Syneron-Candela’s PicoWay Technology is Changing the Way Aesthetic Doctors Address Tattoo Removal, Skin Irregularities and Pigmented Lesions
In Spring 2016, Modern Aesthetics® hosted a roundtable discussion with national and international thought leaders, who discussed their collective experiences using Syneron-Candela’s PicoWay technology. Topics included the advent of the ultra-short 785nm wavelength to address hard-to-treat colors in tattoos and pigmented lesions and the new PicoWay ResolveTM Fractional Handpiece for pigment and skin irregularities. The aim of this conversation was to shape best practices for PicoWay technology going forward.

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In 2016, Syneron-Candela introduced a new picosecond laser platform - The Picoway - with multiple wavelengths for tattoo removal as well as a holographic fractional handpiece, the PicoWay Resolve, to help address overall pigmentation, revitalize skin and improve skin irregularities. The combination of the 1064nm and 532nm wavelength treats most colors within tattoos, but hard-to-treat blues and greens remained resistant. To address these resistant colors, Syneron-Candela added a third wavelength at 785nm to their PicoWay device. The 785nm wavelength sits nicely between the 532nm and the 1064nm and provides impressive absorption of blues and the greens.

In addition to having the highest peak power available on the market, the PicoWay offers repetition rates up to 10Hz and a wide range of spot sizes. While tattoo removal is normally performed with relatively small spot sizes, there are rejuvenation applications that benefit from the use of low fluences at very large spot sizes. Physicians now have a full range of spot sizes from 2-10mm maximum diameter.

What’s more, histology data from the Resolve Holographic Fractional hand pieces (1064nm and 532nm) presented at the 36th annual conference of the American Society for Laser Medicine and Surgery demonstrated the creation of laser induced optical breakdown (LIOB) within the epidermis and dermis without surface disruption. Taken together, PicoWay now has the unique ability to treat all tattoo colors and types, pigmented lesions, skin irregularities and signs of aging, making it a true workhorse for a busy aesthetic practice.

NANO VERSUS PICO TECHNOLOGY FOR LASER TATTOO REMOVAL

Many of the roundtable members are pleased with the results achieved when they switched laser tattoo removal patients from nanosecond to picosecond technology. As noted, PicoWay now consists of three wavelengths—1064nm, 532nm and 785nm—allowing greater flexibility in treating a broader range of skin types and tattoo inks. In particular, the 785nm will facilitate the treatment of green and light blue tattoos.

“The availability of multiple wavelengths makes PicoWay a very versatile laser— with the 1064nm being the safest wavelength for all skin types,” says Vic A. Narurkar, MD FAAD, founder of the Bay Area Laser Institute in San Francisco.

Dr. Narurkar and colleagues use the PicoWay laser for the removal of decorative tattoos. “Fluences vary based on skin types, with the 1064nm wavelength being our choice for blue/ black tattoos and dermal pigmented lesions and the 532nm for benign pigmented lesions and red/yellow ink of tattoos,” he says.

“The PicoWay laser capitalizes on the predominant effect of photoacoustic over photothermal effects,” says Dr. Narurkar. “It has the shortest picosecond pulse duration, thereby allowing for the maximizing of the photoacoustic effect.”

With tattoos, he explains, the photoacoustic effect shatters the unwanted ink in a more effective fashion, allowing for more rapid clearance. “With reduction of the photothermal effects, the side effects, such as hypopigmentation, are minimized,” he says.

The photoacoustic effects are also important for the treatment of benign pigmented lesions, allowing the shattering of the melanosomes and extrusion of pigment more effectively, Dr. Narurkar says. “With the nanosecond lasers, the photothermal effects predominate over the photoacoustic, thereby making removal of tattoos and pigmented lesions less efficient and also increasing risks of collateral thermal injury,” he says.

“Picosecond is a better technology than nanosecond in terms of complication rates especially on Asian skin,” says Taro Kono, MD, PhD, Associate Professor of Plastic Surgery at Tokai University in Kanagawa, Japan. In a study comparing 1064nm nano/pico and 532nm nano/pico, there was some improvement in the tattoo at two weeks and much improvement at four weeks for both, he says. “There is hypopigmentation one week after, however, this hypopigmentation is improved after four weeks with the picosecond laser. And four weeks after there is some post-inflammatory hyperpigmentation (PIH), but the picosecond score is lower than nanosecond score.”

