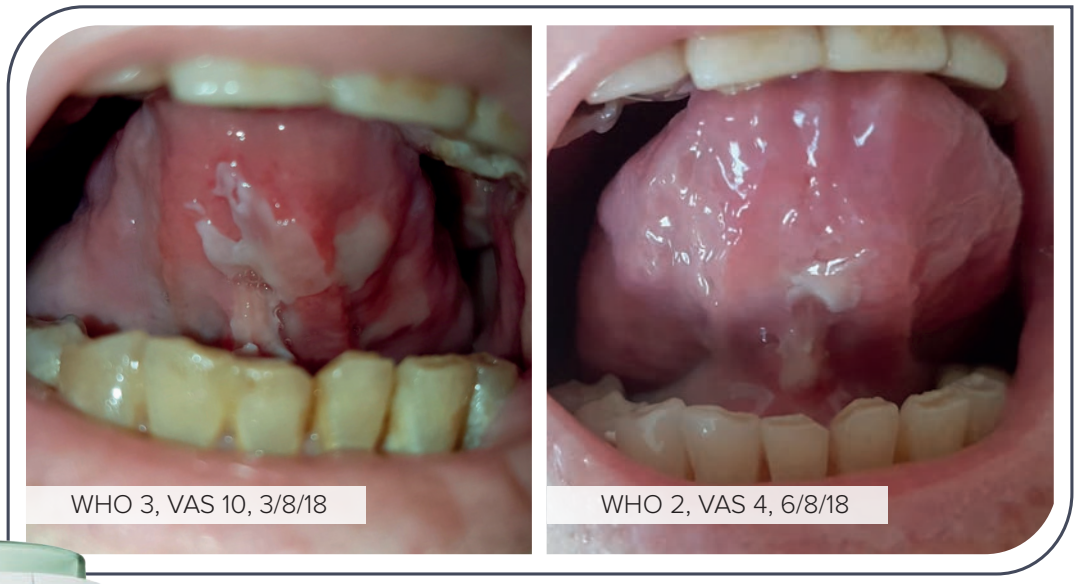
B-CURE® LASER PRO

Tehokas B-Cure lääkintälaserterapia SUUN MUKOSIITIN ja HAAVAUTUMIEN HOITOON – lievittää kipua ja nopeuttaa paranemista



Suomen Käypä hoito -suosituksissa ja kansainvälisissä ohjeissa suositellaan matalan tason laserhoitoa mukosiitin hoitoon

Kansainvälinen syövän tukihoitojen yhdistys (Multinational Association of Supportive Care in Cancer MASC) ja Kansainvälinen oraalionkologian järjestö (International Society of Oral Oncology ISOO) ovat julkistaneet tieteellisiin todisteisiin perustuen uudet hoitosuositukset, joissa (LLLT) lääkintälaserterapiaa suositellaan sädehoidon ja kemoterapian aiheuttaman mukosiitin (Oral Mucositis) ehkäisyyn ja hoitoon. Myös Suomen Käypä hoito -suosituksissa tuetaan terapian tehoa.

B-CURE® LASER PRO

GOOD ENERGIES®

Terveystekniikka

MITEN B-CURE LÄÄKINTÄLASER TOIMII?

Low Level Laser Terapia (LLLT) on matalan tason laserhoitoa, joka vaikuttaa ihon pinnalla sekä syvällä sen alla olevassa pehmytkudoksessa vahingoittamatta tai kuumentamatta ihoa tai kudosta. Tämä laserterapia stimuloi solujen toimintaa, vahvistaa solusignaaleja ja tehostaa kehon omaa immuunijärjestelmää. Terapia nostaa tulehduksia vastaan taistelevien entsyymien tuotantoa ja vapauttaa endorfiineja (kipua vähentäviä hormoneja) lievittäen kipua. Terapia nostaa kollageenin ja elastaanin luonnollista tuotantoa nopeuttaen haavojen ja vaurioituneiden kudosten parantumista.

LOW LEVEL LASER -ENERGIA

Kehomme vastaanottaessa lääkintälaserenergiaa, se reagoi usealla eri tavalla samanaikaisesti: verenkierto vilkastuu, solujen toiminta nopeutuu ja solujen välinen kommunikaatio lisääntyy.

Vaikuttaa solujen läpäisevyyteen, Ca++,Na+, K+ -ioneiden välitykseen ja nopeuttaa hermotoimintaa.

Lisää ATP (Adenosin Triphosphate) tasoja, aktivoi ja stimuloi kohdesoluja ja solujen välisiä signaaleja välittäviä cAMP molekyylejä.

