








CYNO\SURE® LUTRONIC®

# Publications and Clinical Studies on Cynosure Lutronic Technology From Asia Pacific in 2024



Technology	Author	Study Title	Summary	Country / Region	Page
 PICOsure <sup>pro</sup>	Christina SM Wong, Samantha YN Shek, Mandy WM Chan, Martin HM Chung, Adrian KC Cheng, Yuk Ming Lau, Carmen JW Xian, Chi Keung Yeung, Henry HL Chan	Evaluation of efficacy and safety of a new Picosecond 755-nm Alexandrite Laser with an increased energy output for skin rejuvenation in asian skins: a prospective study <i>American Society for Laser Medicine and Surgery Abstracts (2024)</i>	The preliminary data demonstrated that the new picosecond 755-nm alexandrite laser with an increased energy output is an effective non-ablative modality for targeting facial skin texture and dyspigmentation in Chinese skin with very low risk of post-inflammatory hyperpigmentation.	Hong Kong	5 /
 PICOsure <sup>pro</sup>	Niwat Polnikorn, Harit Leksuksri, Pawit Phadungsaksawasdi	Treatment of Melasma in Skin Type IV and V with a New Adjustable Fluence Diffractive Lens Array Picosecond 755 nm Laser <i>American Society for Laser Medicine and Surgery Abstracts (2024)</i>	Our results demonstrate that the adjustable fluence 755-nm picosecond laser with diffractive lens array, alongside standard medications, effectively and safely treats mixed and telangiectatic melasma in skin types IV and V, improving pigmentation and rejuvenating skin.	Thailand	6 /
 PICOsure <sup>®</sup>	Zhen Zhang, Xiaojin Wu	A Split-Face, Single-Blinded, Randomized Controlled Comparison of Low-Fluence versus High-Fluence Alexandrite 755 nm Picosecond Laser in the Treatment of Nevus of OTA <i>American Society for Laser Medicine and Surgery Abstracts (2024)</i>	LF-PSAL is an effective and safe treatment for nevus of Ota, particularly for patients < 3 years old because of its low side effect rate and easy nursing procedure.	China	7 /
 PICOsure <sup>pro</sup>	Chang Cheng Chang, Yen-Jen Wang, Ling Huang, Emily Tsai, Jia-wei Shen, Meng-en Lu	Activated melanocyte and senescent collagen fibers as predictors of the prognosis of melasma Post Picosecond laser treatment <i>American Society for Laser Medicine and Surgery Abstracts (2024)</i>	PAL with a DLA could effectively treat melasma. Activated melanocytes and senescent collagen fibers served as predictors of the prognosis of melasma post laser treatment.	Taiwan	8 /
 PICOsure <sup>®</sup>	Yun-Jhen Lin, Bing-Qi Wu, Chang-Cheng Chang, Yung-Hsueh Huang, Yen-Jen Wang	Laser-induced optical breakdown is a prior strategy for acquired melanin-increased disorder in dermal layer <i>Lasers in Medical Science (2024) 39:216</i> <a href="https://doi.org/10.1007/s10103-024-04170-4">https://doi.org/10.1007/s10103-024-04170-4</a>	The findings suggest that LIOB offers a promising solution for acquired dermal hypermelanosis by addressing both diffuse and localized pigmentation effectively, leading to skin rejuvenation with minimal downtime and high patient satisfaction.	Taiwan	9 /
 PICOsure <sup>®</sup>	YanJun Zhou MM, Yong Li BM, Michael R. Hamblin PhD, Xiang Wen MD	Comparison of 755-nm picosecond alexandrite laser versus 1064-nm Q-switched Nd:YAG laser for melasma: A randomized, split-face controlled, 2-year follow-up study <i>Lasers Surg Med. 2024;1-7.</i> <a href="https://doi.org/10.1002/lsm.23763">https://doi.org/10.1002/lsm.23763</a>	QSNYL demonstrated short term clinical efficacy for melasma, but did not provide any additional benefit compared to PSAL with DLA. QSNYL was associated with less pain. There was a high recurrence rate at 2-year follow-up. RCM allowed the detection of cellular changes in melasma lesions.	China	10 /
 PICOsure <sup>®</sup>	Marni Kishimoto1, Takanori Iwayama, Nobuyuki Horita and Takeshi Fukumoto	Case report: Usefulness of a picosecond Alexandrite laser therapy on atypical henna-induced Riehl's melanosis inferred from immunohistochemical analyses <i>Front. Med. 11:1401938.</i> <a href="https://doi.org/10.3389/fmed.2024.1401938">doi:10.3389/fmed.2024.1401938</a>	In this study, we report safe and effective treatment of henna induced-atypical Riehl's melanosis using a 755-nm picosecond Alexandrite laser. Immunohistochemical analyses revealed a potential role of CD8-positive lymphocytes in henna-induced inflammation and hyperpigmentation of the basal layer, and a role of melanophages in the pigmented dermis of Riehl's melanosis.	Japan	11 /

Technology	Author	Study Title	Summary	Country / Region	Page
 <b>PICOSURE<sup>pro</sup></b>  <b>POTENZA<sup>®</sup></b>	Kentaro Oku, Mikako Oku	Strategies for Skin-Quality Improvement with Minimally Invasive Treatment <i>Jpn J Plast Surg Vol.67 March 2024 ISSN 0021-5228</i>	For energy-based device therapies, it is essential to disrupt degenerated structures and reactivate cells and tissues. Different layers of the skin require specific targeting substances. Our facility developed CynoGlow™ treatment, which combines the use of the Picosure®Pro laser and the Potenza® RF system in three phases to achieve skin quality improvement. In treatments that are designed to improve skin quality, it is desirable to reconstruct strategies on a case-by-case and treatment-by-treatment basis, as the factors involved may vary depending on the patient's case and skin condition.	Japan	12 /
 <b>PICOSURE<sup>pro</sup></b>  <b>ULTRA<sup>®</sup></b>	Davin Lim	Direct Comparison between 755 nm Picosecond Laser Versus 1927 nm non-Ablative Fractional Laser in the Treatment of Photoaging and Pigmentation in Skin Types 1-3 <i>American Society for Laser Medicine and Surgery Abstracts (2024)</i>	Third generation picosecond laser in the 755 nm wavelength is an effective solution for a multitude of pigmentation disorders in lighter skin types. With understanding of beam profile, end points and basic lesion morphology, picosecond lasers can provide marked skin rejuvenation in all skin types 1-3 with superior results than non-ablative fractional lasers with the added benefit of minimal to no downtime. Fewer treatments are required; with a mean of 1.3 sessions for 755 picosecond laser, in comparison to 2.4 sessions for 1927 thulium non-ablative to reach a similar improvement in the global aesthetic improvement scale.	Australia	13 /
 <b>PICOSURE<sup>®</sup></b>	Putri Hendria Wardhani, MD, PhD, Cita Rosita Sigit Prakoeswa, and Muhammad Yulianto Listiawan	Evaluation of Wrinkle and Dermal Thickness in the Forearm before and after Picosecond Laser Therapy <i>J Cutan Aesthet Surg . 2024 Jan-Mar;17(1):7-10. doi: 10.4103/JCAS.J-CAS_80_22.</i>	This picosecond 755 nm alexandrite laser with DLA was found to be very effective in treating wrinkles, which was confirmed by a dermatologic assessment from forearm photographic assessment scaled and dermal thickness improvement.	Indonesia	14 /
 <b>ULTRA<sup>®</sup></b>	Soo Il Chun	A Novel Treatment of Acne Vulgaris Using a 1927 nm Fractional Thulium Laser: A Case Series <i>Clinical, Cosmetic and Investigational Dermatology 2024;17 1931-1942</i>	This study investigates the effects of a fractional 1927 nm thulium laser (FTL) on acne vulgaris in nine Korean subjects (ages 13 to 33) with both inflammatory and noninflammatory lesions. After 5 to 6 treatment sessions, significant reductions in lesion counts were observed (60% to 97.1%), and acne severity decreased by an average of 1.67 grades. Mild pain was reported during treatment, with no adverse events. The FTL effectively disrupted the upper part of affected follicles and sebaceous glands, targeting Cutibacterium acnes and promoting follicular remodeling and tissue regeneration, leading to improved acne outcomes.	Korea	15 /

