

Pneumatic Skin Flattening Offers Increased Benefits

BY FRED WILSON, CONTRIBUTING EDITOR

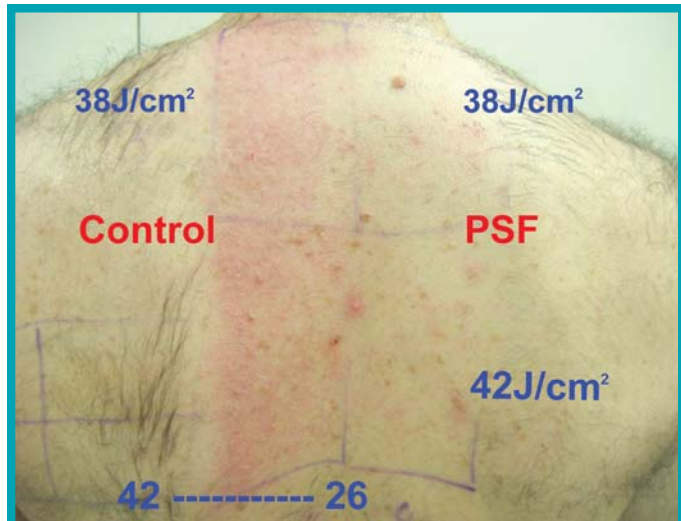
Using negative pressure and a sapphire window, Pneumatic Skin Flattening™ (PSF) from Inolase, Ltd. (Netanya, Israel) mitigates the unwanted side effects of treatment with lasers or intense pulsed light (IPL) and virtually eliminates the need for skin cooling. As an adjunct to laser or IPL devices, PSF allows practitioners to treat more effectively and more rapidly without pain. PSF is indicated for non-ablative skin tightening, treatment of pigmented lesions, tattoos and most commonly, hair removal.

PSF uses an evacuation chamber attached to the distal end of a laser or IPL treatment handpiece, according to Michael Slatkine, Ph.D., vice president of marketing at Inolase and member of the PSF development team. He explained that when the chamber is placed on the treatment site, a vacuum creates suction, elevation, upward compression and flattening of the skin against the sapphire window covering the chamber. The skin is stretched and blood is expelled from the treatment area to make the skin more transparent. Hair follicles are realigned parallel to the skin surface. “Reduced blood means fewer competing chromophores, stretched skin means reduced melanin density and the hair fibers are reoriented closer to the surface in a more orderly fashion,” said Dr. Slatkine. “Together, these

“Together, these three factors increase clinical efficiency because more energy reaches the target.”

three factors increase clinical efficiency because more energy reaches the target, even green and yellow wavelengths.” Dr. Slatkine added that the suction increases the distance between the treated skin surface and the underlying structures, which helps stave off side effects such as erythema.

Additionally, if the negative pressure creates upward compression greater than a 400 to 500 millibar threshold, pressure receptors in the skin inhibit



Cutaneous side effects
20 min post, Light Sheer (30ms)

pain transmission as well. “This effect, known as the gate theory, basically transforms PSF into a pain blocker. The gate theory is fairly common knowledge among dermatologists,” Dr. Slatkine said. “When pain is minimized, the need for analgesic creams with even the highest energy densities is eliminated, thus saving time and money. PSF is also convenient because it doesn’t require the modification of treatment protocols.”

Nathalie Fournier, M.D., of Centre Laser Dermatologie & Phlébologie, La Croisée, Clapiers, France, believes most experienced laser operators will have no trouble using PSF for that very reason. “It’s quite easy to use.”

“If you are an experienced operator, you will simply start with the same energy level as you would without the PSF. During the first session,” Dr. Fournier continued, “you can experiment with raising the fluence a little if you want to be more efficient and effective. You can increase the energy without increasing the pain by much, because PSF makes these treatments more tolerable. I use PSF with the IPL in my office, and the reduced pain and erythema are remarkable.”

Monica Elman, M.D. of Beit-Harofim, Holon, Israel, agreed. “The operator must know how to properly treat

each type of hair. He or she must know how to make the treatment tolerable despite each individual's different response to discomfort. And most importantly the operator should know that side effects might be a part of the process."