Specifically, hyperpigmentation one month after nanosecond laser treatment is 30 percent and by three months, it’s 10 percent, Dr. Kono explains. By contrast, with the picosecond laser, it is 10 percent at one month, and there is no hyperpigmentation.

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"There are no issues with hyperpigmentation when you use a large spot size. You can use less fluence and these patients do very well," Dr. Kono says. "In my practice we treat a variety of skin types and sun-exposed skin," says David Friedman, MD, Director, Friedman Skin & Laser Center in Jerusalem & Tel Aviv, Israel. "With the use of the larger spot sizes, we can more safely treat darker skin. I have been able to treat both black and red inks on skin type VI without pigmenatry changes," he says. I start doing test spots with the 10mm spot at the highest fluence and decrease the spot size if until I see whitening of the tattoo.

"As the first person to use the PicoWay, I have had a great deal of experience treating tattoos with this device. I was extremely impressed with the results on all tattoo colors, and found that I can even remove yellow pigment, something I had trouble removing in the past," Dr. Bernstein says. "I was extremely impressed with the results on all tattoo colors, and found that I can even remove yellow pigment, something I had trouble removing in the past," Dr. Bernstein says. "The PicoWay really changed my practice and it gives me everything without success."

"Comparing Cynosure’s PicoSure and the PicoWay, I think the PicoWay has some advantages for tattoo removal including higher power, which translates into fewer treatment sessions and fewer recalcitrant tattoos, as well as increased ergonomics and ease of use," says Douglas Wu, MD, PhD, a dermatologist at Cosmetic Laser Dermatology in La Jolla, CA.

Dr. Friedman says, "For someone who has tried and failed every other treatment for years, this is a positive result," he says. "I’m stressing to patients that they’re going to need some type of topical to maintain the effects," Dr. Friedman explains. "Topicals and other treatments including lasers work as increased ergonomics and ease of use," says Douglas Wu, MD, PhD, a dermatologist at Cosmetic Laser Dermatology in La Jolla, CA.

The blistering response also appears to be greater after PicoSure than with PicoWay treatment for reasons that are not yet completely understood, adds Mitchel Goldman, MD, Founder and Medical Director of Cosmetic Laser Dermatology in La Jolla and a volunteer clinical professor of Dermatology at University of California, San Diego.

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The BENEFITS OF THE PICOWAY RESOLVE FRACTIONAL HANDPIECE

The PicoWay Resolves Holographic Fractional Handpiece represents a new way of treating patients. Unlike fractional lasers that depend on heat to damage tissue, picosecond lasers create high intensity zones of damage, LIooms, LIObfs are the result of damage to tissue utilizing the acoustic effect of the Picoway picosecond technology. This phenomenon creates voids in the skin while leaving the top layer of the epidermis intact. "We have demonstrated LIoBs with both 532nm and 1064nm and it looks like we have different effects on light and dark skin," says Arnelle N. B. Kaurar, MD, Founding Director of New York Laser & Skin Care in New York City.

In vivo histology studies showed very little LIoB forma- tion on light skin with 1064nm pulses, but there was LIoB formation with light skin using the 532nm wavelength. "At 1064nm, we actually saw more LIoB formation with darker phototype skin," he says. "In addition to seeing the LIoBs after 1064 nm fractional picosecond irradiation, we rate of pigment recurrence can be expected," says Dr. Alster. "All practitioners are keen on having a definitive treatment for melanoma and Picoway laser treatment may provide the jumpstart that these patients need, particularly in those who report that they have tried everything without success."

EXPLORING TREATMENT INTERVALS FOR TATTOO REMOVAL

"I haven’t had one that worsened to date. They’re improved, and the results have been dramatic. And again, I usually end up with 5 to 6mm spot size and it works very nicely."
observed intense inflammation (mixed type infiltrate with neutrophils) in the superficial, mid- and deep dermis.”

