

A blue-tinted microscopic image showing the intricate structure of skin cells, including various layers and cellular components, serving as a background for the top section of the page.

Innovations in Aesthetic Technology

Precision and Refinement Distinguish Current Generation of Aesthetic Products

Michael Moretti, Editor and Mark J. Tager, M.D., Editor

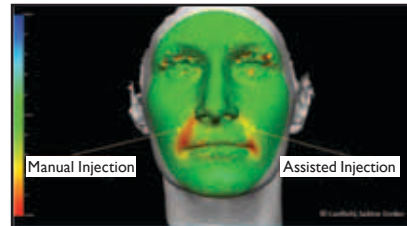
It can be argued that many of the major improvements in healthcare, aesthetics in particular, have come from the standardization of treatment protocols. As science becomes better understood, there is a natural process of technique refinement and advancement. While devices such as intense pulsed light (IPL), fractional resurfacing and radiofrequency (RF), have been optimized for safety and efficacy, new treatment approaches, such as skin tightening via RF or focused ultrasound transducers have emerged.

As dermal fillers and neurotoxins grow in popularity, what role does technique variability have in cosmetic outcomes? For example, would a lip augmentation using hyaluronic acid (HA), performed by a plastic surgeon in Korea, be equivalent to the same procedure done by a dermatologist in Germany? According to research, it is more likely to be, if the two physicians use an assisted injection device such as the Anteïs Injection System (AIS) from Anteïs (Geneva, Switzerland). This injection system offers multiple advantages to the practitioner, including significantly diminished muscle fatigue and better control over the speed of injection and the amount of product injected.

Sabine Zenker, M.D., a dermatologist from Munich, Germany has recently compared dermal filler injections with the AIS versus standard, manual injections in a split-face clinical trial. The automated system produced, "less redness, swelling and pain," Dr. Zenker reported. "Clinically, we saw more precise dermal filler delivery in the assisted injection side. We were also able to use less product."



Sabine Zenker, M.D.
Dermatologist
Munich, Germany



Three-dimensional photographic assessment of assisted dermal filler injection vs. manual injection
Photo courtesy of Sabine Zenker, M.D.

"In addition to the objective findings, patient satisfaction was higher in the assisted injection groups," Dr. Zenker continued. "Basically, the consistent and controlled injection pressure and homogenous product delivery resulted in a far more even therapy and a better aesthetic outcome. This tremendously enhances patient comfort during and even after the injection."

The AIS complements the use of Modélis, the company's monophasic HA dermal filler, injected subcutaneously for volume augmentation. Modelis allows the physician to reshape a patient's face by subtly changing proportions.

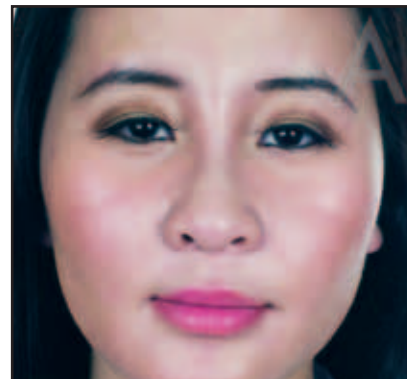
In the same way that Asian patients have adopted a more Western aesthetic, so too have they adopted a more Western personality – they want immediate and long lasting results. As the facial contouring market grows exponentially in Asia, more physicians are turning to Aquamid® from Contura International A/S (Soeborg, Denmark). Aquamid is a non-allergenic, biocompatible and non-absorbable hydrogel sold in more than 40 countries worldwide.

This homogeneous gel comprises 97.5% water and 2.5% patented cross-linked polyacrylamide, a material that has been used in medical products for many years. Since it contains no micro-particles, is completely stable and integrates fully into the tissue that it is injected, Aquamid provides an outstanding safety profile. Results documented around the world for more than eight years revealed a complication rate of less than 1:1,000. Unlike other long lasting dermal fillers with micro-particles, no cases of allergy, hypersensitivity, fibrosis, inflammation or granulomas have been observed with Aquamid (unless related to infection).