Technology	Author	Study Title	Summary	Country / Region	Page
 XERF	Hong J, Ryu HG, Park C, Park J, Kim K, Lee KMM, Chun SI.	Efficacy of dual-frequency noninvasive monopolar radiofrequency in skin tightening: Histological evidence <i>Skin Res Technol.</i> 2024 Jun;30(6):e13821. doi: 10.1111/srt.13821.PMID: 38881041; PMCID: PMC11180671.	The study finds that the novel NMRF device, XERF, leads to immediate thickening of collagen bundles and significant changes in superficial and deep fascial layers. This suggests enhanced dermal penetration and therapeutic efficacy, with potential benefits for improving skin texture, elasticity, and deeper skin concerns, warranting further research on its long-term clinical outcomes.	Korea	16 /
 XERF	Chidae Park, Jumi Hong, Hye Guk Ryu, Seokhong Kim, Jinyoung Park, Kyung Kim, Jongah Won, Jungmi Lee, Soo Il Chun	Monopolar radiofrequency for dermal temperature regulation and remodeling: A porcine model study <i>J Cosmet Dermatol.</i> 2024;00:1-6. doi:10.1111/jocd.16495	Noninvasive monopolar radiofrequency (NMRF) is shown to effectively induce dermal remodeling and enhance collagen synthesis in a porcine model, achieving peak temperatures of 50°C, 60°C, and 70°C without thermal damage. Safety assessments confirmed no adverse effects, while histological analysis indicated increased collagen density, highlighting NMRF's potential as a safe and effective method for skin rejuvenation therapies.	Korea	17 /
 ELITE iQ	Angela Lee	Evaluation of Safety and Efficacy of Sane-Session, Dual-Wavelength Protocol with Long Pulsen 755 nm Alexandrite and 1064 nm Nd: YAG Laser in Facial Contour, Skin Laxity, Uneven Skin Tone, and Erythema <i>American Society for Laser Medicine and Surgery Abstracts</i> (2024)	In conclusion, the dual-wavelength long-pulsed alexandrite and Nd: YAG laser offer safe and effective solutions for addressing aged contour, laxity, uneven skin tone, and erythema. Although the effects persist over a 1-month period, the decline in PSI suggests the need for further maintenance sessions.	Hong Kong	18 /
 GENIUS	Won Oak Kim	Treatment of Palmar Hyperhidrosis With Radiofrequency Microneedling-Based on Ultrasound Measurements <i>J Ultrasound Med</i> . 2024 Apr;43(4):807-809. doi: 10.1002/jum.16402. Epub 2023 Dec 27.	This study addresses the treatment of palmar hyperhidrosis, which has been difficult to manage. A new treatment has been developed using radiofrequency microneedling to reduce sweating non-surgically by ablating sweat glands. Based on ultrasound measurements of the dermis and precise microneedling damage, effective energy was applied to locate the sweat glands and disabled their function. Radiofrequency microneedling with ultrasound can safely and effectively treat hyperhidrosis in a minimally invasive way.	Korea	19 /
 CYNERGY	Chang Cheng Chang, Han-Yuan CHANG, Yen-Jen Wang, Yu-Tsung chen	Efficacy of Early Pulsed Dye Laser Intervention for Improving Traumatic or Post-Operative Scars in Asian Patients <i>American Society for Laser Medicine and Surgery Abstracts</i> (2024)	Early PDL intervention for traumatic and postoperative scars within 10 weeks of injury resulted in better treatment outcomes, as evidenced by clinical and patient opinions.	Taiwan	20 /



Technology	Author	Study Title	Summary	Country / Region	Page
 CYNERGY™	Khor Shih Chieh, Chang Cheng Chang	Adjuvant Pulsed Dye Laser Therapy for Post-Auricular Keloid Excision <i>American Society for Laser Medicine and Surgery Abstracts (2024)</i>	Adjuvant PDL therapy for post-auricular keloid excision was a reasonable treatment strategy with low recurrence and ideal VSS and MSS score that comparable to results on other combination treatment strategy, especially radiotherapy. PDL showed comparable recurrence rate, less remarkable complication, especially in the consideration on carcinogenesis or cartilage fibrosis and better patient compliance compared to radiotherapy. In purpose of prevention on the recurrence after surgical excision of auricular keloid, PDL should be a ideal choice of adjuvant therapy.	Taiwan	21 /

# Evaluation of Efficacy and Safety of A New Picosecond 755nm Alexandrite Laser with an Increased Energy Output for Skin Rejuvenation in Asian Skins: A Prospective Study

Christina SM Wong, Samantha YN Shek, Mandy WM Chan, Martin HM Chung, Adrian KC Cheng, Yuk Ming Lau, Carmen JW Xian, Chi Keung Yeung, Henry HL Chan

American Society for Laser Medicine and Surgery Abstracts (2024)

**Authors:** Christina SM Wong, Samantha YN Shek, Mandy WM Chan, Martin HM Chung, Adrian KC Cheng, Yuk Ming Lau, Carmen JW Xian, Chi Keung Yeung, Henry HL Chan

Division of Dermatology, Department of Medicine, The University of Hong Kong, Hong Kong SAR, China; Wellman Center for Photomedicine, Massachusetts General Hospital, Harvard Medical School, Boston, USA; Blossom innovations, LLC Boston, MA, USA

**Background:** Photoaging is a natural occurrence to humankind which shows signs of dyspigmentation, laxity, yellow hue, wrinkles, and leathery appearance. Treating photoaging skin has cosmetical importance. A recent study showed that alexandrite picosecond laser has promising result in benign pigmentation, particularly lentigo and freckles. The objective of this study is to investigate the efficacy and safety of a new picosecond 755 nm alexandrite laser, with an increased energy output treatment on skin rejuvenation in Asian.

