



Noninvasive Lifting

Physicians are reporting more consistent results in noninvasive skin tightening with newer devices and improved protocols.

By Linda W. Lewis

“I don’t want a facelift, but can’t you just tighten up some of this saggy skin a little?” It’s a question asked in aesthetic practices around the world. With new advances in technology and treatment protocols, answers are shifting from a tentative “maybe” to a qualified “yes.” Whether the energy comes from infrared broad-based light (IR), radio frequency (RF), laser energy or ultrasound, noninvasive skin tightening devices produce results through thermal injury to underlying dermal tissue with little or no harm to the epidermis. Early reports of painful procedures and unpredictable outcomes have now given way to more dependable results, less pain and patient satisfaction rates of up to 80%. While we’ve seen some notable advances in skin tightening devices in the past few years, much of the improvement is attributable to more effective protocols, better patient selection and better management of patient expectations. To keep you up-to-date on the latest in noninvasive skin tightening, we spoke with a panel of physician experts about the latest devices and how they can be used to achieve optimal outcomes.

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When *MedEsthetics* last covered this category in July/August 2008, the Sciton SkinTyte (www.sciton.com) and the Thermage NXT (Solta Medical, www.solta.com) were the newest introductions. Since then, EclipseMed (www.eclipse-med.com) introduced the EndyMed PRO RF, Viora (www.viorareaction.com) introduced the Reaction RF device, Thermage added vibration to RF to reduce pain in its new Thermage CPT, Primaeva introduced fractional RF (FRF), and Ulthera (www.ulthera.com) gained FDA clearance for its ultrasound-based skin tightening system.

The EndyMedPRO, the first phase-controlled, multisource RF device to be FDA cleared for the treatment of mild to moderate facial wrinkles, penetrates as deep as 9mm into the skin. The system utilizes selective, phase-controlled heat

The EndyMed PRO is equipped with four handpieces to treat areas up to 10cm² without the need for disposable tips.

Comfort Pulse Technology, along with a vibrating handpiece, allows the new Thermage CPT system (www.thermage.com) to enhance outcomes and improve patient comfort. The new energy delivery algorithm interweaves pulsed RF with bursts of cool air to mimic the effect achieved with transcutaneous electrical nerve stimulation therapy. It disrupts the brain's neural response and improves patient comfort during treatments. A split-face clinical study involving 40 patients compared treatments with the vibrating handpiece to those without. All preferred treatment with vibration.

"The ability to perform a quality Thermage procedure without the use of

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delivered to the collagen fibers to offer immediate skin tightening, followed by a second stage of collagen remodeling. The EndyMed PRO's 3DEEP technology addresses the need for more predictable clinical outcomes by delivering consistent energy into the skin despite differences in skin impedance.

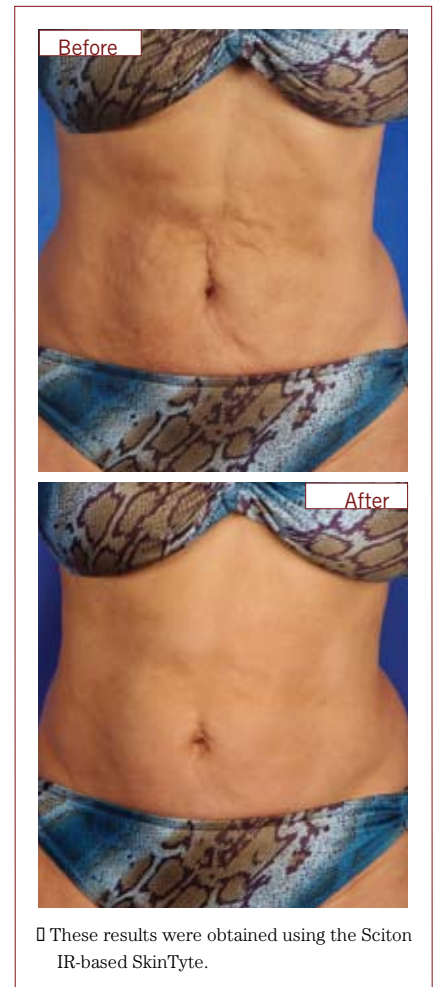
"The treatment is virtually painless. A tissue contact sensor and a motion sensor prevent the device from firing unless the tip is flat against the skin surface and in motion. It also keeps track of how many passes you have done, and if the skin is too warm, it will not fire," says Flor Mayoral, MD, who specializes in cosmetic procedures in her Coral Gables, Florida, practice. "My patients love that they can have a treatment in the morning and attend a black-tie affair in the evening with no trace of [having had] a medical procedure—just nicer looking skin."

pain medications is a great help to my practice and to my patients," says Bill Johnson, MD, owner of Innovations Med-spa in Dallas. "Patients can now drive themselves to their appointments."