Furthermore, the safety and efficacy of Aquamid have been documented in several clinical trials involving more than 3,000 patients, with 92% of patients stating they were satisfied or very satisfied with the results at 60 months. Aquamid remains where it is injected, delivering a predictable immediate and permanent result. This soft-textured gel can be gently manipulated to refine the effects, and is natural looking.



Before Tx



After Aquamid Tx

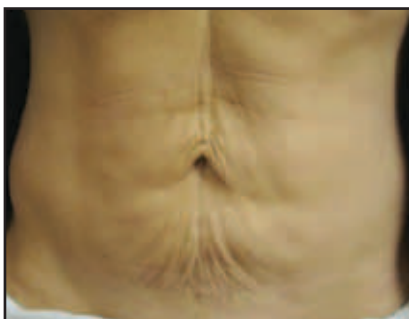
Photos courtesy of Contura International



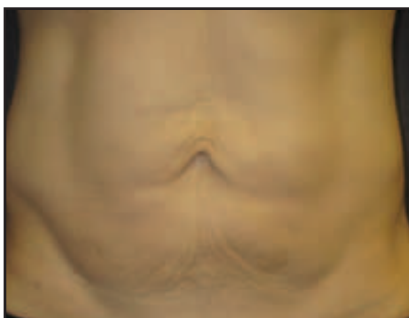
Neuronox by Medytox



SmartXide² DOT/RF by DEKA



Abdomen before Tx



Abdomen seven weeks after three SkinTyte treatments

Photos courtesy of Jody Levine, M.D.

The recent influx of additional botulinum toxin type A products into the market has created competition among manufacturers. With this competition have come opportunities to acquire essentially biologically equivalent products at lower price points. Such is the case with Neuronox®, a botulinum toxin type A complex product, manufactured by Medytox, Inc., a Korean biopharmaceutical company. The product is registered in 23 countries such as Korea, Brazil, India, Hong Kong, Chile, Ukraine, Thailand, Colombia and Panama, and is in the process of registration in another 25 countries.

Since its launch in 2006, more than one million vials of Neuronox have been sold in the global market, and there have been no confirmed serious adverse events. It is widely used in the cosmetic and therapeutic fields, with efficacy and duration for both applications proven equivalent to a competitor through clinical trials and tests. The product is sold under different brand names such as Siax, Botulift, Cunox and Meditoxin, and consists of 50, 100 and 200 units depending on the purpose of usage.

Meanwhile, the evolution of aesthetic devices has moved toward greater precision and flexibility. For the first time, physicians can discover the DOT scanner and bi-polar RF feature of the SmartXide² multidisciplinary CO₂ laser platform from DEKA (Calenzano, Firenze, Italy). This dual treatment mode yields improvements in both skin rejuvenation and tightening.

Featuring new Pulse Shape Design (PSD®) technology, SmartXide² is capable of issuing pulses in any shape, specific for each individual treatment and indication. The newest DEKA Pulse allows control in specific layers of the dermis. The SmartXide² also has an intelligently integrated plug and play feature, allowing the clinician to simply add all scanning accessories at will. Value is enhanced through the multitude of clinical applications. In addition to aesthetic and dermatological indications, it can be used for a variety of non-aesthetic applications including ear, nose and throat, gynecological and dental. As well, an optional diode laser fiber can be attached to the system, expanding the therapeutic spectrum of the device to endosurgical and endovascular applications.

Non-ablative skin tightening continues to make great strides as manufacturers seek to provide tools that can stave off the need for surgical intervention of skin laxity. Most recently, Sciton (Palo Alto, California, U.S.), introduced SkinTyte II, an expansion of their popular SkinTyte module. This broadband infrared light technology with integrated cooling provides optimal clinical results without downtime and obviates the need for topical anesthetics and consumables. Physicians can tailor the treatment for skin types I-VI while maximizing treatment speed, effectiveness and safety. In addition, the device can be used on many parts of the body, including, but not limited to, the abdomen, arms, chest, back of hands, chin, jaw line, cheeks and neck.