**Study Design/Materials and Method:** Up to 20 Asian male and female subjects, aged 21-85, who seek treatment for skin rejuvenation were recruited prospectively to examine the efficacy and safety of the new picosecond 755 nm alexandrite laser with an increased energy output. Each patient will receive up to six laser treatment at 4-8 weeks intervals ( $6 \pm 2$  weeks). Standardized photography is taken at each visit. The baseline and Posttreatment on clinical assessment for skin and 5-point Global Aesthetic Improvement Scale for skin rejuvenation and will be assessed by blinded investigators based on the clinical photographs.

Subject overall satisfaction will also be assessed by the questionnaire after treatment. All adverse events will be documented at each visit.

**Results:** The study is ongoing with 20 subjects undergoing treatments. A total of 97 treatments were conducted. Immediately Posttreatment, only erythema and slight edema were recorded. One subject was observed mild post-inflammatory hyperpigmentation (PIH) after the fifth treatment (PIH rate: 1.03%, 1/97). The PIH resolved in 2-month after topical treatment with bleaching cream. Out of 20 subjects, 8 have completed treatments and 1-month and 2-month follow-up visits. 5-point Global Aesthetic Improvement Scale was conducted by physicians, 87.5% have shown improvement.

According to the physician-evaluated clinical outcome, skin texture (from 6.00 to 5.25,  $p=0.048^*$ ), pore size (from 6.0 to 5.5,  $p=0.033^*$ ) and pigmentation (from 5.38 to 2.27,  $p=0.005^*$ ) were significantly improved at 1-month follow-up. At 2-month follow-up, pigmentation was significantly improved (from 5.38 to 3.38,  $p=0.015^*$ ). Among these 8 subjects, all of them were satisfied with the outcome of the treatment at both of 1-month and 2-month follow up.

**Conclusion:** The preliminary data demonstrated that the new picosecond 755 nm alexandrite laser with an increased energy output is an effective non-ablative modality for targeting facial skin texture and dyspigmentation in Chinese skin with very low risk of post-inflammatory hyperpigmentation.

**Acknowledgment:** This study was supported by Cynosure.

# Treatment of Melasma in Skin Type IV and V with a New Adjustable Fluence Diffractive Lens Array Picosecond 755 nm Laser

Niwat Polnikorn MD., Pawit Phadungsaksawasdi MD., PhD., Harit Leksuksri MD., M.Sc.

American Society for Laser Medicine and Surgery Abstracts (2024)

**Authors:** Niwat Polnikorn, Harit Leksuksri, Pawit Phadungsaksawasdi, Dr. Niwat's Skin Clinic, Dr. Niwat's Skin Clinic, Prachuap Khiri Khan, Thailand, Division of Dermatology, Chulabhorn international college of medicine, Thammasat University, Thailand.

**Background:** Melasma, a complex skin condition, challenges traditional therapies like topical agents and peels. Advancements in 755nm alexandrite picosecond laser technology, especially with adjustable fluence, promise tailored treatments. This study evaluates its efficacy and safety in Asian patients.

**Study Design/Materials and Method:** This retrospective study conducted from November 2022 to November 2023, analyzed patients treated for facial melasma with 755nm alexandrite picosecond laser at a private dermatology center. It included two patient groups, differentiated by their previous melasma treatment history, and utilized the Melasma Severity Index and Quartile grading scale for evaluation.

**Results:** Over 12 months, this study involved 50 patients (14% men, 86% women, ages 31-60) treated for facial melasma. On average, 3.26 treatment sessions were conducted, with Melasma Severity Index (MSI) scores improving from 14.10 to 8.34, showing statistically significant enhancement. Improvement varied: 10% excellent, 30% good, 22% moderate, 14% mild, and 24% no improvement. No substantial difference was noted in treatment efficacy between Mixed and Telangiectatic melasma or between previously untreated and I S183 refractory cases. Overall, 76% showed melasma improvement posttreatment, underscoring method's effectiveness.

**Conclusion:** Our results demonstrate that the adjustable fluence 755 -nm picosecond laser with diffractive lens array, alongside standard medications, effectively and safely treats mixed and telangiectatic melasma in skin types IV and V, improving pigmentation and rejuvenating skin.

# A Split-Face, Single-Blinded, Randomized Controlled Comparison of Low-Fluence versus High-Fluence Alexandrite 755 nm Picosecond Laser in The Treatment of Nevus of OTA

Zhen Zhang, Xiaojin Wu

American Society for Laser Medicine and Surgery Abstracts (2024)

**Authors:** Zhen Zhang, Xiaojin Wu

Department of Dermatology, Department of Laser and Aesthetic Medicine, Shanghai Ninth

People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

**Background:** Nevus of Ota is a benign dermal and mucosal melanocytic nevus that usually presents at or shortly after birth. Because of the detrimental cosmetic outcome, parents seek to clear the patients' lesions before their actual social life begins. However, blisters and crusts commonly seen following laser therapy pose a challenge for parents who are unfamiliar with the nursing procedure. Low-fluence Q-switched nanosecond alexandrite laser (QSAL) was shown to achieve a higher success rate than traditional high-fluence QSAL in the treatment of nevus of Ota without downtime. As picosecond alexandrite laser (PSAL) is considered the first line of therapy for nevus of Ota, the present study was designed to evaluate the efficacy and safety of low-fluence PSAL (LF-PSAL) in the treatment of nevus of Ota.

**Study Design/Materials and Method:** A total of 22 patients with Ota nevus were enrolled, and the lesions were randomly divided into two parts. One part was treated with LF-PSAL (spot size 5 mm,  $1.02\text{J}/\text{cm}^2$ ), and the other part was treated with traditional high-fluence PSAL (HF-PSAL, spot size 3mm,  $2.83\text{J}/\text{cm}^2$ ). There were three sessions at 6-month intervals. The last follow-up was set at 1 year following the third treatment. Three blinded dermatologists were asked to evaluate the clearance rate depending on the standard photos collected at each follow-up. Patients were asked to choose their preferred laser option at the last follow-up. All adverse events and their respective durations were noted.

**Results:** All 22 patients in the study, 8 males and 14 females, completed the study. Seven patients were <3 years old, and 15 were >3 years old. Their median age was 10.5 years. At the last follow-up, the clearance score of HF-PSAL was significantly higher than LF-PSAL for patients older than 3 years ( $4.5 \pm 0.5$  vs.  $3.64 \pm 0.97$ ,  $p < 0.05$ ). However, no significant difference was observed between the two groups when patients < 3 years old were compared ( $4.75 \pm 0.43$  vs.  $4.75 \pm 0.43$ ,  $p > 0.05$ ). The Visual Analog Scale (VAS) for determining the pain score was significantly higher in the HF-PSAL group ( $4.53 \pm 1.96$  vs.  $3.68 \pm 1.99$ ,  $p < 0.05$ ). Scabs occurred in all 22 patients on the HF-PSAL side, and the mean time for scab shedding was  $5.93 \pm 1.95$  days. The occurrence rate for blisters, postinflammation hyperpigmentation, and hypopigmentation was 40.9%, 4.5%, and 22.7%, respectively, for HF-PSAL. None of the above side effects occurred on the LF-PSAL side.

