

AESTHETIC

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Lux2940 Laser Advances Resurfacing

A new single treatment micro-fractional Er:YAG laser device has restored ablative treatments, this time with only three to four days of recovery time, according to plastic surgeon Brooke R. Seckel, M.D. "The Lux2940™* Fractional ablative laser (Palomar Medical Technologies, Inc., Burlington, Mass.) gives great results as opposed to other multiple treatment devices which offer minimal results," he said. "This is the latest innovative attachment to the StarLux 500 platform." Dr. Seckel, a pioneer in the field of traditional CO₂ laser skin resurfacing and Khalil A. Khatri, M.D., a pioneer in traditional erbium ablative laser treatments, feel the Lux2940 Fractional is a very useful and innovative device that will bring the treatment of photodamage to a new level.

Palomar Breaks New Ground in Ablative Treatments

By Fred Wilson, Contributing Editor



Brooke R. Seckel, M.D.
Plastic Surgeon
The Adams-Seckel Center
Peabody, MA

“Downtime is reduced from two weeks with the CO₂ laser to three or four days with the Lux2940 Fractional.”

According to Dr. Seckel, a private practitioner in Peabody, Mass., the Lux2940 Fractional treatments use microbeams. “The beams penetrate deeply enough to stimulate new collagen formation with much less recovery time than CO₂ lasers,” he said. “The older CO₂ lasers would vaporize a whole patch of skin layer by layer, then the damaged skin would heal from the remaining sweat glands in the deeper parts of the skin. Since the healthy tissues were deeper in the skin and far from the damaged tissue, healing time was significant. With the Lux2940 Fractional on the other hand, the microbeams leave untreated bridges of skin between the columns, resulting in much quicker healing. Downtime is reduced from two weeks with the CO₂ laser to three or four days with the Lux2940 Fractional.” The histological analysis, conducted by Zeina Tannous, M.D., shows that these micro-columns close within twelve hours and are covered with

intact epidermis, thus minimizing the risk of complications such as scarring, infection, or long-term pigmentation changes.



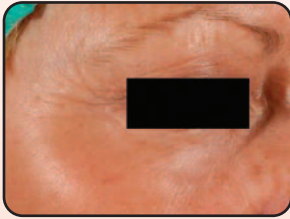
Khalil A. Khatri, M.D.
Dermatologist
Skin & Laser Surgery Center
of New England
Nashua, NH

Dr. Khatri, a dermatologist and former clinical associate at Massachusetts General Hospital (Boston, Mass.), added that the Lux2940 Fractional delivers micro-columns of ablation which are narrower than those of other fractional devices. “Such fractional micro-ablation allows heating of deeper tissues, such as scars and deep wrinkles, more safely than traditional resurfacing by bulk heating,” he said. “Healing occurs quickly in the tissue between the microscopic columns of ablation instead of in large ablated areas.” In the Lux2940 Fractional

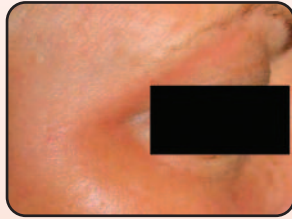
clinical trials, patients were treated without any pre- or post-operative supplemental pain medication, much different from traditional laser skin resurfacing. “Patient comfort during treatment is increased, downtime is reduced to three to four days, and efficacy seems comparable to that of an ablative CO₂ laser device,” continued Dr. Khatri. “Additionally, with the Lux2940 Fractional, the adjacent thermal damage around the columns coagulates smaller, superficial blood vessels, prohibiting bleeding as compared to traditional erbium treatments.”

In clinical trials, Dr. Seckel used the Lux2940 Fractional primarily to remove wrinkles and improve skin texture. “Most recent lasers try to remove wrinkles non-ablatively, in which the laser energy goes deep into the dermis and stimulates new collagen formation,” he said. “They do not remove dead skin and surface wrinkles, and traditional ablative CO₂ lasers provide good results but downtime is long. Treatment with the

Photos courtesy of Khalil Khatri, M.D.



Eye before Tx



Eye one month after Lux2940 Tx

“Being ablative, the Lux2940 removes skin during treatment and improves both wrinkles and skin texture.”

Lux2940 Fractional offers similar efficacy in less downtime and less inflammation.”

In clinical trials, Dr. Khatri used the new device to treat photo-aging and acne scars. “Most patients come in for these indications,” Dr. Khatri said. “The device can also be used to treat benign tumors, epidermal nevi, actinic cheilitis lesions, keloids, verrucae and actinic keratosis lesions. The Lux2940 can be used on patients of all skin types.”

Physicians can customize the treatment on the basis of a patient’s specific needs and skin condition because the degree of micro-ablation and coagulation can be controlled with the Lux2940 Fractional, according to Dr. Khatri. “This level of customization places physicians in total control, improves the results significantly and helps meet patient expectations. This is a new, sophisticated fractional erbium dosing that allows for both long pulse and short pulse

applications to vary the amount of coagulation and ablation. The Lux2940 is also easy to use compared to traditional ablative resurfacing devices.”

Dr. Seckel considers the Lux2940 Fractional to be Palomar’s entry into the ablative resurfacing market. “It’s a significant development,” he said. “Being ablative, the Lux2940 removes skin during treatment and improves both wrinkles and skin texture.” Dr. Seckel also feels the Lux2940 is different from non-ablative fractional devices. “The 2940 nm wavelength is more strongly absorbed by water, so more heat is generated and you get micro-ablation with the fractional beam,” he said. “The fractional non-ablative devices are significantly less absorbed by water, which leads to a different laser tissue interaction. Though non-ablative fractional treatments leave the epidermis intact and allow for no downtime treatments, they require between four

and six treatments, and wrinkle results have generally been modest.”