Another approach to skin tightening involves the use of focused ultrasound. Ultherapy from Ulthera (Mesa, Arizona, U.S.) precisely and consistently coagulates tissue to 65° C at 4.5 and 3.0 mm of depth. Ultherapy creates discrete 1 mm³ thermal coagulation points that are completely surrounded by healthy tissue. This fractional approach to heating eliminates downtime while promoting rapid and focused neocollagenesis. With the advent of a new 1.5 mm transducer, users may now target tissue at a more superficial level to profoundly affect the dermis.

Nark-Kyoung Rho, D.D., a dermatologist in Korea, recently conducted a small clinical trial using this new transducer on ten Korean patients whose primary concerns were fine periorbital wrinkles. "Most of the patients were satisfied with the results at the recent four month follow-up," Dr. Rho noted.



Nark-Kyoung Rho, D.D.
Dermatologist
Seoul, Korea

"Clinical results after periorbital treatment become evident two to three months after therapy, which is to be expected as the body needs at least two months for full regeneration of the new collagen. Treatment was well-tolerated and there were no side effects. In addition, there were also no side effects when the 1.5 mm and 3.0 mm transducers were used on the same treatment site. One of the study subjects also experienced improvement of burn scars after treatment, which is a very interesting phenomenon. I think the 1.5 mm transducer is a good option for periorbital wrinkles, upper lip wrinkles, perioral fine lines or horizontal neck lines," he added.



Ultherapy superficial transducers by Ulthera

Predictable heat delivery is also achieved with fractional microneedles. INTRAcel from Jeisys, Inc. (Seoul, Korea) delivers RF energy via a 7 x 7 array of 0.2 mm needles. Each needle is insulated up to the exposed 0.3 mm tip, where energy is emitted in a bi-polar mode. RF is able to target the skin at depths of 0.5 mm, 0.8 mm, 1.5 mm or 2.0 mm as determined by the user. By adjusting the delivery to bypass the dermal-epidermal junction, the likelihood of post-inflammatory hyperpigmentation (PIH) is greatly reduced.



All New INTRAcel by Jeisys



Takashi Takahashi, M.D.
Director
Takahashi Clinic
Tokyo, Japan

According to INTRAcel pioneer Takashi Takahashi, M.D., director of the Takahashi Clinic (Tokyo, Japan), "the INTRAcel array of 49 needles makes treatment more rapid than other devices. I can treat the full face within 20 minutes and I always make at least six passes during one session, so this is indeed a rapid treatment. Downtime with INTRAcel is practically non-existent." In Dr. Takahashi's experience, "patients may see edema and erythema, which will resolve within three days, with no burning or PIH. In fact, in most cases any adverse events resolve within 24 hours. Over time, the growth of new collagen creates the final result." In addition to skin tightening, the variable penetration depth allows INTRAcel to be used for other indications including acne scarring, telangiectasia, axillary hyperhidrosis and osmidrosis, striae, rosacea and enlarged pores.

Tone, texture, color, wrinkles – these are the most common complaints that drive patients into an aesthetic practice. The ability to treat these indications quickly and cost-effectively, with minimal downtime and discomfort is a major advantage for a clinician. Sublative rejuvenation with Syneron's (Yokneam, Israel) portable eMatrix system allows aesthetic practitioners to address these concerns with fractionated bi-polar RF technology. Each pulse delivers conducted RF energy via a grid of matrix spots to induce a skin injury. An accelerated healing process is supported by the intact tissue surrounding the matrix spots.



