LDF-value of the studied teeth was 11.49±1.23PU. Average LDF-value for mesially positioned teeth was 11.86±1.72PU and for distally positioned teeth was 11.12±1.77PU. No statistical significance was found in pulpal perfusion scores of tested adjacent normal teeth localized mesially and distally to the ST. Statistical analysis showed that the laser-treated groups had significantly less leakage in apical third than the control group.

Conclusions: Certain lasers can help in removing the smear layer and debris and can modify the morphology of the root canal wall for better root canal sealing.

Influence of diode laser radiation on the apical leakage of endodontically treated teeth

Introduction: The outcome of root canal treatment is based on efficient disinfection of the root canal system and prevention of reinfection. Current chemomechanical cleaning methods do not always achieve these goals, and insufficient root canal disinfection is the main reason for endodontic failure.

Aim: The aim of our in vitro study was to evaluate the effect of diode laser irradiation (λ=660 nm; λ=970 nm) on the intraoral dentin and their interference in the apical seal of filled root canals.

Methods: Forty human single rooted teeth were randomly assigned into four groups. Root canal preparation was done using ProTaper Universal rotary system up to F3, 2% Sodium hypochlorite, 17% EDTA and distilled water were used as irrigants. The laser irradiation was performed at the end of the traditional endodontic preparation and teeth were filled with gutta-percha and AH+ Plus. The apical leakage was reported on mm.

Results: Statistical analysis showed that tooth hypersensitivity affects more than one third of the population. Conventional techniques for treating this condition have low success rate and don’t have long-term results.

Laser treatment has proved to be fast, effective, minimally invasive and has better long-term results.

Aesthetics is very important in dentistry. A lot of patients ask for ceramic brackets in orthodontists and veneers in anterior region. Composite adhesives are hard to remove and Er:YAG laser is a most effective and conservative tool for this indication. Success in endodontics is mostly dependent on our ability to eliminate microorganisms in the root canal system. Mechanical instrumentation is not enough to clean all parts of root canals. Different irrigation methods are utilized to increase penetration of irrigation solutions in noninstrumented parts of complex root canal system. Laser - the tool for all dentists.

In my presentation I will address few different Er,Cr:YSGG lasers on surface conditioning of Lithium disilicate glass ceramics in comparison with conventional methods.

Materials and methods: 20 glass ceramic specimens were constructed and divided into 4 equal groups (n=5) according to the surface treatment protocol (conventional method, Er,Cr:YSGG with 3 different parameters). Surface topography for each group was analyzed before and after treatment. For each group microtubsules were bonded to the disc specimens (n=20). Adhesive resin was then loaded and bonded according to manufacturer’s instructions. Microshear bond strength was performed at the disc–ceramic interface. Data was analyzed statistically.
A similar situation exists with deep extraction. In the elderly, any extraction subgingivally or below bone level often is associated with the risk of bone loss around the implant, with mucositis time is associated with the risk of bone loss subgingival decay descending to the bone level, in which it’s impossible to make proper conservative restoration and/or root canal treatment due to the lack of dryness or isolation.

The use of a laser as an alternative to extraction has not encountered negative feedback from the patient. As a minimally traumatic tool for shaping gums and bone, the laser is an ideal tool for younger patients - when extraction will cause loss of alveolar bone or will be associated with expensive regenerative treatments and implantation. Also implantation over a longer period of time is associated with the risk of bone loss around the implant, with mucositis and parainfectilants. Controlled "loss" of bones and gums with the laser use is always safer than uncontrolled bone loss; even with minimally traumatic extraction. The doctor’s workload is relatively small and the risk associated with possible complications is practically zero in comparison to the socket preservation and implantation. This involves compromise and a dilemma. How mucosa and bones can be or should be removed? Will it still be possible to make a proper restoration after this surgery? How to reduce the size of the tooth to achieve longevity? How long will the tooth remain?
Oral Presentations

Stefan Schreiber

Laser Applications In Pediatric Dentistry. Is It A Myth Or A Magical Treatment

Laser, as a technology, is booming in dental practice, where a new era of laser treatments is proposed with various applications in all branches of dentistry. Yet, its use in pediatric dentistry is quite challenging. In this presentation, we will show the challenges together and know what to expect from the treatment outcome and what not to expect from the laser regarding the pediatric dentistry field. Various clinical cases will be presented showing different laser treatment options and management. By the end of this presentation, we will know where laser stands in pediatric dentistry, if it is a myth, a magical treatment or somewhere in between...

