

Laser treatment for pigmentation

Sunspots and freckles

In lesions such as solar lentigines (sun induced age spots), lentigo simplex and ephelides (freckles) the pigment (melanin) is in the top layers of the skin.

Many lasers that selectively target melanin or simply remove the top layers will lead to improvement. One to two treatments will be necessary.

There are many non-laser treatment approaches to treat such spots. However, if laser therapy is chosen, there are many different types of laser that can be used including Q-switched lasers [Q switched (QS) alexandrite, QS ruby (694nm)], long-pulsed, fractionated thulium (1927nm) and ablative lasers.

IPL (filter 500-600nm) can also be very effective. However, it is common to see the pigmentation return over time. Treatments need to be avoided if the skin is tanned because this greatly increases the risk of complications.

Seborrhoeic warts and dermatosis papulosa nigra

Some conditions that present as dark spots are in fact wart-like and sit on the surface of the skin such as seborrhoeic keratoses and dermatosis papulosa nigra and epidermal naevi. These conditions require physical removal. This is most commonly treated with a curette if thick or with fine wire diathermy particularly for the dermatosis papulosa nigra. Ablative lasers may also be used including CO2 in combination with a curette or an erbium YAG laser which reliably gives the best results. These lesions have a tendency to return over a number of years and maintenance treatments may be needed.

Pigmented birth marks – Becker's naevus

Current lasers are unable to remove pigmented birthmarks without scarring. The best advice is to avoid treatment of the pigmentation in these cases.

Pigmented birth marks – Congenital and acquired melanocytic naevi (moles present at birth and moles that appear after birth)

Laser treatment of pigmented naevi may complicate accurate diagnosis of moles due to the subsequent re-pigmentation. Avoid any laser treatment if any suspicion of melanoma exists. Surgical excision (removal) remains the mainstay of treatment for any suspicious naevi.

Many different lasers have been tried in the treatment of benign melanocytic naevi.

Laser treatment is best used only in those cases where there is a very low risk of melanoma or where the appearance is greatly troubling for the individual.

Combining treatment with CO2 laser (10600nm) or erbium YAG laser (2940nm) and frequency doubled QS Nd:YAG (532nm) has been used to treat the congenital naevi. Fractionated ablative lasers, fractional erbium YAG lasers (2940nm) and fractional CO2 lasers (10600nm) have been trialled more recently.

Pigmented birth marks – naevus of Ota and Hori

Pigment-selective lasers have largely superseded other treatments in the management of naevus of Ota. As the melanocytosis in naevus of Ota is mostly in the deeper layers of the skin, longer wavelength QS lasers and the newer picosecond lasers 694nm, 755nm, 1064nm may be trialled. Many treatments will be necessary to lighten the pigmentation gradually.

Melasma

Lasers are not the first line therapy for melasma due to the high-risk hyperpigmentation reappearing after laser treatment. In some cases, laser can make melasma worse. Consultation with a dermatologist is highly recommended prior to embarking on any laser therapy for this chronic condition.

Lasers play only a supporting role in treating melasma and may be used in conjunction with topical therapy (creams).

Many lasers have been trialled as a last resort in cases of medication resistant melasma. These include fractionated thulium (1927nm) non-ablative laser, fractionated Er:glass non-ablative laser (1,550nm), low fluence QS Nd:YAG (1064nm) non-ablative laser, fractional erbium YAG (2940nm) ablative laser and fractional CO2 laser (10600nm) ablative and IPL .

Of these lasers, the low fluence QS Nd:YAG is the most gentle and safest. However, multiple and frequent treatment is required and recurrence is common. Unfortunately, there is a high risk of worsening the condition if more aggressive laser treatment is used.

Strict sunlight protection and topical treatments such as hydroquinone, azelaic acid and topical retinoids remain first-line treatments at present. Many other topical agents are available including Kojic acid, ascorbic acid and niacinamide. A dermatologist's opinion is best sought when deciding which is best to use.

When using topical agents, care should be taken to avoid any irritation (reddening, itching or darkening). If this happens the topical agent should be stopped and adjusted appropriately as any form of skin irritation runs the risk of darkening melasma

Other anti-inflammatory agents are often used in combination to avoid any irritation which can add to the hyperpigmentation.

Post-inflammatory hyperpigmentation

Post-inflammatory hyperpigmentation is treated in a similar manner to melasma. This is a very difficult condition to treat. It is likely that future fractionated pigment specific lasers of 532nm wavelength will be helpful.