

Adjunctive 830 nm light-emitting diode therapy can improve the results following aesthetic procedures

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Background: Aggressive, or even minimally aggressive, aesthetic interventions are almost inevitably followed by such events as discomfort, erythema, edema and hematoma formation which could lengthen patient downtime and represent a major problem to the surgeon. Recently, low level light therapy with light-emitting diodes (LED-LLLT) at 830 nm has attracted attention in wound healing indications for its anti-inflammatory effects and control of erythema, edema and bruising.

Rationale: The wavelength of 830 nm offers deep penetration into living biological tissue, including bone. A new-generation of 830 nm LEDs, based on those developed in the NASA Space Medicine Laboratory, has enabled the construction of planar array-based LED-LLLT systems with clinically useful irradiances. Irradiation with 830 nm energy has been shown *in vitro* and *in vivo* to increase the action potential of epidermal and dermal cells significantly. The response of the inflammatory stage cells is enhanced both in terms of function and trophic factor release, and fibroblasts demonstrate superior collagenesis and elastinogenesis.

Conclusions: A growing body of clinical evidence is showing that applying 830 nm LED-LLLT as soon as possible post-procedure, both invasive and noninvasive, successfully hastens the resolution of sequelae associated with patient downtime in addition to significantly speeding up frank wound healing. This article reviews that evidence, and attempts to show that 830 nm LED-LLLT delivers swift resolution of postoperative sequelae, minimizes downtime and enhances patient satisfaction.

Key words: Photobiomodulation · low level light therapy · wound healing · collagenesis · angiogenesis · hematoma · edema · erythema

Background & Rationale

Patient downtime after any surgical or nonsurgical aesthetic or other procedure needs to be kept as short as possible to allow patients to return swiftly to their activities of daily living (ADL), and the shorter this downtime can be, the happier and more satisfied are the patients. Satisfied patients reflect positively on the

success of the practitioner. In the case of an unhappy and dissatisfied patient, however, the reverse is certainly true. Even when the final results may be good, if the patient has suffered severe or prolonged postoperative sequelae, such as erythema, edema, bruising or a combination of all of these, together with a concomitantly prolonged downtime, she or he will definitely be unhappy at least in the shorter term.

Virtually every interventional approach in the aesthetic field, whether surgical or even nonsurgical with minimally invasive techniques, is associated with some

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