

# Premacular Subhyaloid Hemorrhage Treated with Argon Laser Hyaloidotomy in a Pregnant Patient: Case Report

## Premaküler Subhyaloid Hemoraji Gelişen Gebe Hastada Argon Laser Hiyaloidotomi Uygulaması

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**ABSTRACT** A 27-year-old female patient had applied to our clinic with a complaint of sudden onset, painless and persistent loss of vision in the left eye starting after an airplane flight 3 days ago. She was 26 weeks pregnant. Visual acuity in the left eye was counting fingers with a normal anterior segment examination. On fundus exam, subhyaloid hemorrhage covering the macular region between the vascular arcades was noticed. After giving information about the pregnancy, complication risks and other treatment alternatives, drainage of the subhyaloid hemorrhage with Argon laser membranotomy treatment was performed. After laser treatment, drainage of the hemorrhage into the vitreous cavity and instant improvement of vision was observed with no complications. The visual acuity was 0.3 (Snellen chart) the following day and 0.9 on the third postoperative day. Premacular hemorrhage was completely drained at one month. No complications were observed on 2 month follow-up. 532 nm lasers are present in most clinics and when proper parameters are selected, it proved to be an effective and safe alternative for treating premacular subhyaloid hemorrhage in our patient.

**Key Words:** Lasers, gas; pregnant women; retinal hemorrhage

**ÖZET** Uçak seyahati sonrası sol gözünde 3 gün önce başlayan ani görme kaybı şikayeti olan 27 yaşında 26 haftalık hamile hasta kliniğimize başvurdu. Hastanın görme keskinliği sol gözde 50 santimetreden parmak sayma düzeyinde ölçüldü ve ön segment muayenesi doğaldı. Hastanın fundus muayenesinde sol gözde vasküler arkadların içini tamamen dolduran yarı yarıya seviye veren subhyaloid-internal limitan membran (İLM) hemoraji tespit edildi. Hastaya hamilelik durumu, uygulanabilecek tedavi seçenekleri ve komplikasyonları ile ilgili bilgi verildikten sonra Argon lazer membranotomi önerildi ve hastanın kabulü üzerine uygulandı. Komplikasyonsuz uygulamanın ardından subhyaloid- İLM hemorajinin sızıntı şeklinde vitreusa boşalmaya başladığı izlendi. Hastanın ertesi gün görme keskinliğinin 0,3 (Snellen eşeli), postoperatif 3. günde 0,9 olduğu görüldü. Birinci ay sonunda premaküler sahadaki hemoraji tamamen temizlenmişti. Hastanın 2 aylık takibinde görme keskinliği tamdı ve komplikasyon yoktu. 532 nm lazer günümüzde pek çok klinikte bulunan bir cihaz olup, lazer membranotomi uygun parametreler ile uygulandığında hastamızda subhyaloid-İLM hemoraji tedavisinde etkin ve güvenilir bir seçenek olduğu görülmüştür.

**Anahtar Kelimeler:** Lazerler, gaz; gebe kadınlar; retinal hemoraji

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Premacular hemorrhage is a cause of abrupt and severe vision loss that may occur in Valsalva retinopathy and in association with hormonal, metabolic hematological and immunologic alterations.<sup>1</sup> Enlargement of the uterus during pregnancy causes an elevation of intra-abdominal pressure leading to elevation in intravenous pressure which decreases venous re-

turn. Along with other factors which increases the risk for hemorrhage, pregnancy is considered to be a common risk factor for Valsalva retinopathy.<sup>2,3</sup>

Major conventional treatment options in subhyaloid hemorrhage are observation (to allow spontaneous clearance) and vitrectomy. If untreated, the subhyaloid hemorrhage resolves slowly with prolonged reduction in visual function and possible toxic damage to the retina from prolonged contact with hemoglobin and iron. Non-invasive Nd:YAG laser and argon laser membranotomy choices have been proposed as alternatives.<sup>4-8</sup> Laser treatment is a non-invasive method, which enables the drainage of the extensive premacular subhyaloid hemorrhage into the vitreous, facilitates absorption of blood cells and improves the vision within days by clearance of the obstructed premacular area.

We hereby present the use of 532 nm laser in treatment of premacular subhyaloid hemorrhage as a safe and effective alternative to Nd:YAG laser hyaloidotomy in a pregnant patient.

