

Low-fluence photodynamic therapy for early onset choroidal neovascular membrane following laser *in situ* keratomileusis

Dear Editor,

Despite being a technically near-perfect procedure, laser refractive surgery is not without attending complications involving the anterior and posterior segments, which include retinal tears and breaks, retinal detachment, vitreous hemorrhage, macular hemorrhage, subretinal hemorrhage, macular holes and, rarely, choroidal neovascular membrane (CNVM).^[1]

Recently, low-fluence photodynamic therapy (PDT) has been shown to be effective and safe for the treatment of myopic CNVM.^[2] Intravitreal injections of anti-vascular endothelial growth factor (VEGF) have also been shown to be effective therapeutic options.^[3]

We report the successful management of subfoveal CNVM that appeared 2 weeks following laser-assisted *in situ* keratomileusis (LASIK) for high myopia.

A 25-year-old lady with high myopia who underwent uneventful LASIK complained of sudden diminution of vision in the left eye (OS) 2 weeks after the procedure. Her preoperative best-corrected visual acuity (BCVA) had been 20/20 OU, with a refractive correction of -8.00 in the right eye (OD) and $-8.25, -0.5 \times 105^0$ OS. One week after the LASIK procedure, an uncorrected VA of 20/20 OU was recorded.

On presentation 2 weeks post-LASIK, her BCVA was 20/20 OD and 20/400 OS. Slit lamp examination showed normal anterior segment OU. Fundus examination showed a localized grayish subfoveal CNVM with overlying retinal edema OS [Fig. 1a]. Fundus fluorescein angiography (FFA) confirmed a subfoveal classic CNVM with increasing late leakage [Fig. 1a]. Optical coherence tomography (OCT) of the macular area showed subfoveal fibrovascular lesion with a central macular thickness of $342 \mu\text{m}$ OS [Fig. 1b].

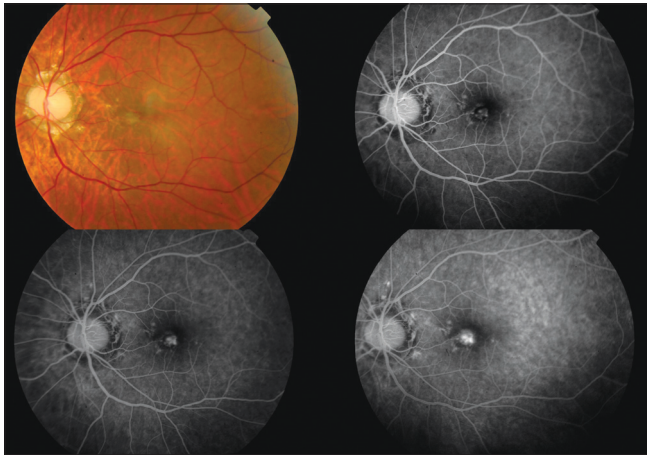


Figure 1a: Fundus photograph and fluorescein angiography of the left eye at presentation showing myopic fundus with active subfoveal classic choroidal neovascular membrane and late leakage

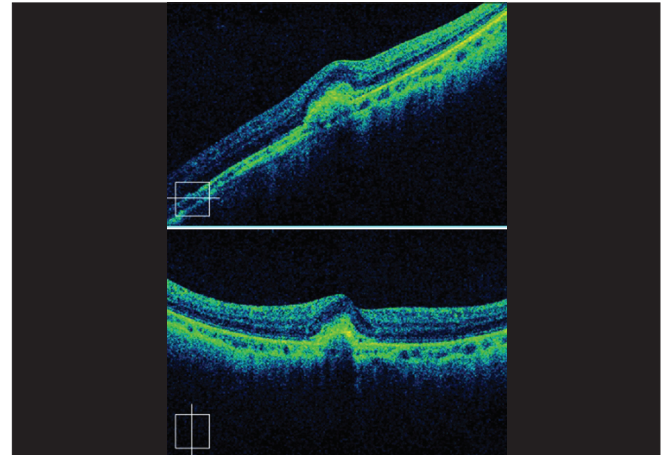


Figure 1b: Optical coherence tomography (horizontal and vertical) of left eye macula showing subfoveal choroidal neovascular membrane with edema of the overlying neurosensory retina

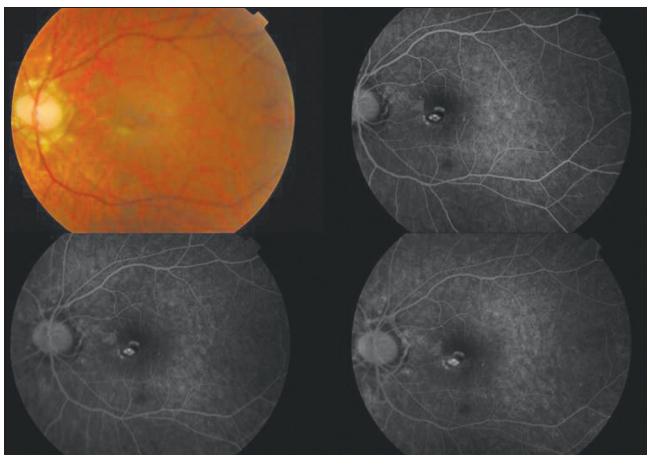


Figure 2a: Fundus photograph and fluorescein angiography of the left eye following treatment with low-fluence photodynamic therapy showing regressed subfoveal choroidal neovascular membrane with late staining