Fifty percent of the patients preferred LF-PSAL, and most patients (73%) chose LF-PSAL because of its easy nursing procedure and little downtime. HF-PSAL was mostly chosen (63%) because of its faster onset of effect.

**Conclusion:** LF-PSAL is an effective and safe treatment for nevus of Ota, particularly for patients < 3 years old because of its low side effect rate and easy nursing procedure.



# Activated melanocyte and senescent collagen fibers as predictors of the prognosis of melasma Post Picosecond laser treatment

Chang Cheng Chang, Yen-Jen Wang, Ling Huang, Emily Tsai, Jia-wei Shen, Meng-en Lu

American Society for Laser Medicine and Surgery Abstracts (2024)

**Authors:** Chang Cheng Chang, Yen-Jen Wang, Ling Huang, Emily Tsai, Jia-wei Shen, Meng-en Lu

China medical university hospital

**Background:** Data regarding the prediction of treatment response of melasma post laser treatment are limited. This preclinical study aimed to evaluate the in vivo efficacy of picosecond alexandrite laser (PAL) with a diffractive lens array (DLA) for melasma and delineate the prognostic factors that predict the outcome of picosecond laser treatment.

**Study Design/Materials and Method:** We evaluated the efficacy of PAL with a DLA based on Melasma Area and Severity Index (MASI) score and cellular resolution full-field optical coherence tomography (CRFF-OCT) images. The CRFF-OCT scoring system was developed and prospectively validated to predict the treatment responses.

**Results:** There was 20 melasma patients, who received 3-session 755nm picosecond laser with diffractive lens array (DLA), enrolled in this study from May 2020 to Feb. 2022. Five patients dropped

out for the pandemic Covid-19. 360 vertical sections and 73,980 enface images was analyzed with the computer-aided detection (CADE) system. MASI score significantly decreased after laser treatment ( $p < 0.001$ ). The presence of activated melanocytes at baseline predicted a high regional MASI ( $\text{corrcoef} = 0.4496$ ,  $p = 0.0127$ ), whereas senescent collagen fibers at baseline predicted a minimal MASI improvement ( $\text{corrcoef} = -0.4989$ ,  $p = 0.005$ ). Moreover, basement membrane (BM) damage at the baseline predicted the presence of melanophages after laser treatment ( $\text{corrcoef} = 0.7678$ ,  $p = 0.0008$ ). BM damage was significantly repaired in lesions ( $p < 0.001$ ).

**Conclusion:** PAL with a DLA could effectively treat melasma. Activated melanocytes and senescent collagen fibers served as predictors of the prognosis of melasma post laser treatment.



# Laser-induced optical breakdown is a prior strategy for acquired melanin-increased disorder in dermal layer

Yun-Jhen Lin, Bing-Qi Wu, Chang-Cheng Chang, Yung-Hsueh Huang, Yen-Jen Wang

Lasers in Medical Science (2024) 39:216

<https://doi.org/10.1007/s10103-024-04170-4>

## Abstract:

This brief report discusses the challenges in treating dermal melanosis and the limitations of current laser treatments due to inadequate tissue penetration and potential side effects. It introduces laser-induced optical breakdown (LIOB) as a novel therapeutic approach using a picosecond laser with a diffractive lens array (DLA) to target dermal pigmentation effectively.

LIOB induces multiphoton ionization, leading to melanin clearance through phagocytosis and apoptotic cell removal, while also promoting dermal remodeling and collagen synthesis. We present a case of successful treatment of dermal pigmentation in a 55-year-old woman using 755 nm-picosecond alexandrite laser therapy, demonstrating significant improvement without recurrence. The findings suggest that LIOB offers a promising solution for acquired dermal hypermelanosis by addressing both diffuse and localized pigmentation effectively, leading to skin rejuvenation with minimal downtime and high patient satisfaction.

# Comparison of 755 nm picosecond alexandrite laser versus 1064 nm Q-switched Nd: YAG laser for melasma: A randomized, split-face controlled, 2-year follow-up study

YanJun Zhou MM, Yong Li BM, Michael R. Hamblin PhD, Xiang Wen MD

Lasers Surg Med. 2024;1-7.

<https://doi.org/10.1002/lsm.23763>

**Objectives:** Pulsed laser treatment of melasma has shown some promising results. To compare the effectiveness and safety of 755 nm picosecond alexandrite laser (PSAL) fitted with diffractive lens array (DLA) versus 1064 nm Q-switched neodymium:yttrium aluminum garnet laser (QSNYL) for the treatment of melasma.

**Methods:** We conducted a randomized, split face controlled, 2-year follow-up study. Each face was divided into two parts, each side receiving three treatments with either PSAL or QSNYL at 1 month intervals. Modified Melasma Area Severity Index scores (mMASI), pain scores, patient satisfaction and adverse events were recorded. In vivo reflectance confocal microscopy (RCM) images were acquired.

**Results:** Twenty subjects were enrolled and three dropped out. At 6 months, mMASI scores were significantly lower than baseline for QSNYL sides ( $p=0.022$ ), with no statistically significant difference between PSAL sides before and after treatment, PSAL sides versus QSNYL sides, or patient satisfac-

tion scores. QSNYL treatment was associated with less pain ( $p=0.014$ ). No serious adverse events were reported. In the PSAL sides RCM showed a large number of dendritic melanocytes infiltrated in the dermis at 2 weeks and 4 weeks after treatment. Ten patients (58.82%) reported recurrence or exacerbation at 2-year follow-up with no statistically significant difference between the two lasers.

**Conclusions:** QSNYL demonstrated short term clinical efficacy for melasma, but did not provide any additional benefit compared to PSAL with DLA. QSNYL was associated with less pain. There was a high recurrence rate at 2-year followup.

RCM allowed the detection of cellular changes in melasma lesions.

# Case report: Usefulness of a picosecond Alexandrite laser therapy on atypical henna-induced Riehl's melanosis inferred from immunohistochemical analyses

Marni Kishimoto<sup>1,2</sup>, Takanori Iwayama<sup>3</sup>, Nobuyuki Horita<sup>4</sup> and Takeshi Fukumoto<sup>1\*</sup>

Front. Med. 11:1401938. doi: 10.3389/fmed.2024.1401938

Riehl's melanosis is a pigmented dermatitis that manifests as brown-gray facial pigmentation with pigment incontinence and infiltration of cells in the upper dermis. The associated inflammation is induced by a variety of products such as drugs and cosmetics. Henna, commonly referred to as a hypoallergenic cosmetic, has been reported to cause Riehl's melanosis in some cases. Although skin depigmenting agents have been occasionally used, satisfactory results have not been obtained and no established therapeutic strategies exist to treat Riehl's melanosis. Meanwhile, picosecond lasers effectively treat other hyperpigmentation disorders. In this study, we report safe and effective treatment of henna induced-atypical Riehl's melanosis using a 755nm picosecond Alexandrite laser. Immunohistochemical analyses revealed a potential role of CDS-positive lymphocytes in henna-induced inflammation and hyperpigmentation of the basal layer, and a role of melanophages in the pigmented dermis of Riehl's melanosis.





