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Publications

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Randomised, clinically controlled and internationally published studies:

Fabio C. A., Yolanda M. B., Carmen G. M., Francisco C., Antonio Julián B., Leonor PL., Jesús S.
Use of photodynamic therapy and chitosan for inactivacion of Candida albicans in a murine model
J Oral Pathol Med. 2016; Mar 15. doi: 10.1111/jop.12435.
Used Photodynamic System: HELBO®

Hafner S., Ehrenfeld M., Storz E., Wieser A.
Photodynamic Inactivation of Actinomyces naeslundii in Comparison With Chlorhexidine and Polyhexanide-A New Approach for Antiseptic Treatment of Medication-Related Osteonecrosis of the Jaw?
J Oral Maxillofac Surg 74; 516-522, 2016.
Used Photodynamic System: HELBO®

Ramos U. D., Ayub L. G., Reino D. M., Grisi M. F. M., Taba M., Souza S. L. S., Palioto D. B., Novaes A .B.
Antimicrobial photodynamic therapy as an alternative to systemic antibiotics: results from a double-blind, randomized, placebo-controlled, clinical study on type 2 diabetics
J Clin Periodontol. 2016; doi: 10.1111/jcpe.12498.
Used Photodynamic System: HELBO®

Moreira A. L., Novaes A. B., Grisi M. F., Taba M., Souza S. L., Palioto D. B., De Oliveira P. G., Casati M. Z., Casarin R. C., Messora M. R.
Antimicrobial Photodynamic Therapy as an Adjunct to Non-Surgical Treatment of Aggressive Periodontitis: A Split-Mouth Randomized Controlled Trial
J Periodontol 2015; 86:376-386.
Used Photodynamic System: HELBO®

Petelin M., Perkič K., Seme K., Gašpirc B.
Effect of repeated adjunctive antimicrobial photodynamic therapy on subgingival periodontal pathogens in the treatment of chronic periodontitis
Lasers Med Sci 2014.
Used Photodynamic System: HELBO®

Bago Jurič I., Plečko V., Pandurić D.G., Anić I.
The antimicrobial effectiveness of photodynamic therapy used as an addition to the conventional endodontic retreatment: A clinical study
Photodiagnosis and Photodynamic Therapie (2014) 11, 549-555.
Used Photodynamic System: HELBO®

Bassetti M., Schär D., Wicki B., Eick S., Ramseier C. A., Arweiler N. B., Sculean A., Salvi G. E.
Anti-infective therapy of peri-implantitis with adjunctive local drug delivery or photodynamic therapy: 12-month outcomes of a randomized controlled clinical trial
Clinical Oral Implants Research 00, 2013,1-9.
Used Photodynamic System: HELBO®

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Clinical outcome of a nonsurgical and surgical treatment protocol in different types of peri-implantitis: A case series
Quintessence International Implantology 2013,44: 137-148.
Used Photodynamic System: HELBO®

Deppe H., Mücke T., Wagenpfeil S., Kesting M., Sculean A.
Nonsurgical antimicrobial photodynamic therapy in moderate vs. severe peri-implant defects: A clinical pilot study
Quintessence International Implantology 2013;44:1-10.
Used Photodynamic System: HELBO®

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Long-term clinical effect of adjunctive antimicrobial photodynamic therapy in periodontal treatment: a randomized clinical trial
Lasers Med Sci, 09/2013.
Used Photodynamic System: HELBO®

De Oliveira Macedo G., Novaes A. B., Souza S. L. S., Taba M., Palioto D. B., Grisi M. F. M.
Additional effects of aPDT on nonsurgical periodontal treatment with doxycycline in type II diabetes: a randomized, controlled clinical trial
Lasers Med Sci, 03/2013.
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Nonsurgical treatment of aggressive periodontitis with photodynamic therapy or systemic antibiotics
Schweiz Monatsschr Zahnmed Vol. 123 6/2013.
Used Photodynamic System: HELBO®

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Schär D., Ramseier C. A., Eick S., Arweiler N. B., Sculean A., Salvi G. E.
Anti-infective therapy of peri-implantitis with adjunctive local drug delivery or photodynamic therapy: six-month outcomes of a prospective randomized clinical trial
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Used Photodynamic System: HELBO®