Lisää endorfiinien (kipua lieventävien hormonien) tuotantoa.

Lisää S.O.D (Super Oxide Dismutase) entsyymin tuotantoa, joka taistelee tulehduksia vastaan, lieventää kipua ja vapaiden radikaalien aiheuttamia vahinkoja.

Aktivoi immuunijärjestelmän ketjureaktiota, kiihdyttää makrofagisoluja sekä lisää haavoja parantavien solujen määrää.

Kiihdyttää kollageenin ja elastaanin synteesiä. Lisää endoteelisolujen migraatiota ja kiihdyttää keratiinisyyttien (orvaskeden solujen) synteesiä nopeuttaen huomattavasti haavan parantumisprosessia.

Lopputulos:
Kivun lieveneminen

Loppututos:
Tulehduksen parantuminen

Lopputulos:
Haavojen ja kudosvaurioiden nopeampi parantuminen.

Lopputulos:
Haavojen ja ihovaurioiden nopeampi parantuminen.

KOKONAISVALTAINEN HAAVOJEN JA KUDOSVAURIOIDEN, KIVUN, TULEHDUSTEN JA TUKI- JA LIIKUNTAELINVAIVOJEN HOITO.

B-CURE LÄÄKINTÄLASERIN HYÖTYJÄ

Tehokas ja nopea hoito
- Vähentää kipua ja turvotusta
- Lyhentää toipumisaikaa
- Tehokas niin akuuttien kuin kroonisten haavojen ja tulehdusten hoidossa.

Kliinisesti todistettu
- Lääkintälaserteknologian tehokkuus haavojen, tulehdusten, kivun ja tuki- ja liikuntaelinvaivojen hoidossa on todettu yli 2000:ssa tutkimuksessa.
- B-Cure Laser -terapian teho on todettu useissa kliinisissä tuplasokkotutkimuksissa.

Luonnollinen ja turvallinen hoitomuoto kaiken ikäisille
- Luonnollinen, kivuton ja non-invasiivinen hoitomuoto.
- B-Cure Laser-terapian turvallisuus on tutkittu ja todennettu laajoin kliinisin tutkimuksin. Se ei aiheuta sivuoireita, vahingoita ihoa tai kudoksia, eikä siitä voi saada yliannostusta.
- Ei kontraindikaatioita.

Soveltuu itsehoitoon kotona
- Laitetta on helppo ja turvallinen käyttää niin terveysasemilla kuin kotonakin.
- Edistyksellinen teknologia ennen näkemättömän pienessä, helposti mukana kulkevassa muodossa.

Helppokäyttöinen
- Laitteen käyttö ei vaadi erityistä koulutusta, tietoa tai suojavarustusta.
- Laite sijoitetaan lähelle haavaa, koskettamatta sitä. Hoitoaika asetetaan laitteeseen käyttöohjeen hoitosuositusten mukaisesti ja hoito voidaan aloittaa.

Maailmanlaajuisesti tunnustettu teknologia
- Äskettäin julkaistu vertailu (Systematic Literature Review Nov. 2018) Photomedicine and Laser Surgery Journal -lehdessä tukee vahvasti B-Cure Laser -hoitolaitteen erinomaista hoitotehoa verrattuna muihin kivun ja kudosvaurioiden itsehoitoon tarkoitettuihin terapialaitteisiin.
- Kansainvälinen syövän tukihoitojen yhdistys (Multinational Association of Supportive Care in Cancer MASC) ja Kansainvälinen oraalionkologian järjestö (International Society of Oral Oncology ISOO) ovat julkistaneet tieteellisiin todisteisiin perustuen uudet hoitosuositukset, joissa (LLLT) pehmeälaserterapiaa suositellaan sädehoidon ja kemoterapian aiheuttaman mukosiitin (Oral Mucositis) ehkäisyyn ja hoitoon.
- Suomen Käypä hoito -suosituksissa on julkaistu 22.5.2019 suositus otsikolla ”Pienienergiainen laserhoito on tehokas sädehoidon aiheuttaman suun mukosiitin ehkäisyssä ja hoidossa.”

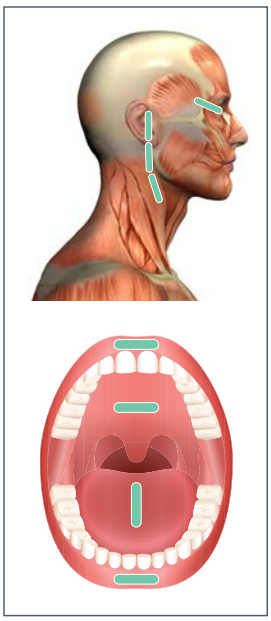
SUOSITELTU HOITOPROTOKOLLA *

Extra-oraalihoito: (yhteensä 4 hoitoaluetta, 3 min kullekin alueelle)
- Hoida molempia poskia suun limakalvoilla sijaitsevia haavautumia ja/tai mukosiittileesioita vastaavalta kohdalta. Hoida myös ylä- ja alahuulen sisäpintaa.