## Strategies for Skin-Quality Improvement with Minimally Invasive Treatment

Kentaro Oku, MD\*, Mikako Oku, MD\*

Japanese Journal of Plastic Surgery; Vol. 67, March 2024

The aim of skin-quality improvement treatment is to achieve smooth, elastic, and well-hydrated skin. This requires a multifaceted approach tailored to the individual's skin condition, including replenishing moisture, removing excess melanin, and enhancing collagen production. Regarding injection treatments, Juvederm Vista® Volite™ XC is an injectable filler that uniquely addresses skin-quality improvement by targeting both the structure and the function of the skin. For energy-based device therapies, it is essential to disrupt degenerated structures and reactivate cells and tissues. Different layers of the skin require specific targeting substances. Our facility uses the Picosecond Alexandrite laser (Picosure®Pro) for epidermal approaches, a micro-needle radiofrequency (RF) system (Potenza®) for dermal and basement membrane approaches, and synchronous ultrasound parallel beam technology (Sofwave®I for dermal approaches. These versatile devices allow for both single-device treatments and combination treatments that provide synergistic effects. In terms of skin tightening, the Sofwave® delivers thermal energy in a continuous and directional manner while minimiz-

ing pain levels. Our facility developed the Thermal Thread Technique™, which forms thermal threads within the dermis with the use of the synchronous ultrasound parallel beam, resulting in overall skin improvement and tightening effects. In cases with multiple skin symptoms such as pigmented lesions with photodamage, fine lines, enlarged pores, and acne scars, simultaneous approaches to multiple targets in the epidermis and dermis are necessary. Our facility developed CynoGlow™ treatment, which combines the use of the Picosure®Pro laser and the Potenza® RF system in three phases to achieve skin quality improvement. In treatments that are designed to improve skin quality, it is desirable to reconstruct strategies on a case-by-case and treatment-by-treatment basis, as the factors involved may vary depending on the patient's case and skin condition.

# Direct Comparison between 755 nm Picosecond Laser Versus 1927 nm non-Ablative Fractional Laser in the Treatment of Photoaging and Pigmentation in Skin Types 1-3

**Davin Lim**

American Society for Laser Medicine and Surgery Abstracts (2024)

**Author:** Davin Lim, MBBS, FACD, Dermatologist, Cutis Clinic Brisbane, Australia

**Background:** Picosecond lasers are primarily employed for skin rejuvenation in darker skin types. This is based upon the higher amount of chromophore in ethnic skin, which accounts for increased cytokine release via laser induced optical breakdown. In darker skin types, picosecond technology offers a greater safety profile compared to fractional and nanosecond lasers. Their application in lighter skin types are limited to a few studies. This presentation will discuss the author's experience in treating lighter skin types, with direct comparison to non-ablative laser resurfacing.

**Objectives:** To ascertain the pros and cons of each laser treatment modality, taking into account clinical efficacy, recovery time, treatment time. A proposed ideal patient phenotype suited for picosecond will be discussed.

**Study Design/Materials and Method:** The author will present the findings of high powered full beam and fractional beam profiles for skin rejuvenation in skin types 1-3, with a direct comparison to non-ablative fractional laser resurfacing. The effects on photoaging, pigmentation and skin quality will be discussed. Comparison histology for both modalities will be presented. The study will include 10 subjects of each, 20 in total. The assessment will utilise an Independent blinded assessor.

**Results:** Ultra short pulse duration 755nm picosecond laser is highly effective in the treatment of photoaging in skin types 1 to 3.

**Conclusion:** Third generation picosecond laser in the 755nm wavelength is an effective solution for a multitude of pigmentation disorders lighter skin types. With understanding of beam profile, end points and basic lesion morphology, picosecond lasers can provide marked skin rejuvenation in all skin types 1-3 with superior results than non-ablative fractional lasers with the added benefit of minimal to no downtime. Fewer treatments are required; with a mean of 1.3 sessions for 755 picosecond laser, in comparison to 2.4 sessions for 1927 thulium non-ablative to reach a similar improvement in the global aesthetic improvement scale.

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## A Novel Treatment of Acne Vulgaris Using a 1927 nm Fractional Thulium Laser: A Case Series

Soo Il Chun

Clinical, Cosmetic and Investigational Dermatology 2024;17 1931–1942

**Background and Aims:** Acne vulgaris remains one of the most common and problematic dermatological conditions. Recently, a fractional 1927 nm thulium laser has been developed with specific water absorption characteristics which may be of interest in the treatment of acne.

**Subjects and Methods:** Nine consecutive Korean subjects, 6 females and 3 males, ages ranging from 13 to 33 yr, presented with a mixture of inflammatory and noninflammatory acne. Baseline clinical photography, image analysis and lesion counts were performed. A fractional 1927 nm thulium laser (FTL) delivered 6 treatment sessions in 5 subjects and 5 sessions in 4 subjects, 4 weeks between sessions. Pain during treatment was assessed. At 32 weeks after the last treatment session, an independent Investigator Global Assessment (IGA) performed lesion counts and graded the severity of the acne at baseline and the final assessment on a quintile scale. Data were analyzed statistically.

**Results:** All 9 subjects completed the study with significant reductions in the inflammatory and non-inflammatory lesions (P values 0.0012 and 0.0081, respectively) with overall lesion counts at the final assessment ranging from 60% to 97.1%, and acne grades in the IGA dropping by an average of 1.67 (range 1 to 3 grades). There was no significant difference in lesion counts or acne grades between the subjects who had 6 treatments and those who had 5 (P = 0.7695). Mild pain was reported during treatment, and no adverse events were reported by either the subjects or investigator.

**Conclusions:** The FTL at the parameters used in the present study caused disruption to the upper portion of the affected follicles and sebaceous glands under an intact stratum corneum, thereby destroying or damaging the causative Cutibacterium acnes. The superficial controlled coagulation additionally induced follicular remodeling and tissue regeneration, potentially contributing to the noticeable results in inflammatory and noninflammatory acne lesions.

