Using an 810-nm Diode Laser to Remove a Venous Lake

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**INTRODUCTION**

A venous lake lesion is a common occurrence in many dental patients and manifests as a dark blue-to-violet compressible papule caused by dilation of venules. It was first described in 1956 by Bean and Walsh, who noted how these lesions can be easily compressed and their tendency to occur on sun-exposed skin, especially on the ears of elderly patients. Although venous lakes may be considered clinically insignificant from a biological standpoint, they are important because of their resemblance to more ominous lesions, such as melanoma and pigmented basal cell carcinoma. The clinician is reminded to consider differential diagnosis to ensure proper treatment planning.

The development of venous lakes is believed to be exacerbated by solar exposure and damage. One theory is that chronic solar damage injures the vascular adventitia and the dermal elastic tissue, permitting dilatation of superficial venous structures. Vascular thrombosis also may play a role in the development of these lesions because it is commonly present in lesions of this type. Whether thrombosis is a primary or a secondary event in the development of these lesions is unclear.

Although the exact incidence is unknown, venous lakes are typically considered biologically harmless. Although they are usually asymptomatic, pain, tenderness, and bleeding can occur once a lesion has been traumatized, for example, when a patient bites the affected area.

Bean and Walsh reported that 95% of venous lakes were observed in males and the average age of presentation was 65. They suggested that the disproportionately large male distribution may be related to occupational exposure to the elements (sun, wind, and cold).

Women comprised the majority of treated patients in two moderate-sized studies of laser therapy for venous lakes; however, this may be related to increased concern among women regarding cosmetic appearance rather than with true incidence. No racial predilection has been documented.

Physical examination usually reveals a soft, compressible, purple-colored papule, up to 1 cm in greatest diameter. The lesions usually are well demarcated with a smooth surface, and compression often causes a transient depression. Lesions typically are distributed on the sun-exposed surfaces of the face and neck and the ear. Another common site of involvement is the vermilion border of the lower lip.

Avoidance of excess sun exposure is important in prevention of many skin disorders. Treatment of lip venous lake includes surgical excision, laser therapy, infrared coagulation, cryotherapy, electrodessication, sclerotherapy, and intense pulsed light.

**CASE STUDY**

A previous report described a dentist utilizing a 980-nm diode laser in a noncontact mode to treat a venous lake. In this case shown here, a 31-year-old male presented with a lesion, approximately 2 mm in diameter, on the right side of his upper lip. The lesion appeared blue in color and was slightly raised, as shown in Figure 1. As a hygienist, I knew that, because of my State Dental Practice Act, I could not use the laser in contact mode on these lesions, but was eager to proceed with treatment. Informed consent was obtained.

An 810-nm diode laser (Odyssey® 2.4G, Ivoclar Vivadent, Inc., Amherst, N.Y.) was used in noncontact mode, and no topical or local anesthetic was used. The patient was instructed that heat would be felt during procedure, and to raise a hand if any discomfort were to occur. High-volume evacuation was used during the entire procedure to remove plume from the area and aid in cooling the site.

The laser tip was held in noncontact mode approximately 2 mm from the target area. At an initial setting of 0.5 Watt Continuous Wave (CW), the laser tip was aimed perpendicular to the lesion, circling around the borders of the lesion several times, then “filling in” the lesion with overlapping, back-and-forth strokes. Then the laser tip, still at a 90-degree angle, was swept over the entire lesion in noncontact mode.
again, in a “cross-hatching” pattern, for 45 to 60 seconds. Next, the power settings were gradually increased (0.6, 0.7, 0.8, and 0.9 W) and treatment resumed following the procedure described above, with a duration of 45 to 60 seconds per setting. Thus the total treatment time was approximately 5 minutes. The patient stated that he was very comfortable during the procedure and that the warmth from the laser energy was soothing.

The target area appeared the same immediately after the noncontact laser procedure has been completed. In the author’s experience, the area may occasionally appear to be smaller or exhibit a change to a lighter color, from a bluish purple to lavender.

Vitamin E was placed on the lesion after laser treatment to help rehydrate and protect the lased area. Additional vitamin E was given to the patient to reapply at home as needed; in this clinician’s experience, topical application of vitamin E creates comfort for the patient as the area heals.

Figure 2 shows a 4-day postoperative view. The patient reported that the lesion seemed to “pop open” on the previous day and had bled a small amount. He reported that he applied pressure to the area for a short time and the bleeding stopped. In the author’s opinion, this could have been the result of the patient’s bumping the area or disrupting the area by eating. In Figure 2, a stable coagulum is present.

Figure 3 shows an 8-day postoperative view. The patient reported no discomfort and the area is healing. Figure 4 is a 6-month postoperative view. Note that the lip is completely healed with no evidence of scarring.

Figure 5 is a 1-year postoperative view. The tissue appears normal.

**CONCLUSION**

This case study examined the successful use of a diode laser in noncontact mode to treat a venous lake lesion of the upper lip. Your patients will appreciate your ability to make these unsightly lesions heal uneventfully. This noncontact-mode laser procedure could be added to the list of soft tissue laser procedures successfully performed by dentists and dental hygienists.

**AUTHOR BIOGRAPHY**

Angie Mott, RDH, has been a clinical hygienist for more than 20 years. She is a member of the Academy of Laser Dentistry (ALD), and obtained her Standard level proficiency in 810-nm diode and 1064-nm Nd:YAG lasers in March 2003, and her Advanced proficiency in Nd:YAG in April 2005. She completed her Educator course with ALD in August 2005 and became an ALD Recognized Course Provider in 2007. She achieved her Mastership with ALD in 2008. Ms. Mott is currently serving as Auxiliary Chair for the ALD Board of Directors and serves on the Regulatory Affairs, Education, Membership, Advertising, and Scientific Sessions Committees. She is a past presenter for the Academy of Laser Dentistry and the Oklahoma Dental Hygiene Association and is also a member of the American Dental Hygienists’ Association. She has had articles published in RDH and The Journal of Practical Hygiene magazines. Ms. Mott received her Dental Hygiene degree in 1987, and received her licenses in the States of Iowa in 1987, Colorado in 1988, and Oklahoma in 1991. She has worked with the Nd:YAG soft tissue laser since November 2000 and diode soft tissue laser since 2005. Angie can be contacted by e-mail at DABT4CU@aol.com.

**Disclosure:** Ms. Mott has no commercial relationships relative to this paper.

**REFERENCES**