Marwa Taha

Peri-implantitis therapy by Er:YAG Laser

Peri-implant diseases have received much attention in the last years. It has been described as progressive osseous bone loss around a dental implant. Microorganisms living on the implant surface are considered to be the initial cause of peri-implantitis. Those bacteria form a biofilm which establishes harmful inflammatory response in the host and inhibits bone cells reattachment to the implant surface. The first step of the therapy is the implant surface decontamination. Several approaches for implant decontamination like mechanical debridement or disinfestation with chemotherapeutic agents and smoothing implant surface have been suggested but the efficacy of mechanical or chemical modalities seems to be limited due to resistant bacterial strains. Moreover, mechanical strategies may develop a roughened implant surface, which itself increases bacterial colonization and biofilm formation.

The antibiotic therapy has pharmacologic limitations like in site drug dosage or insufficient antibacterial effect. Also, the limited access to the infected area is to be taken into consideration. Up-to-date there was not a valid treatment for bacterial peri-implantitis. In the last years the peri-implantitis therapy by Er:YAG have received a lot of attention and reliable documentation, as the laser energy is totally reflected by titanium and without any heat rise of the implant and of the surrounding tissues, as spray air/water is used. The presentation will include the protocol of the peri-implantitis therapy by Er:YAG Laser, advantages and disadvantages of the Er:YAG Laser therapy and well documented different clinical cases of peri-implantitis treatments by Er:YAG Laser.

Roman Itelman

Peri-implantitis – A Different therapeutic approach

The use of dental implants in dentistry is increasing exponentially, because they appear to be a successful treatment for partially and fully edentulous patients. But even the implants with successful osteointegration can develop inflammatory complications at later stages.

Nowadays, most of the dentists face late implant complications as mucositis and periimplantitis. Ever since 1994, when Mombelli named these implant complications ‘‘Periimplantitis’’, several treatment protocols have been proposed for these diseases. But no standard protocol has been announced so far, even though there are numerous studies related to this topic that compare one treatment protocol to another in the attempt to singularize the best one of them.

Due to their special characteristics, lasers appear to be the next great actors on stage, each one with its special laser–tissue interactions, but more than that, the combination of wavelengths in treatment protocols will open a new perspective in the treatment of this group of peculiar, but widely spread diseases.

Our research work on this topic is focused on evaluating the contribution of 2 wavelengths 940 nm and 2780 nm to the same treatment protocol. Apparently, it stands in obtaining a better, promising result in the treatment of mucositis and incipient periimplantitis.

Codruța Ciureșcu, Anca Gheorghiu

Microscopic investigation of the effectiveness of dual wavelength Er:Cr:YSGG and diode 940 nm laser and the XP-Endoﬁnisher in removing the endodontic sealer from disinfected root canals

Introduction: Endodontic retreatment can be one of the most complicated procedures with varied prognosis. Moreover, curvatures in root canals can pose additional obstacles during retreatment procedures.

Aim: to validate the ability of the dual wavelength laser Er:Cr:YSGG and diode 940 nm laser in removing the debris and sealer remnants from endodontically rehydrated canals.

Methods: 24 curved root canals were prepared using the reciproc system, and then ﬁlled with AH-sealer and reciproc Gutta percha cones. The samples were stored in thymol solution for six weeks to allow the lasing to bond with the canal walls and dentinal tubules. The ﬁllings were then removed and the teeth were randomly divided into 3 groups:

- Group A: Negative control: irrigated with normal saline
- Group B: XP-Endoﬁnisher with EDTA 17% on sounds 940nm: 200; 20 Hz; 50 µs
- Group C: Er:Cr:YSGG and diode 940 nm laser in removing the debris and sealer remnants from endodontically rehydrated canals.

Results and conclusion: Preliminary results show overall clean canals and open dentinal tubules not only in the cervical and middle thirds in both groups B and C. The apical retrograde varied results in both groups. Statistical analysis of the results will be presented.

Riman Nasher, Norbert Gutknecht

Basant El Asaly

The Effect of Diode LASER 940nm on deep cavities and on S. mutans

Introduction: A pilot study was held on twenty teeth. Ten sound and ten carious. Holes were prepared to allow the entrance of thermocouple. 5.mutans were lased with the same parameters and counted.