Bago I., Plečko V., Pandurić D. G., Schauperl Z., Baraba A. & Anić I.
Antimicrobial efficacy of a high-power diode laser, photo-activated disinfection, conventional and sonic activated irrigation during root canal treatment
International Endodontic Journal 2012.
Used Photodynamic System: HELBO®

Novaes A. B., Schwartz-Filho H. O., De Oliveira R. R., Feres M., Sato S. & Figueiredo L.C.
Antimicrobial photodynamic therapy in the non-surgical treatment of aggressive periodontitis: microbiological profile
Laser Med Sci; 2012, 27:389-395.
Used Photodynamic System: HELBO®

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Antimicrobial Photodynamic Therapy for the Treatment of Teeth with Apical Periodontitis: A Histopathological Evaluation
J of Endodontics; 2012.
Used Photodynamic System: HELBO®

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The effect of a single episode of antimicrobial photodynamic therapy in the treatment of experimental periodontitis. Microbiological profile and cytokine pattern in the dog mandible
Laser in Medical Science; 2011.
Used Photodynamic System: HELBO®

Schneider M., Kirfel G., Berthold M., Frentzen M., Krause F., Braun A.
The impact of antimicrobial photodynamic therapy in an artificial biofilm model
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Used Photodynamic System: HELBO®

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Full-Mouth Antimicrobial Photodynamic Therapy in Fusobacterium nucleatum - infected Periodontitis Patients
J Periodontol 2010 Jul; 81(7): 975-981.
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Lulic M., Leiggener Görög I., Salvi G. E, Ramseier A., Mattheos N., Lang N. P.
One-year outcomes of repeated adjunctive photodynamic therapy during periodontal maintenance: a proof-of-principle randomized controlled clinical trial
J Clin Periodontol 2009 Aug;36(8):661-6. Epub 2009 Jun 25.
Used Photodynamic System: HELBO®

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Antimicrobial Photodynamic Therapy in the Non-Surgical Treatment of Aggressive Periodontitis: Cytokine Profile in Gingival Crevicular Fluid, Preliminary Results
J Periodontol 2009 Jan; 80(1):98-105.
Used Photodynamic System: HELBO®

Christodoulides N., Nikolidakis D., Chondros P., Becker J., Schwarz F., Rössler R., Sculean A.
Photodynamic Therapy as an Adjunct to Non-Surgical Periodontal Treatment: A Randomized, Controlled Clinical Trial
J Periodontol 2008, 79: 1638-1644.
Used Photodynamic System: HELBO®

Braun A., Dehn C., Krause F., Jepsen S.
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J Clin Periodontol 2008; 35: 877-884.
Used Photodynamic System: HELBO®

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Photodynamic therapy as adjunct to non-surgical periodontal treatment in patients on periodontal maintenance: a randomized controlled clinical trial
Laser Med Sci 2008.
Used Photodynamic System: HELBO®

Peri-implantitis: 12-month results of closed treatment of peri-implantar diseases

University of Bern, Switzerland

Anti-infective therapy of peri-implantitis with adjunctive local drug delivery or photodynamic therapy: 12-month outcomes of a randomized controlled clinical trial

Authors:
Mario Bassetti[1], Dorothee Schär[1], Beat Wicki[1], Sigrun Eick[1], Christoph A. Ramseier[1], Nicole B. Arweiler[2], Anton Sculean[1], Giovanni E. Salvi[1]

Institute:
[1] Department of Periodontology, Dentistry Department, University of Bern, Bern, Switzerland
[2] Department of Periodontology, Philipps University, Marburg, Germany

Published:
Clinical Oral Implants Research 00, 2013, 1-9

Abstract: *
AIM: The aim of the study is to compare the clinical, microbiological and host effects of non-surgical treatment of peri-implantitis achieved after 12 months in the initial stage with treatment by means of adjuvant local administration of antibiotics (LDD) on the one hand, and through adjuvant photodynamic therapy (PDT) on the other hand.

MATERIALS AND METHODS: Forty people with peri-implantitis in the initial stage - pocket probe depths (PPD) 4-6 mm with bleeding on probing (BOP) and radiological bone loss ≤ 2 mm - were randomly divided into two treatment groups. All implants were cleaned mechanically with titanium curettes and a glycine-based powder jet system (air polishing). Implants in the test group (N=20) were treated with adjuvant PDT, with the local application of Minocycline microspheres in the peri-implant pocket of the control implant (N=20). In places where residual persistent BOP occurred, treatment was repeated after 3, 6, 9 and 12 months. The primary results variable was the changed number of peri-implantar sites with BOP. Secondary results variables included changes in the PPD, the clinical attachment levels (CAL), the mucosal recession (REC), bacterial measurements and the quantities of crevicular fluid (CF) of host-based biomarkers.