"PSF just makes this easier," said Dr. Elman. "For example, the PSF head itself weighs only about 150 grams, so it will be easy to work both with two hands and a single hand. Reducing treatment time is also useful. It takes about half a second to elevate the skin with the unit. This is important because otherwise it would extend treatment time, which we're trying to reduce by eliminating the need for the cream or for pausing treatment regularly."

Gary Lask, M.D. director of the Dermatologic Surgery Service, Dermatology Laser Center, and Mohs' Micrographic Skin Cancer Surgery Unit at UCLA Medical Center in Los Angeles, California, U.S., is lead author on a peer-reviewed PSF journal article. "The most common problems encountered with lasers or IPL would be reduced efficacy and side effects like discoloration or pain," he said. "Much of this is tied to the energy level. You must reach a certain fluence threshold to achieve the desired results, and this may

require care and skill. Depending on what you're treating, pain becomes more likely and more intense when the energy goes higher, and when you're talking hair removal this is definitely the case. With some lasers or treatments pain is less of an issue."

"PSF minimizes or in some cases totally eliminates pain in these procedures," Dr. Lask said. "We've used it with traditionally painful lasers such as the long pulsed YAG and diode lasers for hair removal during



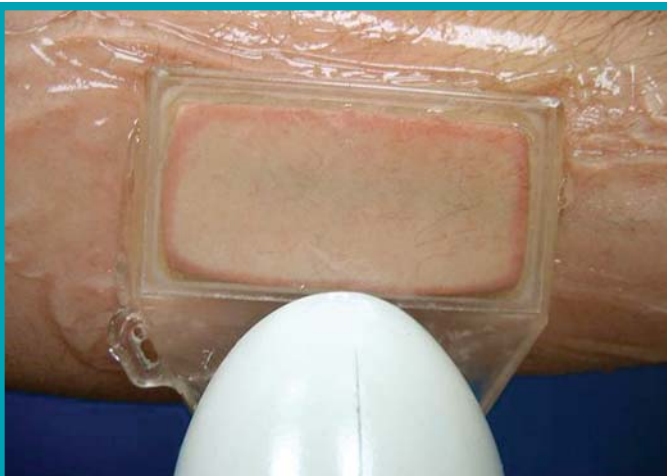
David Friedman, M.D.

LaseOhr Medical Centre
Jerusalem, Israel

initial evaluations, and pain was certainly minimized. You don't have to use pain or erythema as endpoints. We're always looking for something to make things hurt less, because pain will keep patients from returning to complete treatment or to seek additional therapies. And if something doesn't hurt, you certainly don't need analgesic cream."

According to David Friedman, M.D., of LaseOhr Medical Centre, Jerusalem, Israel, and a co-author of the paper, the use of analgesic cream is no small matter. "There are a lot of annoying problems with cream. First off, it costs somebody money, and patients often expect the physician to provide the cream. If you're doing a man's chest, that's two tubes, not one, and after five or six treatments that adds up. But it's not only the cost," Dr. Friedman explained. "It's also a hassle to put this cream on and ask the patient to sit around for an hour. You probably have to tie up a room and the patients have to wait. And what if they have to put this cream on their back? That ties up someone else. So overall the expense and inconvenience are significant."

"Also, there is something of a risk of a negative physical reaction when applying cream," continued Dr. Friedman. "There have been a number of deaths associated with creams, most often with creams compounded by pharmacies with high concentrations of the

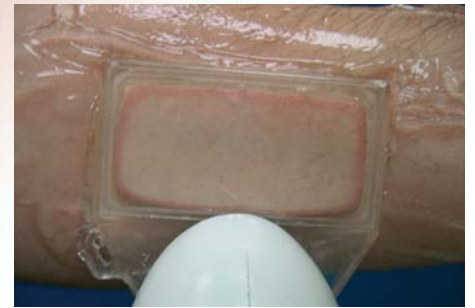


Pneumatic Skin Flattening Operation Principles

A thin vacuum cell covered by a Sapphire window flattens the skin and expels blood to the circumference. Skin is more transparent in treatment zone resulting in better target contrast. Pressure receptors in the skin inhibit the transmission of pain impulses through the dorsal horn to the brain.

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Adaptable to any IPL or laser.