Aim of the study: To preserve the pulp in deep cavities. As a partial caries removal technique.

Methods: The study was divided into four groups. Two groups of carious teeth and two groups’ sound teeth lased with 0.5 and 1 Watts. Same parameters were applied for lasing 5.mutans in comparison with chlorhexidine.

Results:
- Sound teeth 0.5W: 3 teeth; 1 degree temperature rise;
- Sound teeth 1W: 4 teeth; 1 degree temperature rise;
- Carious teeth 0.5W: No temperature rise;
- Carious teeth 1W: 3 teeth with no temperature rise;
- S.mutans count 0.5W: 98X1000;
- S.mutans count 1W: 70X1000;

Conclusion: The diode LASER showed a decrease in the bacterial count without affecting the pulpal temperature.

Basant El Asaly, Prof. Norbert Gutknecht
Elitsa Veneva

Laser analgesia: Efficacy of a modified protocol for achieving pre-emptive dental analgesia with Er:YAG Laser

Introduction: A current non-pharmacological means for attaining painless conservative treatment is presented by laser analgesia (LA), considered as photomodulation of pulp reactivity aiming reduction of nociceptive impulse formation. Currently no consensus has been reached regarding a detailed protocol with laser parameter settings for pre-emptive laser analgesia. Aim of this study is determining the efficacy of Er:YAG laser in achieving pulp analgesia and quantifying duration and extent of any effects assessed. Methods: This is a double-blind placebo-controlled randomized split-mouth clinical trial with two-way repeated measures design. Eligible patients of age 10 - 12 years undergo two single-visit treatments, randomized to receive either LA or placebo analgesia (PA) prior to caries ablation in the first visit. Primary outcome measure is pain felt during treatment, reported by patient on visual-analogue scale. Secondary outcomes: changes in pulpal sensitivity to electrical and cold-stimuli, patient experience during LA/PA; pain-related behavior during caries ablation according to Faces, Legs, Activity, Cry, Consolability scale; heart rate. Trial registration: ClinicalTrials.gov (Registration number: NCT03412721). Results: This study is currently recruiting patients. Pre-test on 20 subjects resulted in n=41 patients needing to be recruited. Data will be analyzed with intention-to-treat concept by Student T-test for paired data. Conclusion: The microbiological control improves notably with laser but without any laser application. The microbiological results were significantly better in the laser-treated groups than in the control group. Statistical analysis showed that the laser-treated groups had significantly less leakage in apical third than the control group.

Carolina Isabel Benitez Arevalo

Comparative study on Endodontic treatment with and without laser with microbiological control

Introduction: We present 5 cases of endodontic treatment, with microbiological control before and after laser treatment and with microbiological control but without any laser application. The evolution is also reviewed with radiographic studies of 3 (months) before and after. Aim: Our aim in this presentation is to prove whether laser improves endodontic treatment, using a microbiological control. Materials & Methods: Microbiological study: periapical and panoramic radiographs before and after. We used laser (Er:YSGG) of 2780nm, ErCr:YSGG of 2780nm, diode lasers of 940nm and 660nm (high and low power) endodontic treatment (Rotatory endodontic, apex locator, isolation). Results: Patients treated with laser, presented better postoperative period and better microbiological results. Conclusions: The microbiological control improves notably with laser and the radiographic evolution is very positive.

Influence of diode laser radiation on the apical leakage of endodontically treated teeth

Introduction: The outcome of root canal treatment is based on efficient disinfection of the root canal system and prevention of re-infection. Current chemomechanical cleaning methods do not always achieve these goals, and insufficient root canal disinfection is the main reason for endodontic failure. Aim: The aim of our in vitro study was to evaluate the effect of diode laser irradiation (λ=660 nm; λ=970 nm) on the intracanal dentin and their interference in the apical seal of filled root canals. Methods: 48 human single rooted teeth were randomly assigned into 4 groups. Root canal preparation was done using ProTaper Unirotary rotary system up to F3. 2% Sodium hypochlorite, 17% EDTA and distilled water were used as irrigants. The laser irradiation was performed at the end of the traditional endodontic preparation and teeth were filled with gutta-percha and AH-plus. The apical leakage was reported on mm. Results: Statistical analysis showed that the laser-treated groups had significantly less leakage in apical third than the control group. Conclusion: Certain lasers can help in removing the smear layer and debris and can modify the morphology of the root canal wall for better root canal sealing. All teeth had the root canals biomechanically instrumented using the ProTaper system (Dentsply, Maillefer, Ballaigues, Switzerland) and Crown-down. All teeth had the root canals biomechanically instrumented using the ProTaper system (Dentsply, Maillefer, Ballaigues, Switzerland) and Crown-down. Elitsa Veneva, Ani Bateva, Ralitsa Raycheva