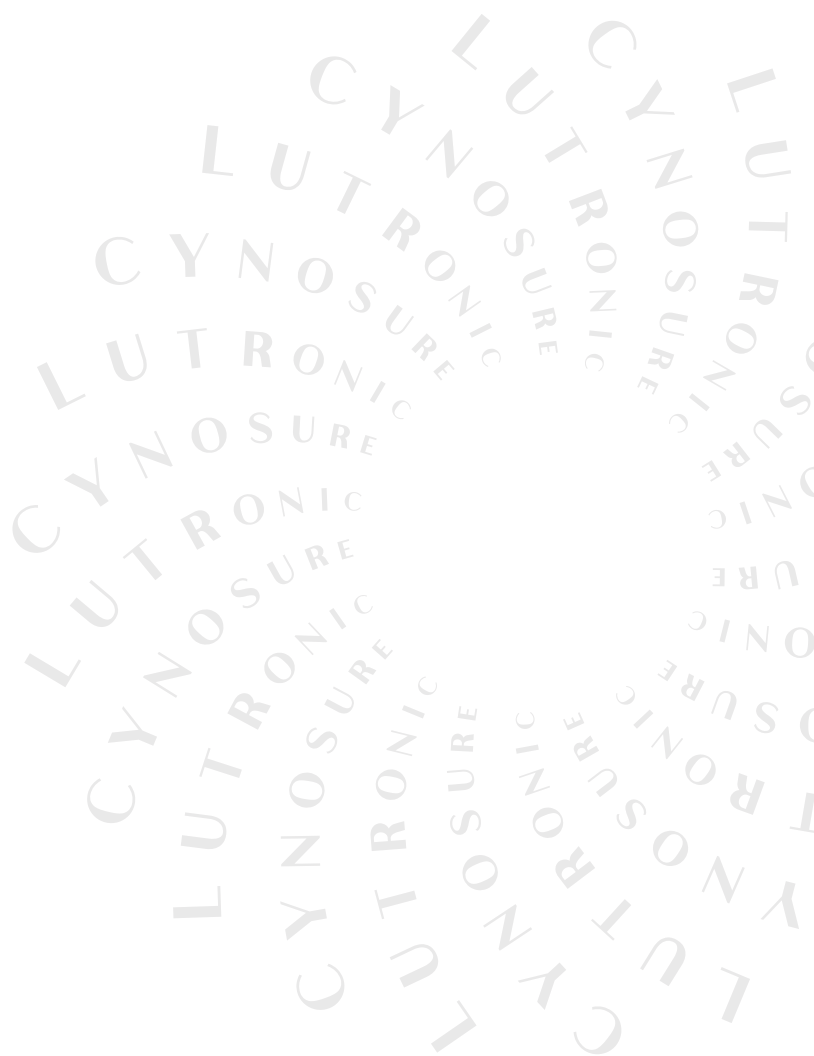


## **Efficacy of dual-frequency noninvasive monopolar radiofrequency in skin tightening: Histological evidence**

**Hong J, Ryu HG, Park C, Park J, Kim K, Lee KMM, Chun SI.**

Skin Res Technol. 2024 Jun;30(6):e13821. doi: 10.1111/srt.13821. PMID: 38881041; PMCID: PMC11180671.

The study finds that the novel NMRF device, XERF, leads to immediate thickening of collagen bundles and significant changes in superficial and deep fascial layers. This suggests enhanced dermal penetration and therapeutic efficacy, with potential benefits for improving skin texture, elasticity, and deeper skin concerns, warranting further research on its long-term clinical outcomes.



# Monopolar radiofrequency for dermal temperature regulation and remodeling: A porcine model study

Park C, Hong J, Ryu HG, et al

J Cosmet Dermatol. 2024;00:1-6. doi:10.1111/jocd.16495

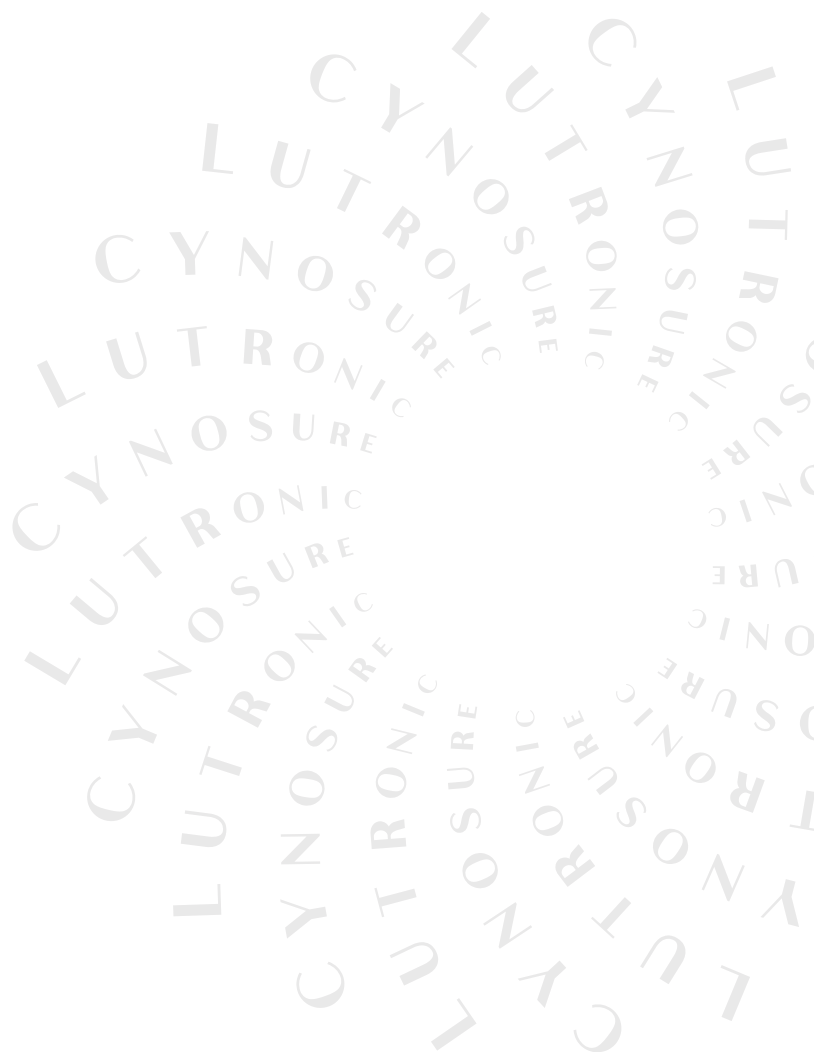
**Background:** Noninvasive monopolar radiofrequency (NMRF) is widely used for dermal and subdermal volumetric heating, yet detailed research on its effects on dermal temperature is scarce.

**Aims:** This study evaluates the impact of NMRF on dermal temperature and its potential for dermal remodeling using a porcine model.

**Methods:** Noninvasive monopolar radiofrequency was applied to porcine skin with temperature monitoring via optic fiber technology and forward-looking infrared thermal imaging. Safety was evaluated using nitro blue tetrazolium chloride assessments, and effectiveness was determined through histological examinations before and after treatment.

**Results:** Noninvasive monopolar radiofrequency treatment in a porcine model achieved effective dermal remodeling with no thermal damage, recording peak temperatures of 50 ° C, 60 ° C, and 70° C. Histological analysis showed increased collagen density, indicating successful tissue remodeling.

**Conclusion:** Noninvasive monopolar radiofrequency is effective in delivering controlled dermal heating and enhancing collagen synthesis, promoting safe and efficient skin tightening and dermal remodeling in a porcine model. It presents a viable option for skin rejuvenation therapies.