## CASE REPORT

A 27-year-old female patient had been referred to our clinic with a sudden onset, painless and persistent loss of vision in the left eye starting after an obligatory flight three days ago. She was 26 weeks pregnant. Her medical history revealed that she had constipation for one week. Visual acuity in the left eye was counting fingers with a normal anterior segment examination. On dilated fundus exam, a subhyaloid hemorrhage covering the entire macular region between the vascular arcades was noticed (Figure 1). Spectral-domain optical coherence tomography (SD-OCT; Spectralis HRA+OCT, Heidelberg Engineering, Heidelberg, Germany) revealed a dome-shaped hypo-reflective area, consistent with blood beneath a hyper-reflective band at the macula. Information about the risks and the treatment alternatives were discussed with the patient. After obtaining full consent, drainage of the premacular hemorrhage into the vitreous cavity with argon laser (Visulas 532, Carl Zeiss Meditec, Germany) treatment was performed. The



**FIGURE 1:** Fundus photograph of the left eye demonstrating the premacular subhyaloid hemorrhage approximately 10 disc diameters in size.

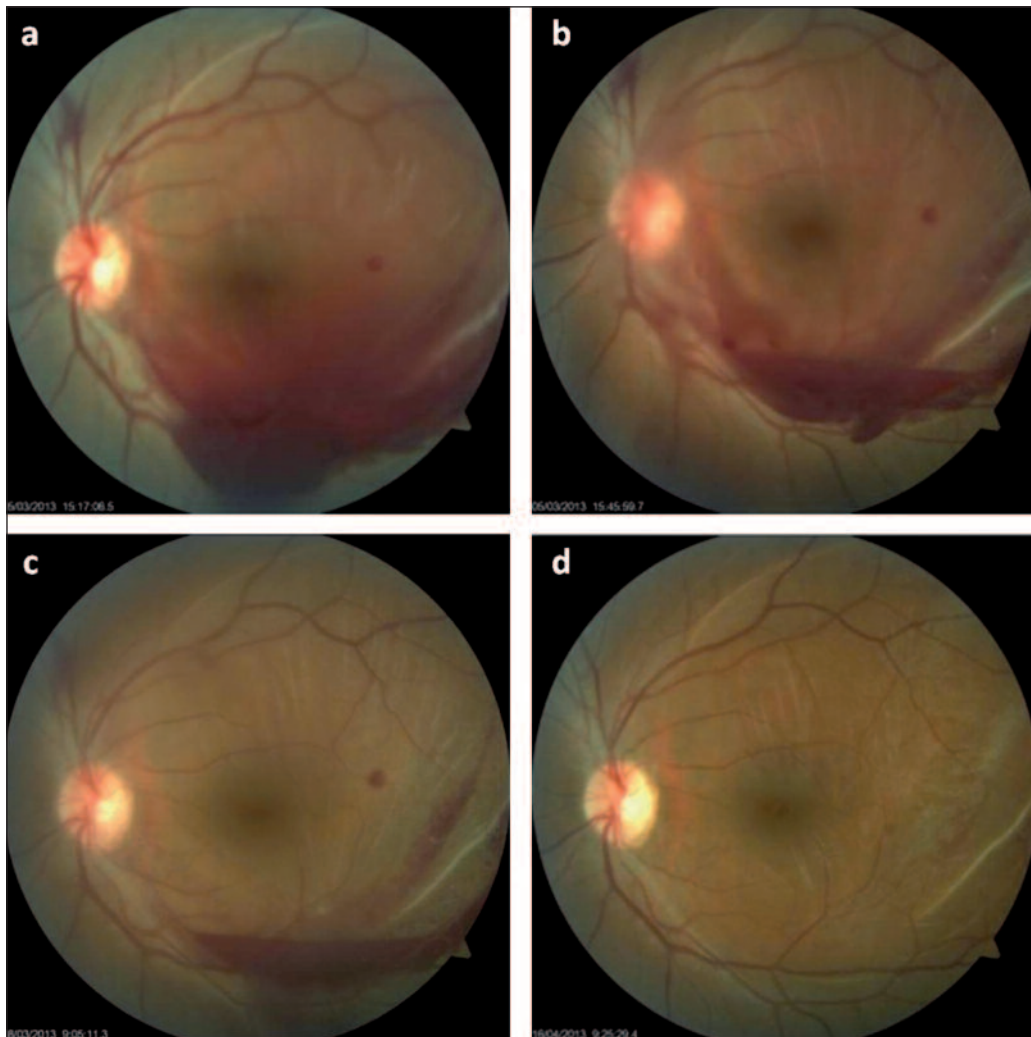
(See color figure at <http://www.turkiyeklinikleri.com/journal/oftalmoloji-ozel-dergisi/1308-111X/>)

laser was set at energy level of 600 mW, duration of 100 ms and 100 µm spot size was used. The beam was aimed at the inferior border of the elevated hyaloid with a sufficient thickness of blood. Six spots were placed in a circular pattern with contact macular laser lens (Mainster standard, Ocular instruments, USA).