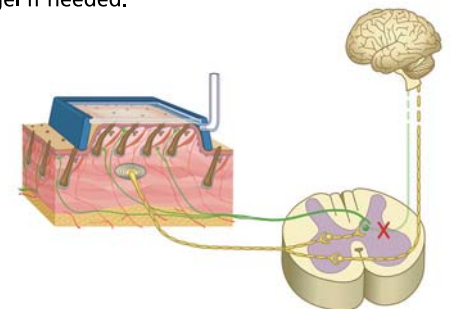
- More effective
- No pain even with high energies
- No need for analgesic creams
- Safer, less erythema
- Adaptable to any Laser or IPL
- Faster treatments and cost effective
- Proven and peer-reviewed

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The operating principle of PSF. Skin upward compression inhibits pain transmission to the brain.

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active ingredient. Some cases have been due to widespread use and occlusion because there is a limit to how much you're supposed to apply to a given area. Of course this is not common."

According to Dr. Fournier, the control unit of the PSF also helps increase safety. "If you input the correct parameters into the control unit, there will be no special problems. The unit regulates the sequence of suction, flattening and release of the skin as well as handling the application of gel."

"It's definitely a very safe device," added Dr. Lask. "If anything, it makes the whole laser treatment safer. There are no contraindications for the device itself, only for the laser treatment it's an adjunct to."

Malcolm S. Ke, M.D., director of the Skin Surgery, Laser and Aesthetic Center and assistant professor of dermatology at the University Hospitals of Cleveland, Case School of Medicine, U.S., believes in the future of PSF for any laser treatment where pain is a limiting factor. "As long as an adaptation for that handpiece can be made, I think PSF would be quite useful, especially where anesthesia is involved," he explained. "Anything to reduce hassles, pain and cost. From a patient care perspective, people are much happier when it hurts less. I myself was a doubter because I'm pretty wimpy

when it comes to pain, but when it was tested on me, I was pleasantly surprised."

"From a financial perspective, PSF is simple enough that an aesthetician could use it if they already are performing the regular treatment," Dr. Ke added. "This frees up the doctor. But it's the reduction of pain that will keep patients coming back. People will pay more for a device that's less painful."

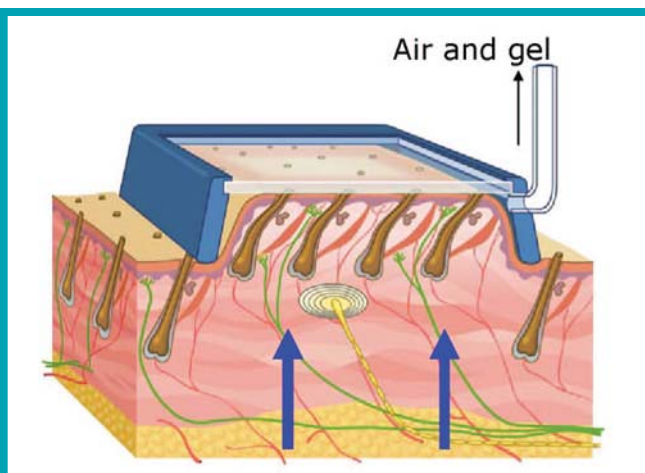
"There's interest in a technology that significantly reduces treatment time, acute pain, and side effects without lowering the energy density."

Dr. Lask agreed fully: "Increased efficacy is nice but with PSF, the reduction in pain is what makes it a big winner."

"Overall the limitations of PSF seem to be few," said Dr. Slatkine. "In fact, PSF helps overcome limitations of non-PSF treatment. The vacuum level in the chamber can be varied, so physicians should be able to treat even thin skinned people who may be susceptible to vacuum. There is a size minimum for the upwardly compressed area, in order to control pain, but that's not a real limitation because IPLs are large and lasers are scanned very quickly over areas this size. Either way, the duration of the vacuum is very short and the process is reportedly quite comfortable."

According to Dr. Slatkine, the Inolase PSF is currently being investigated for pigmented lesions, skin tightening and tattoo removal in addition to hair removal. "I use it on pigmented lesions, mainly for solar lentigines," said Dr. Fournier. "I can treat in one shot because I can use very high energy and it's not painful. I avoid the erythema or blisters I would get without the PSF."

Dr. Slatkine added, "There's interest in a technology that significantly reduces treatment time, acute pain and side effects without lowering the energy density." ■



PSF Operation
Suction, elevation, upward compression and flattening of skin