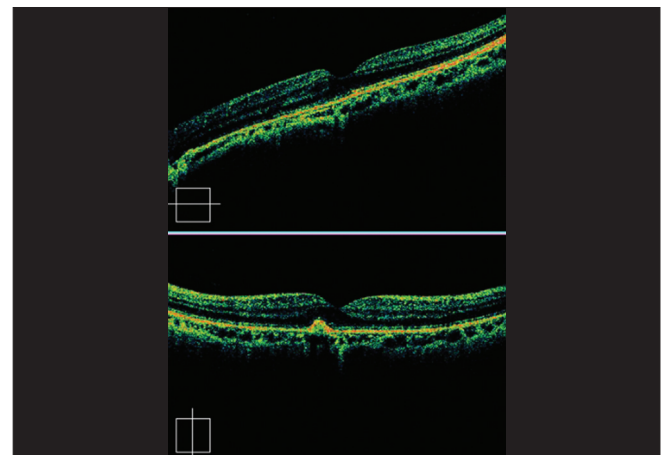


Figure 2b: Optical coherence tomography (horizontal and vertical) of left eye macula following treatment with low-fluence photodynamic therapy showing regressed subfoveal choroidal neovascular membrane

Low-fluence PDT with Verteporfin (Visudyne, Novartis Pharma AG, Switzerland) at a standard dosage of 6 mg/m² was performed using a diode laser (Visulas 690s, Carl Zeiss Meditec, Inc., Dublin, CA), with a radiant exposure of 25 mJ/cm² at an intensity of 300 mW/cm² over 83 s. Three sittings of low-fluence PDT at 3-monthly intervals were required for complete regression of CNVM.

Low-fluence PDT resulted in complete regression of the CNVM, as documented by FFA and OCT [Fig. 2a and b]. Her BCVA improved to 20/40 OS from 20/400 at 6 months follow-up.

Al Dhibi *et al.*, described a case of early CNVM in a young myope, 2 weeks following LASIK.^[4] However, the initial diagnosis of central serous chorioretinopathy (CSCR) and use of systemic steroids in this case makes the real diagnosis and response to PDT uncertain.

Aravelo *et al.*, have described five cases of subfoveal CNVM following LASIK with mean onset of 45.6 months, treated with PDT.^[5]

The induction of high intraocular pressure up to 60 mmHg with the microkeratome suction ring, up to 4 mm posterior to the limbus, exerts posterior traction and compression. This may have triggered the stretching and breaks within the Bruch's membrane in the macula, consequently resulting in the genesis of a CNVM.^[1]

CNVM can be triggered by LASIK in patients with high myopia, with an onset as early as 2 weeks following LASIK, without other predisposing macular disorders. Patients should be informed and made aware of this possible complication.

However, when they do occur, CNVM may be successfully managed with low-fluence PDT, as an alternative to or in combination with intravitreal anti-VEGF injections.

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References

1. Arevalo JF. Posterior segment complications after laser-assisted *in situ* keratomileusis. *Curr Opin Ophthalmol* 2008;19:177-84.
2. Besozzi G, Sborgia L, Furino C, Cardascia N, Dammacco R, Sborgia G, *et al.* Low-fluence-rate photodynamic therapy to treat subfoveal choroidal neovascularization in pathological myopia: A study of efficacy and safety. *Graefes Arch Clin Exp Ophthalmol* 2010;248:497-502.
3. Rishi P, Rishi E, Venkataraman A, Gopal L, Sharma T, Bhende M, *et al.* Photodynamic monotherapy or combination treatment with intravitreal triamcinolone acetonide, bevacizumab or ranibizumab for choroidal neovascularization associated with pathological myopia. *Indian J Ophthalmol* 2011;59:242-6.
4. Al-Dhibi H, Chaudhry IA, Al-Assiri A, Shamsi FA. Development of early choroidal neovascular membrane in a young myope after LASIK. *Eur J Ophthalmol* 2007;17:262-5.
5. Arevalo JF, Ruiz-Moreno JM, Fernandez CF, Mendoza AJ, Ramirez E, Montero JA, *et al.* Photodynamic therapy (PDT) with verteporfin for subfoveal choroidal neovascular membranes in highly myopic eyes after laser-assisted *in situ* keratomileusis (LASIK). *Ophthalmic Surg Lasers Imaging* 2004;35:58-62.

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