Kaulan bilateraali lymfaketju: (yhteensä 6 hoitoaluetta, 1 min kullekin)
- Hoida kaulan lymfaketjua molemmin puolin 3 x 1 min.

Intra-oraalihoito:
- Ennaltaehkäisy: Hoida suun mukosiitille alttiina olevia alueita (kuten kitalaki ja kielen ylä- ja alapuoli, 2 min / alue).
- Hoito: (3 min / hoitoalue). Hoitoalue riippuu suun mukosiittileesioiden sijainnista.

Hoitoprotokollan toteutus: (Kemoterapia ja sädehoito):
- Ennaltaehkäisevä – Aloita lääkintälaserterapia kemoterapia-/sädehoitojakson ensimmäisenä päivänä tai jo ennen hoitoja ja jatka hoitojen viimeiseen päivään asti.
- Akuuttiin mukosiittiin – Päivittäinen hoito kunnes oireet vähenevät. Jatka käyttöä kemoterapia- /sädehoitojakson loppuun asti.



** Modified from Zecha et al. to adjust to B-Cure Laser parameters: Low-level laser therapy/photobiomodulation in the management of side effects of chemoradiation therapy in the head and neck cancer: part 2: proposed applications and treatment protocols. Support Care Cancer / June 2016*

B-CURE® LASER PRO

Published in: Physics of Cancer: Interdisciplinary Problems and Clinical Applications, Sep 2017

B-CURE LASER DENTAL PRO TECHNOLOGY FOR PREVENTION AND TREATMENT OF PERI-IMPLANT MUCOSITIS

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The use of B-Cure Laser in prevention and treatment regimens before and after Dental Implantation significantly reduces the frequency and intensity of the pain symptoms and oral mucosal postoperative hematomas in comparison with the sham laser group

Abstract:

Oral mucositis (OM) is the severe inflammation, lesioning and ulceration of the epithelia, accompanied by bleeding and intensive pain. OM is a common complication of dental implantation. Low-level laser therapy (LLLT) has been found to enhance the repair and healing of epithelia. The aim of this study was to evaluate the effectiveness of preventive and treatment use of LLLT (B-Cure Laser Dental Pro) in the patients who have undergone dental implantation. Simple blind randomized prospective one-center comparative placebo.

Background:

In recent years, dental implants confidently retain the status of a leading trend in modern dentistry, making a serious alternative to the traditional techniques of fixed and removable prosthetics of dental defects, providing high aesthetic and functional results and improving the quality of life of the dental patient. However, the possibility of early and late postoperative complications of dental implantation (DI) did not entirely eliminate and may reduce the success of implant treatment, and therefore it requires adequate prevention, early detection and correction. For the prevention and treatment of inflammatory and sensory-paresthetic complications of DI low-level laser therapy (LLLT) having multifactorial local and systemic effects on the patient is reasonably used.

Materials and Methods:

Single-blind randomized prospective single-center comparative placebo-controlled clinical trial to study the efficacy of LLLT by defocused beam of B-Cure Laser Dental Pro device in the complex events of the surgical phase of DI in prosthetic treatment of patients with partial edentulism was held in the period from June to October 2016.

30 patients (13 men and 17 women aged 28 to 57 years) with included defects of tooth alignment of various location and extent, with indications and intentions for prosthetic treatment with the use of DI. Monitoring groups for the comparative placebo-controlled trial were formed by the method of restricted randomization: the laser group —LG, the patients in the complex of dental implantation received “active” LLLT, generating the corresponding laser radiation by B-Cure Laser Dental Pro device, and the placebo group - PG, the patients received “inactive” placebo B-Cure Laser Dental Pro device with an identical exterior design and handling characteristics, simulating the generation of LLLT and with specific, understandable only by the dentist encoding. The patients of LG used a portable laser therapeutic dental devices B-Cure Laser Dental Pro (Good Energies®, Israel)—Ga-Al-As diode laser generated infrared laser radiation (wavelength—808 nm, power—250 mW, pulse frequency—14 kHz) with unfocused beam 4.5 cm u 1.0 cm with a power density of 14.4 J/min at the peak (3.2J/cm^2 per minute). The device has the necessary international certificates (CE 0120—Medical Device), approved for the use in the field of healthcare. At the baseline (T0), on the 2–3 (T2-3), 5–7 (T5-7), 10–14 (T10-14) days and 3 months (T90) after the operation of DI the structure, the frequency and severity of complications in early and late postoperative period were analyzed in the patients.

