

Assessment of Feasibility and Efficacy of Class IV Laser Therapy for Postoperative Pain Relief in Off-Pump Coronary Artery Bypass Surgery Patients: A Pilot Study.

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Background: Laser therapy, for its established analgesic properties with minimal side effects, has been used for the treatment of chronic pain. However, it has not been used for the treatment of acute postoperative pain. This pilot study was designed to assess the feasibility and efficacy of Class IV laser on postoperative pain relief following off-pump coronary artery bypass graft (OPCABG) surgery, as a component of multimodal analgesia (MMA) technique.

Methods: This open observational prospective study comprised of 100 adult patients (84 male, 16 female) who underwent OPCABG through sternotomy. For postoperative analgesia, they were subjected to laser therapy in addition to the standard institutional pain management protocol comprising of IV infusion/bolus of tramadol and paracetamol and fentanyl bolus as rescue analgesic. Pain intensity was measured by Verbal Rating Scale (VRS). The laser therapy was scheduled as once a day regime for three consecutive postoperative days (PODs) starting on POD 1, 30 min following tracheal extubation. The subsequent laser applications were also scheduled at the same time of the day as on day 1 if VRS was ≥ 5 . 10 W Class IV laser was applied over 150 cm² sternal wound area for 150 s. VRS was used to assess pain severity and was recorded for statistical analysis using Friedman Test.

Results: The mean (standard deviation [SD]) VRS of all the 100 patients just before application of the first dose of laser was 7.31 (0.94) while on MMT; the same fell to 4.0 (1.279) and 3.40 (2.697) at 1 h and 24 h respectively following first dose of laser. The change of VRS over first 24 h among all the 100 patients was statistically significant ($P = 0.000$). Laser was re-applied in 40 patients whose VRS was ≥ 5 (mean [SD] - 6.38 [0.868]) at 24th h. After receiving the 2nd dose of laser the VRS scores fell significantly ($P = 0.000$) and became 0 at 54th h. No patients required 3rd dose of the laser. No patient required rescue analgesic while on laser therapy.

Conclusion: Class IV laser can be an effective technique for postoperative analgesia following OPCABG surgery through sternotomy when included as a component of MMA technique.

Key words: Class IV laser; Low level laser therapy; Multimodal analgesia; Off-pump coronary artery bypass graft; Postoperative pain

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