

Treatment of venous lesions of the lips and perioral area with a long-pulsed Nd:YAG laser

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Abstract

The conventional treatments for venous lesions of the lip have been excision, cryotherapy, infrared coagulation, and sclerotherapy. We report the use of a long-pulsed Nd:YAG laser in 31 consecutive patients. At a mean follow up of 12 months (6 weeks to 3 years), 27 (87%) had no evidence of recurrence and one had a small contracted scar. The treatment is effective for both small and large lesions, and operation or other ablative techniques are no longer indicated, or considerably less relevant.

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Introduction

Venous malformations of the lip are relatively common ectasias of the blood vessels. In our experience, venous lakes, first described by Bean and Walsh in 1956, are the most commonly seen.¹ They are soft, raised, bluish or purple, compressible lesions that are most often found in sites exposed to the sun (usually the face, ears, and lips) in middle-aged and older people. Histologically they consist of dilated venules composed of a thin layer of endothelial cells with a thick wall of fibrous tissue located in the upper dermis.^{1,2} Clinicians who deal with facial abnormalities are asked to treat expanding, true venous vascular malformations around the mouth.

Whilst smaller venous lesions are often asymptomatic, treatment has previously been reported as being indicated for recurrent bleeding after trauma (although this has not been our experience), for functional reasons associated with increasing size, or for cosmetic reasons. Excision, infrared

coagulation,^{3,4} cryotherapy,⁵ sclerotherapy,⁶ intense pulsed light,⁷ and laser treatment^{8–14} have all been described.

Material and methods

A total of 31 patients (mean age 53 years, range 10–79) who presented with venous lesions of the lips were treated over a 4-year period at the Laser Treatment Centre, Bedford Hospital (2009–2013). They were all white, and the female:male ratio was 2:1. All the lesions had been present for a number of years. Most were on the lower lip, and several extended intraorally. Three patients had tried other treatments, 3 had had excision, one cryotherapy, and one had failed to respond to pulsed dye laser therapy.

Clinical photographs were taken before treatment. Most patients had a local anaesthetic (usually mental or infraorbital nerve blocks), one had general anaesthesia, and in the rest, chilled air-cooling was the only form of analgesia used. Treatment was with a long-pulsed 1064 nm Nd:YAG laser (CynergyTM, Cynosure Inc, Westford, USA). The spot size depended on the size of the lesion, most being 7 mm in diameter. The energy varied between 60 and 120 J/cm² and in

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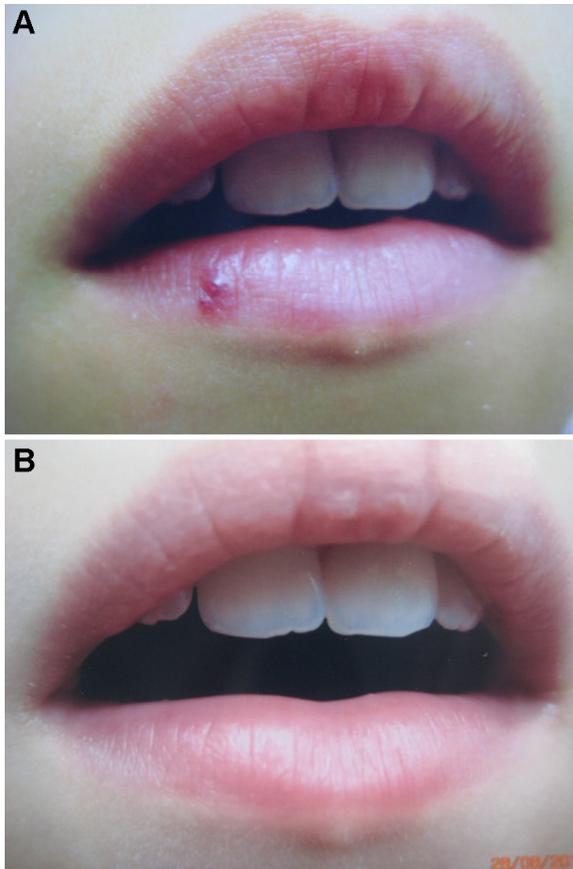


Fig. 1. Small venous lesion on the lower lip: before treatment (A) and complete clearance 6 months after single treatment with long-pulsed Nd:YAG laser (B).

most it was 80 J/cm^2 . A pulse width of 20 ms was used for all treatments. Stacked (multiple) pulses were sometimes used to shrink the lesion adequately, which characterised our clinical end point.

