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Clinical efficacy of the dual-pulsed Q-switched neodymium:yttrium-aluminum-garnet laser: Comparison with conservative mode

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The quality (Q)-switched neodymium:yttrium-aluminum-garnet (Nd:YAG) laser is one of the first non-ablative lasers to be used for facial resurfacing and photorejuvenation. Recently, the method of low-fluence Q-switched Nd:YAG lasers known as 'laser toning' has been used for non-ablative skin rejuvenation and for the treatment of melasma in Asian countries. We report our experience of using a novel Q-switched Nd:YAG laser that was operated as a dual pulse at half fluence and 140- μ s intervals compared with conservative mode laser.

*Source : Clinical efficacy of the dual-pulsed Q-switched neodymium:yttrium-aluminum-garnet laser: Comparison with conservative mode: Journal of Cosmetic and Laser Therapy: Vol 15, No 6 (tandfonline.com) [VIEW ►](#)

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Savior of post-blepharoplasty scarring: Novel use of a low-fluence 1064-nm Q-switched Nd:YAG laser

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Blepharoplasty with medial epicanthoplasty is popular in Asia. However, known complications include scarring, which can take the form of hypertrophic scars or keloids. Treatments for scars include pressure dressing, silicone gels, retinoic acids, radiotherapy, cryotherapy, triamcinolone injections, and surgical revision. These methods, however, have variable outcomes. Recently, there is an interest in post-surgical scar remodeling with lasers. Although the 1064-nm Q-switched Nd:YAG is primarily a pigment laser, it has recently been shown to be effective for treating scars. In the management of post-blepharoplasty scarring, this is certainly unheard of. In this paper, we present a novel technique of treating a patient with post-blepharoplasty hypertrophic scarring with a low-fluence 1064-nm Q-switched Nd:YAG laser.

*Source : Savior of post-blepharoplasty scarring: Novel use of a low-fluence 1064-nm Q-switched Nd:YAG laser: Journal of Cosmetic and Laser Therapy: Vol 18, No 2 (tandfonline.com) [VIEW ►](#)

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A prospective, split-face, double-blinded, randomized study of the efficacy and safety of a fractional 1064-nm Q-switched Nd:YAG laser for photoaging-associated mottled pigmentation in Asian skin

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Background : Laser toning using low-fluence 1064-nm Q-switched neodymium-doped yttrium aluminum laser (QSNY) has gained popularity in the treatment of photoaging-associated mottled pigmentation (PMP). However, hypopigmentation or lack of efficacy has been reported depending on the fluences used.

Objective : To compare a novel fractional 1064-nm QSNY with conventional 1064-nm QSNY for the treatment of photoaging-associated mottled pigmentary lesions except epidermal lesions of lentigines and freckles through a randomized, split-face, double-blind study.

Materials and methods : Thirteen Asian women were treated every week for 6 weeks with fractional 1064-nm QSNY on one side of the face and conventional 1064-nm QSNY on the other side. We evaluated the pigmentation area and severity index (PSI), melanin index, erythema index, and the patient's global assessment of improvement.

Results : At three months post-treatment, the PSI score improved compared with baseline, by 14.48% on the conventional 1064-nm QSNY side and 21.81% on the fractional 1064-nm QSNY side. Both groups showed improvements in the melanin index.

Conclusion : Both fractional 1064-nm QSNY and strictly low-fluence conventional 1064-nm QSNY are moderately effective against PMP and other photoaging signs. Fractional laser toning shows better subjective outcomes than conventional toning.

*Source : A prospective, split-face, double-blinded, randomized study of the efficacy and safety of a fractional 1064-nm Q-switched Nd:YAG laser for photoaging-associated mottled pigmentation in Asian skin: Journal of Cosmetic and Laser Therapy: Vol 18, No 7 (tandfonline.com) [VIEW ►](#)

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Nonablative acne scar reduction after a series of treatments with a short-pulsed 1,064-nm neodymium:YAG laser

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Background : Effective treatment of facial acne scarring presents a major challenge. Nonablative lasers and radiofrequency devices work by thermally stimulating dermal collagen remodeling, thereby softening acne scars in a minimally invasive fashion. One such laser, a 1,064-nm short-pulsed Nd:YAG, uses rapidly scanned low-energy infrared pulses to heat the dermis selectively through the normal dermal microvasculature.

Objective : In this pilot study, the safety and efficacy of a novel short-pulsed Nd:YAG laser were investigated for the treatment of moderate to severe facial acne scarring.

