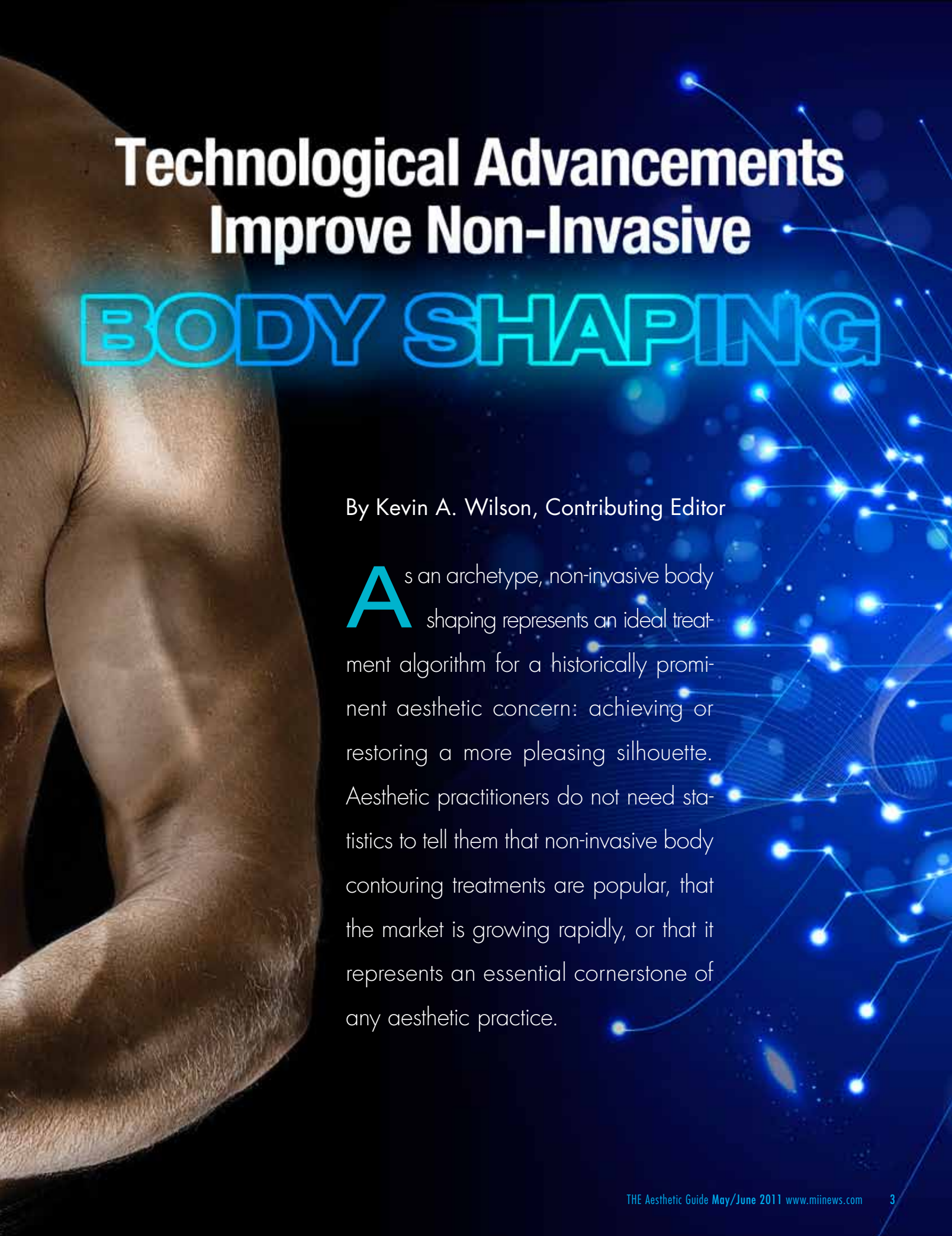

Technological Advancements Improve Non-Invasive BODY SHAPING

By Kevin A. Wilson, Contributing Editor

As an archetype, non-invasive body shaping represents an ideal treatment algorithm for a historically prominent aesthetic concern: achieving or restoring a more pleasing silhouette. Aesthetic practitioners do not need statistics to tell them that non-invasive body contouring treatments are popular, that the market is growing rapidly, or that it represents an essential cornerstone of any aesthetic practice.

