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SHORT COMMUNICATION

Case report

Lacquer crack formation after photodynamic therapy

I.D. LADAS[1], M.M. MOSCHOS[2], A.A. ROUVAS[1], D.A. KARAGIANNIS[1], S.N. KOKOLAKIS[1]

[1]Department of Ophthalmology, Medical School of Athens University, Athens - Greece
[2]Jules Gonin Eye Hospital, University of Lausanne, Lausanne - Switzerland

PURPOSE. *To report the occurrence of a lacquer crack after photodynamic therapy (PDT) of choroidal neovascularization (CNV) in a patient with pathologic myopia.*
DESIGN. *Interventional case report.*
METHODS. *PDT was performed with verteporfin, which was activated by a diode laser light at 690 nm.*
RESULTS. *The left eye of a 42-year-old woman was treated with PDT because of juxtafoveal CNV caused by pathologic myopia. No lacquer crack was present in the macula on either fluorescein or indocyanine green angiography before treatment. The CNV subsided after treatment. However, a large lacquer crack underlying a subretinal hemorrhage was formatted in the macula of the treated eye soon after PDT.*
CONCLUSIONS. *Although the chorioretinal damage produced by PDT is minimal, it is enough to create, directly or indirectly, the basis for the formation of a lacquer crack in an eye with pathologic myopia.* (Eur J Ophthalmol 2003; 13: 729-33)

KEY WORDS. *Lacquer crack, Myopia, Photodynamic therapy, Verteporfin, Choroidal neovascularization*

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INTRODUCTION

Photodynamic therapy (PDT) with verteporfin has recently demonstrated efficacy in the treatment of patients with subfoveal choroidal neovascularization (CNV) due to pathologic myopia (1). However, the complications of PDT have not been fully described. We report the occurrence of a lacquer crack after PDT of CNV in a patient with pathologic myopia.

METHODS

Before treatment, verteporfin (Visudyne, Ciba Vision AG, Novartis Company, Bülach, Switzerland) was administered at a dose of 6 mg/m^2 body surface area by intravenous infusion of 30 ml over 10 minutes. PDT was done 15 minutes after the start of the infusion, using a diode light at 690 nm, with a radiant exposure of 50 J/cm^2 at an intensity of 600 mW/cm^2 over 83 seconds (Visulas 690s with Visulink PDT/U, Zeiss Group, Jena, Germany).

Case report

A 42-year-old woman was treated with PDT in the left eye because of juxtafoveal CNV caused by pathologic myopia (spherical equivalent for distance correction of -8.50 diopters). Before treatment, best-corrected visual acuity (VA) of the left eye was 20/50. Fundus examination showed a small round subretinal hemorrhage on the papillomacular bundle (Fig. 1a). Fluorescein angiography (FA) and indocyanine green angiography (ICGA) revealed a juxtafoveal CNV on the

