

Long-Pulsed Laser Speeds Ecchymosis Healing

BY MIRIAM E. TUCKER

NATIONAL HARBOR, MD. — A long-pulsed 595-nm pulsed dye laser rapidly improved ecchymosis resulting from either cosmetic procedures or traumatic injury in a study of 10 patients.

Postprocedural and traumatic ecchymosis is an extremely common problem, particularly with the recent explosive growth in minimally invasive procedures

that potentially induce bruising, Dr. Julie K. Karen noted at the annual meeting of the American Society for Laser Medicine and Surgery.

Patients are often motivated to minimize or camouflage bruising to conceal the fact that they have had cosmetic intervention. Current strategies to minimize the bruising, such as discontinuation of nonessential blood thinners; meticulous intraoperative technique; and

topical or oral agents such as arnica, vitamin K, and hirudin are not always effective, she said.

“Long-pulsed [pulsed dye laser] may alleviate this common stigma associated with cosmetic intervention by expediting healing,” said Dr. Karen of the Laser & Skin Surgery Center of New York, N.Y.

The 10 adult patients had skin types I-IV, with one or more ecchymoses. Each subject served as his or her own control.

One ecchymosis was treated in those who had two, while those with just one ecchymosis had half of the lesion treated. None of the patients had active infections, photosensitivity/photoallergy, pregnancy/lactation, prior irradiation to the ecchymosis site, use of oral retinoids or photosensitizing drugs in the previous 2 years, or a history of keloid formation.

Each patient received a single treatment with a long-pulsed 595-nm pulsed-dye laser (Vbeam, Candela) with these parameters: spot size, 10 mm; fluence, 7.5 J/cm²; pulse duration, 6 ms; and dynamic cooling device, 30 ms spray/20 ms delay. Two passes were used in most patients. Photographic documentation was taken before treatment and at 24

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hours, 48 hours, and 1 week after treatment. Two blinded investigators reviewed the photographs and graded the bruise severity on a 0-10 scale, with 0 being no visible bruise and 10 being most bruised.

Treated lesions resolved more rapidly than untreated lesions in all 10 patients. All 10 treated lesions showed improvement within 24 hours, with some improvement evident as early as 6 hours post treatment.

At 24 hours post treatment, there was an average 62% improvement from baseline in the treated lesion compared with just 13% of the untreated lesion. At 48 hours, the improvements were 76% and 37%, respectively. At 1 week post treatment, there was no longer a significant difference between the treated and untreated areas, with both lesions largely resolved (87% vs. 81%).

Side effects were minimal, including slight discomfort, erythema, and edema. Transient crusting occurred in the first two patients, in whom pulse-stacking was attempted. That was avoided in the subsequent eight patients and none had crusting, Dr. Karen said.

The precise mechanism by which laser treatment accelerates the resolution of ecchymosis is unknown. Ecchymoses result when extravasated blood accumulates in tissue. The yellow color that develops in older bruises correlates with macrophage degradation of hemoglobin to bilirubin.

The pulsed dye laser emits yellow light (595-nm) matching an absorption peak of oxyhemoglobin. Since bilirubin has a broad absorption peak of 460-nm, “we posit that laser intervention is most effective if initiated early, when hemoglobin predominates,” she commented.

Dr. Karen stated that she had no relevant disclosures. ■

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