

# Nd:YAG laser treatment of an atypically located subhyaloid hemorrhage due to Valsalva maneuver in late pregnancy: a case report

F.Cüneyt Erdurman (\*), A.Hakan Durukan (\*), Volkan Hürmeriç (\*), Tarkan Mumcuoğlu (\*)

## SUMMARY

Valsalva retinopathy is a well-known entity that is seen following episodes of increased intrathoracic pressure and characterized by a painless and sudden visual loss in healthy individuals. The sudden rise in intrathoracic pressure leads to increased intraocular venous pressure, causing the rupture of perifoveal capillaries. The hemorrhage is typically located in front of the macula and Nd:YAG laser hyaloidotomy is one of the accepted treatment modalities for this entity. In this report, we aimed to present a case of an atypically located subhyaloid hemorrhage which was successfully treated with Nd:YAG laser hyaloidotomy. This case report suggests that Nd:YAG laser hyaloidotomy may be safe and efficient in the treatment of extramacular subhyaloid hemorrhages.

**Key words:** Nd:YAG laser hyaloidotomy, subhyaloid hemorrhage, Valsalva retinopathy, vomiting of pregnancy

## ÖZET

**Geç gebelik döneminde Valsalva manevrası nedeniyle oluşan atipik yerleşimli subhyaloid hemorajide Nd:YAG lazer tedavisi: olgu sunumu**  
Valsalva retinopatisi intratorasik basıncın artışına bağlı olarak oluşan bir durumdur ve sağlıklı kişilerde ağrısız, ani görme kaybıyla karakterizedir. İntratorasik basınçtaki ani yükselme perifoveal kapillerlerin yırtılmasıyla sonuçlanan göz içi venöz basınç artışına neden olur. Hemoraji tipik olarak makula önündedir ve Nd:YAG lazer hyaloidotomi kabul gören tedavi seçeneklerinden birisidir. Bu makalede, Nd:YAG lazer hyaloidotomi ile başarılı bir şekilde tedavi edilen atipik yerleşimli subhyaloid hemoraji olgusunu sunmayı amaçladık. Bu olgu Nd:YAG lazer hyaloidotominin ektramaküler yerleşimli subhyaloid hemorajilerin tedavisinde güvenli ve etkin bir tedavi olabileceğini göstermektedir.

**Anahtar kelimeler:** Nd:YAG lazer hyaloidotomi, subhyaloid hemoraji, Valsalva retinopatisi, gebelik kusması

## Introduction

Valsalva retinopathy results from Valsalva maneuver and leads to sudden and painless visual loss. The most common activities related with Valsalva maneuver include vomiting, heavy lifting, coughing and compression injuries (1). Valsalva maneuver produces a sudden increase in abdominal or intrathoracic pressure against a closed glottis. This leads to a rise in intraocular venous pressure and spontaneous rupture of perifoveal capillaries, also known as Valsalva maculopathy. The hemorrhage typically occurs at the macula, and fundoscopy demonstrates well circumscribed, dome-shaped premacular hemorrhage and vitreous hemorrhage. Nd:YAG laser treatment is a non-invasive method, which enables the drainage of the subhyaloid hemorrhage into the vitreous cavity. In this report, we present a case of atypically located Valsalva retinopathy in pregnancy treated by Nd:YAG laser hyaloidotomy.

## Case Report

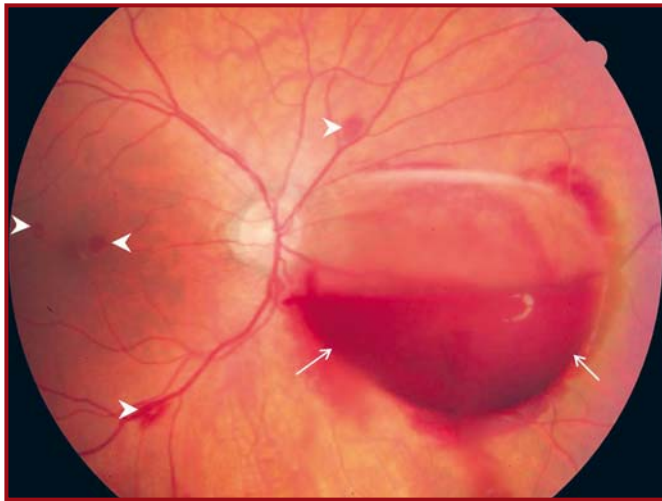
A 27-year-old pregnant woman presented with complaints of sudden onset of temporal visual scotoma and floaters in her right eye. The symptoms occurred 6 days previously after intense vomiting. She was in the 25th week of her pregnancy. Visual acuity in the right eye was 20/20. There was no history of trauma or medication use. Systemic examination was normal with a blood pressure of 130/75 mmHg. Complete blood count, platelet count, bleeding and clotting time were normal. Right eye fundoscopy revealed a large and well circumscribed dome-shaped preretinal hemorrhage located in the nasal retina close to the optic nerve head accompanied by a few macular hemorrhages and mild vitreous hemorrhage inferonasally (Figure 1). The patient had no other vascular alterations or retinal anomaly in her right eye. Left fundus examination revealed no abnormality, and visual acuity was 20/20.

