



## Short-Pulse Nd:YAG Treatment for Port-Wine Stain

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### Introduction:

Port-wine stain (PWS) is a common congenital vascular malformation characterized as ectatic capillaries and venules in the dermis that clinically appears as a deep red to purple patch on the skin. Laser treatments provide improvement through selective destruction of vasculature. Even though the pulse-dye laser stands out as the treatment of choice, different vascular-specific lasers can be employed. Three cases of PWS treated successfully with Nd:YAG laser are presented.

Laser	Fotona SP Dynamis
	<b>Nd:YAG</b>
Wavelength	1064 nm
Handpiece	R33T
Mode/Pulse	FRAC3 0.6-1.6 ms
Spot Size	2-4 mm
Fluence	130-260 J/cm <sup>2</sup>
Frequency	1 Hz
Air	5-7
Passes/Repeats	1 pass, sparse spots
Sessions	1 session per month for 8-10 months



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### CLINICAL CASE 1:

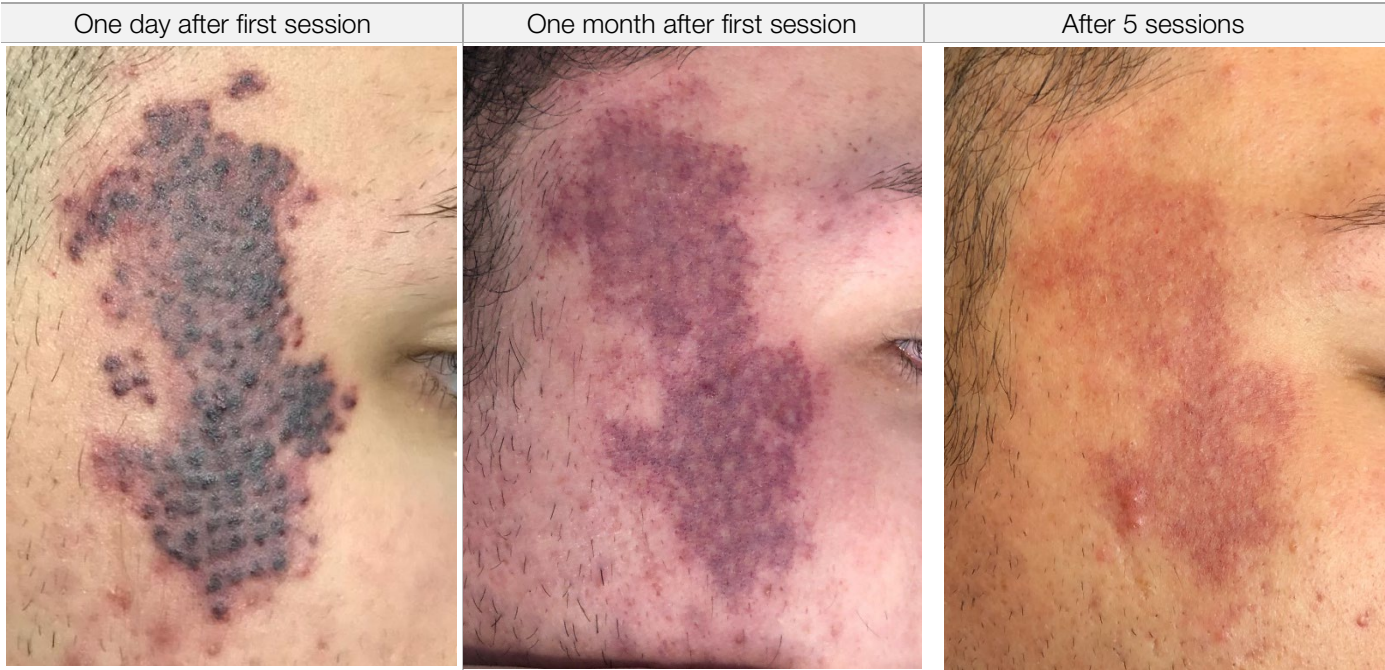
A 19-years-old male patient presented with a dark purple patch covering his right temple, extending to his cheek. The lesion was diagnosed as a port-wine stain and Nd:YAG treatment with FRAC3 modality was planned. Even though it's not a standard protocol for vascular lesions, an anesthetic cream was applied to avoid severe pain due to the dense vasculature.

Local anesthetic cream containing lidocaine was applied 20 minutes prior to the procedure.

Using the R33T handpiece with 2 mm spot size, 170-180 J/cm<sup>2</sup> with a pulse duration of 0.6 ms was applied sparsely on the entire lesion. The same parameters were applied to the non-treated spots in the 2<sup>nd</sup> session after one month. Raising the fluence 10 J/cm<sup>2</sup>

every session, 200 J/cm<sup>2</sup> was reached at the end of the 4<sup>th</sup> session. In the 5<sup>th</sup> session the spot size was shifted to 4 mm with 130 J/cm<sup>2</sup> and 1.6 ms energy settings. Raising the fluence in every session for a total of 8 sessions, we reached the settings of 4 mm with 180 J/cm<sup>2</sup> and 1.6 ms during the last session.