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Before Tx

After Thermacool, Pearl Fractional, LimeLight, BOTOX, Restylane, Juvéderm, Radiesse and Perlane Tx

Photos courtesy of Grant Stevens, M.D.

Periorbital area before Tx

Periorbital area six months after two Thermage treatments spaced six months apart

Photos courtesy of Grant Stevens, M.D.

Miles H. Graivier, M.D.
Plastic Surgeon
Medical Director
North Atlanta Plastic and Reconstructive Surgery
Roswell, GA

According to Miles H. Graivier, M.D., plastic surgeon and medical director of North Atlanta Plastic and Reconstructive Surgery (Roswell, Ga.), "The overall trend in aesthetic medicine is toward safer, less invasive procedures with little or no downtime, even when efficacy is less than what would be expected from riskier or more invasive alternatives. Non-invasive body shaping is just that, a sort of Holy Grail that we, as a medical community, are trying to grasp."

An early and enduring modality, Endermologie from LPG (Valence, France), involves the use of mechanical energy through deep rolling massage to stimulate cellular activity and lymphatic drainage. This modality helped to establish the basic philosophy of non-invasive body shaping – reshaping stubborn areas otherwise resistant to change through diet and exercise alone. "It's not about weight loss, it's about firming and reshaping," Dr. Graivier began. "While some patients may experience some weight loss with these technologies, and some heavier patients may experience satisfying results, the ideal patient for these technologies is usually a fairly young patient with a healthy lifestyle."

Alan H. Gold, M.D.
Plastic Surgeon
Great Neck, NY

Alan H. Gold, M.D., a plastic surgeon in Great Neck, N.Y., reinforced this point. "Patient selection is critical to non-invasive body shaping. People will come in asking for it when surgical intervention is what they need, so we have to make sure we can meet patient expectations with whatever modalities we recommend and perform. Unsatisfied patients are not good for the physician or the business."

Building on the mechanical massage foundation, SmoothShapes from Cynosure, Inc. (Westford, Mass.), combines painless mechanical stimulation suction rollers with 650 nm or 915 nm light emitting diode (LED) energy for further biostimulation, a technique termed photomology. "The mechanical component helps break up the fascia and mobilize lymphatic tissue," Dr. Graivier explained. "The suction also improves penetration of the LED energy, which helps liquefy the fat and causes transitory pores in adipocyte membranes to open, so that the fat leaks out. The body's natural waste removal processes do the rest of the work, further synergized by the LED and suction massage as well." Dr. Graivier recommends eight to ten treatments, twice weekly, for best results. "I also use SmoothShapes in conjunction with almost every liposuction procedure I perform, which in my mind is a growing application for these technologies."

FDA cleared for non-invasive body contouring, Zerona® from Erchonia (McKinney, Texas), uses a low-level laser to effectively remove unwanted fat and inches from the waist, hips and thighs. As one of the most researched low-level lasers in the world, Zerona reportedly causes no side effects, pain or bruising and results are observed relatively soon after treatment.

Syneron and Candela's (Irvine, Calif.) VelaShape II combines infrared (IR) and radiofrequency (RF) energy known as elōs, or electrical-optical stimulation technology, to achieve clinically-proven cellulite and circumference reduction with no downtime. With 60 W of RF (up from 50 W with the original VelaShape) and 35 W of IR, treatment time has been shortened from 20 to 45 minutes to 15 to 30 minutes. Additionally, results may be seen after only two treatments, as opposed to three or four, or more, with the original device. "There is also rolling massage and suction to

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Abdomen before Tx

Abdomen after eight Reaction treatments

Photos courtesy of Arena Medical Aesthetic Center

"RF and IR energy disrupt the integrity of the fat cell, stimulate cell metabolism and promote tightening via thermal stimulation of collagen."

Abdominal laxity before Tx

Abdominal laxity after four Exilis treatments

Photos courtesy of Jeanine Downie, M.D.

break up the fibrous septae and stimulate the lymphatic system," said Dr. Gold. "The RF and IR energy disrupt the integrity of the fat cell, stimulate cell metabolism and promote tightening via thermal stimulation of collagen. With this new version we can do this more effectively because the target tissue temperature can be reached more rapidly and efficiently." Results may begin to manifest within several weeks but full results will take three to six months to appear, depending on the individual.