The complex of LLLT using B-Cure Laser Dental Pro technology was carried out in “preventive” (at preoperative stage) and in “treatment mode” (at postoperative period) modes. LLLT in “preventive mode” were conducted

by a trained dentist in the dental office using contact, stable technique, transcutaneously in the projection of dentoalveolar segments corresponding to the DI installation location; a course of 2-3 procedures daily, with a duration of 8min. LLLT in the “treatment mode” was carried out by a trained patient at home on the next day after the operation of DI by the following method: contact, stable area of irradiation (4.5 cm^2) of the skin in the projection of the dentoalveolar segment(s) corresponding to the area of DI. The sessions of laser therapy (2) were carried out after the operation on a daily basis, lasting for 8 min (total exposure time—16 min.), the course—7–10 days. Optional LLLT was carried out by the patient at the stage of gingival formation using contact, stable technique, transcutaneously in the projection of DI: daily, duration of the procedure—8 min, treatment course—3–5.

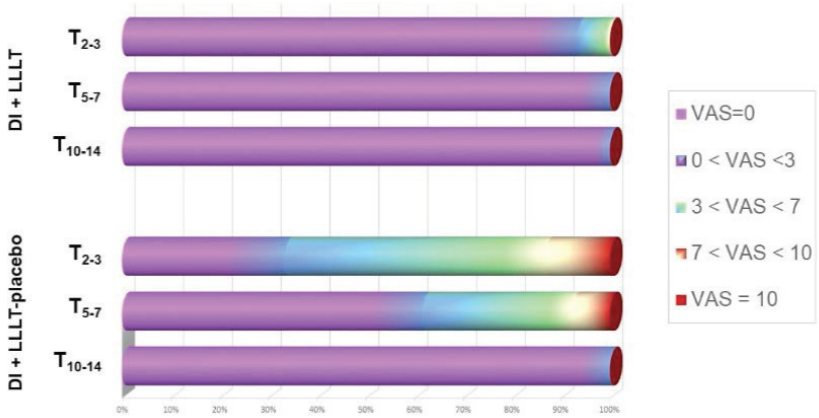

FIGURE 1. The magnitude of pain (VAS scores) and the restructuring of the pain symptom in patients of compared groups in postoperative period of dental implantation stages (T2-3–T10-14)

Results:

Two thirds (66.7%) of the patients in PG noted local inflammation (swelling, redness) in the area of implantation, mostly slightly or moderately expressed. The symptoms of local, mainly slight, inflammation, in periimplantation area were revealed (Fig.2) only in 20.0% of the patients at T2-3, i.e. 3.3 times less than in PG. The frequency of occurrence of oral mucosal postoperative hematomas on T2-3 in the patients of PG was significantly ($p < 0.05$) higher than in the patients of LG, (33.3% versus 13.3%, respectively), including the vast, exciting area of 1-2 jaw segments and adjacent areas of oral mucosa and lips (Fig. 3), often continuing for 5 days after surgery. On T2-3 in the absolute majority of PG patients mouth opening was restricted in comparison with the initial values (29.32±4.40 mm versus 45.50±6.22 mm; $p < 0.05$).

Conclusion:

The results of the study are consistent with the known data that dental implantation in some cases can create problem situations for the doctor and the patient, manifested a steady and severe pain symptom, orofacial swelling, etc.

The use of original LLLT techniques in prevention and treatment regimens before and after DI significantly (in 3.5 times) reduces the frequency and intensity of the pain symptom in the first days after the installation of endosseous implants, promotes earlier and more complete relief without additional analgesics within the first 5 days of the postoperative period in comparison with placebo-laser therapy.

The inclusion of LLLT in DI complex by 3.3– 3.7 times reduces the frequency, duration and intensity of local edema-inflammation in preimplantation area and edema of soft tissues, prevents the development of clinical functional and aesthetic disorders, associated with limitation of mouth opening throughout the surgical stage of DI. The data confirms the information that in some patients early postoperative DI may be accompanied by pronounced physical and psychological discomfort, pain symptom, functional and aesthetic disorders, manifested by a decrease in dental dimensions of quality of life. Effective relief of swelling pain and sensory-paresthetic symptoms as well as associated aesthetic, functional and psychological disorders on the background of LLLT allows minimizing subjective feelings of reduced quality of life in the early postoperative period.