Materials and methods : Nine of 10 enrolled patients with moderate to severe facial acne scarring received eight sequential 1,064-nm Nd:YAG treatments (laser parameters 14 J/cm², 0.3 milliseconds, 5-mm spot size, 7-Hz pulse rate, 2,000 pulses per side of face). Patients were graded for the presence and severity of three scar morphologies: superficial (rolling), medium-depth (boxcar), and deep (ice pick). Outcome measures included blinded evaluation of before and after photographs by three physician observers (scar severity score) and patient self-assessment.

Results : Acne scarring improved in 100% of the nine patients completing the study. Scar severity scores improved by a mean of 29.36% (95% confidence interval, 16.93%-41.79%; p = .006); 89% of patients noted greater than 10% scar improvement. No treatment-related adverse events were seen.

Conclusion : Our findings support the use of a short-pulsed, low-fluence 1,064-nm Nd:YAG laser as a safe, effective treatment for facial acne scarring. Scar improvement was noted in all treated subjects with minimal discomfort and no downtime. This protocol appears to be most effective at reducing scar depth and softening scar contours. A laser upgrade needed for the study was provided to the authors at a reduced price.

*Source : Nonablative Acne Scar Reduction after a Series of Treatments with a Short Pulsed 1,064 nm Neodymium:YAG Laser - LIPPER - 2006 - Dermatologic Surgery - Wiley Online Library [VIEW ►](#)

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Dual pulse mode Q-switched Nd:YAG laser for pigment lightening: electron microscopical, immunohistochemical, and biochemical observations

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Background : Low-fluence Q-switched Nd: YAG laser proved to be reliable in the treatment of melasma. The Q-switched Nd:YAG laser have long been used for facial resurfacing and photorejuvenation. Objectives: In this study, we evaluated efficacy and safety of the dual pulse mode with half fluence, compared to conventional mode, as a novel treatment method of Q-switched Nd:YAG laser for reducing adverse events with efficacy.

Methods : One Asian man of Fitzpatrick skin type III, two brown guinea-pigs and cultured melan-A cell line were treated with dual pulse and conventional modes of 1064nm Q-switched Nd:YAG laser. And we investigated immunohistochemical, electron microscopic, biochemical studies for human and guinea pig skin, and cultured melan-A cell respectively.

Results : Specimen which was irradiated by conventional mode showed significant increase of pro-inflammatory transcription factor and cytokines, compared to dual pulse mode. In guinea pig and cultured cell study, when comparing with same total energy, we could observe more prominent spongiosis and cellular level damages in case of conventional mode than dual pulse mode.

Conclusion : Our study showed that dual pulse mode can be more effective or at least have similar effect for treating pigment lesion than conventional mode. Dual pulse mode could be a suitable mode to adapt the concept of 'subcellular selective photothermolysis' with fewer adverse events.

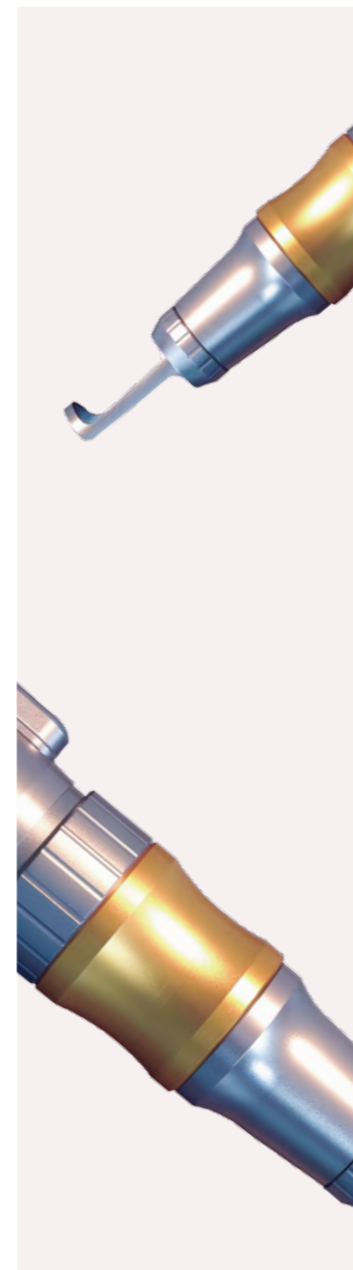
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Use of fractional 1064-nm Q-switched Nd:YAG laser for the treatment of photoaging and melasma in Asian skin

