

Photodisruption of dense subhyaloid premacular hemorrhage with neodymium:YAG laser

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Abstract

Subhyaloid hemorrhage is usually a benign condition that resolves spontaneously. However, it may take several months and is associated with risk of epiretinal membrane formation causing permanent visual impairment. The following report describes a patient who underwent single neodymium:YAG laser membranotomy for a subhyaloid hemorrhage in the macula.

Key words: Laser; Subhyaloid hemorrhage

Introduction

Subhyaloid premacular hemorrhage is typically characterized by a circumscribed, round or dumb-bell shaped, bright red mound of blood beneath the internal limiting membrane in or near to the central macular area.¹ It commonly occurs as Valsalva retinopathy when the retinal vessels are ruptured by increased intrathoracic pressure associated with physical exertion.² Terson's syndrome³ and retinal vascular disorders such as diabetic retinopathy, retinal vein occlusion, or retinal arterial macroaneurysm are also associated with the condition. Profound loss of central vision ensues. Subhyaloid hemorrhage is usually a benign condition. It generally resolves spontaneously but may take several months and is associated with risk of epiretinal membrane formation causing permanent visual impairment. However, there are reports of the use of laser treatment to aid the resolution.³⁻⁷ The following report describes a patient who underwent single neodymium:YAG (Nd:YAG) laser membranotomy for a subhyaloid hemorrhage in the macula.

Case report

A 23-year-old previously healthy man without any refractive error complained of sudden painless reduction in vision in his left eye. On ophthalmic examination, the patient had a visual acuity of 6/6 in the right eye and 2/60 in the left eye. Slit-lamp examination was unremarkable. However, dilated fundal examination revealed a red, dome-shaped premacular subhyaloid hemorrhage with a fluid level (**Figure 1**). Otherwise, there was no sign of other vasculopathy. On further questioning, the patient gave a history of weight lifting exercises before the incident. Based on the clinical



Figure 1. Dense preretinal hemorrhage covering the macula at presentation.



Figure 2. Complete resolution of premacular hemorrhage 2 weeks after neodymium:YAG laser photodisruption

findings and the history of exertional activity, the diagnosis of Valsalva retinopathy was made.

After detailed discussion of the various management options, including observation, laser therapy, and early pars plana vitrectomy, the patient chose laser hyaloidotomy. The left premacular hemorrhage was treated with Nd:YAG laser (2 pulses of 4.0 mJ) using a Yannuzzi laser lens 4 days after presentation. The laser was aimed at the inferior edge of the hematoma away from the fovea. Rupture of the anterior surface of the hematoma and immediate drainage of blood into the vitreous cavity, settling in the inferior retina was noted. The patient was followed up 2 weeks after the procedure. The vision in his left eye improved to 6/6 with complete resolution of the hematoma in the macula area (**Figure 2**). At the last follow-up examination, performed 3 months after treatment, left eye visual acuity was maintained at 6/6. No obvious retinal damage or rebleeding occurred.

Discussion

This patient had premacular subhyaloid hemorrhage consistent with Valsalva retinopathy. It most likely occurred as a result of heavy lifting when the sudden elevations of venous pressure caused a decompensation in the retinal capillary bed and the hemorrhage broke through the internal limiting membrane becoming subhyaloid.² In long-standing cases, the formation of epiretinal membrane and macular traction has been reported.⁸

Therapeutic options include observation, vitrectomy, and laser treatment. Nd:YAG³⁻⁶ or argon⁷ laser membranotomy perforates the posterior hyaloid face or internal limiting membrane. This report is of the treatment of subhyaloid premacular hemorrhage using a few low-energy applications of Nd:YAG laser. Nd:YAG was chosen over argon laser because the latter delivers a much higher energy of greater than 200 mJ.⁷ The procedure was performed safely in an outpatient setting and resulted in rapid resolution of the hematoma and improvement of vision.

Clinical benefits of Nd:YAG treatment include rapid visual rehabilitation, visualization of the underlying retina, expedited access for macular photocoagulation if necessary, and prevention of the need for vitrectomy.⁵ Although Nd:YAG laser hyaloidotomy is considered to be a safe and effective procedure,^{3,4} rare complications such as extensive rebleeding, macular hole formation, and rheumatogenous retinal detachment have been associated with treatment.^{5,6} Therefore, the procedure is not recommended for small premacular hemorrhage because the cushion effect of the blood protecting the retina may be insufficient.⁵ We advocate Nd:YAG laser treatment for recent onset premacular hemorrhage of sufficient thickness and size (greater than 3 disc diameters⁵).

In conclusion, this report demonstrates that Nd:YAG laser posterior hyaloidotomy can be considered as a therapeutic option for draining a premacular hemorrhage into the vitreous cavity in selected patients.

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