The New Midas from Hironic Co., Ltd. (Seoul, Korea), also uses IR and RF energy for a non-invasive, no downtime body shaping procedure. According to the manufacturer, the technology, called ICE RF, starts with RF for heating and destruction of fat cells, as well as tightening, plus IR for additional stimulation of tissue, made possible by an advanced cooling system making treatment painless.

RF energy is a popular choice for non-invasive body contouring because the higher impedance of fat versus skin tissue make it possible to heat fat cells through the skin. A long standing, enduring and constantly evolving modality, Thermage from Solta Medical, Inc. (Hayward, Calif.), is the original RF modality for tightening through collagen contraction via bulk heating of the tissue. Thermage CPT, the newest version, incorporates Comfort Pulse Technology, including a vibrating handpiece, for enhanced patient comfort. "CPT is an energy delivery algorithm with interwoven RF pulses and cooling, which is far more comfortable than previous iterations of the device," noted Grant Stevens, M.D., medical director of Marina Plastic Surgery Associates (Marina Del Rey, Calif.). "I've undergone treatment myself and found it to be painless – it's more warm and pleasant now. Also, with the new technology, Thermage CPT delivers more energy, more efficiently, so results are more reliable." Thermage CPT also features a number of treatment tips for differing therapeutic challenges, including Body Tip 16.0 for faster body treatments. "You can do a single treatment but I like to do two, spaced three months apart. You'll see maximum results in five to six months."

Grant Stevens, M.D.
Medical Director
Marina Plastic Surgery Associates
Marina Del Rey, CA

Dual-layer Thermotherapy with Accent^{XL} from Alma Lasers, Inc. (Buffalo Grove, Ill.), uses unipolar RF to oscillate water molecules beneath the skin to generate heat (to about 42° C) in subcutaneous fat at a depth of up to 20 mm, with the potential addition of bi-polar RF for a more superficial tightening and a better overall effect. "The unipolar RF works very much like a microwave," said John Hamel, M.D., founder of Complete Laser Clinic (Hickory, N.C.). "If you put bacon in a microwave, the energy oscillates water molecules and heats it up to cook it. Accent^{XL} causes a similar thermal reaction which shrinks fat cells and firms up collagen bonds."

Dr. Hamel further noted that with IN-Motion technology treatment is virtually painless and feels like a very warm massage because the area is heated gradually so it's very well tolerated. Typical use involves a course of six to ten treatments, and the peak result matures in three to six months. "The ideal patient is younger with thick, well-hydrated skin because water is the vector by which this technology works. In that same vein, Accent^{XL} is great after liposuction because at that time, edema increases the amount of localized hydration. It helps create a smoother overall result." Accent^{XL} has three handpieces: BiPolar, UniPolar and the UniLarge which offers a larger spot for more rapid treatment.

Instead of relying on a single RF mode to treat cellulite and tighten skin, Reaction from Viora, Ltd. (Jersey City, N.J.), uses multi-channel RF (CORE™ technology) plus

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Abdomen before Tx

Abdomen after eight Venus Freeze treatments

Photos courtesy of Maurice Adatto, M.D.

Lower face and neck before Tx

Lower face and neck six weeks after one SkinTyte Tx

Photos courtesy of Jody A. Levine, M.D.

vacuum therapy to maximize energy penetration, enhance local circulation and promote lipolysis, according to Daniel Man, M.D., a plastic surgeon in Boca Raton, Fla. "Each of the three RF modes (2.45 mHz, 1.7 mHz or 0.8 mHz) goes to different depths," he said, "or you can combine modes for a stronger effect. Lower megahertz settings go deeper, higher settings are more superficial." This allows the user to specify depth and intensity of RF delivery, for individualized treatment. "Some patients have looser skin but less subcutaneous fat. Some don't need as much tightening, but have a thicker fatty layer. You can choose your RF mode based on the patient's physical make-up." Dr. Man recommends six to ten treatments at weekly, bi-weekly, or three week intervals, depending on the area and patient.

Daniel Man, M.D.
Plastic Surgeon
Boca Raton, FL

"Each of Reaction's three RF modes goes to different depths, or you can combine modes for a stronger effect."

