

Shared Clinical Experience:

An Expert's Perspective on Skin Revitalization with the PicoSure® Laser



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Dermatologist Jeremy A. Brauer, MD is board certified and trained in laser, cosmetic, and Mohs micrographic surgery. He earned his medical degree from the University of Pennsylvania School of Medicine after pre-med work at Cornell University, and has won numerous awards during his education and practice experience. After a two-year fellowship in Mohs micrographic surgery, laser surgery and clinical research at the Laser & Skin Surgery Center of New York, Dr. Brauer now practices privately. A member of the American Academy of Dermatology, American Society for Dermatologic Surgery, American Society for Laser Medicine and Surgery and the American College of Mohs surgery, he is currently affiliated with the Ronald O. Perelman Department of Dermatology, NYU Langone Medical Center and the Division of Dermatology, Lenox Hill Hospital, and the Northwell Health System. Dr. Brauer is well known not only for his expertise, but his ability to connect and communicate with patients.

With pulse durations of trillionths of a second, the PicoSure laser harnesses the power of the picosecond pulse width to create unique and therapeutically useful effects in skin. Eventually everyone is a candidate for skin revitalization, and with the PicoSure laser everyone can be treated. With its ability to modulate parameters, physicians can use the energy level, spot size, repetition rate, and beam profile to give anyone's skin overall improvement and a nice, healthy glow with reduction in the signs of photoaging.

Traditionally patients and their physicians have turned to IPL and Q-Switched lasers for pigment and fractional ablative or non-ablative laser therapies for fine lines, wrinkles, and mild laxity. These are safe and effective, though not necessarily suitable for all skin types. Additionally, there may be notable associated discomfort and significant downtime that often prevents many patients from seeking energy-based treatments.

The PicoSure laser's Focus™ lens array with the 755 nm wavelength creates a powerful magnification of the pulse in only ~5% of each treatment spot combined with low intensity irradiation of the surrounding tissue in each zone, creating the photomechanical effect of picosecond laser induced optical breakdown (LIOBs) in the epidermis. During an approximately 10-minute face treatment, a few hundred thousand intra-epidermal LIOBs are uniquely created with 755 nm and the Focus lens help to stimulate dermal collagen and elastin remodeling and reduce unwanted pigmentation. Treatment is fairly comfortable and well tolerated, so patients enjoy a better treatment experience that may appeal to those who would not otherwise choose laser treatment.

I am fortunate to have been involved with the PicoSure device and the Focus lens array since its early stages of development. Most of our work with the device is in the treatment of acne scarring or overall skin revitalization. In

one case of a woman with acne scarring with pigmentation, plus nevus of Ota, we saw improvement in the scarring but also the overall pigmentation. As with pigmentary conditions, acne scarring is not one size fits all, but the PicoSure laser is very safe and effective, and the ability to vary treatment parameters makes it versatile enough to treat individual cases of any skin type. You can vary the spot size or number of pulses, change the repetition rate, or modify the treatment interval. It's been wonderful to see the PicoSure laser evolve into an exceptional skin revitalization platform, and we expect this to continue with new studies and clinical experience.

At the end of the day, the PicoSure laser is designed for treating pigmentation but we see excellent results for skin revitalization in the fairest of Skin Type I patients and the darkest of Skin Type VI individuals. With the standard/flat optic we reduce epidermal and dermal pigment, but with the Focus lens array we use the photomechanical effect to reduce unwanted pigment and increase collagen and elastin. Published histology studies have shown the effect of intra-epidermal LIOBs and the resultant improved changes to the skin, with no evidence of true dermal injury excepting overall improvement in collagen and elastin.

For acne scarring patients, the results are consistent; there is a reduction in the appearance of surface inconsistencies as well as improvement in overall skin tone, so it's become our go-to treatment for these conditions as long as there are no contraindications. Treatment is well tolerated with a great safety profile. Consumers have eagerly embraced treatments such as the ones the PicoSure laser provide because of the trend toward less invasive options that are safe and effective with little or no downtime, and this delivers on all of these.

The PicoSure laser is not directly comparable to anything else out there, so it fills a void in any practice. Patients may come in looking for a certain brand of treatment they've heard about that may offer treatment recovery, but often, what they want is the result available through the PicoSure laser because you will get similar results without downtime. It may take a few more sessions compared to a more aggressive option, but they'll have far less recovery and a treatment experience that's much more pleasant than the alternative, which you want to recommend because a happy, satisfied patient will come back for more and refer their friends.