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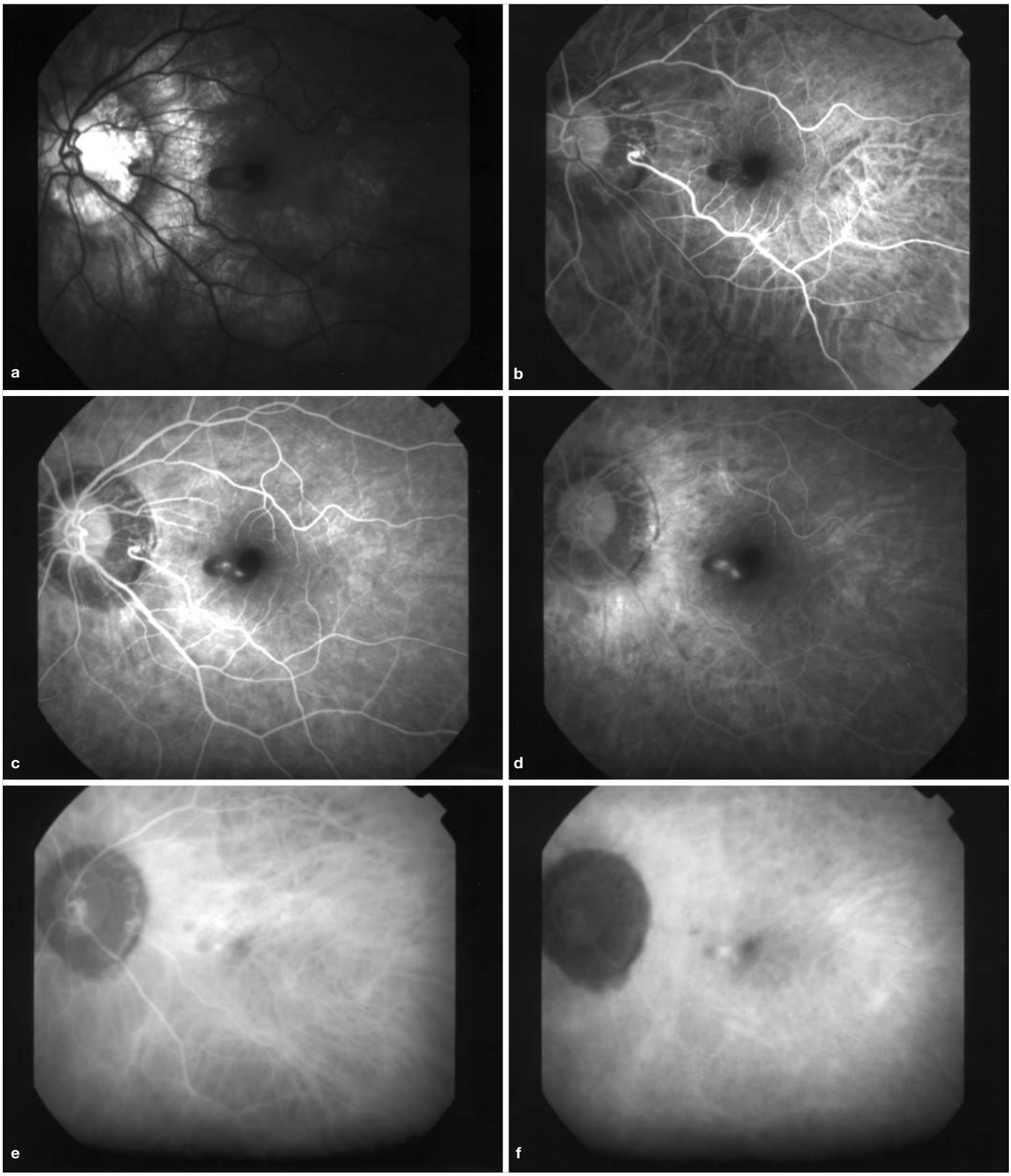

Fig. 1 - *Just before treatment, red-free photograph* **(a)**, *fluorescein angiography* **(b-d)**, *and indocyanine green angiography* **(e, f)** *reveal a juxtafoveal choroidal neovascularization on the papillomacular bundle. No lacquer crack is present in the macula in any of the examinations.*