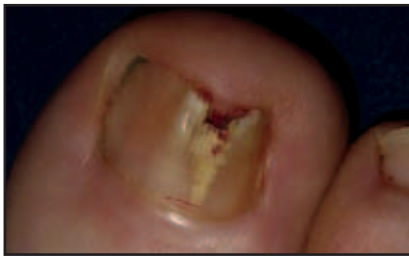
eMatrix by Syneron & Candela

Tone, texture, color, wrinkles – these are the most common complaints that drive patients into an aesthetic practice. The ability to treat these indications quickly and cost-effectively, with minimal downtime and discomfort is a major advantage for a clinician. Sublative rejuvenation with Syneron's (Yokneam, Israel) portable eMatrix system allows aesthetic practitioners to address these concerns with fractionated bi-polar RF technology. Each pulse delivers conducted RF energy via a grid of matrix spots to induce a skin injury. An accelerated healing process is supported by the intact tissue surrounding the matrix spots.

eMatrix also features SelectPulse™ technology, which allows a tunable impact of effects. By offering various degrees of impact to affected areas, a range of skin conditions and skin types can be safely treated. Depth of ablation and the extent



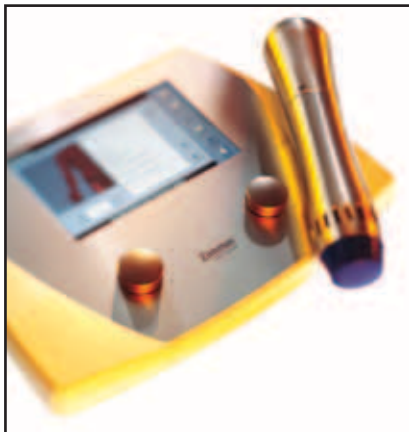
Clear + Brilliant by Solta Medical



Onychomycosis before Tx



Onychomycosis after CoolBreeze Tx
Photos courtesy of Neil Van Dyke, D.M.P.



ZWave by Zimmer MedizinSysteme

of surrounding tissue coagulation can be controlled and customized to ensure that the exact degree of skin resurfacing required is provided to each individual patient. New Sublative ID (Intelligently Designed) tips can be reconnected with multiple tip configurations.

Another elegant solution to creating visibly smoother skin, along with improved tone and texture is Clear + Brilliant™, a unique laser-based system from Solta Medical (Hayward, California, U.S.). This system utilizes the company's patented Intelligent Optical Tracking System (IOTS) for quick, uniform and predictable results, providing an affordable, minimal downtime procedure that is fast and effective.

Until recently, there has not been a cost-effective, safe, convenient means to treat onychomycosis. In epidemiological studies, the prevalence of tinea pedis and onychomycosis across Europe and East Asia has been shown to be 20%. A significant market and an unmet need are perfect driving forces for innovation and have sparked a solution for this chronic problem.

The CoolBreeze™ 1064 nm and 1320 nm laser systems, manufactured by Cooltouch (Roseville, California, U.S.), and distributed by GlobalMed Technologies (Glen Ellen, California, U.S.), safely address onychomycosis. The unique CoolBreeze handpiece includes a thermal feedback feature that monitors and adjusts the laser's operation to achieve a temperature pre-set by the physician. When the device reaches the desired pre-set temperature cryogen is sprayed on the toe for patient comfort and safety. This safety feature eliminates any guesswork and guards against over treatment. The laser also features a 2 – 10 mm adjustable spot size for large and small nails. CoolBreeze lasers may also be used for skin tightening, acne, acne scars, warts, dermal heating, hair removal, vein removal and a variety of other treatments.

A much more vexing complaint is cellulite, which has been estimated to affect 85% or more of post-pubertal females of all races. A variety of treatment methods, ranging from physical and mechanical manipulation, pharmacological agents and lasers have been tried. The most recent and promising approach available from ZWave by Zimmer MedizinSysteme (Neu-Ulm, Germany), involves the use of acoustic radial waves.

ZWave's acoustic radial wave consists of two different parts – positive pressure pulse and a comparatively small tensile wave component. The shockwave constricts the surrounding tissue and breaks the grid structure of the molecules. The tensile wave leads to a collapse of the gas bubbles within the fat structures (cavitation), which re-expand after application of the acoustic radial waves; thus ensuring a destabilization of the fat structures. A number of tissue reactions and metabolic effects have been observed including short-term increase of blood flow, enhanced lymphatic draining, softening of fibrotic structures, lipolysis, collagen remodeling and longer-term angiogenesis. Advantages of acoustic radial waves include painless treatment, no downtime, ease of operation and visible results.