RESULTS: 12 months after the trial commencement date, there was a statistically significant reduction in the number of BOP-positive sites in both groups (P <0.05) (PDT: 4.03 ± 1.66-1.74 ± 1.37, LDD: 4.41 ± 1.47-1.55 ± 1.26). A statistically significant (P <0.05) reduction in PPD was detected for up to 9 months from the trial commencement date in sites treated with PDT (4.19 ± 0.55 mm to 3.89 ± 0.68 mm) and for up to 12 months in the case of sites treated with LDD (4.39 ± 0.77 mm to 3.83 ± 0.85 mm). The figures for *Porphyromonas gingivalis* and *Tannerella forsythia* yielded statistically significant lower values (P < 0.05) for up to 6 months from the trial commencement date in the PDT group and for up to 12 months in the LDD group.
There was a statistically significant reduction in CF quantities of IL-1ß (P < 0.05) in both groups for up to 12 months from the trial commencement date.
A statistically significant (P >0.05) difference was not detected between the groups after 12 months with regard to clinical, microbiological and host-based parameters.

CONCLUSION: Non-surgical mechanical debridement with adjuvant PDT was just as effective in reducing mucosal inflammations as adjuvant application of Minocycline microspheres for up to 12 months. Adjuvant PDT may offer an alternative to the local administration of antibiotics (LDD) in the case of non-surgical treatment of peri-implantitis in the initial stage.

*** Source language: English**

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Periodontology: repeated use of aPDT adjuvant to cleaning, double-blind study

University of Bern, Switzerland

One-year outcomes of repeated adjunctive photodynamic therapy during periodontal maintenance: a proof-of principle randomized controlled clinical trial

Authors:
Martina Lulic[1], Isabelle Leiggener Görög[2], Giovanni E. Salvi[2], Christoph A. Ramseier[2], Nikolaos Mattheos[3] and Niklaus P. Lang[1]

Institute:
[1] Prince Philip Dental Hospital, University of Hong Kong, Hong Kong, China
[2] Dentistry Departments, University of Bern, Bern, Switzerland
[3] School of Medicine and Oral Health, Griffith University, Gold Coast, Queensland, Australia

Published:
J Clin Periodontol 2009; 36

Abstract: *
BACKGROUND: Individual photodynamic therapy (PDT) was successful in initial periodontal treatment, however it only improved bleeding on probing (BOP) for patients undergoing tooth maintenance after a single application. Repeated use of PDT has not been examined to date.

AIMS: To examine the possible additional benefits of repeated adjunctive PDT in conventional treatment of residual pockets of patients, who are earmarked for periodontal tooth maintenance.

MATERIALS AND METHODS: Ten patients undergoing tooth maintenance with 70 residual pockets [probe depth (PPD) ≥5 mm] were referred for randomised treatment that was carried out 5 times in 2 weeks (day 0, 1, 2, 7, 14) with PDT (test) or a deactivated laser (control), followed by debridement. The PPD was the primary results variable;
the secondary results variables were the clinical attachment level (CAL) and BOP. These variables were assessed 3, 6 and 12 months after the procedures.

RESULTS: Greater PPD reductions were observed in the test patients (-0.67 ± 0.34; p=0.01) compared with the control patients (-0.04 ± 0.33; NS) after 6 months. A significant increase in CAL (+0.52 ± 0.31; p=0.01) was recorded in the test patients, which did not occur in the control patients after 6 months (-0.27 ± 0.52; NS). The BOP percentages decreased significantly for the test patients after 3, 6 and 12 months (97-64%, 67%, 77%), but not for the control patients.

CONCLUSION: The PDT, which was repeated (5 times) adjuvant to debridement, led to improved clinical results for residual pockets in patients undergoing tooth maintenance. The effects were most clearly seen after 6 months.