The ergonomically redesigned Face Tip 3.0 and Body Tip 16.0 make procedures faster and easier for patients and operators. "One of the most exciting things about the new 16.0 tip is that it has an extra 100 pulses per tip. We can now treat the same areas with fewer tips, and that means big price breaks that we can pass along to our patients," says Dr. Johnson.

New Technologies

Primaeva introduced the FRF Miratone skin tightening system in early 2009. Two articles in the January and February 2009 issues of *Lasers in Surgery and Medicine* describe the novel device and its ability to create controlled fractional radio-



frequency thermal zones using real-time temperature and impedance data provided by the system. The device employs five micro-needle electrode pairs to deliver bipolar RF energy directly into the dermis.

In April of this year, a group of researchers headed by Macrene Alexiades-Armenakas, MD, PhD, published a study comparing patients treated with FRF with the gold standard of surgical facelifts (*Arch Dermatol* 2010; 146(4): 396-405). Five blinded evaluators used a four-point laxity grading scale to evaluate baseline and follow-up photographs of 15 sequential patients treated with FRF and 6 patients who had undergone surgical facelifts. The surgical facelifts resulted in a mean 1.20-grade improvement, while a single FRF treatment received a 0.44 laxity grade improvement, or 37% that of the surgical facelift—without the adverse effects and complications of surgical procedures.

Speaking at the 2010 Annual Meeting of the American Society for Laser

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Medicine and Surgery in Phoenix, David J. Goldberg, MD, JD, noted that the internal bipolar RF probes of the Primeavea offer more predictable results than previous RF technologies. However, the procedure is very painful and

announced FDA clearance of the Ulthera System for noninvasive eyebrow lifts.

“We use imaging to anticipate where the energy will be placed and then we deliver small amounts of very productive energy to targeted planes

use in delivering energy at about 4mm below the skin surface, creating thermal coagulation zones about 1.5mm apart. At 90 days postprocedure, 86% of subjects showed significant eyebrow elevation. There were no serious adverse events. Slight erythema and edema resolved within a week.

“The Ulthera System is at least as effective as other devices,” says Dr. Alam, “and ultrasound has the theoretic advantage of being able to permeate deep into tissues without injuring overlying skin. So, more than RF and broadband light, ultrasound may ultimately be able to cause deep contraction of fascia and other deep tissues.”

The Ulthera System is also being used in Canada, Australia, Asia, Europe and the Middle East. Outside the U.S., clinicians are using a “dual plane” approach to create significant improvements in the lower face and neck: Patients are treated at two different depths, affecting twice the volume of tissue.

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will require more than topical numbing agents for patient comfort.

In October of 2009 Syneron (www.syneron.com) purchased Primaeva and is in the process of refining the technology. The company anticipates release of the device in late 2010 or early 2011.

Considered a first-of-its kind technology, the Ulthera System adapts time-honored ultrasound technology for aesthetic use, affording a degree of control and consistency not available with other tissue tightening devices. Its DeepSEE technology combines visualization beneath the skin's surface with noninvasive delivery of ultrasound energy at depths that enable significant lifting of the skin. Because it is substantially different from other in-office aesthetic devices, the Ulthera System underwent a 510(k) “de novo” review by the FDA. Extensive pre-clinical studies began in 2004, followed by clinical trials in 2006. In September 2009, Ulthera

of tissue,” says Murad Alam, MD, associate professor of dermatology, otolaryngology and surgery at Northwestern University's Feinberg School of Medicine. “This precision contributes to both safety and effectiveness, and because this is accomplished without damaging the superficial layers of skin, patients experience no down time.”

Dr. Alam and his colleagues at Northwestern published a rater-blinded prospective cohort study of 36 patients treated with the Ulthera System in the February 2010 edition of the *Journal of the American Academy of Dermatology*. Topical anesthetic ointment controlled the pain well (3 to 4 on a scale of 10) in all but seven patients (7 on a scale of 10); all were able to complete the procedure. The physicians used real-time diagnostic ultrasound to determine skin thickness and, thus, the appropriate probe for

Changing Protocols

Whether you work with IR, RF or ultrasound, an important first step is patient selection. “Very elderly patients with severe sagging and wrinkles are, in general, suboptimal candidates for the modest to moderate improvement possible with noninvasive tightening devices,” says Dr. Alam. “Younger to middle-aged patients with early laxity and wrinkles are better candidates.”

