

[FULL TEXT LINKS](#)

[J Photochem Photobiol B](#). 2016 Sep;162:663-668. doi: 10.1016/j.jphotobiol.2016.07.023.

Epub 2016 Jul 21.

Effects of Low-Level Laser Therapy on Autogenous Bone Graft Stabilized With a New Heterologous Fibrin Sealant

Jéssica Barbosa de Oliveira Gonçalves ¹, Daniela Vieira Buchaim ¹, Cleuber Rodrigo de Souza Bueno ², Karina Torres Pomini ³, Benedito Barraviera ⁴, Rui Seabra Ferreira Júnior ⁴, Jesus Carlos Andreo ³, Antonio de Castro Rodrigues ³, Tania Mary Cestari ³, Rogério Leone Buchaim ⁵

Affiliations

PMID: 27497370 DOI: [10.1016/j.jphotobiol.2016.07.023](https://doi.org/10.1016/j.jphotobiol.2016.07.023)

Abstract

Autogenous bone grafts are used to repair bone defects, and the stabilization is needed for bone regeneration. Laser photobiomodulation is a modality of treatment in clinical practice for tissue regeneration, and it has therapeutic effects as an anti-inflammatory, analgesic and modulating cellular activity. The aim of the present study was to evaluate the effects of low-level laser therapy (LLLT) on an autogenous bone graft integration process stabilized with a new heterologous fibrin sealant. Forty rats were divided into two groups: Autogenous Fibrin Graft (AFG, n=20), in which a 5mm dome osteotomy was conducted in the right parietal bone and the graft was adhered to the left side using fibrin sealant; and Autogenous Fibrin Graft Laser (AFGL, n=20), which was subjected to the same procedures as AFG with the addition of LLLT. The treatment was performed immediately following surgery and then three times a week until euthanasia, using an 830nm laser (30mW, 6J/cm(2), 0.116cm(2), 258.6mW/cm(2), 2.9J). Five animals from each group were euthanized at 10, 20, 30 and 40days postoperative, and the samples were submitted to histomorphological and histomorphometric analysis. Partial bone regeneration occurred, with new bone tissue integrating the graft to the recipient bed and small areas of connective tissue. Comparative analysis of the groups at the same intervals revealed minor interfaces in group AFGL, with statistically significant differences ($p < 0.05$) at all of the analyzed intervals (10days $p = 0.0087$, 20days $p = 0.0012$, 30days $p < 0.0001$, 40days $p = 0.0142$). In conclusion, low-level laser therapy stimulated bone regeneration and accelerated the process of integration of autogenous bone grafts.

Keywords: Bone graft; Bone regeneration; Fibrin sealant; Laser therapy; Osseous defects.

Copyright © 2016 Elsevier B.V. All rights reserved.

LinkOut - more resources

Full Text Sources

[Elsevier Science](#)

Medical

[MedlinePlus Health Information](#)