

PicoSure for Melasma: Efficient, Yet Gentle

with Raminder Saluja, MD

The wavelength of the PicoSure 755 nm laser workstation from Cynosure makes it ideal for treating pigment. Its unique approach to therapeutic picosecond laser energy delivery is efficient, yet gentle, making it an ideal centerpiece for the management of both dermal and epidermal melasma*, adding to PicoSure's proven versatility. Laser treatment of melasma has been challenging. While lasers are the best modality for breaking up melanin for future removal by the body at the cellular level, thermal energy with longer pulse durations, may exacerbate the condition, resulting in hyperpigmentation in these sensitive individuals.

The treatment of melasma using PicoSure is illustrative of just how different it is from traditional fractional ablative and non-ablative laser therapies for the clearance of pigment. The key difference of the thermal effect delivered is that it is delivered in pico pulsations coupled with the novel photomechanical impact created by PicoSure and the Focus Lens leading to laser induced optical breakdown zones (LIOBs) which may upregulate chemical mediators stimulating production of new collagen and elastin. The very short pulse durations (trillionths of a second) allow for small particles of melanin to be fragmented through this photomechanical impact where longer pulse duration lasers will not have the same impact and may generate greater heat at the dermal and epidermal layer. Traditional non-ablative fractional lasers carry a two to three day healing time of erythema and edema. Post laser erythema with PicoSure is limited to 24 hours at the maximum, and edema resolves within two to six hours, yet the results are comparable.

One unique aspect to the management of melasma, in comparison to other indications, is that one should not rely on PicoSure alone. As a multifactorial therapeutic challenge, clinicians should take a multi-vector approach. While epidermal melasma is relatively easy to treat, dermal melasma is more challenging to elicit visual changes. It is recommended to initiate topical treatment beginning 1 month prior to treatment with a retinoic acid to increase cell turnover along with a skin



Before

After 5 Focus Tx

Courtesy of R. Saluja, MD

lightening agent (hydroquinone or azelaic acid) and a photoprotective agent such as topical Vitamin C serum.

The combination of topical agents helps prepare the melanocytes for treatment with the laser, suppressing the tyrosinase mechanism in pigment formation to avoid triggering a reaction which may exacerbate the condition. Skin in the treatment area should be in the best possible condition prior to initiating treatment. It is also important to protect the skin with a zinc/titanium based sunscreen.

After priming the skin with a topical regimen, we treat with PicoSure, three to six sessions at intervals of four to six weeks, using the 6 mm spot size, based on the skin's response to treatment. In our experience we usually end up needing about five to six sessions or until clinical results begin to plateau. For dark skinned patients, there is greater chromophore density of melanin, so treatment can be performed with less fluence utilizing the 8 mm and 10 mm spot sizes. Increasing the spot size reduces the associated fluence but the larger spot size allows for deeper penetration of energy and when coupled with the lower fluence, the risk of PIH diminishes without compromising energy delivery to the dermal melanin.

We opt for time intervals between four to six weeks to give the skin adequate time to heal and appropriate time to assess for any development of PIH. Initially, any epidermal melasma will have particulate micro-crusts which come to the surface and shed. Deeper dermal melasma (which does not respond to IPL) will darken for

one to two weeks followed by lightening as the body's natural waste removal mechanisms dispose of fragmented necrotic pigment debris. This is not PIH, but rather a natural and expected reaction whereby micro necrotic debris is created and transported to the surface epithelium which is shed over the next 2 weeks. In the rare case of PIH you simply wait out the four to six week interval, and perform a less aggressive treatment with the FLAT beam profile to gently clear it away. Oscillating between the FOCUS Lens and the FLAT beam profile varies aggressiveness which allows the practitioner to harness the unique properties of treatment using the FOCUS lens whenever possible and switching to the FLAT lens when needed. Users can experiment with combinations of these two modes and various spot sizes as they gain experience, in the understanding that the FOCUS lens with smaller spot size will be more aggressive, while using the FLAT beam profile with the larger spot sizes will deliver energy less aggressively, with greater penetration of laser energy.

Melasma still represents a therapeutic challenge, and we have a long way to go. PicoSure is by far the best laser I've seen for treating the condition because of its unique adjustable beam profile and picosecond energy deposition. In combination with topicals, we can apply energy powerful enough to break up and clear pigment, but gentle enough to prevent flare-up in many cases.



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*PicoSure is not FDA cleared to treat melasma.

Dr Saluja was compensated for her clinical bulletin summary.

PicoSure 755 and 1064 are FDA cleared to treat tattoos and pigmented lesions in skin types I-VI. PicoSure 755 with Focus is FDA cleared to treat pigmented lesions in Skin types I-VI and acne scars and wrinkles in skin types I-IV. PicoSure 532 is FDA cleared to treat tattoos in skin types I-III. Patient results will vary.

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