



Review of effectiveness and safety of picosecond Nd:YAG laser compared to Q-switched laser for treatment of common pigmentary condition in Asian skin

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Introduction:

Picosecond laser technology has transformed the field of aesthetic medicine. Despite its growing popularity, the efficacy of picosecond laser technology in aesthetic medicine remains an active area of research. A comprehensive evaluation of the effectiveness of picosecond lasers in various aesthetic treatments is crucial to determine its full potential and guide the optimal use of this technology in clinical practice.

Laser	StarWalker PQX		
	Step 1	Step 2	Step 3
Wavelength	1064 nm	1064 nm	1064 nm
Handpiece	Black	Black	Black F5
Fluence	1.8 J/cm ²	0.4 J/cm ²	2–3 mJ/pixel
Mode	PICO	PICO	PICO
Spotsize	4 mm	10 mm	5x5 mm
Frequency	7–10 Hz	7 Hz	5 Hz
Passes	Multiple passes	Multiple passes	2–3 passes
Endpoint	–	–	Erythematous, petechiae
Anesthesia	Numbing cream	Numbing cream	Numbing cream
Target	Pigmented area	Whole face	Whole face
Sessions	2 sessions, one months apart		



Dr. Wong Yeut Sun completed his medical training at the National Defense Medical Center in Taipei, Taiwan in 2011. From 2011 to 2013 he performed internships in the Dermatology Department of Tainan ChiMei Hospital and the Plastic Surgery Dept. of Taipei Veteran General Hospital. After working as a Medical Officer at the Sungai Buloh and Tawau hospitals, he began his current position in 2017 as an aesthetic physician in the Davinci Clinic at the National Taiwan University Hospital in Taipei.

CLINICAL CASE:

This is a 39-year-old female with uneven skin tone and dyspigmentation came to my clinic 1 year ago. At that point of time, there is only Q-switched laser in my clinic and as shown in the photos, there was some improvement on the pigmentation however patient is not satisfied. With the new addition of PQX to our clinic arsenal, with just 2 sessions of PQX, settings shown in the table, patient is happy with the result and there is no side effects reported. This is to show that picosecond laser is good in treating dyspigmentation issue in Asian skin effectively and safely. EMLA cream was applied for 40 minutes on interest area prior to the treatment. The first step is to target pigmented area with BLACK handpiece, spot size 4mm, fluence 1.8 J/cm² as shown in the table. The second step is to target the whole face with spot size 10mm, fluence 0.4 J/cm². Multiple passes were done. The third step is targeting the whole face with Black F5 handpiece, 2-3 mJ/px and 2-3 passes were done. The endpoint is mild erythematous and petechiae. Pain was tolerable throughout. Moisturizer and sunscreen were applied to patient after treatment. Advice for patient was to avoid long period, extreme sun exposure. In conclusion, the use of picosecond lasers in pigmentation treatment has shown promising results compared to nanosecond lasers. Picosecond lasers can deliver shorter pulse durations, resulting in better targeting of the melanin in pigmented lesions while minimizing damage to surrounding tissues. The shorter pulse duration also leads to fewer treatment sessions and faster healing time for patients. However, more research is needed to evaluate the long-term effectiveness of picosecond lasers and also the recurrence rate of pigmentation. In order to get the best result, clinicians should carefully consider the specific needs and conditions of their patients when choosing the appropriate laser treatment for pigmentation.



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