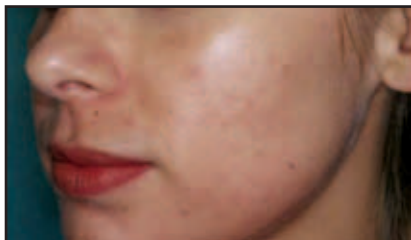
Continuing demand for effective treatment of another troublesome condition – melasma – is also driving technological innovation. Increasingly physicians in Asia are turning to Q-switched Nd:YAG for this condition. The RevLite™ Electro-Optic



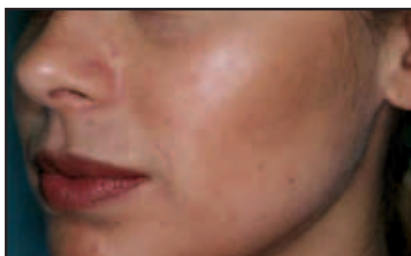
RevLite by Cynosure



TattooStar R by Asclepion Laser Technologies



Before Tx



After four sessions of Milk Peel Tx
Photos courtesy of Dermaceutic

(EO) Q-switched Nd:YAG from Cynosure (Westford, Massachusetts, U.S.) features PhotoAcoustic Technology Pulse (PTP) for safe, effective treatments at high energy levels. The EO Q-switch provides a high-speed shutter to produce nano-second pulse durations. High-speed repetition rates of PTP produce maximum energy output over a large spot size at the same fluence level, enabling physicians to treat large areas effectively and rapidly. This versatile workstation features four standard wavelengths – 1064 nm, 532 nm, 650 nm and 585 nm, and is CE marked and FDA cleared to treat all skin types and for a variety of indications including: skin toning and rejuvenation, treatment of vascular and pigmented lesions, tattoo removal, hair removal and acne scars.

As fractional technology has matured, it is no surprise that this approach has been adapted to the treatment of melasma. Asclepion Laser Technologies (Jena, Germany), has recently introduced a fractional solution for Q-switched lasers. Using established Q-switched ruby technology, the unique solid-state microlens array built into the special handpiece produces 196 simultaneous fractional energy transmission microspots. This unique laser-tissue interaction allows for the gentle and homogeneous fragmentation of melanin structures, removing pigmentation while dramatically limiting the associated risk of side effects. The result is a highly effective solution for skin rejuvenation, the removal of pigmentation and the treatment of melasma.

Extensive trials have shown the effectiveness of treatment without side effects and with the highest levels of patient comfort. Moreover, the technology requires no costly consumables and offers an exceptionally homogeneous Flat-top beam profile for optimized energy input. The square spot makes for a simple, safe and effective side-by-side treatment which is remarkably fast.



Adam Miller, M.D., D.D.S.
Maxillofacial and Cosmetic Surgeon
Borneo

If you have ever wondered whether aesthetics has truly become a global phenomenon, consider the patient mix of Adam Miller, M.D., D.D.S., a maxillofacial and cosmetic surgeon who practices in Borneo. "Awareness of professional skincare among women in Borneo is very great, but in the past two years, the number of men who have come in for acne scar treatment, pigmentation problems or hair removal has been steadily increasing. What's more, these are the not-far-removed descendents of headhunters," Dr. Miller pointed out. "One of the best ways to introduce patients to the world of professional skincare is through the use of Dermaceutic (Shannon, Ireland Co. Clare) products."

"The Milk Peel is ideal for this purpose as it is widely tolerated," Dr. Miller shared. "I have seen very little negative reactions, perhaps a little redness for a day and this is in patients with very sensitive skin. Milk Peel allows us to introduce our practice to the patient and results in increased acceptance of other procedures down the line." Milk Peel is a superficial peel containing 50% glycolic acid, salicylic and lactic acids and is ideal for oily skin regulation, pigmentation problems, skin lightening, fine line and wrinkle reduction.

The world of aesthetic medicine is growing at a rapid pace. Supporting this sweeping expansion is a dedicated group of companies creating products that help aesthetic practitioners take patients to ever-increasing levels of beauty. ■