Exilis from BTL Industries (Prague, Czech Republic), has been engineered to allow the customized, focused and precise delivery of high-power RF at various depths to 20 mm within tissue, without burns or blisters, for the duration of treatment and without the need for disposables. The technology relies on an advanced cooling system and constant temperature monitoring that helps control the depth of RF penetration, minimizes patient discomfort and allows therapeutic temperature levels to be reached rapidly. "Once you understand Exilis technology and how to balance RF power and surface cooling you can customize the delivery of thermal energy to any depth desired," said Robert Weiss, M.D., associate professor of dermatology at Johns Hopkins University School of Medicine (Hunt Valley, Md.). "What is unique about Exilis is that now we can comfortably shape and then tighten in the same treatment zone for most body areas such as upper arms, abdomens, love handles or knees." A course of four sessions, 20 to 30 minutes in length, is recommended.

Robert Weiss, M.D.
Associate Professor of Dermatology
Johns Hopkins University School of Medicine
Hunt Valley, MD

TriPollar technology from Pollogen, Ltd. (Tel Aviv, Israel), painlessly delivers focused RF energy to different layers using three or more electrodes simultaneously, according to the manufacturer. Under treatment, adipocytes contract as they release their fatty contents, which are naturally removed by the body over time. Superficial application of energy creates tightening. No cooling is required.

Venus Concept Ltd. (Tel Aviv, Israel), offers Venus Freeze, combining multipolar RF and pulsed magnetic fields (PMF) for facial and body skin tightening, and treatment of cellulite. According to the manufacturer, studies have shown multipolar RF to be superior to monopolar and bi-polar RF in effectively reaching the critical thermal endpoint faster (41° C to 43° C) and maintaining it for longer, while improving patient comfort and decreasing potential side effects experienced previously with monopolar and bi-polar RF technologies. PMF accelerates angiogenesis, increasing cutaneous wound healing, as well as decreasing post-surgical pain and edema. In the U.S., the Venus Freeze is cleared for the treatment of facial wrinkles, and it is approved by Health Canada. The Freeze's synergistic multipolar RF and PMF treatments are versatile, effective and are an economical addition (with no disposables necessary) to an aesthetic medical practice.

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Abdomen before Tx

Abdomen five weeks after third SkinTyte Tx

Photos courtesy of Jody A. Levine, M.D.

61 year old female before Tx

61 year old female after VASER Shape Tx

Photos courtesy of Julene Samuels, M.D.

Jody A. Levine, M.D.
Co-Founder
Plastic Surgery & Dermatology of NYC
New York, NY

Using near-IR light (590 nm) alone, SkinTyte from Sciton, Inc. (Palo Alto, Calif.), delivers deep, uniform, targeted heat to coagulate tissue and stimulate collagen contraction and remodeling anywhere on the body, according to Jody A. Levine, M.D., co-founder of Plastic Surgery & Dermatology of NYC (New York, N.Y.). Sapphire contact cooling means no topical anesthesia is needed. "This new *SP* allows us to treat even faster than before," she said. "It has a large 15 x 45 mm spot and a rapid repetition rate, so we can move the handpiece for more gradual energy delivery. The wavelength heats tissue at the surface and deeper, for a better effect with no patient downtime. Accurate temperature sensors in the handpiece facilitate optimal and more therapeutic delivery of energy." SkinTyte is available on the JOULE platform or as a stand-alone system.

According to Patrizia Gilardino, M.D., of Milan, Italy, TriActive Plus from DEKA (Calenzano, Italy), a versatile device for tightening and cellulite, is a workhorse in her office. The treatment, called Dermodynamic, "combines three modes of action: deep laser stimulation, massage and a localized cooling system," she said. "Energy from six laser diodes stimulates microcirculation; cryotherapy cooling reduces edema and also stimulates circulation; and the rhythmic massage element promotes drainage." The device has two handpieces, one for the face and one for the body, which users can conveniently switch between as necessary.

VASER Shape MC1 from Sound Surgical Technologies, LLC (Louisville, Colo.), uses external ultrasound to treat laxity and cellulite with a dual mechanism of action, according to Julene Samuels, M.D., a plastic surgeon in Louisville, Ky. "External application of ultrasound causes heat for collagen remodeling at the surface to induce tightening and firming, and to affect fat cell membrane permeability," Dr. Samuels explained. "The vibration effect of the ultrasound also causes localized mechanical trauma to the fat cell, a sort of implosion."

