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LETTER TO THE EDITOR

A case of epiretinal membrane secondary to diode laser epilation due to the use of incorrect protective glasses

Farklı lazer epilasyon cihazına ait koruyucu gözlük kullanımı ile ilişkili diyot lazer epilasyona ikincil gelişen epiretinal membran olgusu

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To the Editor,

Laser epilation is a very common cosmetic procedure after the 1990s. Following the widespread use of laser epilation, dermatological and ophthalmological complications have also increased in the literature. Ophthalmologic complications are very important as they can lead to irreversible vision loss. Both anterior and posterior segment involvements have been reported[1]. Conjunctival hyperemia, iris atrophy, posterior synechia, uveitis, anterior subcapsular cataract are among the reported anterior segment involvements[2]. Macular hole, vitreous hemorrhage, epiretinal membrane (ERM) and choroidal neovascular membrane (CNVM) are the other posterior segment complications of laser epilation[3,4].

The most commonly used devices for laser hair removal are Alexandrite (755nm), Diode (810nm) and Neodymium-doped yttrium aluminum garnet (Nd: YAG) (1064nm) laser devices[5]. The target of the laser is the melanin pigment in the hair matrix. Since the retinal pigment epithelium (RPE) also contains melanin, retina is very sensitive to laser light[6].

In this connection, a 37-year-old female patient presented to the emergency department with the complaint of sudden blurred vision and metamorphopsia in her left eye. She said that she tried the new Diode laser epilation device (Eva life 8, Diod Lasers, Turkey- 808nm 1-100 J/cm^2), which she worked as a laser epilation practitioner in a beauty center, with a protective glasses. After detailed history, we learned that the patient was using the glasses of the previous device (Noblex, Alexandrite Laser, Korea ,755nm-70J/cm^2) (Figure 1). In initial examination, best corrected visual acuity was 0.5 in left eye and 1.0 in right eye with Snellen chart. Anterior segment and intraocular pressure were normal. The fundus was normal in the right while a yellow-white lesion localized at nasal region of fovea in the left eye (Figure 2). Optical coherence tomography (OCT) revealed intraretinal and minimal subretinal fluid, disruption of the elipsoid zone and damage to the outer retinal layers (Figure 3). Nepafenac 0.3% eye drop (1×1) (Apfecto, World Medicine, Turkey) was given to the patient for 6 weeks. On the 5th day, the visual acuity increased to 0.7 and the intraretinal fluid regressed. On the 10th day, the patient's intraretinal fluid was completely resolved and her vision level increased to 1.0. At the 6th month examination of the patient, the visual acuity was 0.8 in the left eye and epiretinal membrane was observed in the retinal examination (Figure 4).

Laser epilation is a procedure that has been used frequently recently in removing unwanted hair. Laser beams target on the melanin found in hair follicles. Laser energy concentrated in melanin turns into termal energy and damages the surrounding tissues. The wavelength of the light absorbed by the melanin pigment is between 600-1100 nm [6]. Wavelengths that may pose a danger to the eye are visible light (400-720nm) and near infrared (720-1400nm) rays. In

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other words, almost all of the devices used for laser hair removal can harm the eyes.

Figure 1. While black glasses suitable for Diode laser wavelenght shoul be used, red glasses which previously used for Alexandrite laser were used.

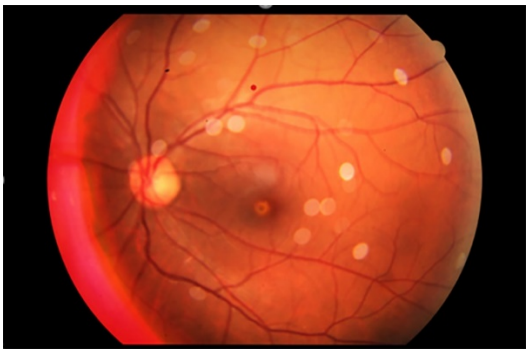

Figure 2. A yellow-white lession localized at nasal region of fovea in the left eye

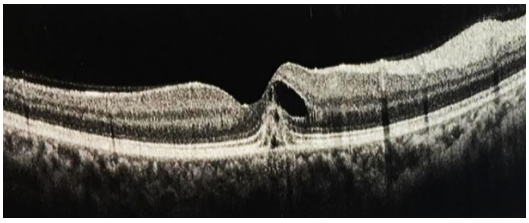

Figure 3. Optical coherence tomography (OCT) revealed intraretinal and minimal subretinal fluid, disruption of the elipsoid zone and damage to the outer retinal layers.