Economics shouldn't guide our clinical management, but ultimately this does influence patient choices. Treatment is relatively affordable, but more treatments can lead to a higher cost. I recognize the importance of factoring finances into their decision but I'm going to recommend what's best for them, and it's easy to recommend a treatment like the one offered by the PicoSure system.

CASE STUDY

Figure 1 is courtesy of Robert Weiss, MD. This is a classic case of a woman in her sixties with Skin Type I or II, and basic photodamage with dyschromia and fine lines. She is an ideal candidate for treatment with the Focus lens array, which is exactly what was done. The physician used a 6 mm spot (translating into 0.71 J/cm^2) and a rep rate of 10 Hz with 5000 to 6000 pulses on average per treatment, with an interval of four weeks. I would not be surprised if the patient was primarily interested in reducing the fine lines.

The result is excellent with overall improvement in individual pigmented lesions, improvement in overall skin tone, and the glow one achieves when using the PicoSure laser to revitalize skin. We see nice improvement of the crow's feet and infraorbital creases as well as marionette and perioral lines upon closer inspection. The overall lightening is often perceived to be due to the photography but is more likely the result of treatment, and it's certainly common to see increased skin luminosity.



Before & After 4 Treatments
Courtesy of R. Weiss, MD

Patient Education

Any physician can be the beneficiary of a well-informed patient, so it pays to be thorough when explaining to patients the benefits of treatment with this laser. Patients already tend to understand—which we bolster with proper education during consultation—that non-ablative treatments will likely not give them the result of a more aggressive alternative, but they readily trade this off for the reduced downtime. They must also be made to understand that we're talking about a variable course of treatment. Because we're talking about photodamaged skin, it depends on the individual case. Skin type, degree of photodamage, whether we are concerned more with laxity or pigment, these will all factor into how things progress. It's great that almost everyone I treat will begin to see improvement in pigmentation after the first session or two. Due to its 755nm wavelength and unique Focus lens array, we can position the PicoSure laser as offering relatively quick, tolerable skin revitalization treatments with minimal downtime and recovery; patients can come in, get treated, and within a few hours they can get on with life and nobody will be the wiser.

In the short term we suggest good sun protection in the weeks before treatment. If a patient has a history of cold sores, we discuss prophylaxis, which is common for any such treatment. For patients with a history of, or greater potential risk for, post-inflammatory hyperpigmentation we may prescribe a low- to mid-potency steroid twice a day for 3 to 7 days to reduce the chance of PIH. For any patient with a history of hives or similar reactions, antihistamines may be appropriate as well.

Treatment

Most often we do a full-face treatment using the Focus lens array. We may use the standard/flat optic for isolated pigmented lesions or those that don't respond as we had hoped with the Focus lens. Personally, I do not use cooling for skin revitalization with the PicoSure laser. When using the Focus lens array they will most likely not need topical anesthesia, however, there are patients that will want it and we do make it available to them. I often suggest that they try it without and make the decision after some experience because treatment is so well tolerated.

I tend to be conservative so I prefer, especially with first time patients, to choose a larger spot size and/or lower fluence with fewer pulses overall. As the patient gains experience and I get a sense of how well they're responding, I will treat a little more aggressively with successive treatments, usually increasing the pulse count or fluence. For lighter skin types, I will use a 6mm spot at 0.71 J/cm² for 3,000 to 4,000 pulses and shorter intervals. For darker skin types, 8mm should be the starting

CASE STUDY

Figure 2 shows a patient, most likely Skin Type IV (case courtesy of Emil Tanghetti, MD) presenting with some uneven pigmentation and some scarring, who received another nice result. The physician started with the larger spot size and resultant lower fluence, transitioning to the 6 mm spot over the course of four sessions and varying the rep rate between 5 and 10 Hz, and probably 5000 to 6000 pulses, with treatment interval of about four weeks.

The result shows again the common pattern of overall improvement in tone and texture with reduction in the appearance of scarring to some degree, as well as improvement in the atrophic scars and overall pigmentation, but the striking, similar aspect to the previous case is the overall lightening and youthful glow to the skin.



