Prevention of Abdominal Adhesions and Healing Skin After Peritoniectomy Using Low Level Laser

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Background: Adhesions commonly occur after abdominal surgery and can cause bowel obstruction, chronic abdominal pain, and infertility. Their prevention remains a challenge.

Objectives: To evaluate the effects of the application of low-level lasers on the prevention of adhesions and scarring of the skin after peritoniectomia.

Method: Twenty-four New Zealand breed male rabbits, approximately 2months of age, were randomly divided into 3 groups (n¼8): GC—control group not subjected to laser, GL1—group with laser application at a dose of 0.2 J, and GL2—group with laser application at a dose of 3.6 J. All animals received a longitudinal midline incision and a bilateral resection of the peritoneal fragment, measuring 3_1cm2. The animals received a laser treatment of one application every 24 hours, beginning at the time of surgery and lasting for a period of 4 days. After 14 days post-surgery, the animals were killed and adhesion formation was evaluated qualitatively and quantitatively by means of a laparotomy shaped inverted "U", which allowed for the verification of the broad wall of the abdominal cavity and organs. Differences were considered significant at $P<0.05$.

Results: The adhesion formation was observed in100% of the rabbits from groups GC and GL1, as compared to 37.5% of the rabbits from group GL2 ($P<0.01$). The evaluation of the vascularization and tenacity of adhesions among the groups showed no significant difference. In groups CG and GL1, 72% and 83% of adhesions were verified between visceras, respectively whereas in GL2 occurred among abdominal wall. The tensile strength of the skin between the groups was not significant (P¼0.3106). The resistance of abdominal wall segments without skinhe resistance of skin segments between groups GL2 and GC were higher than in GL1 (P¼0.01).

Conclusion: Low-level LASER is effective in preventing intra-abdominal adhesions in rabbits without compromising strength and healing of the abdominal wall.
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