Dr. Mayoral adds that skin condition

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can be a better indicator than age. “If the skin is in good condition, even older patients will show visible improvement,” she says.

Another issue is patient expectations. “If patients are educated before their treatment and told that noninvasive skin tightening cannot produce the same results as a facelift, they are usually pleased with their results. Some patients will notice significant improvements on their own. Others will be impressed only after reviewing their before-and-after photos,” advises Marie N. DiLauro, MD, who specializes in noninvasive aesthetic medicine at Reflections in Columbus, Ohio.

For patients who want to look refreshed with no downtime, Dr. DiLauro often recommends one of

pulses at 15-second intervals in a 4cm by 4cm area. I stop when the external skin temperature reaches 38° C to 40° C. Nearby squares will heat more quickly. The goal is to have the skin retain heat for 15 to 20 minutes, depending on the pain threshold of the patient. I also try to apply extra energy to areas with greater damage. With this technique, patients see some instant improvement with increased collagen regeneration and skin firmness that becomes visible over the next 3 to 4 months and continues for up to 12 months,” reports Dr. DiLauro.

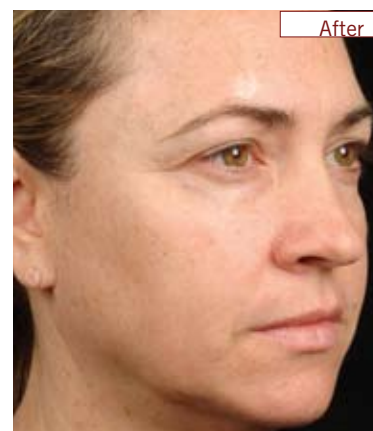
“My experience is with Thermage, which I have been using successfully since it came out earlier this decade,” says dermatologist Susan Van Dyke, MD, who operates Van Dyke Laser & Skin in Paradise Valley, Arizona. “Pain has always

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her infrared devices. Options include the Cutera Titan (www.cutera.com), Alma Harmony ST (www.almalasers.com) or Sciton SkinTyte (www.sciton.com). “The SkinTyte offers a great no-downtime rejuvenation treatment, which stimulates the fibroblasts to produce more collagen. Patients love the treatments because they are comfortable without pain medication or numbing creams,” she says. Dr. DiLauro was initially concerned with achieving consistent results. In November 2008 she started monitoring the external skin temperature of her patients and keeping track of the clinical outcomes she achieved. With the data she collected, she developed her Temperature In Motion technique, which she now teaches to other physicians. “Using the SkinTyte, I start by delivering 2 to 3

been an issue but less so in recent years with the lower energy/multiple-pass protocols. Patient satisfaction has also improved with the current protocols. Originally, only about a third of patients were very pleased. At this time more than 80% are very pleased, and it is rare for a patient to remain unsatisfied.”

Dr. Alexiades-Armenakas, a pioneer in the newer protocols that call for decreased fluence and multiple passes, says these advances have led to improved results across the board. “I have conducted, overseen or participated in FDA trials for a large number of skin tightening devices, including Thermage, Syneron, Cutera, Alma, Primaeva and, most recently, Sciton, to name those that come to mind,” she says. “Both IR and RF devices produce volumetric heating but, interestingly, the Titan generates neoelastogen-



□ Skin tightening results of Thermage RF, six months post treatment.

esis, which may account for some of the observed improvements in laxity. Indeed, there are differences among both RF devices and IR devices in their output, their tissue effects and their clinical effectiveness. That said, I have found that skilled laser specialists can manipulate any of these devices to achieve desired effects by increasing pass numbers, pulse counts and duration of treatment sessions.” The issue becomes time and money, and the physicians’ personal preferences.

“I love being able to make women look better with these noninvasive tools,” says Dr. Mayoral. “Recently, a patient returned whom I had originally treated with RF in 2006. She came back for another treatment. When we looked back at her original photos, it was clear that she looked better today at age 67 than she had before the initial treatment four years ago. Collagen rejuvenation can help perpetuate youthful looking skin.” ■

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