Published in: EWMA 2019, Gothenburg, Sweden

TREATMENT OF ORAL MUCOSITIS WITH A HOME-USE PHOTOBIOMODULATION DEVICE: A CASE SERIES

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Aim:

Oral Mucositis (OM) is a common painful and debilitating side-effect of chemotherapy and radiotherapy. It requires treatment with analgesics, frequently impairs the ability for food intake, and potentially prevents completion of the full cancer treatment regimen. According to international guidelines, photobiomodulation (PBM), also known as low-level laser therapy, is recommended as a favorable intervention to be used for OM prevention and/or treatment. In the following case series, we present 4 cases treated with a home-use PBM device.

Method:

The 4 cases reported here (1:3 male:female, 55-71 yo) all suffered from OM (WHO grade 3 or 4) as a result of various etiologies. The PBM treatment (808nm, 250mW peak power, 15KHz, 5J/min, ray size 4.5×1.0cm^2) was self-applied intra-orally over the tongue and inner epithelial surface of the lips, and extra-orally on the cutaneous surface corresponding to the buccal mucosa, and cervical lymph nodes. Treatment duration was 18-30 minutes.

Results / discussion:

Pain decreased after a single treatment and significant improvement with ability to ingest soft food in up to 3 days. One of the patients that stopped chemotherapy in view of severe OM, but resumed treatment after a single PBM session and continued using the device successfully for prophylaxis. In agreement with the official guidelines, PBM was found to have favorable effects on severe OM with no adverse effects, while standard care had only limited effect.

Conclusion:

The home-use PBM device* may be an important instrument for management of OM. The treatment is self-applied, thereby encouraging patient's involvement in own care, while requiring minimal staff involvement.

*B-Cure Laser PBM device

Published in: Cranio, April 2019 | https://www.ncbi.nlm.nih.gov/pubmed/30999823

B-CURE LASER: EVALUATION OF THE EFFICACY OF A NEW LOW-LEVEL LASER THERAPY HOME PROTOCOL IN THE TREATMENT OF JOINT-RELATED PAIN (TMJD): A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED CLINICAL TRIAL

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Results of a randomized, double blind, placebo controlled clinical trial conducted on 90 patients

B-Cure Laser's efficacy is almost equivalent to the conventional drugs therapy

Objectives:

This study analyzed a home, low-level laser therapy (LLLT) protocol to manage temporomandibular joint disorders (TMJDs)-related pain.

Methods:

Ninety TMJD patients (12M, 78F) between 18 and 73 years were randomly subdivided into three groups. Study group (SG) received 1-week home protocol LLLT by B-cure Dental Pro: 808 nm, 5 J/min, 250 mW, 15 KHz for 8', 40 J each, over pain area, twice daily. Placebo group (PG) followed the same protocol using sham devices. Drugs group (DG) received conventional drugs. Pain was evaluated by visual analog scale (VAS) before and after therapy.

Results:

An analysis of variance (One-Way ANOVA) was performed to compare the mean pain decrease in SG, DG, andPGpatientsbetweenT0andT1.Resultsindicatedthat theeffectofthetreatmentwassignificant(F(2,83)=4.882; p = .010). Post-hoc analysis (Bonferroni test) showed that the mean decrease in pain in the **PG group was significantly lower than both SG (p < .05)** and DG (p < .05). No difference was found between the SG and DG groups (p = 1.000) (Table 5). In the SG, a pain reduction between T0 to T1, of a mean of 34 VAS points per patient was registered. Additionally, in the PG, a mean pain decrease of 25.6 points was found. Finally, in the DG, a mean reduction of pain of 35.3 points was noted per patient. **This preliminary evaluation showed that LLLT and drug therapy have almost the same efficacy in the treatment of pain related to TMJDs (Table 4).**

Table 4. Mean VAS reduction between T0 and T1 in the three groups.

	N	Mean	Standard deviation
SG	29	35.17	22.139
PG	28	22.14	16.635
DG	29	36.55	18.181
Total	86	31.40	20.010

VAS: Visual analog scale; T0: Immediately before treatment; T1: After treatment; N: Number of subjects; SG: Study group; PG: Placebo group; DG: Drugs group.

Table 5. Bonferroni test shows that the values in PG were lower than both SG and DG.

(I) Group	(J) Group	Means difference (I-J)	Standard error	Significance
SG	PG	13.030*	5.075	.036
	DG	−1.379	5.030	1.000
PG	SG	−13.030*	5.075	.036
	DG	−14.409*	5.075	.017
DG	SG	29	5.030	1.000
	PG		5.075	.017

SG: Study group; PG: Placebo group; DG: Drugs group.