Christopher Zachary, MD, Professor and Chair of the Department of Dermatology, University of California at Irvine has focused some of this PicoWay research on this LIOB formation. When he looked at horizontal and vertical sections of LIOBs with multiphoton microscopy to compare high fluorescence with both 1064nm and the 532nm, he found originally that they look empty. “However, when we look at these sequentially, it’s clear that these LIOBs contain cellular debris clearly contained within the structure,” says Dr. Zachary.

Dr. Kauvar is finishing a study that looks at the clinical response with the PicoWay Resolve Fractional Handpiece for photodamage and wrinkles in 20 patients as well as 20 subjects with acne scars. “The 532nm wavelength produces improved results in subjects with phototype I and II skin, there is both improvement in dyschromia and texture changes. The skin is just a lot smoother and a lot of the dyschromia is gone,” she says.

The biggest niche for the PicoWay Resolve Fractional Handpiece will be its safe use in dark skin,” Dr. Kauvar says. “We are seeing good improvement in acne scars and skin texture changes in skin phototypes IV-VI after three to four monthly treatments with the fractional 1064nm picosecond handpiece. Patients develop erythema and mild swelling overnight so there is no appreciable down time,” she says. “We haven’t used topical anesthetics for the wrinkle study, the pain score is about 4.5 out of 10. For the acne scar study; the pain score is about 4.5 out of 10. For the acne scar treatment combined, both are equivalent in our photographic analysis at two months,” Dr. Wu says. That said, there was significant-ly less downtime on the side treated with PicoWay Resolve. “After Fraxel Dual, you get the regular crusting and peeling, but with the PicoWay Resolve, there was just a few days of erythema,” Dr. Wu says.

Patient comfort is also greater with the PicoWay Resolve, Dr. Wu says. “When we use numbing cream, it seems like the pain levels that they report are 1 to 2 out of 10, which is pretty nice.” Fraxel Dual patients tend to report slightly higher pain scores, he adds.

Dr. Wu’s above-mentioned subject, Dr. Goldman, adds, “When my face was treated with both the PicoWay and Fraxel DUAL 1927 in a split-face study, the PicoWay healed more quickly with similar results.” He continues: “I use the PicoWay 532/1064 for rejuvenation, especially for the male face. It is very effective for nexus of Ota and nexus of lox, post inflammatory hyperpigmentation and post-steroid therapy hyperpigmentation.”

Dr. Friedman recently began a study to examine the novel PicoWay Resolve fractional handpiece for skin rejuvenation, wrinkles, acne scars and skin irregularities and has noticed improvement in skin tone, brightness and texture after one or two treatments. “I led the FDA trials for the Resolve in treating acne scars and wrinkles and have been very impressed with the results, as have my patients. I am extremely excited to see the results of this study,” Dr. Bernstein adds. “The Resolve is already a main-stay in my practice for improving pigmentation as a component of photo damage and skin aging.”

Dr. Zachary agrees. “I think Resolve extends the ability for the practitioner to be able to treat different types of lesions that we’ve had difficulty treating in the past. I think this is definitely an advancement that’s going to be important for our specialty,” he says.

Dr. Narurkar is also a fan of this handpiece. “We use the Fractionated Resolve handpiece for textural changes, pore size reduction and scars.” He has introduced a treatment called photacoagulative photorejuvenation (PAAR), which combines the PicoWay Resolve with non-fractionated PicoWay of isolated pigmented lesions for global skin treatments. “We have also recently started using the Resolve 1064nm for recalcitrant melasma with good early results,” he says.

CONCLUSIONS
The panelists agree that the addition of the third 785nm wavelength improves the versatility of the PicoWay for laser tattoo removal. The ability to treat previously resistant colors, such as blue and green, will further increase the devices’ utility in clinical practice. In addition, the PicoWay Resolve fractional handpiece is changing how practices approach skin rejuvenation, with improvement of pigmentation and skin irregularities. There appears to be less pain and fewer side effects associated with this treatment, translating into less downtime than what has been associated with competing technology.

Syneron-Candela’s PicoWay technology is transforming how physicians treat patients and this is just the tip of the iceberg in terms of novel applications.