# PicoSure – Tips for Tattoo Pigment

with Raminder Saluja, MD

The versatile PicoSure 755 nm and 532 nm laser workstation from Cynosure has numerous capabilities but fundamentally it is a pigment laser. Resolution of unwanted pigment, whether injected by an artist or arising as a manifestation of photodamage, is a popular and profitable practice. No aesthetic office should be without a device that can treat pigment safely in the majority of skin types, and PicoSure fits the bill—aggressive enough for rapid tattoo clearance but gentle enough for skin revitalization with minimal downtime. Its unique capabilities extend its utility even to traditionally recalcitrant yellow tattoo coloring while still being highly effective in fragmenting densely implanted dark tattoo ink.

The 755 nm wavelength of PicoSure will successfully resolve green pigment. During the process there can be residual yellow pigment when the green dissipates, which can subsequently be targeted with the 532 wavelength for more efficient clearing. Multiple sessions are needed when treating tattoo ink. In my experience, you get the best clearance waiting 10 or even 12 weeks between sessions, giving the body more time to clear the ink fragments.

We typically initiate treatment with a 3.0 to 3.5 mm spot size depending on the ink density, the location of the tattoo and the patient's Fitzpatrick skin type. The important factors to consider are fluence and treatment depth and how these affect the photomechanical impact of treatment on the skin. With PicoSure, each spot size has an associated fluence which is reduced as the spot size increases, but the depth of energy penetration increases with spot size. Increasing spot size with dense ink serves a twofold purpose. We want a deeper treatment, first. Secondly, the photomechanical impact created when treating dense, dark ink is substantial so we want a lower fluence. Combining a lower fluence with deeper penetration focuses energy farther away from the epithelium to avoid surface irregularity, redness, and potential scarring. We may even start with a spot size as large as 3.6 mm at the beginning because the pigment will so readily absorb the wavelength. As you're learning it's best to use conservative settings and make upward modifications as experience is gained.


During the initial treatment when ink density is high, there will be an audible 'pop' and patients may blister due to the photomechanical impact separating the dermis from the epidermis. It's important to inform patients of this ahead of time to reassure them, and properly advise them about any post-treatment protocol they'll undertake between sessions. To assist in the management of blisters it is beneficial to do light fractional ablative $CO_2$ laser treatment over the area to provide egress pathways that prevent fluid accumulation; I use Cynosure's SmartSkin (formerly Affirm$CO_2$) at 10 Watts with a pitch of 400 and dwell time of 0.2 ms on top of the treatment zone to allow for an egress pathway for any fluid from a blister. It basically ablates tiny holes in the skin surface without affecting the result of the PicoSure treatment. It is also important to inform patients that during the week following PicoSure treatment, the area around the ink will be edematous and erythematous as it heals. We typically recommend topical emollient (coconut oil, or cicalfate cream) for 4 days post treatment.

Longer intervals between treatments are also a beneficial protocol for dark pigment, for the same reason: we want to give the skin sufficient healing time, and allow the body's natural waste removal processes to do the job of clearing fragments of pigment. Theoretically this is even more essential with large surface area tattoos to give the immune system ample time for clearance. We wait for 10 to 12 weeks before the next treatment (8 to 10 weeks for a smaller tattoo), then increase the fluence by diminishing the spot size by 0.2 to 0.3 mm until we eventually achieve 2.5 mm (about 4 J/cm$^2$). With higher fluence, it is essential that you monitor the tissue response.

As we move forward the ink becomes less dense, particles become smaller, and the tattoo begins to lighten considerably. Therefore a higher fluence is necessary and can be delivered with a smaller spot size to allow for an efficient photomechanical impact to occur on the nanometer small residual ink particulate. If necessary, we can oscillate between larger and smaller spot sizes to give us continued deep treatment as well.

For treating tattoos on darker skin, stretching the interval between sessions is essential, as is utilizing larger spot sizes, even greater than 4.0 mm in cases of higher ink density and/or darker skin. Using the SmartSkin fractional $CO_2$ treatment to mitigate blistering is also very effective here, but it may be helpful to reduce the power to 8 Watts, or even 6 Watts if presented with very dark skin to avoid PIH.

The importance of waiting 8 to 12 weeks between treatments is a key component to successful resolution of tattoo ink in my experience. This may translate into fewer sessions necessary for clearance, and by waiting, you give the body the time it needs to resolve as much fragmented pigment as possible prior to the next treatment.

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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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