

Effects of low-level laser therapy on pain and scar formation after inguinal herniation surgery: a randomized controlled single-blind study

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Abstract:

Objective: The aim of this study was to investigate the efficacy of an infrared GaAlAs laser operating with a wavelength of 830 nm in the postsurgical scarring process after inguinal-hernia surgery. **Background:** Low-level laser therapy (LLLT) has been shown to be beneficial in the tissue-repair process, as previously demonstrated in tissue culture and animal experiments. However, there is lack of studies on the effects of LLLT on postsurgical scarring of incisions in humans using an infrared 830-nm GaAlAs laser. **Method:** Twenty-eight patients who underwent surgery for inguinal hernias were randomly divided into an experimental group (G1) and a control group (G2). G1 received LLLT, with the first application performed 24h after surgery and then on days 3, 5, and 7. The incisions were irradiated (2) with an 830-nm diode laser operating with a continuous power output of 40 mW, a spot-size aperture of 0.08 [cm.sup.2] for 26 s, energy per point of 1.04 J, and an energy density of 13 J/[cm.sup.2]. Ten points per scar were irradiated. Six months after surgery, both groups were reevaluated using the Vancouver Scar Scale (VSS), the Visual Analog Scale, and measurement of the scar thickness. **Results:** G1 showed significantly better results in the VSS totals (2.14 [+ or -] 1.51) compared with G2 (4.85 [+ or -] 1.87); in the thickness measurements (0.11 cm) compared with G2 (0.19 cm); and in the malleability (0.14) compared with G2 (1.07). The pain score was also around 50% higher in G2. **Conclusion:** Infra-red LLLT (830 nm) applied after inguinal-hernia surgery was effective in preventing the formation of keloids. In addition, LLLT resulted in better scar appearance and quality 6 mo postsurgery.