Conclusion:

According to the results obtained, it is possible to answer positively to the main query of the study, since the pain reduction obtained in the SG was significant. Concerning the answers to the two secondary queries, it is possible to affirm that the efficacy of the laser treatment is very promising, **being at the same level of the one registered in the DG.** The study supports the efficacy of home LLLT management of TMJD related pain.

Published in: 37th Annual Meeting of the Israel Orthopedic Association, Dec 2017, Tel Aviv, Israel

HEALING OF CHRONIC DIABETIC FOOT ULCERS USING B-CURE LASER PRO - LOW LEVEL LASER THERAPY (LLLT)

(Submission in process)

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12 weeks of daily B-Cure Laser Pro treatments significantly decreased wound size in patients with diabetic foot ulcers compared to the sham laser group

Background:

Diabetes mellitus (DM) is a significant health concern affecting hundreds of millions of individuals worldwide. A diabetic person has a 25% lifetime risk of developing a diabetic foot ulcer (DFU), which may lead to limb amputation and risk patient's life. The cellular and molecular effects of LLLT on wound healing were studied, though solid clinical effects on DFU healing is still lacking. The current study is a double blinded randomized trial evaluating the effects of a home use LLLT device (B-Cure Laser Pro, Israel) on DFU healing.

Methods:

19 patients, suffering for at least 6 weeks from a DFU, sized 3-37.5cm^2 were recruited. Patients were randomly assigned to daily treatments of LLLT (808nm, 8 minutes, 9 J/cm^2) (experimental group, n=10) or sham (control group, n=9) in addition to standard of care dressing. The treatment period lasted 12 weeks or until wound closure.

Results:

Initial wound sizes were 11.2±11.1cm^2 in the control group and 12.4±9.2 in the experimental group. At the endpoint wound sizes were 6.5±7.3 and 1.5±2.4. Using 2-sided exact Wilcoxon Sign Ranks test no significant difference was found between the initial wound sizes of the groups (p=0.92) and also between the initial and final wound sizes in the control group (p=0.301). Significant difference was found between the initial and final wound sizes in the experimental group (p=0.002). Direct comparison of percentage of wound closure between the experimental and control groups showed a significant healing effect of laser over sham (p=0.033). 7 of 10 active patients vs 1 of 9 placebo patients had >90% wound closure (p=0.019 by Fisher Exact Probability Test).

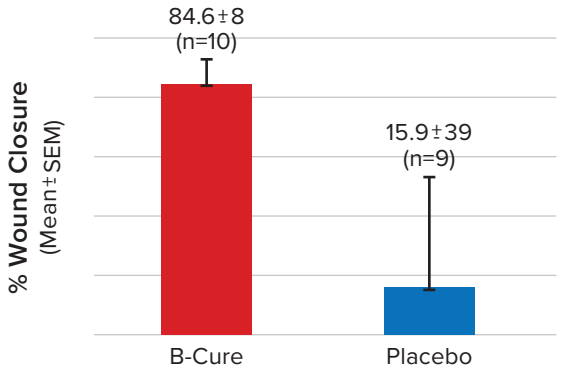

Figure 1: %Wound Closure – B-Cure vs Placebo

Table 2: improvement > 90%

Improvement	Active	Placebo
Less than 90%	3 (30%)	8 (89%)
More than 90%	7 (70%)	1 (11%)
Total	10	9

Placebo vs Active baseline: P=0.019 by Fisher Exact Probability Test

Conclusions:

In spite of the relatively small groups the results show that B-Cure Laser Pro may be beneficial as an adjunctive treatment to standard care for DFU healing. Further studies are warranted to strengthen our conclusions.

Published in: EWMA 2019, Gothenburg, Sweden

SELF USE LOW-LEVEL LASER THERAPY TO ACCELERATE HEALING OF HARD TO HEAL WOUNDS WITH VARIOUS ETIOLOGIES

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Aim:

Evaluation of consumer home-use Low-level laser therapy or Photobiomodulation (PBM) as an as an adjuvant to standard treatment to accelerate healing of acute and/or chronic wounds PBM device*.

Method:

Patient were recruited from clinic: 16 cases (11:5 male:female, 43-84 years old) included 3 abdominal wounds, 5 diabetic foot ulcers (DFU), 2 dehisced limb incisions, 3 Venous leg ulcers, and 3 complicated wounds, were treated from May to November 2018. The PBM treatment (808nm, 250mW peak power, 15KHz, 5J/min, ray size 4.5×1.0cm2) was applied over the wound bed, wound margins, and over nearby lymph nodes by the patients themselves.