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The Q-switched neodymium-doped yttrium aluminum laser(QSNYL) is typically used to treat photodamaged skin and melasma. Fractional photothermolysis has gained popularity, because patients can be treated safely with less downtime as compared to conventional laser treatments. Fractional delivery system delivers a high peak energy to targeted chromophores with minimal risk of bulk heating. It also allows higher fluence therapy with even distance interval. Thereby, it enables efficient treatment of deeper and follicular pigmented lesions, which are known to be difficult to treat with conventional devices. Fractional QSNYL (FRx QSNYL, Tri-Beam, Jeisys Medical Inc., Seoul, South Korea) was recently developed, but its efficacy and safety have not been reported. Herein, we report 3 cases of Korean women with mild-to-moderate facial photo-damage and melasma. All the patients showed mild to moderate improvement in pigmentation, skin texture and wrinkle. Adverse effects were minimal and acceptable. The FRx QSNYL is a safe, effective treatment for photoaging and melasma in Asians.

*Source : <https://papersearch.net/thesis/article.asp?key=3319216>

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Cellular and biomolecular comparison of a novel, dual-pulsed Q-switched 1064 nm Nd:YAG laser with conventional Q-switched 1064 nm Nd:YAG laser

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A recent clinical and histopathological study in melasma patients using a low-fluence, 1064 nm Q-switched neodymium-doped yttrium aluminum garnet (QS Nd:YAG) laser has shown effectiveness in reducing the number of melanosomes and expression of melanogenesis associated proteins.¹ Compared to the high-fluence 1064 nm QS Nd:YAG laser treatment, using the low-fluence, multiple pass and repeated version (called 'laser toning') has a lower risk of adverse events in the treatment of melasma. However, the treatment outcomes are inconsistent. Adverse events including post-inflammatory hyperpigmentation and mottled hypopigmentation by conventional laser toning may occur, especially when the melasma lesions are accompanied by erythema.¹⁻³ To overcome these pitfalls, a dual-pulsed (or twin-pulsed) mode of 1064 nm QS Nd:YAG laser was devised. This mode delivers the desired fluence in two evenly divided pulses, separated by a very short time interval. In a previous study, the dual-pulsed mode was clinically effective in treating hyperpigmentary disorders such as post inflammatory hyperpigmentation and Riehl's melanosis.^{4,5} However, its effect has not been demonstrated at a histological or molecular level.^{1,4,5} Therefore, we examined the efficacy of the dual-pulsed 1064 nm QS Nd:YAG laser at a histological and molecular level.

*Source : View PDF - Indian Journal of Dermatology, Venereology and Leprology (ijdv.com)

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A pilot study of a novel dual - pulsed 1064 nm Q-switched Nd: YAG laser to treat Riehl's melanosis

Bo Young Chung, Jeong Eun Kim, Joo Yeon Ko & Sung Eun Chang



The treatment of Riehl's melanosis is difficult and challenging. Recently, a low-fluence 1064-nm quality (Q)-switched neodymium: yttrium-aluminum-garnet (Nd: YAG) laser method, referred to as 'laser toning', has been used in the treatment of melasma in Asian countries. We present here a series of cases of Riehl's melanosis that were treated effectively with a novel Q-switched Nd: YAG laser that was operated as a dual-pulse at half-fluence and 140-µs intervals.

*Source : A pilot study of a novel dual - pulsed 1064 nm Q-switched Nd: YAG laser to treat Riehl's melanosis: Journal of Cosmetic and Laser Therapy: Vol 16, No 6 (tandfonline.com)

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Fractional 532-nm Q-switched Nd:YAG laser: One of the safest novel treatment modality to treat café-au-lait macules

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Café-au-lait macules (CALMs) are benign epidermal basilar hyperpigmentations that can be found in an isolated form or in association with neurocutaneous syndromes. Frequency-doubled Q-switched neodymium-doped yttrium aluminum garnet laser (532-nm QSNYL) does not penetrate deeply into the skin and is therefore suitable for epidermal pigmented lesion. Fractional photothermolysis (FP) targets only very small areas of the skin, without injuring adjacent areas of healthy, normal skin. Herein, we report a case of CALMs successfully treated with fractional 532-nm QSNYL. By applying FP to 532-nm QSNYL, we could treat CALMs safely with less downtime as compared to conventional laser treatments and expect more energy delivery for each microscopic hole, thereby allowing higher response rate.