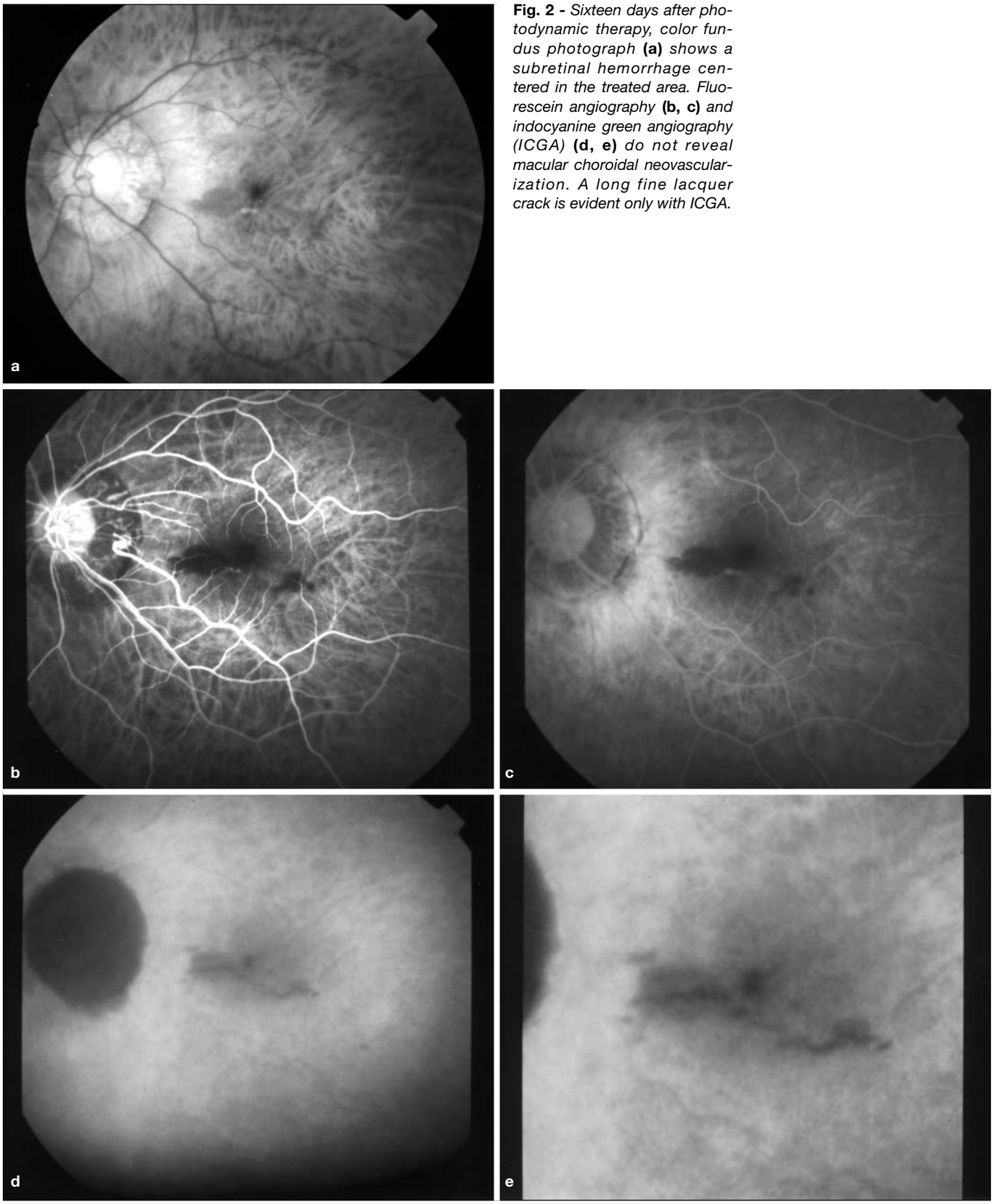

Fig. 2 - *Sixteen days after photodynamic therapy, color fundus photograph* **(a)** *shows a subretinal hemorrhage centered in the treated area. Fluorescein angiography* **(b, c)** *and indocyanine green angiography (ICGA)* **(d, e)** *do not reveal macular choroidal neovascularization. A long fine lacquer crack is evident only with ICGA.*