Violeta Dogandzhiyska

Influence of diode laser radiation on the apical leakage of endodontically treated teeth

Introduction: The outcome of root canal treatment is based on efficient disinfection of the root canal system and prevention of re-infection. Current chemomechanical cleaning methods do not always achieve these goals, and insufficient root canal disinfection is the main reason for endodontic failure. Aim: The aim of our in vitro study was to evaluate the effect of diode laser irradiation (λ=660 nm; λ=970 nm) on the intracanal dentin and their interference in the apical seal of filled root canals. Methods: 48 human single rooted teeth were randomly assigned into 4 groups. Root canal preparation was done using ProTaper Unirotary rotary system up to F3. 2% Sodium hypochlorite, 17% EDTA and distilled water were used as irrigants. The laser irradiation was performed at the end of the traditional endodontic preparation and teeth were filled with gutta-percha and AH-plus. The apical leakage was reported on mm. Results: Statistical analysis showed that the laser-treated groups had significantly less leakage in apical third than the control group. Conclusion: Certain lasers can help in removing the smear layer and debris and can modify the morphology of the root canal wall for better root canal sealing. All teeth had the root canals biomechanically instrumented using the ProTaper system (Dentsply, Maillefer, Ballaigues, Switzerland) and Crown-down. All teeth had the root canals biomechanically instrumented using the ProTaper system (Dentsply, Maillefer, Ballaigues, Switzerland) and Crown-down. Violeta Dogandzhiyska, Evgeniya Popova

The use of Er:YAG Laser for Minimal Invasive ablation of dental hard tissues

Introduction: The Er:YAG laser is used today in dentistry, mainly for the ablation of hard tissues (enamel, dentine and bone), but also for the treatment of soft tissues. Many papers have reported that Er:YAG laser ablation of enamel and dentine is effective and efficient without any heat damage to the pulp, and without carbonization or cracks of the irradiated enamel and dentine surface. Aim: To demonstrate the scientific and clinical evidence which makes the Er:YAG Laser the most adapted tool for treating oral hard tissues following the requirements of Minimal Invasive Dentistry. Methods: Scientific evidences and clinical cases. Results and conclusions: The Er:YAG laser treatment possesses the requirements of Minimal Invasive Dentistry; the possibility to ablate small area of infected layer guarantees maximum conservation of the tooth structure; the antibacterial property of the Er:YAG laser can guarantee the decontamination of the affected layer that retains its remineralisation potential; the lack of smear layer after laser vaporization assures a better retention of the composite resin to the dentine. Moreover, the bio stimulation effect, the tissue selective ablation, the low penetration deep are other Er:YAG laser properties that guarantees better results in Laser dental hard tissues treatment.
The results obtained are promising for the clinical use of LBB 81054 and Str thermophilus 187/4. The diameters of the inhibition zones were filled with 50 µl of soft tissue (trophoblasts) from the gingiva as a result of irradiation with 904 nm low laser wavelength.

P06 Long-term follow-up of medication-related osteonecrosis of the jaw (MRONJ) lesions prevented by diode laser photobiomodulation

Deboni M., Tartarotti N., Lucio L., Naddeo-Hornem H., Martini Martins M.

INTRODUCTION: Treatment of Medication-Realted Osteonecrosis of the Jaw (MRONJ) is complex and varied with no effective therapeutic protocol.

AIM: To evaluate a protocol for treating MRONJ lesions based on antimicrobial photodynamic therapy (aPDT) and photobiomodulation (PBM).

METHODS: Patients in use or with history of antiresorptive drugs usage were followed-up between 2015-2019. MRONJ treatment included aPDT photopheresis at 660 nm, at 4000 Hz, 5 Watts (Laserbaclini 81054), and PBM phototherapy of the lesions at 660 nm with 30 seconds, at 5 mW/cm².

RESULTS: None patients on the prevention approach showed total regression of MRONJ lesions. Forty-three patients (86 years old) were treated postoperatively. In all cases, the method was well tolerated, and the healing process was faster than the control group, with a significant improvement in patients' quality of life.

