

Optimising Q switched laser for pigmentary conditions in skin of colour

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Q switched ND YAG (QSNY) laser is an established treatment for epidermal & dermal pigmented lesions. It has been the choice of laser for nevus of Ota, hori's nevus & tattoos. It's role in melasma & other acquired dermal melanoses, however is not clear . QSNY laser targets melanosomes in melanocytes, keratinocytes & melanophages. The laser has ultra-short pulse width (nanoseconds), adjustable spot size and two wavelengths a longer (1064 nm) & a shorter wavelength (532 nm). Longer wavelength is ideal for dermal lesions . Large spot size up to 10 mm allows deep penetration of the laser beam. Depth of penetration is directly proportional to the spot size of the beam. The laser is also available with a fractional handpiece in which the laser beam is split into microbeams delivering laser energy to a fraction of the area treated. In addition there is a top-hat beam profile in which uniform energy is distributed over a given spot size area without producing hot spots . A few precautions may be followed to treat dark skin with QSNY. Broad-spectrum sunscreens should be used prior to starting & throughout treatment . Priming with HQ, kojic acid, or non- HQ lighteners (2 to 3 weeks prior), test spots to choose the right fluence, individualizing treatment parameters for the patient, using laser with a "top-hat" beam profile, large spot size & lower fluences help to avoid complications. Avoiding stacking & too much overlap while treating, cooling the treated area with continuous air cooling , postoperative ice pack application for a few minutes and application of emollients & a steroid ointment (if blistering anticipated) can optimize treatments and achieve best results in skin of color. Several studies have been conducted in melasma but laser toning with a Q-switched 1064 nm Nd:YAG laser with a 10 mm spot size at 1.2 J/cm², 10 Hz repetition rate with a multi pass technique to an end-point of erythema without frosting, done once in 2 weeks for 6–10 sessions works best . In acquired dermal melanosis pigment incontinence & dermal melanophages leads to grey macular pigmentation. Pathology is dermal or mixed epidermal-dermal. Longer wavelength 1064nm is preferred due to its deeper penetration Multiple sessions are needed for successful outcomes. For Lichen planus pigmentosus, as the disease activity ceases, pigmentation can be tackled by QSNY laser. Multiple (around 5) sessions of Q-switched Nd:YAG at 4–6 week intervals using a large spot size & moderate fluences is efficient. In melasma QSNY is performed in resistant cases when medical therapy fails or patient is intolerant to topical medication. Most positive evidence for QSNY in darker skin is in laser toning (low fluence, multi-pass technique). Nevus of Ota & Hori's nevus respond well to QSNY. LPP should be treated when the condition has stabilized