Infrared Light Energy Is Effective for Tightening

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BOSTON — Infrared light energy delivered through an intelligent pulsed light handpiece can safely and effectively induce tissue tightening in lax skin of the face, neck, arms, abdomen, and buttocks, suggesting that infrared light technology is a useful tool for nonablative tissue tightening, Dr. Matthew E. Halpern said at the annual meeting of the American Society for Laser Medicine and Surgery.

In a clinical trial designed to evaluate the tissue-tightening capability of the Solera Titan, which achieves dermal heating using infrared light at wavelengths of 1100-1800 nm and provides continuous epidermal cooling, Dr. Halpern and his colleagues at St. Luke's–Roosevelt Hospital, New York, enrolled 42 patients with primary tissue laxity or tissue laxity resulting from a liposuction procedure.

Of the initial 42 patients who underwent the nonablative tissue-tightening treatment of multiple anatomic areas, 32 completed one treatment and follow-up; 14 of the 32 completed additional treatment and follow-up.

The light energy delivery parameters for the project included four passes over each area, for a total of 100-500 pulses depending on the area, and fluences ranging from 35 to 50 J/cm^2. For patients who underwent two treatments, the sessions were spaced 6 weeks apart. Photos were taken at baseline and at 6 weeks post treatment and were evaluated by three blinded physician observers. "The observers scored baseline tissue laxity as well as percent improvement after each treatment, paying particular attention to the contour of the jawline, submental area, lines of the neck, nasolabial folds, and marionette lines," he said.

The observers scored baseline tissue laxity as none, mild, moderate, severe, or extreme. They scored degree of improvement as none if there was less than 10% visible improvement, mild for 10%-25% improvement, moderate for 25%-50% improvement, and significant for 50%-75% improvement.

"After one treatment, 94% of patients had better than 10% improvement and 34% had better than 25% improvement," he reported. "All of the patients who underwent two treatments had better than 10% improvement following the second treatment, approximately 75% of them had better than 25% improvement, and about a third of them had better than 50% improvement."

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To determine the characteristics of patients who had the most vigorous response to the infrared treatment, the investigators first looked at patient response by age and then by baseline tissue laxity.

"We found that patients between ages 40 and 50 years tended to have higher improvement scores than older patients after both one and two treatments," Dr. Halpern said. Although these numbers didn't reach statistical significance, the trend toward lower improvement scores among older patients suggests that "perhaps there's something inherent about older fibroblasts, that they respond less well to bulk dermal heating," he said.

In evaluating patient response by baseline tissue laxity, "patients with severe and extreme tissue laxity had higher mean improvement scores after both one and two treatments than patients with mild to moderate tissue laxity," Dr. Halpern noted. "These numbers also did not reach statistical significance, but that is probably a function of the small study size."

Most of the patients had mild erythema and edema that lasted 24-48 hours; three patients developed local blistering, which resolved, with transient hyperpigmentation. "There was no scarring or lipoatrophy in our patients," he said.

The study results suggest that infrared light therapy "is a safe and effective way to induce tissue tightening when used in appropriate settings," said Dr. Halpern, who reported receiving consulting fees and honoraria from Cutera, manufacturer of the Titan product line. "Future studies are needed to confirm whether patient age and baseline tissue laxity are accurate predictors of therapeutic response." ■