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Fractional 1064 nm Nd:YAG Treatment of Port Wine Stains

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SUMMARY

Port-wine stains (PWS) are a congenital, progressive capillary vascular malformation of the skin, occurring in 0.3% to 0.5% of newborns [1]. A port wine stain is usually a large flat patch of purple or dark red skin with well-defined borders, frequently darkening at puberty because of progressive dilation of the abnormal vessels.

Pulsed dye laser (PDL) is the therapy of choice for port wine stains, but the low penetration depth of PDL has some limitations in deeper port wine stain types [2]. There are several reports describing safe and effective use of 1064 nm lasers for treatment of different vascular lesions as well as port-wine stains [3, 4], but some caution is needed when using Nd:YAG laser to treat PWSs, because the 1064 nm wavelength penetrates deeper into the tissue and may cause scarring of vascular and normal tissues.

To avoid scaring, we developed a "fractional" technique using small spots (2 mm), with which in one session only up to 30% of the lesion is treated in a fractional manner (see Fig. 1), leaving sufficient non-treated space to enable healing without adverse effects. In a period of several years we treated 88 PWS patients, 47 of whom completed treatment, while 41 are still under treatment.

Our typical parameters for fractional 1064 nm Nd:YAG treatment of PWS are: 2.0 mm spot size, fluence 200 J/cm^2, pulse width 0.6 ms and frequency 1.6 Hz. Skin cooling during treatment is provided by use of cold air or ice packs. The number of sessions depends on the size and thickness of PWS and is in the range from 4 to 15.

The results are very good – with most patients we achieved almost full clearance (like the case shown in Fig. 2) with a minimal number of adverse effects.

Fig 1: A young female patient with PWS (resistant despite dozens of PDL and LPD treatments) treated with fractional Nd:YAG.

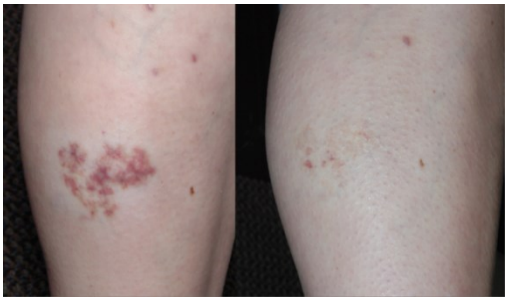

Fig 2: Resistant PWS before and after 8 sessions of fractional 1064 nm Nd:YAG.

In conclusion, when used with due caution, fractional 1064 nm Nd:YAG is an excellent tool for treatment of resistant PWS.

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