*** Source language: English**

Periodontology: single use of aPDT adjuvant to cleaning

University of Bonn, Germany

Short-term clinical effects of adjunctive antimicrobial photodynamic therapy in periodontal treatment: a randomized clinical trial

Authors:
Andreas Braun, Claudia Dehn, Felix Krause and Søren Jepsen

Institute:
Outpatient Department for Periodontology, Tooth Maintenance and Preventative Dental Surgery, University of Bonn, Welschnonnenstrasse 17, D-53111 Bonn, Germany

Published:
J Clin Periodontol 2008; 35

Abstract: *
AIM: The aim of this study was to assess the effect of adjuvant antimicrobial photodynamic therapy (aPDT) in the case of chronic periodontitis.

MATERIALS AND METHODS: The study was carried out on twenty patients with untreated chronic periodontitis. All teeth were subjected to tooth cleaning and root planing. The split-mouth procedure was used to treat two quadrants (test group) with additional aPDT. The sulcus fluid flow rate (SFFR) and bleeding on probing (BOP) were assessed at the beginning of the trial, as well as 1 week and 3 months after treatment. The relative attachment level (RAL), the probe depths (PDs) and the gingiva recession (GR) were assessed at the beginning of the trial and 3 months after treatment.

RESULTS: The mean values in relation to PD, GR and RAL at the beginning of treatment did not differ between the test and the control group. The values for RAL, PD, SFFR and BOP were noticeably lower in the control group 3 months after treatment (delta-RAN-mean value: - 0.35 mm, interquartile range: 0.21 mm), with increased effect on the sites treated with adjuvant aPDT (delta-RAL-mean value: - 0.67 mm, interquartile range: 0.36 mm, $s<0.05$). The GR increased 3 months after treatment with and without adjuvant aPDT ($p<0.05$), with no evidence of a difference between the groups ($p> 0.05$).

CONCLUSION: In patients with chronic periodontitis, the clinical results show an improvement with conventional subgingival debridement with adjuvant aPDT.

***Source language: English**

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Periodontitis and peri-implantitis therapy: 5-yearly results

Die antimikrobielle photodynamische Therapie als adjuvante minimal-invasive Parodontitis-und Periimplantitistherapie
[Antimicrobial photodynamic therapy as adjuvant minimally-invasive treatment of periodontitis and peri-implantitis].
A longitudinal cohort study based on practical experience: 5-yearly results

Authors:
Tilman Eberhard, Freimut Vizethum

Published:
ZWR - Das Deutsche Zahnärzteblatt [The German Dental Journal] 2012; 121 (9)

Abstract: *
BACKGROUND: Preserving treatment for patients with recurrent chronic or aggressive periodontitis places major demands on clinical practice, even in this day and age. The findings of a new treatment concept were documented in 70 patients with 1683 units (teeth + implant) and the diagnosis of recurrent chronic or aggressive periodontitis or peri-implantitis. All patients were aged between 2 and 19 years
(mean: 14 years), were receiving periodontal care yet still showed recurrences of the disease. The clinical effect of the use of antimicrobial photodynamic therapy was examined in this study, taking into consideration
the clinical course of the disease and the bacterial flora over a period of 5 years.

CONCLUSION: As a result of the systematic use of a treatment concept involving HELBO®
therapy procedures, a significant reduction in the periodontal pathogenic bacterial load was initially seen, as well as a noticeable improvement in the periodontal and peri-implantar probe depths and the bleeding index in the long-term. The number of deep pockets also reduced significantly. Recurrences were largely ruled out as a result of regular use. aPDT has proven to be a simple, effective treatment approach in tissue-preserving treatment of periodontitis and peri-implantitis, which has few side effects, can be used when required and supports long-term prophylaxis efficiently.

***Source language: German**

Immediate implantology: Reduction in complications due to disinfection prior to implantation

University of Cologne, Germany

Sofortimplantation bei Parodontitispatienten: Reduktion von biologischen Komplikationen durch die antimikrobielle photodynamische Therapie (aPDT) als adjuvante Therapie [Immediate implantation in patients with periodontitis: Reduction in biological complications due to antimicrobial photodynamic therapy (aPDT) as adjuvant therapy]

Authors:
Jörg Neugebauer[1,2], Steffen Kistler[1], Frank Kistler[1]

Institute:
[1] Joint dental practice of Drs. Bayer, Kistler, Elbertzhagen & Colleagues, Landsberg am Lech, Germany
[2] Interdisciplinary Outpatient Department for Oral Surgery and Implantology, Department and Outpatient Department for Maxillofacial Surgery and Plastic Facial Surgery, University of Cologne, Germany

Published:
ZMK, Jg. 30, Edition 7-8, July/August 2014

Abstract: *
BACKGROUND: If implantation is carried out immediately after removing teeth that are no longer worth saving in the case of chronic periodontitis, antimicrobial photodynamic therapy (aPDT) according to the HELBO® procedure is available as a means of bacterial elimination in the extraction alveoli. Study results show fewer complication rates if this adjuvant therapy is carried out: sequestration in particular occurs less frequently.

