

Fraxel Laser's Potential Still Under Discovery

Some are experimenting with fluences to determine treatment possibilities for 'therapy in flux.'

BY BETSY BATES
Los Angeles Bureau

LAS VEGAS — The new 1,550-nm erbium Fraxel laser, by creating minuscule dots of destruction in the surface of the skin, produces color and texture changes, and may have the ability to significantly reduce wrinkles at high fluences, Mark Rubin, M.D., said at a facial cosmetic surgery symposium.

"This, in my mind, is a therapy in flux. It's where Thermage was 2 years ago," said Dr. Rubin at the symposium, which was sponsored by the Multi-Specialty Foundation for Facial Aesthetic Surgical Excellence.

The Fraxel laser was approved by the Food and Drug Administration in March.

Using company-suggested parameters, the device can deliver perceptible improvement in the skin with significantly less traumatic healing than is required after carbon dioxide (CO₂) laser treatments.

Still, "the color and texture is really what knocks you out," said Dr. Rubin, who has no financial interest in, and receives no funding from, Fraxel manufacturer Reliant Technologies Inc.

"The big issue for me is what's happening wrinklewise. So far, my experience has been very variable," Dr. Rubin said.

It may be that very high fluences are necessary to dramatically alter wrinkles with the novel system. Dr. Rubin noted that a colleague had been experimenting with aggressive settings, and was finding "much more profound changes" than could be produced by a nonablative laser.

He suggested that it may take some time to work out the ideal ways to use the Fraxel laser for different purposes.

"Nobody really knows how to use it correctly," he said, urging colleagues to "look at it again in 6 months."

Dr. Rubin, who practices dermatology in Beverly Hills, Calif., purchased a Fraxel laser in hopes of finding the holy grail of skin resurfacing: a device capable of

smoothing moderate to deep wrinkles without provoking a lengthy, complication-ridden healing period.

"The ablative therapies are spectacular, but no fun for you or the patient. There's risk. There's [a] nasty-looking [healing period] when you have to see patients every couple of days. There are reasons not everyone is dying to do this."

Nonablative devices seemed like a good idea—Dr. Rubin bought several of them—but they proved to be poor substitutes for the steamroller effect that ablative lasers had on deep wrinkles.

Fraxel seemed to him to be a potential bridge between the two types of skin rejuvenation therapies, creating "little islands of ablated skin in a sea of normal skin."

"Rather than burning everything off, can we burn just little tiny bits at a time to sort of fool the skin into thinking it's not been wounded so badly?" he asked.

The answer is—maybe.

The epidermis remains intact, even when the laser's energy reaches depths of 700 micrometers and beyond, a level deep enough to promote collagen remodeling. But are the pinpoint areas of energy enough? And are the surface areas of each microthermal zone (estimated to number 2,000 per cm²) consistent?

About 20% of the facial surface area is impacted during each treatment session at a low fluence, typically four to six passes, Dr. Rubin said. However, "in reality, as you go back and forth like this, you're never really where you're supposed to be. In certain places you hit the same spot two times, three times, four times, who knows? And in other places, you skip."

It may be that the microscopic zones of destruction are so small that overlap does not matter, either in terms of results or side effects, he said. However, it remains to be seen whether consistency will be achieved as the laser makes its way into general clinical practice.

A clear advantage of Fraxel lasers over CO₂ lasers is the healing process, accord-

Fraxel Could Be Well Suited for Some

The Fraxel 1,550-nm erbium laser may fill a niche for certain patients desiring skin rejuvenation, Dr. Rubin said.

These include:

► **Patients with dark skin prone to hyperpigmentation.** Because the damage inflicted by the Fraxel laser is done with microscopic pinpoint areas, it does not create the persistent erythema that often leads to hyperpigmentation following ablative therapies. Used at low fluences, it may be an excellent option for these patients.

► **Patients with melasma.** Melasma is essentially a condition of "misbehaving melanocytes," according to Dr. Rubin.

"When melanocytes aren't functioning appropriately, we would love to kill them without killing the surrounding tissue and creating hypopigmentation."

The selective action of the Fraxel laser may be able to "gently" knock out enough melanocytes to control melasma without tipping the balance too far, he said.

Results in melasma patients at 1-2 months are "intriguing," he said, although 6-8 months of clearance would be necessary to prove that the therapy is a significant advance.