Results / discussion:

The abdominal wounds achieved complete epithelialization after 5-6 treatments at the clinic over a period of 9-21 days. Three of the DFUs closed within 2 weeks after 4-6 treatments and the other 2 achieved 50% size decrease in 1 week. 3 complicated wounds were improved or completely resolved with significant pain alleviation between one to 3 days. Finally, out of 3 recurrent extremely painful not responding to combination pain medication venous ulcer pain resolved in all within a week treatment however accelerated healing was less significant than in other ulcer types.

Conclusion:

Hard-to-heal wounds are a burden for patients, caregivers, and costly for the healthcare system. Based on our previous experience and the cases presented here, self-applied PBM, led to accelerate healing and rapid pain alleviation over standard care alone. Moreover, the treatment encouraged patient's involvement in own care.

*B-Cure Laser PBM device

B-CURE® LASER PRO

Published in: American Society for Laser Medicine and Surgery 2014

B-CURE LASER: LOW LEVEL LASER THERAPY PREVENTS COMPLICATIONS POST LAMINECTOMY *(Submission in process)*

Holanda V., Pereira B., Ferreira K., Greiffo F., Oliveira J., Franca C., Silva D., Ontaneda M., Pinto N., Chavantes C. | Beneficência of Sao Paulo Hospital, Nove de Julho University, Sao Paulo, Brazil

B-Cure Laser, in comparison with the placebo group, stimulates better wound healing, significantly reduces pain level, inflammation and drainage output

Background:

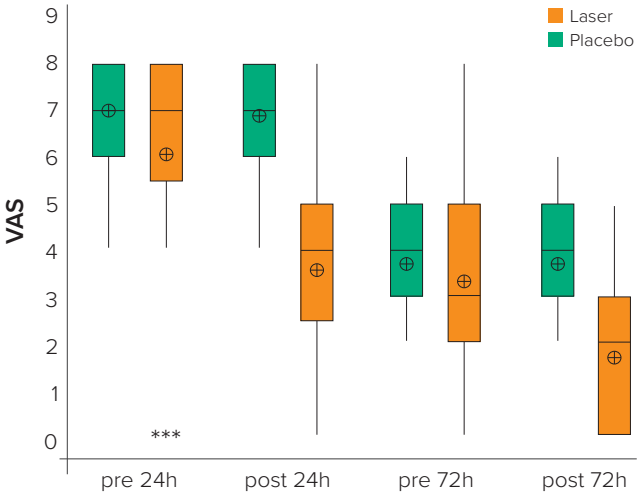
Every year, over one million individuals worldwide are submitted to laminectomies, with a rate failure higher than 40%. Post laminectomy epidural adhesion is implicated as a main cause of ''failed back surgery syndrome'' and associated with high risk of complications during the revision surgery. The objectives of this project are to delineate and evaluate the LLLT effects in spinal surgery.

Study:

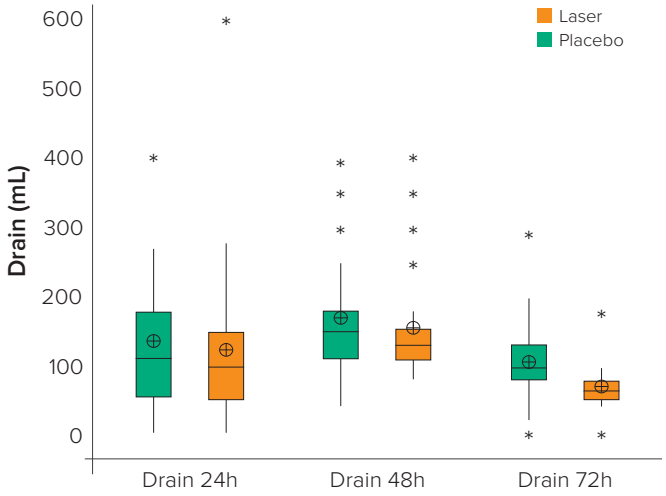
A prospective randomized, controlled trial with a total of 46 patients, undergoing laminectomy, were divided into 2 groups. In 23 randomized patients, LLLT (B-Cure Laser, GOOD Energies, Israel), diode laser-semiconductor Gallium Arsenide and Aluminum (GaAlAs) was applied during surgery (808 nm, total exposure time of 240 seconds, energy density of 2.48 J/cm^2, average power of 62.5mW, spot area of 3,876cm^2), for 60 seconds on the laminectomy site, 60 seconds in the subcutaneous tissue and 120 seconds over the wound. In addition, LLLT was applied on the wound site 24 hours and 72 hours after surgery*. In the second group, 23 patients were induced to think they were getting the same treatment, although LLLT was not operating.