CONCLUSION: Immediate implantation with immediate treatment of teeth with periodontal disease can lead to a significant number of sequestrations. This is particularly noticeable when carrying out treatment in the mandible, therefore additional surgical treatment is required here. aPDT makes it possible to reduce these complications.

***Source language: German**

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A comparison of different photodynamic systems

University of Munich, Germany

Welche Systeme sind geeignet und wirksam? Anforderungen an die aPDT zum Einsatz in der oralen Chirurgie und Mund-Kiefer-Gesichtschirurgie [Which systems are suitable and effective? Requirements of aPDT for use in oral surgery and maxillofacial surgery]

Authors:
Sigurd Hafner

Institute:
Department and Outpatient Department for Maxillofacial Surgery at the Ludwig-Maximilians-University Munich, Germany

Published:
Teamwork 3/2014

Abstract: *
BACKGROUND: Antimicrobial photodynamic therapy (aPDT) has been established for over ten years within the scope of treatment of periodontitis and peri-implantitis. The procedure is already being used successfully as supporting treatment in bisphosphonate-related osteonecroses of the jaw (BRONJ) and other indications in the event of an inflammatory event within the scope of surgical procedures in the specialist areas of oral surgery and maxillofacial surgery. However, one cause for discussion is the partly contradictory reports in literature regarding the significant effectiveness of treatment with regard to bacterial reduction. It must be stated with regard to this problem that the systems currently available on the market that promise "photodynamic therapy", can differ significantly to some extent in terms of their structures and the interaction of the individual components, as well as in the scientific evaluation. It should therefore be important for those treating patients to understand the basic photochemical and photobiological mechanisms of this treatment concept, as only then can they use this correctly and only then can they decide on the right system for their personal treatment range. It should also be taken into consideration that randomised, clinically controlled trials have only been carried out for a few licensed procedures. However, these are essential for assessing the treatment results to be expected and therefore help the person treating the patient to make the best choice.

CONCLUSION:
Local use of aPDT with photochemically suitable systems that also contain sterilised individual components (HELBO®), can definitely contribute to intraoperative disinfection within the scope of treatments in the specialism of oral surgery or maxillofacial surgery. Due to the increasing resistance to antibiotics and the antiseptic rinsing solutions, of which we are already aware, the treatment procedure for aPDT will noticeably increase in significance and possibly also find its indications in other surgical and non-surgical medical specialisms. The analgesic and wound-healing effect of the laser light should also be mentioned here as another positive effect in this procedure.

***Source language: German**

Augmentation in infected alveoli: Reduction in complications due to disinfection prior to augmentation

Komplikationsvermeidung bei Augmentation infizierter Alveolen [Avoiding complications due to augmentation of infected alveoli]

Authors:
Torsten Conrad

Published:
DENT IMPLANTOL 16, 7, 440-445 (2012)

Abstract: *
BACKGROUND: Alveolar osteitis occurs in 3–25% of cases following tooth extraction. The literature contains lively debate on the subject of direct augmentation of an infected alveolus. In order to prevent the loss of buccal bone, simultaneous augmentation during extraction is to be aimed for. This, however, calls for the alveolus to be largely free from inflammation, particularly during the healing phase.
Antimicrobial photodynamic HELBO® therapy is a procedure to tackle bacterial infection in the oral cavity. The efficiency of the procedure is already described extensively in literature for the fields of periodontology, peri-implantitis and endodontics (Novaes, A., Lasers in Medical Science 2011, Braun, A., Journal of Clinical Research, 2008). A significant reduction in the occurrence of alveolar osteitis and additional disturbances to wound healing can also be achieved using the HELBO® procedure (Neugebauer J., et al. Mund Kiefer Gesichts Chir 2004).
The aim of this investigation was to determine whether the complication rate following extraction can be reduced by decontamination using HELBO® therapy and subsequent filling of the alveoli with a xenogeneic bone grafting material (BioOss, Geistlich).

