Treating Periorbital Veins with A Long-pulsed ND:YAG Laser

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Nd:YAG lasers are commonly used for various vascular lesions, such as leg veins. In this month’s column, our guest editor, Dr. Mark Taylor, discusses his technique for using Nd:YAG lasers for periorbital veins, a common cosmetic concern. — Drs. Cohen and Berlin

Periorbital veins (POV) constitute a common cosmetic concern for our patients, most of whom do not know that there is a quick and efficient treatment option available. Some have even been told a number of times that there is no treatment.

Anatomically, periorbital veins start at the bridge of the nose near the medial canthus, course along the tear trough laterally, cross over the lateral periorbital rim and then ascend over the lateral forehead to the scalp. Multiple branches are the norm. Sometimes small vertical veins may be seen arising directly underneath the eyelashes on the lower lid or above the lashes in the upper lid. Small veins below the lower lid lashes connect with larger veins in the tear trough area.

Periorbital veins can be successfully treated using a long-pulse Nd:YAG laser. A note of caution must first be stated regarding the laser. Nd:YAG lasers are extremely dangerous lasers to use around the eye if adequate eye protection is not used. Whenever working near the orbit, the entire globe should be protected with metal scleral shields.1,2

Dr. Taylor’s Technique

I use one of several long-pulse ND:YAG lasers (Candela Gentle YAG, Cynosure Synergy, Fotona Dynamis) to treat POV. When treating 2-mm to 3-mm diameter veins, I may use the
Cynergy laser on YAG only. I use a 3-mm spot size at 20 ms pulse duration, fluence of 140 to 180 joules/cm² (160 most of the time) and 1 Hz. An assistant using two cotton tipped applicators blocks the flow of blood through the vein by pressing on either end of a vein segment several centimeters in length. I will use an ice-cube-on-a-stick intermittently between 2 to 4 pulses of the laser in focused mode. The observed response is for the blue within the vein to immediately disappear while leaving the overlying skin color normal. If the skin turns grey or white, too much fluence is being used and the skin may blister and scar. If too little fluence is used, the blue color of the underlying vein will not disappear and the treatment will not be effective. With the correct application, the blood within the veins is superheated and coagulated. It is important to understand and also explain to the patient that it may take a month or more for the vein itself and all of the coagulated blood within the vein to disappear. One treatment is usually sufficient; however additional treatments can be performed at one-month intervals if necessary to achieve an optimum result.

*Editor's Note: Please click on each image to see the full-size version. Photos courtesy of Mark Taylor, MD*

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**Figure 1 (left):** Veins on the upper eyelid are usually darker blue with slower flow and are more responsive to treatment.

**Figure 2 (right):** Small veins on the lower eyelid have a faster flow and may be more difficult to treat.

Small veins on the lower eyelids have a faster flow and are more difficult to treat. A smaller spot size (1 to 2 mm) and a higher fluence (200+ joules/cm²) are used. These tiny veins are too small to occlude and stop blood flow using cotton tipped applicators, so treatment is done with the ice-cube-on-a-stick and the laser alone. I find a 20-ms pulse duration to also work well for these veins. Other settings can be used by adjusting the pulse duration and fluence. If you are extremely versed in the use of the long-pulsed Nd:YAG laser, you can choose other settings that will also be safe and efficacious.

Veins on the upper eyelid, immediately above the eyelashes can also be treated using a similar technique. These veins are usually darker blue with slower flow and are more responsive than lower eyelid veins. Some vessels adjacent to the eyelashes may be arterioles and may not respond to treatment because of the high-pressure blood flow through these vessels.
Following a successful treatment, the skin will appear flushed over the veins, however there will be no white or grey discoloration of the skin. Ice packs may be applied for a few minutes after treatment is complete. No follow-up post-operative care is needed.

There is a narrow margin of safety and efficacy in treating periorbital veins with long-pulse ND:YAG lasers, so training with an expert is advisable. Mistreatment can cause serious burns and scars. Treatment of POV is not a novice level treatment skill. One must be attentive to the laser tissue interaction that is observed during the treatment, recognize what is happening and be willing to stop and change settings if the response is not as expected.

Precautions include never stacking pulses when treating POV. Once again, remember complete eye protection with metal scleral shields is essential.

The skill to treat periorbital veins with long-pulse Nd:YAG lasers can be easily acquired, allowing for a safe and effective therapeutic option for the patient.

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**Disclosure:** Dr. Cohen is a speaker and trial participant for Palomar.

Dr. Berlin has no disclosures to report.

**References**