Eight weeks after first treatment, we assessed the initial response, compared the appearance with the photographs taken before treatment, and checked for scarring, degree of clearance, and textural changes. Follow up for some of the patients extended to 3 years. To assess the degree of recurrence, patients who did not attend the clinic were sent a questionnaire. If the patient responded that the lesion had not recurred, we considered that the treatment had been successful.

Results

In 20 of the 21 patients who attended the initial follow up, the lesions had completely resolved. In one patient there was a 95% improvement (estimated by volume of the lesion), and further treatment resulted in complete clearance.

Twelve months after initial treatment, we assessed all the patients (21 were examined physically and 10 responded on a questionnaire). Of them, 27 (87%) had no evidence of recurrence. Varying degrees of recurrence were found in 4 (12.9%).



Fig. 2. Larger venous lake of the lower lip with intraoral extension (A), and 8 weeks after single treatment with Nd:YAG laser (B). Minimal scar is visible, but it was not noticeable 6 months later.

One had a small contracted scar that was not cosmetically obvious at a conversational distance.

Discussion

Superficial venous ectatic lesions are relatively common on the face and around the mouth, and tend to present most commonly in middle age. Although the problem is often one of cosmesis (Figs. 1 and 2), some perioral and intraoral examples are so big that they affect function (Fig. 3). Since they were first described,¹ treatment has been ablative and has included coagulation (infrared or electrocoagulation), cryotherapy, and sclerotherapy. They have had varying degrees of success, take a long time, and cause discomfort. Different lasers have also been used such as the carbon dioxide laser,⁸ the diode laser,⁹ or the pulsed dye laser.¹⁰

Although many authors have propounded the use of selective lasers in the treatment of haemangiomas and vascular malformations, and have focused on congenital lesions or lesions acquired in childhood, it was the study by Rebeiz et al. in 1991 that showed the benefit of the Nd:YAG laser in the treatment of low-flow vascular malformations on the head and neck.¹¹ Use of longer wavelength (and therefore



Fig. 3. Large venous malformation with considerable intraoral extension involving the buccal mucosa and tongue that stopped the patient closing his mouth (A), and 6 months after the lesion on the lower lip had been treated twice (B). The patient was awaiting treatment of the oral commissure and tongue.

more deeply penetrating) laser light from an Nd:YAG source allows the light source to be translated into concentrated heat (on the principle of selective photothermolysis) within a large venous lesion in which there is relatively low blood flow, which effectively ablates it from within. The lesion can be seen to shrink almost immediately on each pulse of the laser, in our experience it is often at the second rather than the first. Failure to show immediate response indicates that fluence should be increased. We started with fluence of between 60 and 80 J/cm² (20 ms pulse width) and we suggest that caution is needed if these initial levels are exceeded because of the potential potency. Thereafter power should be increased on a titrated basis.

Werner et al.¹² and Bekhor¹³ have also reported use of the Nd:YAG laser for venous malformations on the face. Scherer and Waner¹⁴ reported good outcomes in a study of 146 patients with lesions on the head and neck, and we think that our paper confirms their findings that long-pulsed Nd:YAG laser light is the treatment of choice for ectatic venous lesions around the mouth. It is a non-invasive, fast, and predominantly single treatment, which can be offered at

the first consultation. The results seem to last well, although we know that it can be unwise to guarantee permanency in these cases. Like Scherer et al., our results suggest that large venous lesions around the mouth can also be treated by this method. Classified as true venous vascular malformations, they may have been visible from an early age but begin to cause problems only in adult life, and may involve wider areas than the tissues immediately around the mouth - for example, the tongue or the floor of the mouth. The lesion in Fig. 3 shows that the laser can offer a solution in these cases.

Conflict of interest

We have no conflicts of interest.

Ethics statement/confirmation of patient permission

We have obtained the patients' permission to publish the photographs.

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