CONCLUSION:
Bacterial infections and the inflammation processes linked with them can cause significant complications. Alveolar osteitis following tooth extraction therefore poses a challenge for the dentist treating the patient, but also presents the risk of failure of bone-preserving measures.
By using aPDT (HELBO® procedure) prior to augmentation for the purposes of decontamination, the occurrence of complications, both directly after extraction and also later, can be almost completely avoided, bone substance can be preserved and patient comfort can be significantly increased, which is no mean feat.

***Source language: German**

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Multiple possible applications for aPDT

University of Cologne, Germany

Erfolgreiche Dekontamination - auch chronischer oral manifestierter Infektionen mit der antimikrobiellen Photodynamischen Therapie (aPDT) nach dem Helbo-Verfahren [Successful decontamination - even in the case of chronic orally manifested infections with antimicrobial photodynamic therapy (aPDT) according to the HELBO® procedure]

Authors:
Jörg Neugebauer, Viktor E. Karapetian, Thea Lingohr, J. Mauricio Herrera, Michael Schnickmann, Martin Scheer, Joachim E. Zöller

Institute:
Department and Outpatient Department for Dental Surgery and Maxillofacial Surgery and Plastic Facial Surgery at the University of Cologne, Germany

Published:
LaserZahnheilkunde [Laser Dental Surgery] 2008; 1/08: 27-38

Abstract:*
BACKGROUND: Orally manifested infections are most often visible to the dentist within the scope of periodontopathies. Peri-implantitis is also occurring increasingly frequently, although this cannot be attributed to an increased risk posed by the implant, but rather it is linked to increased treatment rates. Colleagues involved in surgery also see alveolar osteitis after tooth extraction as the most frequent wound healing disturbance, where further disturbances to wound healing must also be treated according to surgical techniques and patient-specific risk factors. This includes disinfection of the resection cavities in the case of root tip resection or the apex in the case of conventional endodontic treatment methods. Antimicrobial photodynamic therapy makes it possible to carry out local disinfection of these oral infections without side effects by staining the bacteria with a thiazine dye and subsequently activating this photosensitizer using a low-level laser. The different treatment options are explained in this article with the specific procedures.

CONCLUSION:
Photodynamic therapy is an alternative method to the known pharmacological and chemical decontamination procedures for prophylaxis and treatment of orally manifested infections. As resistance among individual species of bacteria is not known with this procedure to date, simple decontamination can be achieved to allow the development of physiological oral flora. Systemic side effects do not occur due to the fact that application is purely local and there are no known allergies to this procedure. System-related low-level laser treatment reduces the feeling of pain and supports wound healing.

*** Source language: German**

Endodontics: Improvement in the bacterial situation in the root canal due to adjuvant use of aPDT

University of Zagreb, Croatia

The antimicrobial effectiveness of photodynamic therapy in addition to conventional endodontic re-treatment:
A clinical study

Authors:
Ivona Bago Jurič[1], Vanda Plečko[2], Dragana Gabrić Pandurić[3], Ivica Anić[1]

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[2] Department for Clinical and Molecular Microbiology, University Hospital Centre, 10 000 Zagreb, Croatia
[3] Department for Oral Surgery, School of Dentistry, University of Zagreb, Gunduličeva 5, 10 000 Zagreb, Croatia

Published:
Photodiagnosis and Photodynamic Therapy (2014) 11, 549-555

Abstract: *
BACKGROUND: This study examines the effectiveness of antimicrobial photodynamic therapy (aPDT) in addition to endodontic re-treatment to eradicate micro-organisms from previously filled root canals.

METHOD: The study was carried out on 21 patients selected at random with root fillings and infected root canal systems with chronic apical periodontitis of the incisors or canines, who had previously undergone endodontic dental treatment. After assessing the canal, following endodontic re-treatment and after aPDT, microbiological samples were taken from the root canals. During instrumentation, the root canals were rinsed with 2.5% sodium hypochlorite (NaOCl) and the final rinsing protocol comprised 17% ethylene diamine tetra acetate EDTA followed by NaOCl. Root canals were filled with phenothiazine chloride and exposed to a diode laser for 1 minute (λ = 660 nm, 100 W). Microbiological samples from the root canals were cultured on selective slides and identification took place by means of micromorphology, macro-morphology and different API strips, as well as on the basis of bacterial counts (colony-forming units).