Before & After 4 Focus Treatments
Courtesy of E. Tanghetti, MD

point using fewer pulses and longer intervals. For someone signing on for full face treatment I tell them to expect at least 3 treatments, depending on the treatment indication. We can always re-evaluate them at follow-up. This is a treatment with impressive results, however with most non-invasive treatments we perform, there must be a conversation about maintenance, both with sunscreen and topicals as well as repeated treatments at established time intervals—this can range from every three to twelve months, depending on the individual.

There will be some mild redness, but it resolves within hours or a few days at most. When treating we're looking for a little bit of erythema. Depending on the reaction—for example, if the patient becomes more flushed than I expect—I end the session sooner.

Slight frosting can be expected when treating with the standard optic over isolated pigmented lesions, with some erythema and even potential post-inflammatory hyperpigmentation, but this is transitory. You don't want to see immediate hypopigmentation or hyperpigmentation, but with appropriate conservative treatment this will not happen. With proper patient and parameter selection we minimize any chance of scarring or pigmentation issues.

When treating darker skin, use reduced settings. We also recommend intervals of 4 to 8 weeks in this population, regardless of whether you're treating scarring, dyschromia, or pigmentation.

We usually see improvement in pigmentation first, then other aspects of the condition. Fine lines and other surface inconsistencies will take the longest to improve because remodeling of collagen and elastin will take months to manifest. In these cases, it is not uncommon to need more than three sessions. We may also choose to focus on these areas when doing a full face, giving extra attention and laying more pulses around the eyes or mouth where more energy is needed. Similarly, one can treat isolated scarring this way.

If the patient needed pre-treatment antihistamines or antiviral prophylaxis, we continue these, which is true for any laser treatment. Other than that, we usually see rapid resolution of side effects such as erythema and edema, and patients can go back to their normal life typically within a few hours. Sun avoidance is always recommended.

CASE STUDY

This result (Figure 4) for skin revitalization and significant acne scarring comes courtesy of Kathleen Behr, MD, using the 6 mm spot and a rep rate of 10 Hz averaging 5000 to 6000 pulses, with a very nice result after 3 treatments. This also appears to have been a full-face treatment rather than limited to the cheeks and lower face (which we sometimes do) because of the improvement of scarring on the temples and forehead. At first glance we are drawn to the perioral scarring, but you can see some acne across the forehead.

The beautiful outcome is evident with nice improvement in the overall complexion and in the atrophic scarring even with the limits of 2D photography. Again, we see that characteristic glow to her skin, the luminosity and improved skin tone and texture. This is another case where we can see multiple indications of dyschromia, scarring, and lentigines with some erythema.



Before & After 3 Focus Treatments
Courtesy of K. Behr, MD

Global Experience

There are amazing things being done globally with the PicoSure laser. As is often the case in dermatology, treatment protocols evolve. Physicians in many Asian countries have been using the PicoSure laser on some of the more complex pigmentary conditions and have been seeing amazing results. Without veering into off-label topics, there is one common theme throughout these evolving protocols: less is more. Less energy (larger spot sizes), fewer pulses, fewer passes, and a reduced rep rate. It may seem contrary to treat a more resistant condition more gently but physicians are finding that this conservative approach may be better to treat some types of difficult pigment. It is likely a combination of the reduced thermal effect of picosecond pulse widths, the high absorption of the 755 nm wavelength by melanin, and the microscopic impact of the Focus lens, but even the standard/flat optic is showing success when used very conservatively with a stamping technique (no overlap).

Regardless of specific protocol, the theme is important: less is more.

Conclusion

As I said, there's really nothing out in the market like the PicoSure laser. We have this device that works well on many pigmentary conditions as well as on surface inconsistencies like acne scars and fine lines with results comparable to more aggressive technologies but without the downtime. It has a high safety profile with reproducible and consistent results which is supported by the clinical evidence that continues to be released worldwide. It's due to all of this and more that it's not directly comparable to anything we have and really is unique from a physician's perspective and a unique offering to patients.

Practitioner was compensated for these product endorsements. PicoSure 755 is FDA cleared to treat pigmented lesions and tattoos in skin types I-VI. PicoSure 755 with Focus is FDA cleared to treat acne scars and wrinkles in skin types I-IV. Individual results may vary and are not guaranteed.

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