Julene Samuels, M.D.
Plastic Surgeon
Louisville, KY

She further advised that the two angled transducer heads allow dual beams of modulated ultrasound energy to travel comfortably through the skin separately, but because of their angle on the head of the handpiece, the beams converge under the skin in the fatty layer to effectively double the energy created in the tissues below the skin. Application of energy can be modulated to control the depth of effect. Furthermore, Dr. Samuels pointed out that the individual beams are not focused, so a broader area is affected and patient comfort is much greater. "This treats much more deeply than RF, and with the transducer handpiece you can easily move over the treatment area. Typical treatment time is 60 to 90 minutes, performed a week apart, for a course of about four treatments. It's very comfortable and effective on the thighs or abdomen. Some patients just won't undergo surgery, and this is a nice alternative, as long as expectations are properly managed."

Hana Raková, M.D.
Esthe Laser Klinik
Prague, Czech Republic

Combining fractionated focused ultrasound (FFUS) with a 635 nm low-level, or 'cold,' diode laser, SPASHAPE© from MEDIXSYSTEME (Nimes, France) is painless with virtually no downtime or side effects, according to Hana Raková, M.D., of Esthe Laser Klinik (Prague, Czech Republic).

18 year old before Tx

18 year old after VASER Shape Tx

Photos courtesy of Julene Samuels, M.D.

Instead of a single continuous emission, FFUS emits thousands of focused ultrasound pulses using a concave ceramic emitter, rather than a flat emitter. The ultrasound energy causes microvibrations that damage fat cell membranes and the scanning cold laser stimulates cell metabolism, microcirculation and vasodilation for improved lymphatic drainage of liberated fat. "The device is totally non-invasive and safe enough to treat at seven day intervals with no problems and no waiting for recovery or healing. Patients can resume normal activity immediately after the procedure."

Cryolipolysis™ is an emerging technique that's gaining ground rapidly within the field of aesthetic medicine. According to Jeffrey Dover, M.D., medical director of SkinCare Physicians in Chestnut Hill, Mass., Coolsculpting by Zeltiq from Zeltiq Aesthetics, Inc. (Plesanton, Calif.), is in a class by itself. "There's nothing like it in the industry," he said. "The technique utilizes cold to selectively damage fat subdermally while sparing the overlying dermis and epidermis. More than 40 years ago it was discovered that cold induces inflammation in the fat, known as cold panniculitis. Dieter Manstein, M.D., and R. Rox Anderson, M.D., at The Wellman Center at Massachusetts General Hospital in Boston, Mass., showed in a series of landmark experiments, how this could be harnessed for selectively damaging fat without damaging the skin, first in animal models and then in humans."

Jeffrey Dover, M.D.
Medical Director
SkinCare Physicians
Chestnut Hill, MA

Dr. Dover explained that a proprietary cryoprotectant is first applied to protect the skin and optimize cooling of underlying fat. Applicators use suction to pull the skin into an inverted U-shaped depression; cold plates on either side of the depression cause cooling. "Since the fat freezes at a higher temperature than the skin, the fat is crystallized while the skin is simply chilled. The effect feels like warm butter firming after being in the refrigerator, but the redness and firmness resolve a few minutes after treatment. Over the next few months cold panniculitis causes death of the fat cells and the gradual and safe release of lipids. Results are impressive for localized unwanted fat."

"I think we're in the midst of a major evolution in terms of what we're able to do non-invasively for lifting, tightening and cellulite. The spectrum of non-invasive therapeutic options for patients is far greater than it was even a decade ago."

Depending on the patient, one to three treatments, at least two months apart, might be performed. "Although there isn't any long-term data as of yet," Dr. Dover added, "results are permanent as far as fat cells being destroyed by the procedure. Patient satisfaction is extremely high." Dr. Dover headed the multicenter clinical trials for FDA clearance of Coolsculpting by Zeltiq, and is also chairman of the scientific advisory board at Zeltiq Aesthetics.

As technology advances, all levels of the market will benefit, from manufacturer to physician to patient, according to Dr. Graivier. "I think we're in the midst of a major evolution in terms of what we're able to do non-invasively for lifting, tightening and cellulite," he said. "The spectrum of non-invasive therapeutic options for patients is far greater than it was even a decade ago. With refinements and improved protocols for existing technologies, as well as emerging technologies, many more patients can now put off or avoid surgery. We're starting to meet needs that were previously unmet." ■