► **Patients desiring significant rejuvenation of nonfacial skin.** Ablative CO₂ laser treatments are risky in areas of the body with few pilosebaceous units to assist in reepithelialization. Because the Fraxel laser does not produce a widespread wound, it may be better at safely treating the skin of the neck, chest, hands, and arms.

Dr. Rubin has no financial interest in the Fraxel laser and receives no funding from its manufacturer, Reliant Technologies.

ing to Dr. Rubin. "These patients aren't weeping fluid. They're not bleeding," he explained.

When low fluences are used, edema typically lasts 1-2 days, and erythema lasts 1-3 days. Flaking and bronzing of the skin are common. Makeup can be worn because there is no open wound, but most patients need heavy makeup to cover the transient effects of the treatment.

"They certainly don't look normal enough to be fully functional a day or 2 days later. It's nonablative, but there is an impact on patient's lives as a result of this," Dr. Rubin said.

A topical anesthetic is used, and some patients require supplemental oral pain medications. A blue dye is used to enhance skin surface contours for optical scanning.

Patients, said Dr. Rubin, "look like [performers in] Blue Man Group," but the dye washes away within a day.

A grid is used to guide the laser.

Patients return for multiple treatments until 100% of the skin's surface is treated.

At low fluences with high density, the laser's zone of thermal injury extends to the superficial papillary dermis, producing excellent improvement in the appearance of actinic dyschromia and photodamage.

"There's no question color- and texturewise, these patients can really do profoundly well. Although just 20% of the epidermis is being treated [at each session], they don't look 20% better; they look 40%-50% better.

"I don't know why; it doesn't make sense. It obviously has to do with our ability to perceive changes in the skin," he said.

A greater challenge is the best and safest use of the device at high fluences with low density. In this scenario, a deep wound is created over a smaller total area of the skin—about 10% per treatment session. Associated edema and erythema may persist for some time, but the potential exists for improvement of deeper wrinkles, just as he was hoping for, Dr. Rubin said. ■

Permanent Hair Removal in a Single Treatment? That's a Myth

BY PATRICE WENDLING
Chicago Bureau

PARIS — Technological advances in lasers and flashlamp devices have given rise to several hair removal myths, including the belief that permanent hair removal requires only a single treatment, that it can be performed on all hair colors and skin types, and that it is without side effects, Christine Dierickx, M.D., said at the Fourth International Academy of Cosmetic Dermatology World Congress.

Each laser treatment will temporarily remove all the hair and permanently remove about 20%. A hair-free period of about 1-3 months follows most laser treatments, which is then followed by partial regrowth of about 80% of the hairs.

The percentage of new hairs decreases with each laser treatment because additional permanent hair loss with each laser treatment is about 20%, she said.

Patients typically need five treatments, and they should be warned not to pluck or wax their hair because photothermal energy is absorbed by melanin in the hair shaft.

"Without the target, there is no effect," said Dr. Dierickx, director of the Skin and Laser Center, Brussels.

She was unsuccessful in her attempt to create a target by dyeing white hair, and has

had mixed results with the use of radio frequency energy.

Because melanin in the epidermis presents a competing site for energy absorption, hair removal in patients with Fitzpatrick skin types IV-VI is challenging. Such patients can be safely treated with longer wavelength lasers such as an 800-nm diode or 1,067-nm long-pulsed YAG laser.

However, tanned skin is "merciless," and hair removal should typically be delayed 10-12 weeks after tanning, according to Dr. Dierickx.

Photopneumatic therapy or PPx is a new treatment modality that combines light-based hair removal and vacuum suction to lift the patient's skin.

Photopneumatic therapy or PPx (Aesthera Corp.) is a new treatment modality that combines light-based hair removal and vacuum suction to lift the skin.

The technology manipulates the optical characteristics of the skin, potentially allowing four to five times more energy to be transmitted to the follicles, Dr. Dierickx said.

Preliminary 3-month results were comparable with conventional 800-nm and 1,064-nm lasers, with 5 of 19 patients achieving 90% hair clearance.

No hair removal system is without risks. Recent reports (J. Am. Acad. Dermatol. 2004;51:774-7) and personal experiences show that livedo reticularis is a new possible side effect of laser-assisted hair removal, she said. ■