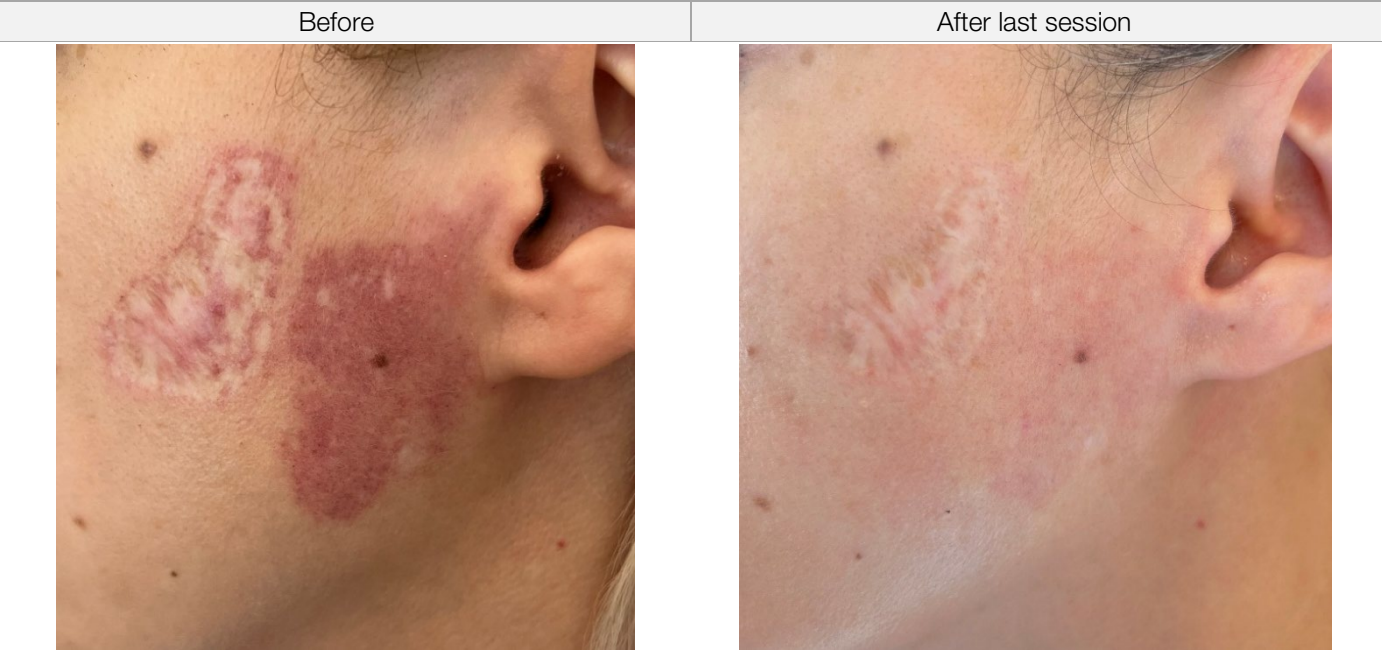
A darkening of the color of the lesion was observed after the treatment. Strict sun protection was advised to the patient during the whole treatment duration.



### CLINICAL CASE 2:

A 43-year-old female patient was referred to our clinic with two PWS patches on her left cheek, one of which had an unsuccessful trial of laser treatment. A 4x3 cm atrophic scar with remaining vasculature in places was detected during examination of the medial stain. The type of the laser used for the previous treatment was not known by the patient. Nd:YAG treatment for the PWS followed by Er:YAG treatment for the scar was planned. Local anesthetic cream containing lidocaine was applied 20 minutes prior to the procedure. The parameters for the first session was 200 J/cm<sup>2</sup> fluence, 1 ms pulse duration, 2 mm spot size and 1Hz frequency. Raising the fluence every 2-3 sessions and lowering the pulse duration after the 4<sup>th</sup> session, a total of 6 sessions were performed. The parameters for the last session were 260 J/cm<sup>2</sup> fluence, 0.6 ms pulse duration, 2 mm spot size and 1 Hz frequency. One session of Er:YAG treatment was applied to the scarred lesion using the FS01 handpiece, LP mode and 58 J/cm<sup>2</sup> fluence, followed by injection of bovine collagen (Salvecoll, Italy). The treatment result of the PWS was satisfying for both the patient and the doctor; further treatment of the scar tissue was suggested.





**CLINICAL CASE 3:**

A 23-year-old female patient presented with a purple PWS located medially on the left side of her forehead and upper eyelid. Nd:YAG treatment with FRAC3 modality was planned. Local anesthetic cream containing lidocaine was applied 20 minutes prior to the procedure. An intraocular metal shield was used to protect the eye for the eyelid treatment. Using the R33T handpiece with 2 mm spot size, 180 J/cm<sup>2</sup> with a pulse duration of 0.6 ms was applied, paying attention that the spots were distributed sparsely. The fluence was raised to 200 J/cm<sup>2</sup> for the 3<sup>rd</sup> session. After the 3<sup>rd</sup> session, a switch to 4 mm spot size was made for the faded areas on the forehead, and the fluence was lowered to 130 J. The forehead part of the lesion had nearly totally disappeared after the 8<sup>th</sup> session; the parameters for this session were 4 mm spot size, 220 J/cm<sup>2</sup> fluence and 0.6 ms pulse duration. A total of 12 sessions were needed for the eyelid part of the lesion, and the fluence with the 2 mm spot size was raised up to 260 J/cm<sup>2</sup> for the last session. The intervals between the sessions were at least 1 month.

A darkening of the color of the lesion was observed after the treatment. Strict sun protection was advised to the patient during the whole treatment duration.