# Evaluation of Safety and Efficacy of Same-Session, Dual-Wavelength Protocol with Long Pulsed 755nm Alexandrite and 1064nm Nd: YAG Laser in Facial Contour, Skin Laxity, Uneven Skin Tone, and Erythema

Angela Lee

American Society for Laser Medicine and Surgery Abstracts (2024)

**Author:** Angela Lee

## THE SKIN ORACLE

**Background:** The long-pulsed neodymium-doped yttrium aluminum garnet (Nd:YAG) laser has a well-established track record of safety and efficacy in addressing key manifestations of photoaging, including wrinkles, sagging, skin laxity, erythema, uneven texture, and pigmentation. Its specific wavelength of 1064 nm enables profound dermal photothermal damage, leading to enhanced collagen synthesis and dermal remodeling. Although long-pulsed alexandrite laser lacks sufficient data on its effectiveness in skin rejuvenation, it is widely used for treating vascular conditions, benign skin lesions, and hair removal. However, existing studies often experiment with restricted parameters, such as single wavelength, spot size, energy density, or pulse duration. Given the potential for different penetrative depths and interactions with chromophores under combined exposure, our hypothesis posits that the alexandrite laser may offer further regenerative benefits, contributing to an overall improvement in facial contour, skin laxity, uneven skin tone, and erythema.

**Study Design/Materials and Method:** The purpose of this study is to evaluate the safety and efficacy of addressing different skin layers and chromophores using a dualwavelength long-pulsed laser (755 and 1064 nm) for treating facial contour, laxity, uneven skin tone, and erythema.

A total of 20 participants aged 40-65 years with Fitzpatrick phototype III-IV were enrolled in this case series. The study utilized a dual-wavelength long-pulsed alexandrite and Nd:YAG laser (Elite IQ, Cynosure, US). Four sequential laser parameters

were applied in a single treatment session over the full face: (1) Long-pulsed 1064 nm, 15 mm spot size, 300 ms, 23-25 J/cm<sup>2</sup>; (2) 15 mm spot size, 50 ms, 23-25 J/cm<sup>2</sup>; (3) 5 mm spot size, 0.4 ms, 16 J/cm<sup>2</sup>; and (4) Long-pulsed 755 nm, 15 mm spot size, 150 ms, 10 J/cm<sup>2</sup>. Follow-ups were conducted at 2 weeks and 1 month following the final treatment. Participants rated their satisfaction using a 10-point Patient Satisfactory Index (PSI) for jawline contour, skin laxity, erythema, and uneven skin tone, along with a Visual Analog Scale (VAS) for pain tolerance. Clinical photographs were taken before and after treatment at 2 weeks and 1 month using the VISIA system (Canfield, US), which were then individually evaluated by the operating physician.

**Results:** The dual-wavelength long-pulsed 755nm/1064nm laser demonstrates significant improvement in facial contour, skin laxity, erythema, and uneven skin tone. At 2 weeks, 92% of participants noted improvement to a certain extent (grade 5 or higher on a 10-point PSI scale) in facial contouring and skin laxity, with 70% and 100% reporting improvements in erythema and uneven skin tone, respectively. By 1 month, a decline in PSI was observed to 60%, 66%, 66%, and 47% for the four outcome measures. Pain during the procedure was generally well tolerated, with participants reporting mild to moderate discomfort (averaging 3-4 on a 10-point VAS scale). No serious adverse events were reported.

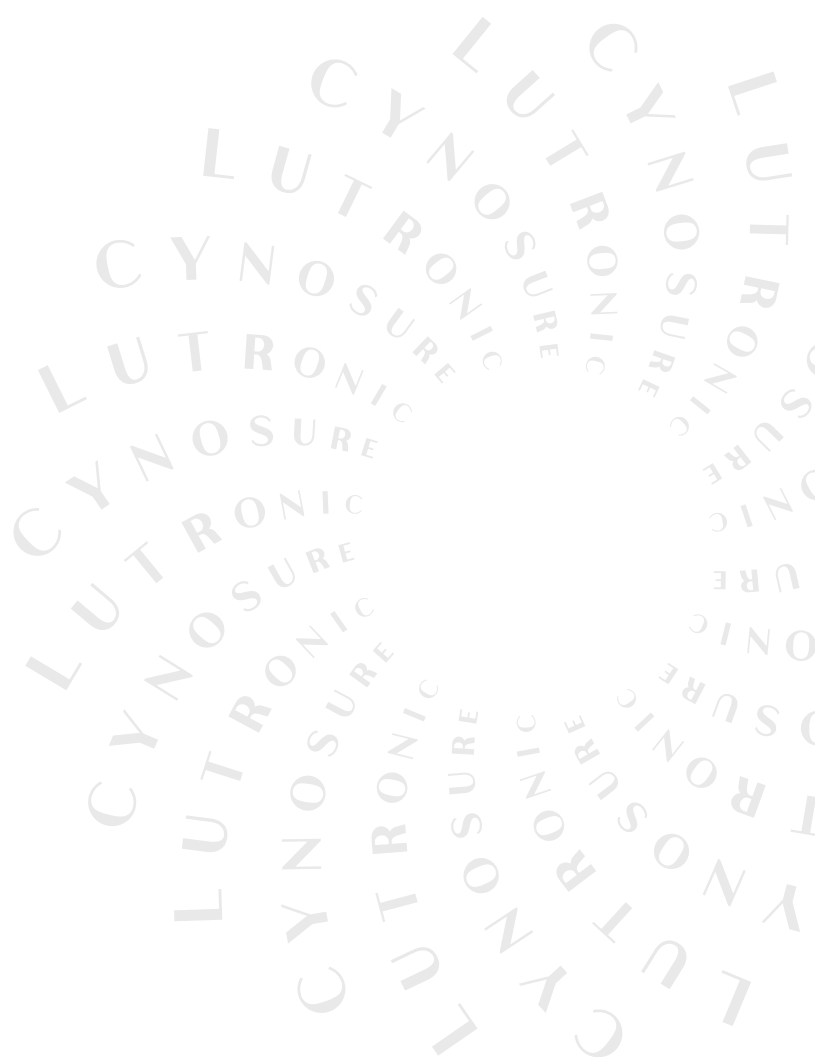
**Conclusion:** In conclusion, the dual-wavelength long-pulsed alexandrite and Nd:YAG laser offer safe and effective solutions for addressing aged contour, laxity, uneven skin tone, and erythema. Although the effects persist over a 1-month period, the decline in PSI suggests the need for further maintenance sessions.

# Treatment of Palmar Hyperhidrosis With Radiofrequency Microneedling-Based on Ultrasound Measurements

**Won Oak Kim**

J Ultrasound Med 2024 Apr;43(4):807-809. doi: 10.1002/jum.16402

This study addresses the treatment of palmar hyperhidrosis, which has been difficult to manage. A new treatment has been developed using radiofrequency microneedling to reduce sweating non-surgically by ablating sweat glands. Based on ultrasound measurements of the dermis and precise microneedling damage, effective energy was applied to locate the sweat glands and disabled their function. Radiofrequency microneedling with ultrasound can safely and effectively treat hyperhidrosis in a minimally invasive way.





# Efficacy of Early Pulsed Dye Laser Intervention for Improving Traumatic or Post-Operative Scars in Asian Patients

Chang Cheng Chang, Han-Yuan CHANG, Yen-Jen Wang, Yu-Tsung chen

American Society for Laser Medicine and Surgery Abstracts (2024)

**Authors:** Chang Cheng Chang, Han-Yuan CHANG, Yen-Jen Wang, Yu-Tsung chen

China medical university hospital

**Background:** This retrospective study evaluated and compared the efficacy of early and late pulsed dye laser (PDL) treatment for traumatic or postoperative scars.