Results:

The results showed a decrease of temperature, pain relief and accelerated healing in laser group, LLLT facilitates wound healing, due to a more rapid resolution of acute inflammation, as suggested by the CRP biggest drop from second to fifth postoperative day, and the proliferation phase of healing to begin earlier demonstrated statistically significant values by more rapid fall in the laser group of CK, suggesting that these markers may guide LLLT treatments.



*Graph 8. Visual Analogue Scale (VAS).
(24h p = 0.0001) (72h p = 0.0001).



*Graph 9. Evaluation of drain exudate.
(24h p = 0.421) (48h p = 0.332) (72h p = 0.004).

Conclusion:

In conclusion, we demonstrate that only three applications of LLLT stimulate better wound healing, reduce inflammation in the wound bed, decrease drainage output and assist in postoperative analgesia in spinal surgery.

*https://bibliotecatede.uninove.br/bitstream/tede/1148/2/Vanessa%20Milanesi%20Holanda.pdf

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B-CURE LASER: THE “AT-HOME LLLT” IN TEMPORO-MANDIBULAR DISORDERS PAIN CONTROL: A PILOT STUDY

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B-Cure Laser group experienced a 50% decrease in pain level within two weeks compared to 8% in the sham laser group

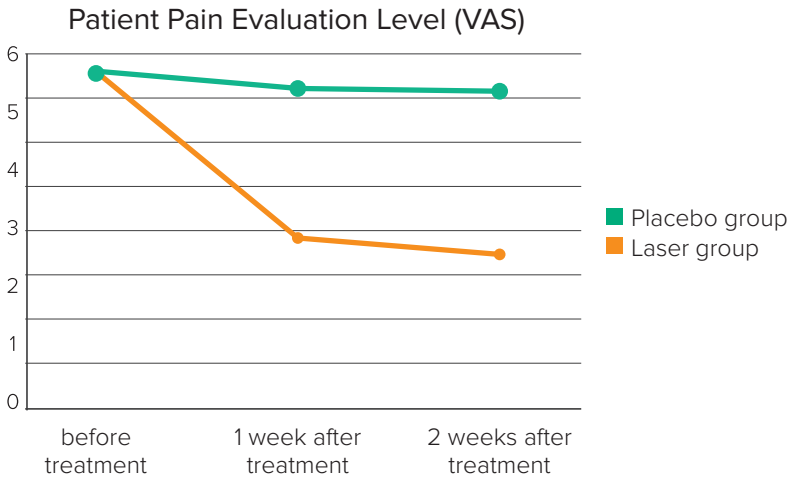
Objectives:

The Temporo-Mandibular Disorders (TMD) are a set of dysfunctional patterns concerning the temporomandibular joints (TMJ) and the masticatory muscles; its main symptom is pain, probably caused by inflammatory changes in the synovial membrane, alterations in the bone marrow of the mandibular condyle and impingement and compression. The aim of this preliminary study was to investigate the effectiveness in the TMD pain reduction of a new laser device recently proposed by the market that, due to its reduced dimensions and to be a class I laser according the ANSI classification, may be used at home by the patient himself.

Materials and methods:

Twenty-four patients with TMD were randomly selected: the inclusion criteria for the sample was the diagnosis of mono- or bi-lateral TMD, with acute pain restricted to the joint area, associated with the absence of any muscle tenderness during palpation. The patients were randomly assigned to two groups: Group 1 (12 patients): patients receiving real LLLT (experimental group). Group 2 (12 patients): patients receiving inactive laser (placebo group). The treatment was performed once a day for two weeks with an 808 nm diode laser (B-Cure Laser, Good Energies, Israel), by the patient himself with irradiation of the cutaneous zone corresponding to the TMJ for 15 minutes each side. Each patient was instructed to express its pain in a visual analogue scale (VAS) making a perpendicular line between the two extremes representing the felt pain level. Statistical analysis was realized with GraphPad Instat Software, where $P<0.05$ was considered significant and $P<0.01$ very significant.

Results:



The patient’s pain evaluation was expressed in the two study groups before the treatment, 1 week and two weeks after the treatment. The differences between the two groups result extremely significant with $p<0.0001$ for the comparison of VAS value after 1 and 2 weeks

Conclusion:

This study, even if it may be considered such a pilot study, investigated a new way to control the pain in the temporo-mandibular diseases by an at home self administered laser device. Results are encouraging but they will have to be confirmed by greater studies.

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