

Low Level Laser Therapy in postoperative recovery

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Low-level laser therapy (LLLT) efficacy in post-operative wounds.

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Abstract

OBJECTIVE:

The aim of this paper was to investigate the efficacy of low-level laser radiation (LLLR) with wavelength of 904 nm on the stimulation of the healing process of postoperative aseptic wounds (early scar).

BACKGROUND DATA:

Low-level laser therapy (LLLT) has been increasingly used to treat many disorders, including wounds. However, despite such increased clinical usage, there is still controversy regarding the efficacy of this wound treatment in current clinical practice.

METHODS:

LLLT has been used to treat cutting plague in the right instep and on the left foot. Both resulted from sutured wounds. The clinical evaluation by semiquantitative methods is presented.

RESULTS:

Clinical evaluation showed that the healing process of these postoperatively treated wounds has occurred and that the functional recovery of the patients (i.e., return to their ordinary life) was faster than without treatment.

CONCLUSION:

LLLR with wavelength of 904 nm to stimulate postoperative aseptic wounds (early scar) is efficient in both cases of cutting plague.

Wound healing of animal and human body sport and traffic accident injuries using low-level laser therapy treatment: a randomized clinical study of seventy-four patients with control group.

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Abstract

BACKGROUND AND OBJECTIVE:

The main objective of current animal and clinical studies was to assess the efficacy of low level laser therapy (LLLT) on wound healing in rabbits and humans.

STUDY DESIGN/MATERIALS AND METHODS:

In the initial part of our research we conducted a randomized controlled animal study, where we evaluated the effects of laser irradiation on the healing of surgical wounds on rabbits. The manner of the application of LLLT on the human body are analogous to those of similar physiologic structure in animal tissue, therefore, this study was continued on humans. Clinical study was performed on 74 patients with injuries to the following anatomic locations: ankle and knee, bilaterally, Achilles tendon; epicondylus; shoulder; wrist; interphalangeal joints of hands, unilaterally. All patients had had surgical procedure prior to LLLT. Two types of laser devices were used: infrared diode laser (GaAlAs) 830 nm continuous wave for treatment of trigger points (TPs) and HeNe 632.8 nm combined with diode laser 904-nm pulsed wave for scanning procedure. Both were applied as monotherapy during current clinical study. The results were observed and measured according to the following clinical parameters: redness, heat, pain, swelling and loss of function, and finally postponed to statistical analysis via chi2 test.

RESULTS:

After comparing the healing process between two groups of patients, we obtained the following results: wound healing was significantly accelerated (25%-35%) in the group of patients treated with LLLT. Pain relief and functional recovery of patients treated with LLLT were significantly improved comparing to untreated patients.

CONCLUSION:

In addition to accelerated wound healing, the main advantages of LLLT for postoperative sport- and traffic-related injuries include prevention of side effects of drugs, significantly accelerated functional recovery, earlier return to work, training and sport competition compared to the control group of patients, and cost benefit.

Efficacy of low level laser therapy in reducing postoperative pain after endodontic surgery-- a randomized double blind clinical study.

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Abstract

The aim of the study was to evaluate the effect of low level laser application on postoperative pain after endodontic surgery in a double blind, randomized clinical study. Fifty-two healthy adults undergoing endodontic surgery were included into the study. Subsequently to suturing, 26 patients had the operation site treated with an 809 nm-GaAlAs-laser (oralaser voxx, Oraliala GmbH, Konstanz, Germany) at a power output of 50 mW and an irradiation time of 150 s. Laser treatment was simulated in further 26 patients. Patients were instructed to evaluate their postoperative pain on 7 days after surgery by means of a visual analogue scale (VAS). The results revealed that the pain level in the laser group was lower than in the placebo group throughout the 7 day follow-up period. The differences, however, were significant only on the first postoperative day (Mann-Whitney U-test, $p < 0.05$). Low level laser therapy can be beneficial for the reduction of postoperative pain. Its clinical efficiency and applicability with regard to endodontic surgery, however require further investigation. This is in particular true for the optimal energy dosage and the number of laser treatments needed after surgery.

Enamel matrix derivative and low-level laser therapy in the treatment of intra-bony defects: a randomized placebo-controlled clinical trial.

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Abstract

AIM:

The aim of this study was to evaluate the immediate post-operative pain, wound healing and clinical results after the application of an enamel matrix protein derivative (EMD) alone or combined with a low-level laser therapy (LLLT) for the treatment of deep intra-bony defects.

MATERIAL AND METHODS:

This study was an intra-individual longitudinal test of 12 months' duration conducted using a blinded, split-mouth, placebo-controlled and randomized design. In 22 periodontitis patients, one intra-bony defect was randomly treated with EMD+LLLT, while EMD alone was applied to the contra-lateral defect site. LLLT was used both intra- and post-operatively. Clinical measurements were performed by a blinded periodontist at the time of surgery, in the first week and in the first, second, sixth and 12th month. Visual analogue scale (VAS) scores were recorded for pain assessment.

RESULTS:

The results have shown that the treatment of intra-bony defects with EMD alone or EMD+LLLT leads to probing depth reduction and attachment-level gain. In addition, EMD+LLLT had resulted in less gingival recession ($p<0.05$), less swelling ($p<0.001$) and less VAS scores ($p<0.02$) compared with EMD alone.

CONCLUSION:

This study shows that EMD is an effective, safe and predictable biomaterial for periodontal regeneration and LLLT may improve the effects of EMD by reducing post-operative complications.

Low-level laser therapy prevents prodromal signal complications on saphenectomy post myocardial revascularization.

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Abstract

BACKGROUND AND OBJECTIVE:

One of the most frequent treatments for ischemic heart disease is myocardial revascularization, often applying the saphenous vein as a coronary graft. However, postoperative complications may occur, such as saphenous dehiscence. According to the literature, low-level laser therapy (LLLT) has been used in the treatment of several inflammatory processes in patients. Recently, its uses have expanded to include LLLT preventive therapy and postoperative treatment. Despite our department's successful application of LLLT in the treatment of saphenectomy incisions, many colleagues are still uncertain as to laser therapy's benefits. Therefore, the study's purpose was to evaluate tissue repair of prodromal surgical incisions after the administration of LLLT.

MATERIALS AND METHODS:

The pilot study included 14 patients, divided into two groups. Both groups of patients received the traditional treatment; additionally, the Laser Group (n = 7) received diode laser treatment ($\lambda = 780$ nm, fluence = 19 J/cm²), pulse = 25 mW, time = 30 sec, energy = 0.75 J, irradiance = 625 mW/cm²), beam spot size 0.04 cm²), which was applied on the edges of the saphenectomy incision. The Control Group (n = 7) received conventional treatment exclusively.

RESULTS:

In the Laser Group: all seven patients showed significant improvement, whereas the Control Group had twice as many complications, including critical rates of incisional dehiscence.

CONCLUSIONS:

LLLT was valuable in preventing prodromal complications in saphenectomy post myocardial revascularization.

[The role of laser therapy in the combined rehabilitation of the patients presenting with abdominal adhesions].

[Article in Russian]

[Naminov VL](#), [Kochergin OIa](#).

Abstract

This article presents a brief description of the applications low-level laser therapy as an instrument for the treatment and early rehabilitation of the patients presenting with abdominal adhesions at the stage of their hospital stay. The data obtained give reason to recommend lasertherapy as a method for the treatment and earlier rehabilitation of the patients with abdominal adhesions.