



EFFECTIVENESS OF HIGH INTENSITY LASER THERAPY ON PAIN AND INCISIONAL WOUND HEALING OF CESAREAN SECTION: A CASE REPORT

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Abstract

Caesarean section (C-section) is a surgical procedure done in complex pregnancies that can save a mother's life and the lives of her child by operating through a laceration in the mother's abdomen and uterus. The first 48 hours following surgery are generally characterized mild to severe pain from C-section that may lead to difficulty of performing activity of daily living and early interaction between mother and infants. The pain and incisional wound healing can be treated by LASER therapy and other physiotherapy management also, the purpose of this case report is to evaluate the effectiveness of class IV LASER therapy in the treatment of incisional wounds of post C-section. A 34 years old female who underwent her first cesarean section was recruited after assessing diabetes, sepsis, hemorrhage and dermatological complications within 12 hours of surgery and was irradiated with Class IV LASER (Lite Cure, Gallium-Aluminum-Arsenide) therapy with a power of 10 W and energy of 10 Joules/cm² for 2.5 minutes. The treatment was given for 3 consecutive days. Pain and incisional wound healing were assessed with visual analog scale (VAS) and Redness, Oedema, Ecchymosis, Discharge, Approximation (REEDA) scale respectively at baseline and after 3 days of intervention. The baseline VAS and REEDA scale scores improved from 7.8 to 1.6 and 12 to 02 post-intervention respectively. The result showed significant improvements in pain and incisional wound healing after 3 sessions. Therefore, class IV LASER therapy is a safe and non-invasive therapeutic intervention to manage pain and improve incisional wound healing amongst post C-Section female.

Keywords: Abdomen; Pregnancy; Surgical wound.

CASE REPORT

A 34 years old female underwent for her first cesarean section delivery with medical indication of placenta previa was recruited from the department of obstetrics and gynecological intensive care unit after duly filled written informed consent. The primary complaints of the patient was severe pain and discharge of blood, serum, and bloody purulent from the incisional line which was assessed by using

VAS(1) and REEDA(2) scale within 12 hours of her first cesarean section delivery by Pfannenstiel incision,(3) and had no history of diabetes, hemorrhage, sepsis, or dermatological problem.

The pain and incisional wound healing were assessed at 2 time periods, within 12 hours of C-section delivery (baseline) and after the 3rd day of interventions. The assessment of pain was performed by using VAS at the baseline. The VAS is a 100mm line with two descriptors (such as "no pain" and "severe pain") at either end that reflect the two extremes of pain intensity. By counting the distance from the "no pain" end of the line to the patient marked pain level on the line, the VAS is scored. According to the findings, a 100mm VAS score with less than 5mm may be interpreted as no pain, a score of 5mm to 44mm may be interpreted as mild pain, a score of 45mm to 74mm may be interpreted as moderate pain, and then a score of 75mm or more may be interpreted as severe pain (4). Therefore, the assessment of incisional wound healing was performed by using REEDA scale. It contains five signs of the healing process: coaptation of the wound edges, ecchymosis, discharge, hyperemia, and edema (5).

Then the patient was irradiated by class IV LASER therapy (High intensity laser therapy) the Lite Cure Gallium-Aluminum-Arsenide (GaAlAs) with non-contact, continuous beam emission with a dosage of 10 W power and 10 Joules/ cm² was used. The incision length of the C-section was 14.5 cm. The treatment time was 2.5 minutes. The linear method was used to disperse the C-section suture area, and the application was carried out using the scan motion method with the aid of a non-contact probe moving at a speed of 1 cm/s. Total of 3 consecutive sessions were given on daily basis on incision line for 2.5 minutes with dose of 10 W.



[Table/Fig- 1]: Shows C-section incisional wound irradiated with non-contact method of Class IV LASER therapy.



[Table/Fig- 2]: Shows C-section incisional wound after 3 days of irradiation of Class IV LASER therapy.

Outcome	VAS score	REEDA score
Pre intervention	7.8	12
Post intervention	1.6	2

* Visual Analogue Scale (VAS)

* Redness, Oedema, Ecchymosis, Discharge, and Approximation (REEDA)

[Table/Fig- 3]: Outcome measures of Pain and Incisional wound healing.

DISCUSSION

The first 48 hours of C-section are generally characterized by mild to severe pain at incision line (6). Although effective pain management through analgesics helped patients quickly discharge from the hospital and provide adequate mother care to their child after C-section (7). Additionally, improper treatment of post C-cesarean pain is linked to an increase in both chronic pain as well as post-traumatic stress in high-income countries (8).

A case report conducted by Aditi K et al. which described that there is a positive effect of low level LASER therapy (LLLT) in improving post C-section wound healing after 2 weeks of intervention (9). Additionally, Roque V S et al. observed in another case report that LLLT has a beneficial effect in healing injured tissue following surgery (10). In the past, studies have demonstrated the benefits of pulsed high intensity laser therapy on the delayed healing of cesarean sections in diabetic women with more than eight weeks, as well as the impact of low-level LASER treatment on pain and wound healing following cesarean sections (11),(12),(13).

In this study, a significant reduction in pain from 7.8 to 1.6 on VAS scale and enhancement of incisional wound healing from 12 to 2 on REEDA scale was encountered after 3 days of treating the C-section incisional wound with GaAlAs diode LASER without any adverse effects. According to Moshkovska T. et al Laser therapy lowers the immediate inflammatory response and causes analgesia when applied to a wound area. Another reason can reduction of pain may be due to inflammatory reduction, microcirculation enhancement, immunological process stimulation, nerve regeneration enhancement, and endorphin secretion all have the ability to alleviate pain after LASER treatment (14).

LASER therapy can rapidly induce photochemical and photothermic effects in the deep tissue by increasing blood flow, vascular permeability, and cell metabolism by specific waveforms with regular peaks of elevated amplitudes and intervals of time between them to reduce thermal accumulation phenomena (15). It also enhances collagen synthesis, and collagen tensile strength, and the amount of myofibroblast for wound healing is enhanced, which can constrict the wound and shorten the time it takes for reepithelization (16). The effects of gabapentin, ketamine, wound infiltration/infusion, opioids, and the transversus abdominis plane block on post-cesarean analgesia were assessed. Opioid administration is still considered to be the gold standard in postoperative analgesia, but because of the potential side effects, non-opioid analgesics are now required in the post-C-section analgesia program (17).

LASER therapy is a non-invasive, and safest process that effectively reduces both acute and chronic pain, including post-operative pain (8).

CONCLUSION

This study concludes that class IV LASER therapy was beneficial to improve wound healing and decreased pain after immediate post C-section surgeries without any adverse effect.

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