\*Department of Ophthalmology, Gulhane Military Medical Faculty

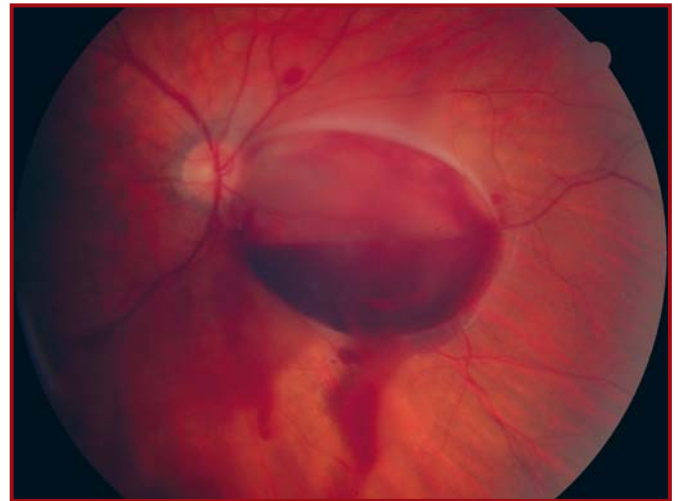
**Reprint request:** Dr. F.Cüneyt Erdurman, Department of Ophthalmology, Gulhane Military Medical Faculty, Etlik-06018, Ankara, Turkey

**E-mail:** erdurman@yahoo.com

**Date submitted:** July 13, 2010 • **Date accepted:** October 20, 2010



**Figure 1.** Fundus photograph of the right eye, showing a large and well demarcated subhyaloid hemorrhage located inferonasally to the optic nerve head (arrows) and macular and retinal hemorrhages (arrowheads)



**Figure 2.** Dispersion of subhyaloid hemorrhage into the vitreous cavity following Nd:YAG laser treatment

We informed our patient about treatment alternatives in Valsalva retinopathy. Although, the patient was expecting a faster visual recovery because of occupational needs, we observed for spontaneous resolution. After 10 days, we decided to perform Nd:YAG laser hyaloidotomy for rapid recovery. The anterior surface of the hemorrhage was perforated at the lower margin, and subhyaloid hemorrhage located in the nasal retina was drained into the vitreous cavity in the Q-switched mode using 2.2 mJ energy pulses (Figure 2). During the following 3 weeks, subhyaloid hemorrhage and vitreous hemorrhage cleared up rapidly without any complication (Figure 3). After Nd:YAG laser treatment, the remainder of the pregnancy passed without additional incident. Thirteen weeks later, an uneventful delivery was performed at full term with cesarean section under epidural anesthesia.

### Discussion

Valsalva retinopathy develops in response to strenuous physical exertion (1). In our case, the hemorrhage developed as a result of violent and intense vomiting. It has been reported that pregnancy is one of the reasons associated with Valsalva retinopathy (2). The hemorrhage typically occurs at the macula, and also known as Valsalva maculopathy. Although a large number of cases of premacular subhyaloid hemorrhage have been reported, extramacular involvement is an uncommon presentation of subhyaloid hemorrhage associated with Valsalva maneuver (3). Preretinal hemorrhages secondary to Valsalva retinopathy usually occur in healthy young adults who are expecting a faster visual recovery. Most cases usually



**Figure 3.** Fundus photograph showing resolution of the subhyaloid hemorrhage at the visit three weeks after treatment

regress spontaneously from a few weeks to several months with good visual outcomes (1). In our previous report, we have demonstrated that drainage of premacular subhyaloid hemorrhage into the vitreous using the Nd:YAG laser is a safe and efficient treatment (4). In this case, although the visual acuity was 20/20, the area of subhyaloid hemorrhage was large and the patient was seriously complaining about the visual scotoma in her temporal visual field. Because of this reason we preferred to perform Nd:YAG laser instead of a long observation period. After treatment, the patient was satisfied with the fast recovery from her temporal scotoma.

Optimal delivery management and anesthesia method are also controversial in patients with antenatal retinal hemorrhages (5-7). It may be considered that vaginal delivery has the risk of developing new hemorrhages and cesarean section could be the pre-

ferred delivery method. It has been reported that general anesthesia may cause rebleeding due to vasodilatation and an increase in intracranial pressure, with an associated increase in retinal venous pressure (5). Moreover coughing may also lead to rise in venous pressure during extubation. It has been postulated that epidural anesthesia may increase retinal venous pressure secondary to a rise in cerebrospinal fluid pressure (6-7). On the other hand Chidley has observed a decrease in the intraocular pressure during cesarean section under fractionated dose epidural anesthesia (5). In our case cesarean delivery was performed under epidural anesthesia without any additional ocular complications.

In conclusion, although it has not been reported previously, it is quite possible that Nd:YAG laser treatment may be an alternative choice for the treatment of extramacular subhyaloid hemorrhages in patients complaining of visual scotoma. We suggest that the occupational needs and expectations of young patients must also be taken into consideration in the management of subhyaloid hemorrhages.

## References

1. Duane TD. Valsalva hemorrhagic retinopathy. *Am J Ophthalmol* 1973; 75: 637-642.
2. Callender D, Beirouty ZA, Saba SN. Valsalva haemorrhagic retinopathy in a pregnant woman. *Eye (Lond)* 1995; 9: 808-809.
3. Wickremasinghe SS, Tranos PG, Davey C. Valsalva haemorrhagic retinopathy in a pregnant woman: implications for delivery. *Acta Ophthalmol Scand* 2003; 81: 420-422.
4. Durukan AH, Kerimoglu H, Erdurman C, Demirel A, Karagul S. Long-term results of Nd:YAG laser treatment for premacular subhyaloid haemorrhage owing to Valsalva retinopathy. *Eye (Lond)* 2008; 22: 214-218.
5. Chidley KE, Law R, Vanner RG. Caesarean section following a recent retinal haemorrhage. *Anaesthesia* 1998; 53: 483-485.
6. Ling C, Atkinson PL, Munton CG. Bilateral retinal haemorrhages following epidural injection. *Br J Ophthalmol* 1993; 77: 316-317.
7. Victory RA, Hassett P, Morrison G. Transient blindness following epidural analgesia. *Anaesthesia* 1991; 46: 940-941.