

Medline Abstract



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Effect of 830-nm laser light on the repair of bone defects grafted with inorganic bovine bone and decalcified cortical osseus membrane.

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OBJECTIVE: The aim of this study was to histologically assess the effect of low-level laser therapy (LLL) (λ 830 nm) on the repair of standardized bone defects of the femur of Wistar albinus rats grafted with inorganic bovine bone and associated (or not) with decalcified bovine cortical bone membrane. **BACKGROUND DATA:** Bone loss may be a result of pathology, trauma, or surgical procedure. Extensive studies on the process of bone repair have been undertaken, and several techniques for the correction of bone defects have been proposed. Amongst them is the use of several types of grafts, the use of membranes, and the combination of both techniques. There is evidence in the literature of the positive effect of LLLT on the healing of soft tissue wounds. However, its effect on bone healing is not completely understood. **MATERIALS AND METHODS:** Five randomized groups were studied: group I (control); group IIA (Gen-ox); group IIB (Gen-ox + LLLT); group IIIA (Gen-ox + Gen-derm); and group IIIB (Gen-ox + Gen-derm + LLLT). Bone defects were created at the femur and were treated according to the group. The animals of irradiated groups were irradiated every 48 h for 15 days; the first irradiation was performed immediately after the procedure. The animals were irradiated transcutaneously at four points around the defect. At each point, a dose of 4 J/cm² was given (phi approximately equal to 0.6 mm, 40 mW), and the total dose per session was 16 J/cm². The animals were humanely killed at 15, 21, and 30 days after surgery. The specimens were routinely processed to wax, serially cut, stained with H&E and Picrosirius stains, and analyzed under light microscopy. **RESULTS:** The results showed more advanced repair of the irradiated groups when compared to the non-irradiated ones. The repair of the irradiated group was characterized by both increased bone formation and on the amount of collagen fibers around the graft within the cavity, as early as the 15th day after surgery, considering the osteoconductive capacity of the Gen-ox and the increment of the cortical repair in specimens with Gen-derm membrane. **CONCLUSION:** It is concluded that LLLT had a positive effect on the repair of bone defect by graft associated or not with the use of biological membrane.

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