RESULTS: Fourteen types of bacteria were initially isolated from the root canals, the mean was 4.57 types per canal. The number of types of bacteria could only be significantly reduced with endodontic re-treatment ($p < 0.001$), the combination of endodontic treatment and aPDT was, however, statistically more effective ($p < 0.001$). No bacteria were cultured from the main root canals of 11 teeth.

CONCLUSION:
The study showed that by using additional aPDT in addition to conventional chemomechanical root canal preparation, the number of CFUs could be reduced considerably further and that the remaining types of bacteria could be eliminated; in some cases, complete eradication of the bacteria was even achieved.

*** Source language: English**

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Prevention of alveolar osteitis and post-extraction pain

University of Vienna, Austria & University of Cologne, Germany

Die antimikrobielle Photodynamische Therapie zur Prävention der alveolären Ostitis und des Dolor post extractionem
[Antimicrobial photodynamic therapy for the prevention of alveolar osteitis and post-extraction pain]

Authors:
J. Neugebauer[1], M. Jozsa2, A. Kübler[1]

Institute:
[1] Department and Outpatient Department for Dental Surgery and Maxillofacial Surgery and Plastic Facial Surgery at the University of Cologne, Germany
[2] Outpatient Department of the Gebietskrankenkasse [regional medical insurance company], Vienna, Austria

Published:
Zeitschrift für Mund-Kiefer-Gesichts-Chirurgie [Journal for Maxillofacial Surgery] 6/2004

Abstract: *
QUESTION: Alveolar osteitis occurs in 3–25% of cases following tooth extraction. Antimicrobial photodynamic therapy (aPDT) using the HELBO® Blue and TheraLite laser makes it possible to carry out local decontamination of the extraction alveoli. The study will show whether aPDT using the HELBO® Blue and Soft laser can prevent the occurrence of alveolar osteitis.

MATERIALS AND METHODS: In an intraindividual study on 100 patients, one or more teeth were extracted contralaterally in 130 jaws with an interval of 1 week. Treatment was carried out on a randomised basis with aPDT on one side and without aPDT on the other in a standardised treatment schedule. In the follow-up check, an assessment of the extraction alveoli was carried out by the person treating the patient.
The patient reported the level of postoperative pain experienced on an analogue scale (0-100).

RESULTS: In the group with aPDT, one case of alveolar osteitis occurred on extraction, yet 13 cases of this occurred in the control group without aPDT. In the subjective pain assessment carried out 1 day after tooth extraction, patients reported this as being 11.2 ± 9.8 in the aPDT group and 19.0 ± 2.2 in the control group. One week after extraction, the values were reported as being 2.4 ± 9.2 in the aPDT group and 13.1 ± 25.2 in the control group. The difference was significantly less for the 1st and 8th postoperative day in the aPDT group, with p=0.000.

CONCLUSION: Due to the significantly lower rate of incidence of alveolar osteitis following antimicrobial photodynamic therapy, this appears to be a new and promising approach to the prevention of alveolar osteitis.

*** Source language: German**

English literature

Khoury F., Hidajat H.
Extensive Autogenous Bone Augmentation and Implantation in Patients Under Bisphosphonate Treatment: A 15-Case Series
International Journal of Periodontics & Restorative Dentistry, Volume 36, Number 1, 2016.
Used Photodynamic System: HELBO®

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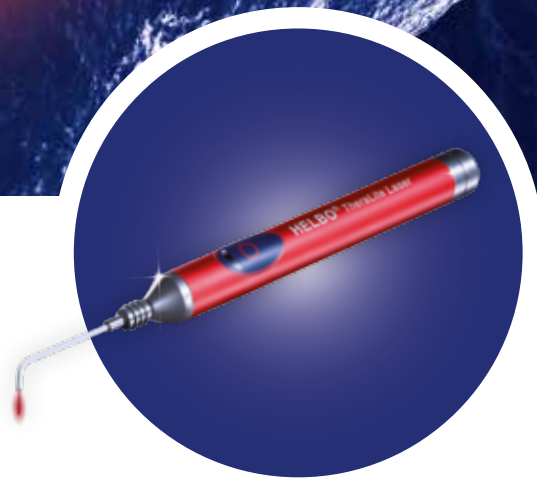

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Viruses and bacteria claim more people's lives than
lions and crocodiles."

(Peter Hohl, writer, journalist and publisher, born in 1941)

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