After laser treatment, slow drainage of the hemorrhage into the vitreous cavity and instant improvement of vision was observed with no complications (Figure 2a,b,c). The Snellen visual acuity was 3/10 the following day and 9/10 on the third postoperative day. In the follow-up, premacular hemorrhage was completely drained at one month (Figure 2d). Although a full withdrawal of hemorrhage occurred, a subhyaloid cavitation was still observable on SD-OCT at fourth month. Furthermore, laser perforation points incurred during the procedure were observed in the SD-OCT from the third postoperative day (Figure 3). No complications were observed on 6 months follow-up.

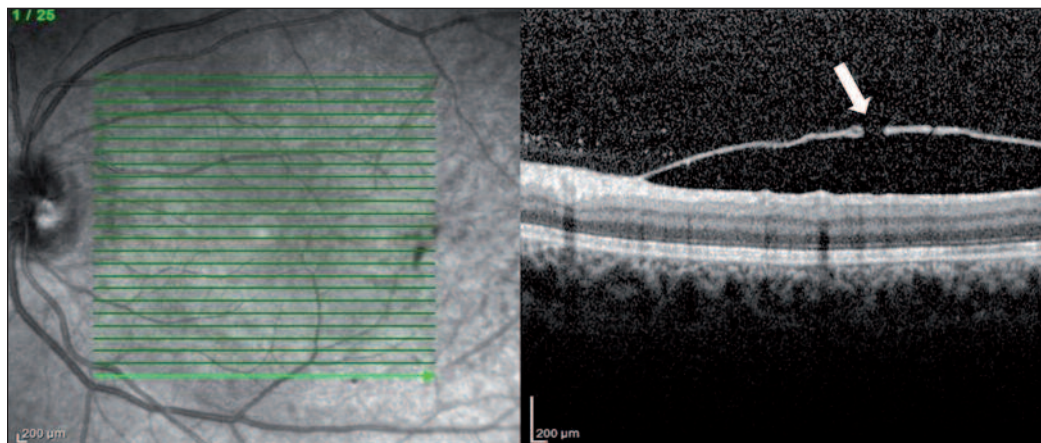
## DISCUSSION

Different approaches have been reported about Valsalva retinopathy occurring during pregnancy.<sup>3,9,10</sup> Conservative approach considering



**FIGURE 2:** Fundus photographs following argon laser hyaloidotomy showing drainage of the hemorrhage into the vitreous cavity. **a)** Immediately following laser, **b)** Following day, **c)** one week after laser, **d)** One month after laser

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**FIGURE 3:** SD-OCT photograph of the left eye four months after the procedure demonstrating a residual premacular subhyaloid cavitation with the draining hole on the surface (arrowhead).

(See color figure at <http://www.turkiyeklinikleri.com/journal/oftalmoloji-ozel-dergisi/1308-111X/>)

spontaneous resolution of retinal hemorrhage resulted in latent resorption of hemorrhage in 5 months in a pregnant patient.<sup>9</sup> Considering the psychological impact of vision loss on the patient and the possible toxicity of hemoglobin, early treatment seems reasonable. Posterior hyaloidotomy by Nd:YAG laser application in a patient with postpartum depression caused by Valsalva retinopathy and in a pregnant patient in the third trimester has been reported to be a safe and effective method.<sup>3,9</sup> Nevertheless, complications such as macular hole, retinal detachment, epiretinal membrane formation have been also reported with the use of Nd:YAG laser for treatment of the premacular hemorrhage.<sup>11,12</sup> Argon laser hyaloidotomy for treatment of premacular hemorrhage has been reported as a useful method in a few case reports for treatment of subhyaloid hemorrhage.<sup>7,8</sup> It has not been applied for Valsalva retinopathy in a pregnant patient. Argon laser may be an alternative to Nd:YAG laser due to its availability, focusing capabilities, negligible absorption by ocular media and high absorption by hemoglobin.

The exact location of the premacular hemorrhage is disputed in the literature. Some authors suggest a cleavage plane under the internal limiting membrane, others a pooling of blood under the

posterior hyaloid, or both. A sub-ILM location of a Valsalva hemorrhage has been confirmed histopathologically and by time-domain OCT imaging.<sup>13,14</sup> Other case reports revealed collagen fibrils of the hyaloid detached from the inner retina the hyporeflexive perforation created by the Nd:YAG laser.<sup>15</sup> We were able to confirm the same cleavage plane in the SD-OCT examination and the SD-OCT images have shown that the retinal layers have not been involved during the procedure.

532 nm argon lasers are present in most clinics and when proper parameters are selected, it proved to be an effective and safe alternative to Nd:YAG laser for treating premacular subhyaloid hemorrhage in our patient. Argon laser hyaloidotomy may be a useful alternative in cases of premacular hemorrhage when a Nd:YAG laser may not be readily available.

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