

Effect of Laser (670 nm) on Healing of Wounds Covered with Occlusive Dressing: A Histologic and Biomechanical Analysis

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Abstract

Objectives: To analyze the effects of low-level laser therapy (LLLT), 670 nm, with doses of 4 and 7 J/cm², on the repair of surgical wounds covered by occlusive dressings. **Background Data:** The effect of LLLT on the healing process of covered wounds is not well defined. **Materials and Methods:** For the histologic analysis with HE staining, 50 male Wistar rats were submitted to surgical incisions and divided into 10 groups ($n = 5$): control; stimulated with 4 and 7 J/cm² daily, for 7 and 14 days, with or without occlusion. Reepithelization and the number of leukocytes, fibroblasts, and fibrocytes were obtained with an image processor. For the biomechanical analysis, 25 rats were submitted to a surgical incision and divided into five groups ($n = 5$): treated for 14 days with and without occlusive dressing, and the sham group. Samples of the lesions were collected and submitted to the tensile test. One-way analysis of variance was performed, followed by *post hoc* analysis. A Tukey test was used on the biomechanical data, and the Tamhane test on the histologic data. A significance level of 5% was chosen ($p \leq 0.05$). **Results:** The 4 and 7 J/cm² laser with and without occlusive dressing did not alter significantly the reepithelization rate of the wounds. The 7 J/cm² laser reduced the number of leukocytes significantly. The number of fibroblasts was higher in the groups treated with laser for 7 days, and was significant in the covered 4 J/cm² laser group. **Conclusions:** Greater interference of the laser-treatment procedure was noted with 7 days of stimulation, and the occlusive dressing did not alter its biostimulatory effects.