P07 *Optimization in a case of Orofacial Rehabilitation after Trauma: Improvement of oral functional and esthetic conditions

Santigo M.

INTRODUCTION: We present the case of a 50-year-old woman who visited us after falling and suffering a trauma and immediate avulsion of the upper central incisor. She was admitted to the Emergency Department where they decided to perform concomitant treatment of the cut in her lip or approach the cutting line with cosmetic sutures or treatment of the dental alveolus to avoid contamination.

AIM: In our aim in this presentation is to show how we performed a comprehensive oral diagno-sis, treatment, and rehabilitation to improve the situation of the dental and extrinsic tissues.

METHODS: Patients in use or with history of antiresorptive drugs usage were followed-up between 2015-2019. MRONJ treatment included aPDT photopheresis at 660 nm, at 4000 Hz, 5 Watts (Laserbaclini 81054), and PBM phototherapy of the lesions at 660 nm with 30 seconds, at 5 mW/cm².

RESULTS: None patients on the prevention approach showed total regression of MRONJ lesions. Forty-three patients (86 years old) were treated postoperatively. In all cases, the method was well tolerated, and the healing process was faster than the control group, with a significant improvement in patients' quality of life.

P08 LLLT treatment for impaired wound healing in patients with para-cellulitis and grafting procedures

Cojugaru M., Popenescu S., Dragachi E., Gogonea R. INTRODUCTION: In recent years it has been shown that wound healing in patients with para-cellulitis, grafting, regenerative proce-dures and other bone substitute material is acquired and the need for sutures is also increased. LLLT improves wound healing, which occurs faster and with less scar formation. In this study, the authors investigated the potential of Er:YSGG laser and soft tissue applications due to its wide-spectrum photobiological action and high therapeutic effectiveness.

AIM: The aim of this case report is to present minimally invasive flaps with crown lengthening performed with Er:YSGG laser of 904 nm wavelength.

CASE REPORT: Crown lengthening procedure using a diode laser (904 nm wavelength) was performed on a 21-year-old male patient using 2780 nm Er:YSGG laser for orthodontic reasons. The patient presented with sinusitis of the upper first molars which was verified using a computed tomography (CT) of the maxillary sinuses. The patient was given a treatment protocol of Er:YSGG laser with a wavelength of 904 nm for decontamination and soft tissue surgery.

RESULTS: The method showed high precision in the lengthening of 3.0 mm for L. bulgaricus LBB 81054 and 2.0 mm for Str. thermophilus LBB 81054. Growth of lactic acid bacteria collagen was measured with the agar Wasc agar.

CONCLUSION: The obtained results are promising for the clinical application of L. bulgaricus LBB 81054 and Str. thermophilus LBB 81054 as dentifrice components to prevent the development of different bone substitutes. Further studies are required to evaluate the long-term effects of this treatment and the potential for prevention of different oral pathologies, such as periodontal diseases and gingival conditions.
Social Events Program

Welcome Cocktail

Where: at the Auditorium complex at Medical University, Plovdiv  
When: 07 June 2019 – 18:30 – 21:00

Gala Dinner

Where: Ball room, Imperial hotel – Plovdiv  
When: 08 June 20:30 – 00:00

Welcome to Plovdiv

People have been living here since the sixth-millennium BC, making Plovdiv one of Europe’s oldest cities. It stood at a vital Roman crossroads in classical times, when it was known as Philippopolis. Plovdiv has a delightful old town topped by the atmospheric ruined fortress Nebet Tepe and a Roman-era stadium (still used for opera and rock concerts). Plovdiv has been ramping up its cultural and events tourism credentials in the lead-up to stepping out as 2019 European Capital of Culture (plovdiv2019.eu). This year will see the city come alive with art installations, culinary events, contemporary arts and dance programs, and a host of music and arts festivals. Kick back in the recently revived and renovated bohemian quarter Kapana, with its tangle of artisans’ workshops, bars, craft-beer outlets and hipster cafes. Most of its streets have been pedestrianised, and there is a perennially buzzing atmosphere.

Welcome to the beautiful and sunny Plovdiv!
SIROLaser Blue
Next level in laser dentistry

- Triple Wavelengths
  Blue 445 nm
  Red 660 nm
  Infrared 970 nm

- Covers more than 20 indications

- In–Office benefits
  Preset programs
  Portability
  Responsive touchscreen

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