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**LOW LEVEL LASER THERAPY PREVENTS  
COMPLICATIONS POST LAMINECTOMY**

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**Background:** Each year, more than one million individuals worldwide are submitted to laminectomies, with a failure rate higher than 40%. Post-laminectomy epidural adhesion is implicated as a main cause of “failed back surgery syndrome” and associated with increased risk of complications during revision surgery. The post-operative epidural scar can cause extradural compression or dural tethering, which results in recurrent radicular pain and physical impairment. Several studies in the literature are signaling that Low Level Laser Therapy (LLLT) is proven to be an effective tool to assist the inflammatory process and wound healing, as well to prevent infection. Thus, 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 who will be undergoing to laminectomy, will be divided into 2 groups. In 23 randomized patients, LLLT (B-Cure, Good Energies<sup>®</sup>, Israel), diode laser-semiconductor Gallium Arsenide and aluminum (GaAlAs) was applied during surgery ( $\lambda = 804 \text{ nm} \pm 2$ , total exposure time of 240 s, energy density of  $2.48 \text{ J/cm}^2$ , average power of 40 mW, spot area of  $3,876 \text{ cm}^2$ ), for 60 seconds on the laminectomy site, 60 seconds in the subcutaneous tissue and 120 seconds over the wound. In the second group, 23 patients were induced to think they were getting the same treatment, although LLLT was not operating. In those groups, C reactive protein (CRP), erythrocyte sedimentation rate, lactic dehydrogenase and creatine kinase (CK) were evaluated in the second and fifth days after surgery, digital temperature and visual analogue scale was measured, pre and post LLLT application. The drainage output was collected in the first and second days following surgery in both groups. Interleukins 1, 4, 6, 8 and 10 and tumor necrosis factor alpha were evaluated.

## American Society for Laser Medicine and Surgery Abstracts

**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 treatment.

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