*Source : Fractional 532-nm Q-switched Nd:YAG laser: One of the safest novel treatment modality to treat café-au-lait macules: Journal of Cosmetic and Laser Therapy: Vol 18, No 5 (tandfonline.com) [VIEW ►](#)

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TRI-BEAM's Rich-PTP Technology Eradicates Pigmented Lesions

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Q-Switched Nd:YAG laser devices are well established in aesthetic medicine as state-of-art skin rejuvenation tools. However, not all devices are equal in terms of controlling the immense power that this laser has, and failure to do so can lead to an increased frequency of adverse events. According to one expert, TRI-BEAM™ from Jeisys (Seoul, South Korea) is able to harness, control and maintain the powerful Nd:YAG, resulting in safer and more effective treatment of pigmented lesions, including melasma, tattoos, various types of nevus (Ota, Ito, blue, congenital melanocytic), ectopic Mongolian spots, café-au-lait macules, lentiginos and freckles.

Un-Cheol Yeo, M.D. of the S&U Dermatologic Clinic (Seoul, South Korea) has used TRI-BEAM for more than four months and finds it to be very efficient in the treatment of pigmented lesions. "Many other systems show a decrease of energy output over longer treatment times. In contrast, TRI-BEAM maintains its power constantly during longer sessions, improving the safety and effectiveness of treatments", he said.

In Dr. Yeo's experience, some lasers deliver variation of output meaning that one shot could unexpectedly be much stronger, resulting in tissue tearing and scarring, which clinically presents as hypopigmentation macules in laser toning of melasma. He pointed out that TRI-BEAM's inter shot variation is less than 3% which is very good compared to other lasers in its class.

Powered by a Q-Switched Nd:YAG laser, TRI-BEAM also features Rich-PTP™ (photo-acoustic toning pulse) technology which shatters targeted chromophores and maximized photo-acoustic effect, resulting in a faster, safer and more effective toning of the targeted area. This technology features 2-pulse energy and up to 20Hz power in a shorter time, which minimizes damage to epidermal cells while selectively targeting and destroying pigmented lesions.

According to Takashi Takahashi, M.D., founder and director of the Takahashi Clinic (Tokyo, Japan), physicians and their patients need to understand the characteristics of melasma. "Multiple sessions are often needed and if you treat with too high of energy melasma may reoccur and the patient could possibly develop post-inflammatory hyperpigmentation (PIH). I feel Rich-PTP technology is most effective in the treatment of melasma..

*Source : The Asian Aesthetic Guide Volume 2, 2012 (miinews.com)

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TRI-BEAM Q-switched Nd:YAG Laser Features Rich-PhotoAcoustic Toning Pulse

Takashi Takahashi, M.D

Takahashi Clinic, Tokyo, Japan

TRI-BEAM, Q-Switched Nd:YAG Laser, built-in Maximum versatility and high power is launched by Jeisys Medical Incorporated. Especially, Rich-Photoacoustic Toning Pulse (Rich-PTP) of TRI-BEAM is a new technology which has 20Hz high power and double pulse function. Compared to ablative lasers, the existing Q-switched Nd:YAG lasers which are non-ablative lasers have made less side effects and recovery time. But the effectiveness of the lasers have not been satisfying. However the Rich-PTP of TRI-BEAM enables it to make great results that only ablative Laser can make so far.

TRI-BEAM creates 2 pulses in nanoseconds that continue extremely short. We call it 'Double pulse'. The Double pulse helps to remove Pigment and Tattoo. So, Rich-PTP creates extreme peak energy in very narrow pulse width and induces Pigment and Tattoo to vibrate and be destroyed. Such a tiny piece of pigment gets engulfed easily by white blood cells. We can say this separated nanosecond pulse is the new technology reducing the possibility of side effects as well as transmitting high energy safely to target.

Regarding new Double Pulse technology of Jeisys (Rich-PTP), the combination of Photothermal effect and Photoacoustic effect eliminates patient's discomforts during treatment and makes people who get treatments feel satisfied. As for one-pulse, it eliminated discomforts and strong burning pain on patients in the Rich-PTP mode.

We highly expect TRI-BEAM will get developed for Tattoo, Blood vein treatment, clinical test and Parameter through upcoming study.

Besides, as we already experienced with Non-ablative Laser, we may expect bigger dermal remodeling and collagen production few months after TRI-BEAM treatment.

*Source : : <http://www.jeisyms.com/uploads/%5bTRI-BEAM%5d%202012%20TRI-BEAM%20QSNY%20Laser%20Features%20Rich%20PhotoAcoustic%20Toning%20Pulse%20by%20Takashi%20Takahashi.pdf>

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