**Study Design/Materials and Method:** The medical records of 147 patients who underwent PDL treatment at our institution between January 2018 and December 2022 were retrospectively reviewed. The inclusion criteria were patients receiving PDL treatment for traumatic or postoperative scars. Of those who met this criteria, 52 patients agreed to participate in the study. A standardized questionnaire was administered that included questions on medical history, treatment experiences, and the patient component of the Patient and Observer Scar Assessment Scale (POSAS) during telephone interviews. Among the enrolled patients, 38 were contacted and interviewed via telephone, while the remaining 14 attended follow-up visits, where photographs of their current skin condition were taken. The pre-treatment and latest follow-up photographs obtained from the clinical database were independently scored by two dermatologist reviewers who were blinded to the treatment, using the Vancouver Scar Scale (VSS) and the Manchester Scar Scale (MSS).

**Results:** Among the 52 patients, 43 exhibited good treatment outcomes. The correlation coefficients between week-to-treatment initiation and Post-treatment MSS and VSS were 0.50 ( $p < 0.001$ ) and 0.46 ( $p = 0.002$ ), respectively. The early treatment group (defined as treatment at  $\leq 10$  weeks) included 22 patients, whereas the late treatment group included 21 patients. The former group exhibited significantly lower Posttreatment MSS and VSS scores than the latter (MSS:  $7.5 \pm 2.1$  vs.  $9.3 \pm 2.5$ ,  $p = 0.011$ ; VSS:  $2.8 \pm 2.0$  vs.  $4.5 \pm 2.3$ ,  $p = 0.011$ ). Furthermore, the early treatment group exhibited significantly greater improvement in MSS and VSS Post-treatment compared with pretreatment (MSS:  $4.4 \pm 1.6$  vs.  $3.2 \pm 1.9$ ,  $p = 0.03$ ; VSS:  $3.8 \pm 1.8$  vs.  $2.8 \pm 1.4$ ,  $p = 0.04$ ).

**Conclusion:** Early PDL intervention for traumatic and postoperative scars within 10 weeks of injury resulted in better treatment outcomes, as evidenced by clinical and patient opinions.

# Adjuvant Pulsed Dye Laser Therapy for Post-Auricular Keloid Excision

**Khor Shih Chieh, Chang Cheng Chang**

American Society for Laser Medicine and Surgery Abstracts (2024)

**Authors:** Khor Shih Chieh, Chang Cheng Chang

China Medical University Hospital, Taichung City, Taiwan

**Background:** Incidence of keloid scars is higher among the Asian and post ear-piercing auricular keloid scars could commonly noticed. Combination therapy was common treatment strategy to auricular keloids. Recurrence rate after treatment to auricular keloid varies among different studies.

Disadvantages of different treatment strategies was reported. Pulsed dye laser (PDL) played a role in modulation of Transforming growth factor- $\beta$  (TGF- $\beta$ ), to reduced inflammation and vascularity with minimal pain. Adjuvant Pulsed dye laser therapy should be a reasonable combination therapy after surgical excision of auricular keloid.

**Study Design/Materials and Method:** In this retrospective study, case series with auricular keloid between year 2020 and 2023 were analyzed. A We performed surgical excision of the auricular keloid following by sequential PDL treatment. First PDL therapy will be initiated 1 month after excision surgery and followed by once a month thereafter. The treatment parameters were fluence of 8.5–9.0 J/cm<sup>2</sup>, spot size 7mm, and pulse duration of 6ms. Outcome was defined as recurrence of auricular keloid and evaluated the lesion site with Vancouver Scar Scale (VSS) and Manchester Scar scale (MSS) score.

**Results:** Ten cases with auricular keloid, aged 22–40 years were analyzed. The treatment result followed ranged from 2 months to 32 months (median 7 months) and with PDL number ranged from 1 to 7 (median 4). No auricular keloid recurrence noticed among the cases and the median lesion site VSS score was 4(2–7), MSS was 8(6–9).

**Conclusion:** Adjuvant PDL therapy for post-auricular keloid excision was a reasonable treatment strategy with low recurrence and ideal VSS and MSS score that comparable to results on other combination treatment strategy, especially radiotherapy. PDL showed comparable recurrence rate, less remarkable complication, especially in the consideration on carcinogenesis or cartilage fibrosis and better patient compliance compared to radiotherapy. In purpose of prevention on the recurrence after surgical excision of auricular keloid, PDL should be a ideal choice of adjuvant therapy.

Maximizing Patient Outcomes Through Clinical Research

**THANK YOU** / Our Clinical Pioneers



**Prof. Niwat Polnikorn**



**Prof. Zhen Zhang**



**A. Prof. Chang Cheng Chang**



**A. Prof. Xiang Wen**



**A. Prof. Takeshi Fukumoto**



**Dr. Kentaro Oku**



**Dr. Davin Lim**



**Dr. Putri Hendria Wardhani**



**Dr. Soo Il Chun**



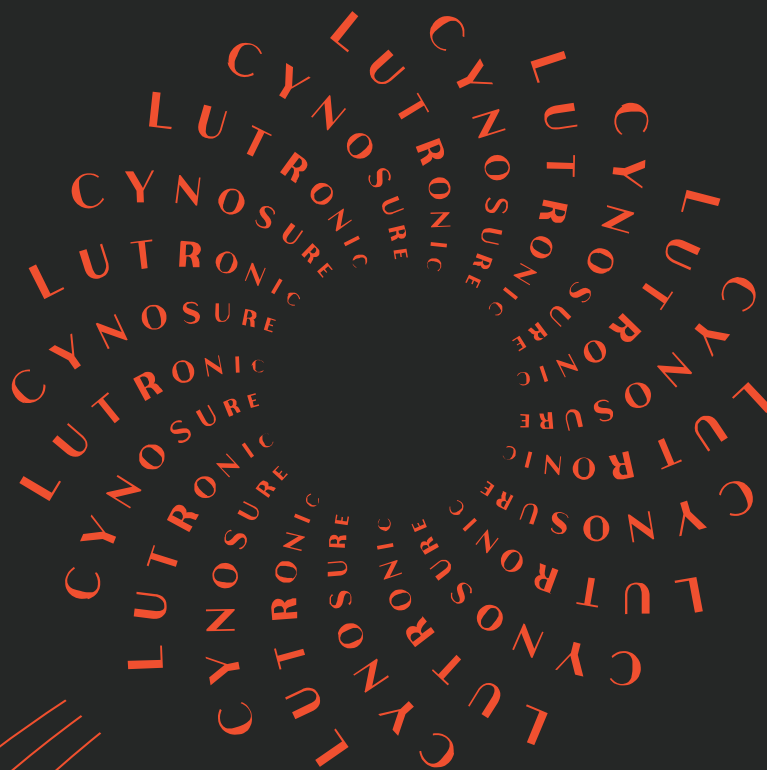
**Dr. Won Oak Kim**



**Angela Lee**



**Dr. Khor Shih Chieh**



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