

SHORT COMMUNICATION

Case report

Choroidal neovascularization in myopic eyes after phakic refractive lens and iris-claw lens implantation

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PURPOSE. To describe the appearance of choroidal neovascularization (CNV) in two myopic patients after implantation of a phakic refractive lens (PRL) and an iris-claw lens.

METHODS. A PRL was implanted in the left eye of a 35-year-old myopic man. Five weeks later, he reported decreased best-corrected visual acuity (BCVA). Fluorescein angiography revealed juxtafoveal CNV. Photodynamic therapy with Visudyne (PDT) was successfully performed, achieving closure of the membrane. BCVA was 20/40 3 months afterwards. An iris-claw lens was implanted in the left eye of a 24-year-old myopic man. BCVA after surgery was 20/40 (SE - 0.75). Three years later subfoveal CNV was diagnosed. PDT was performed, achieving complete closure of CNV. BCVA was 20/100 3 months after treatment.

CONCLUSIONS. The appearance of CNV in myopic eyes corrected by phakic intraocular lens implantation is a possible complication that must be considered. (*Eur J Ophthalmol* 2004; 14: 159-62)

KEY WORDS. Choroidal neovascularization, High myopia, Phakic intraocular lens

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INTRODUCTION

Phakic intraocular lens (IOL) implantation is a refractive surgical technique for high myopia. At present, three types of intraocular phakic lenses exist: anterior chamber angle-supported, iris-claw, and posterior chamber. Retinal detachment and choroidal neovascularization (CNV) after phakic IOL implantation have been described (1-3). The purpose of this report is to describe the appearance of CNV in two myopic patients corrected by a phakic refractive lens (PRL) and an iris-claw lens implantation.

Case 1

A 35-year-old man with residual myopia after laser-assisted *in situ* keratomileusis (LASIK) attended our clinic for surgical correction. Spherical equivalent (SE) was -8.00 D in his left eye. Preoperative best-corrected visual acuity (BCVA) was 20/63 in the left eye. Retinal examination showed a horizontal lacquer crack, without any CNV. A PRL (PRL101, CibaVision, Duluth, GA) implantation was performed (Figure 1a). The post-operative period was uneventful and 1 week after surgery BCVA was 20/50 (SE -1.00 D). Five weeks later he re-