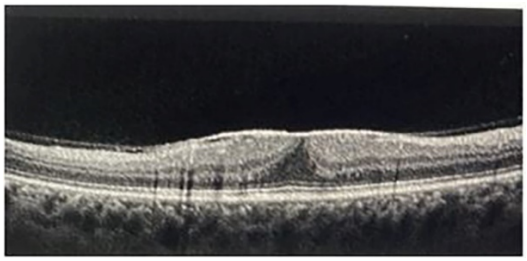

Figure 4. Optical coherence tomography (OCT) revealed epiretinal membrane at 6 months.

It is reported the case of a 39-year-old male patient who developed retinal subretinal and intraretinal fluid due to not wearing protective glasses while undergoing facial laser epilation. The authors reported that while the subretinal fluid was withdrawn at the 4th month, the intraretinal fluid still persisted in the 1st year follow-up [6]. It is reported in a 20-year-old female patient who had Diode laser epilation on her left arm and did not wear protective glasses, subfoveal fluid formed in the retina, RPE injury and intraretinal hemorrhage-related hyperreflectivity in inner retinal layers. Visual acuity increased from 0.5 to 0.8 at 1 month after topical steroid and Nonsteroidal Antiinflammatory Drugs (NSAIDs) treatment [7]. Balyen reported that a 49-year-old female patient who received topical steroids, NSAIDs and cyclopentolate due to macular burn after Alexandrite laser epilation. In the 3-month follow-up of the patient, the visual level remained at 0.1 [8]. It is reported a case of CNVM that developed in the 1st month due to not using protective glasses during diode laser application. With intravitreal anti VEGF, the patient's vision increased to 6/6 in 6 months [9].

A case is reported that ERM developed on the 19th day after injury with Q-switched Nd: YAG laser without protective goggles [10]. Contrary to the literature, in our case, the withdrawal of subretinal and intraretinal fluid in a short time (10 days) and the development of the epiretinal membrane later than those in the literature (6 months), may show us that the glasses used by the patient cause a partial energy block. However, due to inappropriate wavelength glasses usage, this protection was not sufficient for full recovery.

In conclusion, this case is very important for both laser practitioners and laser users to use glasses or eye protection suitable for the wavelength of each device. Glasses should not be switched between laser devices.

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REFERENCES

1. Lee WW, Murdock J, Albini TA, O'brien TP, Levine ML. Ocular damage secondary to intense pulse light therapy to the face. Ophthal Plast Reconstr Surg, 2011;27:263-5.
2. Garcia AC, Llordén AG, Coma M. Ocular complications secondary to diode laser-assisted eyebrow epilation. Arch Soc Esp Oftalmol. 2022;97:172-5.
3. Marcus DF, Ravin J. A new report of laser eye injury. Surv Ophthalmol. 2000;45:262.
4. Anderson RR, Parrish JA. Selective photothermolysis: precise microsurgery by selective absorption of pulsed radiation. Science. 1983;220:524-7.
5. Barkana Y, Belkin M. Laser eye injuries. Surv Ophthalmol. 2000;44:459-78.
6. Plăcintă IA, De Freitas RA, Rahhal-Ortuño M, Udaondo P. Retinal toxicity after facial laser epilation. Rom J Ophthalmol. 2020;64:70-4.
7. Artuç T, Batur M, Öcal H, Özer MD. Retinal injury during laser epilation: case report. Retina-Vitreus. 2022;31:68-73.
8. Balyen L. Inadvertent macular burns and consecutive psychological depression secondary to Alexandrite laser epilation: A case report. Saudi J Ophthalmol. 2019;33:105-8.
9. Tofolean IT, Amer R. Laser-induced CNV following hair removal procedure. Rom J Ophthalmol, 2019;63:281-6.
10. Park DH, Kim IT. A case of accidental macular injury by Nd: YAG laser and subsequent 6 year follow-up. Korean J Ophthalmol. 2009;23:207-9.