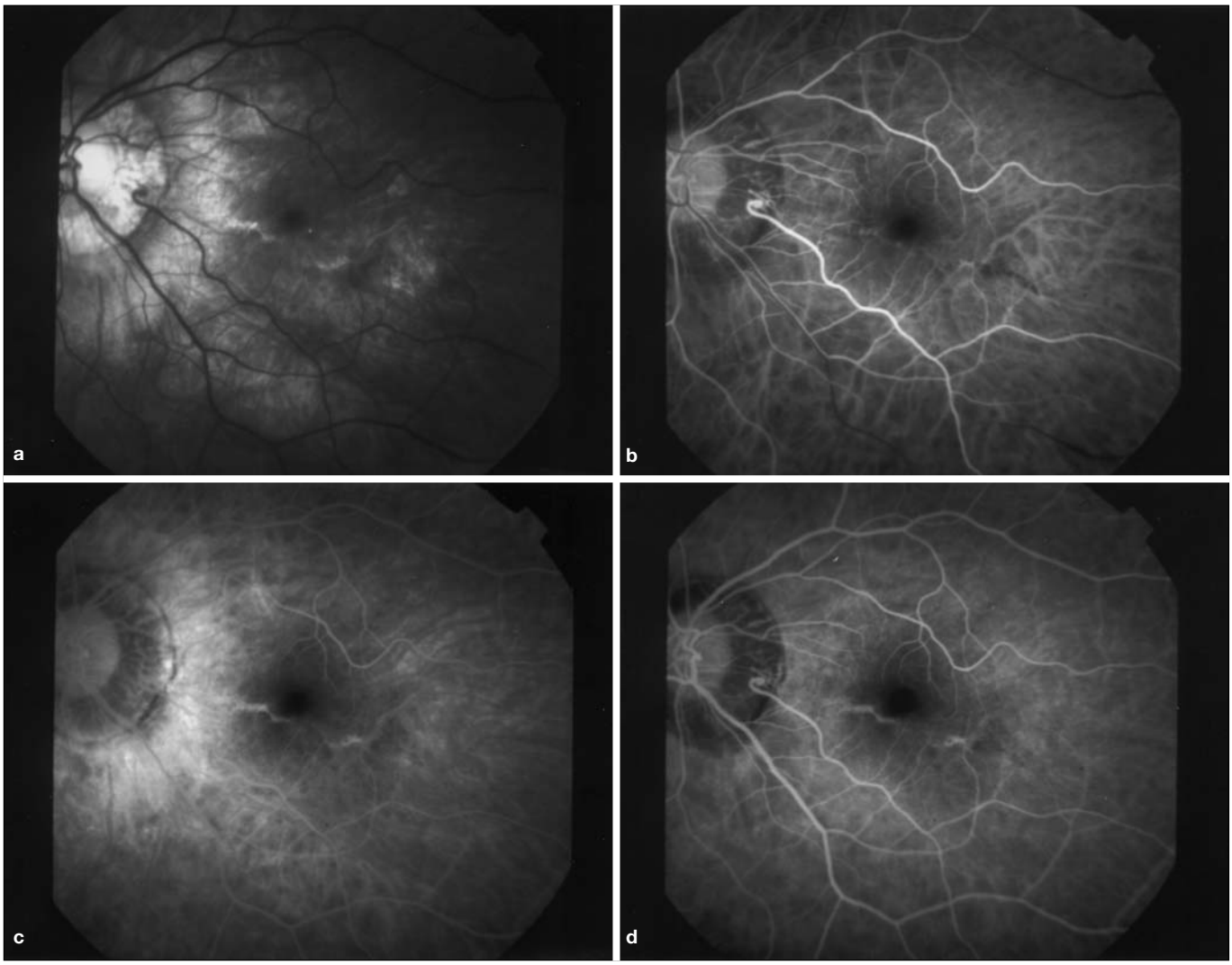

Fig. 3 - *Three months after photodynamic therapy, red-free fundus photograph* **(a)** *does not show any hemorrhage in the macula. Fluorescein angiography (FA) does not reveal a macular choroidal neovascularization* **(b-d)**. *The lacquer crack is clearly evident with FA now.*

papillomacular bundle extended just inside the nasal border of the foveal avascular zone (FAZ) (Fig. 1, b-f). No lacquer crack was present in the macula on any of these examinations.

One day after PDT, the patient reported a sudden decrease in VA of the treated eye. Because the VA did not improve over the next 15 days, she returned for eye examination. Best-corrected VA of the left eye was 20/200. Fundus examination showed an extension of the subretinal hemorrhage onto all the treated area (Fig. 2a). FA or ICGA did not reveal the presence of a macular CNV (Fig. 2, b-e). A long fine lacquer crack underlying the hemorrhage was evident only with ICGA (Fig. 2, d-e). The lacquer crack extended horizontally through the papillomacular bundle on the temporal side of the fovea. Because the hemorrhage was associated with the formation of the lacquer crack in the absence of CNV, no treatment was performed.

Three months later, the patient returned for angiographic control, reporting a significant improvement in VA. Best-corrected VA of the left eye was 20/25. The subretinal hemorrhage had resolved (Fig. 3a). No macular CNV was evident with FA (Fig. 3, b-d). FA

showed the lacquer crack, which was similar in length but thicker. Best-corrected VA and angiographic findings of the left eye have remained stable over 2 years of follow-up after PDT.

DISCUSSION

Randomized clinical trials have shown that PDT with verteporfin has a significant treatment benefit for subfoveal CNV caused by pathologic myopia (2). For CNV that does not extend under the foveola, laser photocoagulation may reduce the risk of additional visual loss by preventing the lesion from extending under the center of the fovea (3). However, this beneficial effect may be lost within 1 or 2 years, because of development of recurrent CNV (3, 4) or progressive enlargement of atrophy of the retinal pigment epithelium surrounding the laser treated area that can extend gradually under the center of the FAZ (5). As a result, many retinal specialists prefer to treat CNV in myopic eyes with PDT, not only if the lesion is subfoveal but even if it extends near, but not under, the foveola.

According to the results of randomized clinical trials, the safety of PDT with verteporfin is high, as its adverse events described so far have been few and usually mild (1, 6, 7). However, as the new therapy has been used in everyday practice for only a few years, its complications have not yet been fully described.

The formation of a lacquer crack has not been described as a complication of PDT with verteporfin (1). Lacquer cracks represent ruptures of Bruch elastic lamina that may occur as a natural complication of degenerative myopia. The most generally accepted explanation for their formation is that they are mechanical tears in Bruch membrane that also involve the choriocapillaris and the retinal pigment epithelium (2). However, the exact sequence of events leading to the development of a lacquer crack remains unknown. Usually located in the macula, lacquer cracks carry a guarded prognosis for the retention of central vision because of their association with focal degenerative lesions and subretinal neovascularization along their course.

In our case, the occurrence of the lacquer crack was closely related in time to the PDT. Therefore, it is likely a consequence of the PDT. Although the chorioretinal damage produced by PDT is minimal, it is enough to create, directly or indirectly, the basis for the formation of a lacquer crack in an eye with pathologic myopia.

Reprint requests to:
Ioannis D. Ladas, MD
8 Meg. Alexandrou Str.
GR-152 36 P. Penteli
Athens, Greece
Ladas@ath.forthnet.gr

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