Regarding the number of Lux2940 Fractional treatments to achieve the desired results, Dr. Seckel does not anticipate more than a single treatment for his patients. “The clinical benefits should be permanent because the micro-ablation has caused structural changes in the dermis and epidermis.” Dr. Seckel has observed very good results so far, particularly in improving wrinkles around the mouth and in the crow’s feet area. “Patients have been very satisfied and the results are visible and significant,” he said.

Dr. Khatri also recommends a single treatment. “The results should last as long as those of traditional CO₂ and Er:YAG ablative resurfacing, and patient satisfaction in clinical trials is very high,” he said.

During the initial studies, no topical anesthesia was used. Treatments

Photos courtesy of Khalil Khatri, M.D.



Lip before Tx



Lip one month after Lux2940 Tx

"If patients want a single treatment procedure and can handle a few days of downtime, they can choose the Lux2940 procedure."

were well tolerated by patients, without significant pain scores reported. To minimize any post-operative discomfort, Dr. Khatri suggests topical anesthesia and good skincare. "I recommend the use of sunblock, cleansing the treated area with a mild soap, applying moisturizers and avoiding sun exposure," he said. "Patients can often resume normal hygiene and return to work in four to six days."

Dr. Seckel also suggests the use of topical anesthesia as well as maintaining good skincare before and after the treatment. In previous laser skin resurfacing procedures Dr. Seckel recommended that before laser treatment, patients prepare their skin by taking tretinoin for four weeks and having a series of four microdermabrasion treatments. "This wiped away a lot of dead skin so the laser could be more effective," he said. Some standard care with micro-ablative procedures is required, such as the pre-treatment with antiviral medication for those

patients with a history of perioral herpetic outbreaks.

The preliminary results of the 12 month Lux2940 Fractional clinical trials were presented by Christine Dierickx, M.D. (Boom, Belgium), at the 2007 *American Society for Laser Medicine and Surgery (ASLMS)* meeting held in Dallas, Texas, and have been submitted to *Lasers in Surgery and Medicine*.

"The Lux2940 Fractional is a new handpiece for Palomar's StarLux 500 laser and pulsed light platform," said Gregory Altshuler, Ph.D., Palomar's senior vice president of research. "When we looked at potential wavelengths for a fractional ablative handpiece for the StarLux, we ruled out CO₂ micro-ablation due to longer downtime. In addition to being a handpiece for the StarLux platform, Palomar intends to launch a stand-alone device with just the Lux2940 handpiece in the future."

With the Lux2940 Fractional, physicians can now accommodate their patients' demands, according to Dr. Seckel. "If patients want a single treatment procedure and can handle a few days of downtime, they can choose the Lux2940 procedure. Other patients might prefer a no downtime, multi-session regimen such as Palomar's TriLux treatment process, which is a combination of non-invasive treatments that use different devices powered by Palomar's StarLux 500 laser and pulsed light platform."

The TriLux process uses three different laser and pulsed light applications, which treat three discrete layers of skin. "The LuxG (visible light) provides superficial clearances for blood vessels and pigment; the Lux1540 provides non-ablative skin resurfacing and penetrates up to 1,000 microns (1 mm); and the LuxDeepIR for non-ablative skin tightening through soft tissue coagulation, sends infrared light as far as

Photos courtesy of Khalil Khatri, M.D.



Before Tx



One month after Lux2940 Tx

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5 mm into the dermis and subcutaneous fat layer, and includes aggressive cooling," Dr. Seckel said. "What I like about the Starlux 500 system is that you can offer different options to patients to choose from during their initial consultation."

Dr. Altshuler added that a major advantage of the TriLux process is that the procedures are non-invasive and therefore very safe. Patients and physicians can choose which procedure or combination of procedures to use. "Palomar is unique to the aesthetic laser industry in that one-third of our 250 employees focus on the research and development of laser and pulsed light devices," Dr. Altshuler said. "Our goal is to continuously optimize our technology and provide cutting edge additions to our StarLux platform."

"The StarLux 500 is the highest-powered laser and pulsed light platform on the market," continued Dr. Altshuler. "It also recaptures reflected

light by photon recycling, which permits more efficient use of energy, and delivers pulses by smooth pulse technology rather than as spikes or bursts. The photon recycling enhances efficacy, and the smooth pulse technology raises the epidermal temperature less during treatment than other pulsed laser devices, thus reducing pain and adverse effects."

Drs. Seckel and Khatri commented on the role of the Lux2940 Fractional in the aesthetic market. "I think physicians have been trying since 1996 to get rid of wrinkles and tighten skin with non-ablative lasers, and it hasn't happened as they hoped," Dr. Seckel said. "The CO₂ laser device is the gold standard for skin resurfacing. It removes wrinkles, and tightens skin, but the recovery time is too long and the traditional CO₂ devices in the market cause pigmentation problems. The Lux2940 is designed to improve wrinkles, skin texture and pigment. It is definitely more effective than all the non-ablative therapies out there. The

key to its success is that it reduces the recovery time significantly because it is a micro-fractional therapy and uses an Er:YAG laser. The Lux2940 is a significant step forward in bringing back ablation but doing so in a fractional way to minimize downtime."

Dr. Khatri agreed with Dr. Seckel. "The aesthetic market has been demanding such a device for a long time, and the Lux2940 should satisfy the demand and help our patients to get the best results without a long amount of downtime," he said. "The Lux2940 is a very useful and innovative device that will bring the treatment of photodamage to a new level."

*Editor's note: The Lux2940 device is currently pending FDA approval.