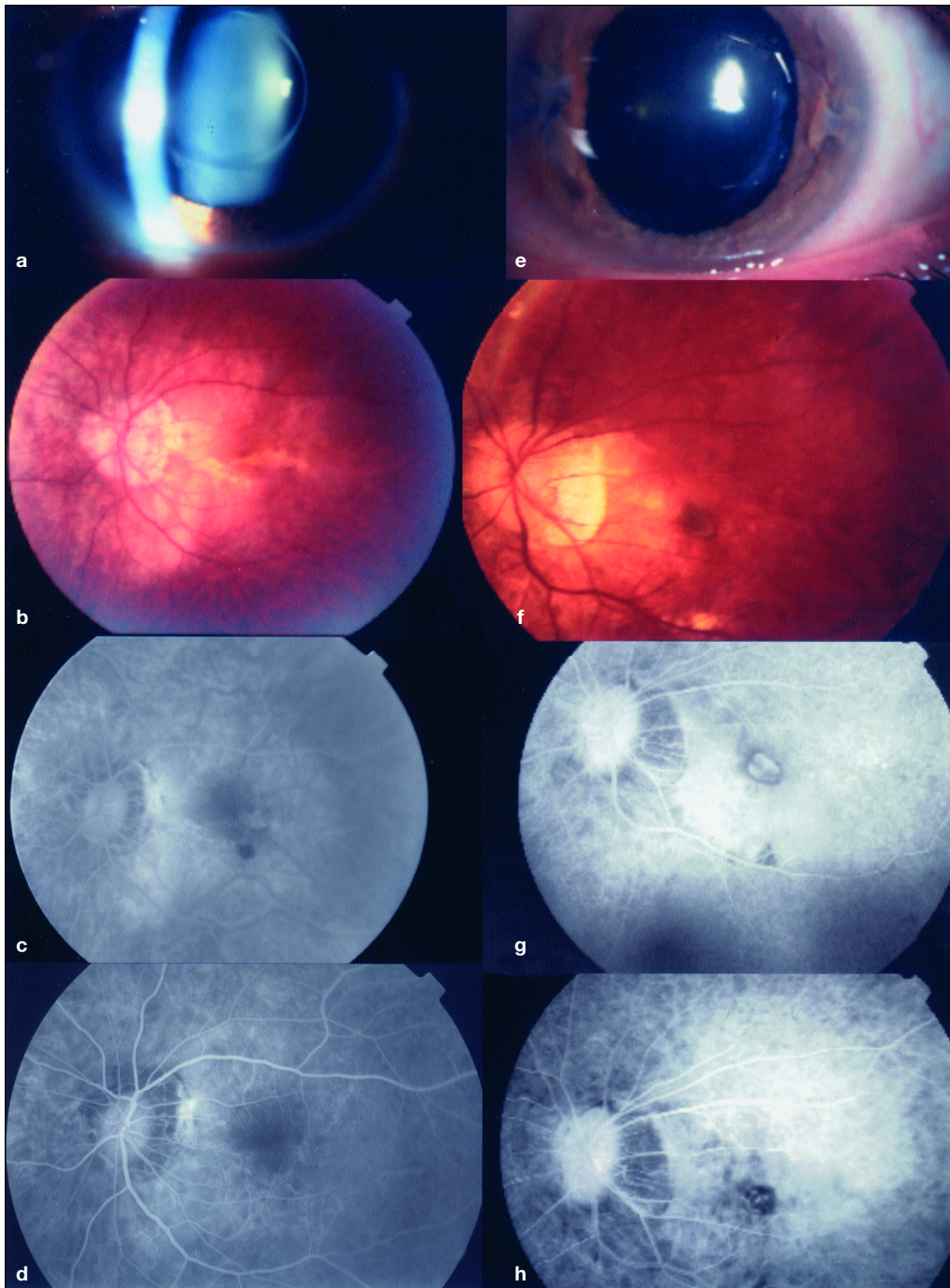


Fig. 1 - a) Slit-lamp photograph of phakic posterior chamber lens (PRL) in the left eye. b) Color fundus photograph of the same eye with subretinal hemorrhage and choroidal neovascularization (CNV). c) Late-phase fluorescein angiography (FA) with juxtafoveal CNV and subretinal hemorrhage. d) Late-phase FA shows total closure of CNV 6 months after photodynamic therapy (PDT). e) Slit-lamp photograph of iris-claw lens in left eye. f) Color fundus photograph of left eye with subfoveal CNV. g) Middle-phase of fluorescein angiography showing subfoveal CNV. h) Late-phase FA with total closure of CNV 3 months after PDT treatment with small subretinal fibrosis.

ported vision loss with a BCVA of 20/100 (SE -1.00 D). Indirect ophthalmoscopy suggested the presence of a juxtafoveal CNV with a small subretinal hemorrhage (Fig. 1b), which was confirmed by fluorescein angiography (FA) (Fig. 1c).

One week later, photodynamic therapy (Visudyne, Novartis, Bülach, Switzerland) was performed. Six weeks later, BCVA had improved to 20/40 (SE +0.50 D), which was stable after 3 months. FA at 6 months revealed total closure of the CNV (Fig. 1d).

Case 2

A 24-year-old highly myopic man underwent successful surgery for correction of high myopia with implantation of an iris-claw lens (Artisan lens, Ophtec BV, Groningen, Netherlands). SE in his left eye before surgery was -23 D. BCVA after lens implantation was 20/40 (SE -0.75 D). Three years later, the patient came back describing partial loss of IOL grasp, which was surgically corrected without further incident (Fig. 1e). Five months later (July 2002), the patient reported loss of vision in his left eye with a BCVA of 20/800 (SE -0.75 D). Indirect ophthalmoscopy was highly suspicious for subfoveal CNV (Fig. 1f). FA was performed and the diagnosis was confirmed (Fig. 1g).

One week later, Visudyne photodynamic therapy was performed. Eight weeks later, BCVA had improved to 20/100 (SE -0.75 D), which remained stable 3 months later. FA showed total closure of the CNV with late phase staining (Fig. 1h).

DISCUSSION

The etiology of CNV in highly myopic eyes implanted with phakic IOL might be twofold: first, high myopia is often associated with CNV; and second, the surgical trauma might induce changes in the choroidal circulation, which could lead to this condition.

High myopia is characterized by excessive axial length elongation (4), which may lead to decreased central vision due to CNV, affecting 4% to 11% of highly myopic patients (5-8). Myopia is associated with CNV when it is higher than -6 D (9). CNV is often associated with lacquer cracks (5, 10, 11), which can be found in 82% of eyes with myopic CNV. The rupture in Bruch's membrane is considered to allow the progression of CNV (12).

Our group has reported a very low incidence of CNV after refractive surgery. CNV occurred in only one of 5936 consecutive myopic eyes (mean SE -4.7 ± 2.8 D, mean follow-up 38.5 ± 17.4 months) operated on by photorefractive keratectomy (13); in 0.10% of 2955 myopic eyes (SE between -6 and -27.5 D, mean follow-up 34.2 ± 11.3 months) corrected by LASIK (14); and in 1.70% of 294 eyes corrected by phakic angle-supported anterior chamber lenses (2).

An additional risk factor for development of CNV could

be the surgical trauma itself. Progression of wet age-related macular degeneration appears more often in surgical eyes than in fellow eyes (15). Blair et al consider that surgery may cause changes in choroidal hemodynamics and allow pre-existing new blood vessels to leak or bleed, or even induce the formation of CNV in a predisposed eye (16). Maculopathy develops faster after surgery, possibly owing to the production of inflammatory and angiogenic cytokines and the invasion of macrophages, all of them capable of inducing neovascularization (17). This is especially likely to occur in eyes with pre-existing pathologic foci, such as drusen and/or alteration in Bruch's membrane (18, 19), which are commonly seen in highly myopic eyes.

To our knowledge, this is the first report of CNV appearing after PRL or iris-claw lens implantation in highly myopic eyes.

In conclusion, CNV is a possible complication of myopic eyes corrected by phakic IOL implantation, but according to our data it is not possible to establish a relationship with refractive surgery. Therefore, posterior studies with longer follow-up are needed to establish the incidence of this complication.

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