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Bilateral spontaneous dislocation of IOLs within the capsular bag to the anterior chamber in a retinitis pigmentosa patient

Obustronne spontaniczne przemieszczenie wszczepów wewnątrzgałkowych wewnątrz torebki soczewki u chorego ze zwyrodnieniem barwnikowym siatkówki

Zarnowski Tomasz, Lekawa-Ilczuk Anna

Department of Ophthalmology Medical University in Lublin, Poland
Head: Ass. Professor Tomasz Zarnowski, MD, PhD

Summary: Purpose: The aim of the paper is to present a case of 82 year old man suffering from retinitis pigmentosa, who over the period of 10 years developed partial, bilateral spontaneous dislocation of IOLs within the capsular bag to the anterior chamber.
Material and methods: Complexes of IOLs in the capsular bags with severe capsule contraction were removed and AC IOLs were implanted in both eyes.
Results: Vision improved significantly in both eyes.
Conclusions: Reported complications can be related to coexisting retinitis pigmentosa in described patient.
Key words: Capsule contraction, IOL dislocation, retinitis pigmentosa.
Streszczenie: Cel: celem pracy jest opis przypadku 82-letniego mężczyzny ze zwyrodnieniem barwnikowym siatkówki, u którego w ciągu 10 lat rozwinęły się częściowe, obustronne, spontaniczne przemieszczenia wszczepów wewnątrzgałkowych wewnątrz torebki soczewki do komory przedniej.
Materiał i metody: kompleksy wszczepów wewnątrzgałkowych wewnątrz torebki soczewki z ciężkim obkurczeniem torebki zostały usunięte. W obojgu oczach wszczepiono soczewki przedniokomorowe.
Wyniki: widzenie poprawiło się istotnie w obojgu oczach.
Wnioski: opisane powikłania mogą być związane ze współistniejącym zwyrodnieniem barwnikowym siatkówki.
Słowa kluczowe: obkurczenie torebki soczewki, przemieszczenie wszczepu wewnątrzgałkowego, zwyrodnienie barwnikowe siatkówki.

Introduction

Anterior capsule opening after continuous capsulorrhexis tend to decrease over time mostly because of postoperative shrinkage. The anterior capsule contraction is considered to be more extensive in some types of pathologic eyes, such as those with PEX, uveitis and retinitis pigmentosa. Severe constriction of the anterior capsule may decrease the patients' visual acuity. Shrinkage is also considered to cause dislocation and tilt of the implanted intraocular lenses that leads to refractive changes and increase of glare disability (1-3).

We here present a case of an elderly man suffering from retinitis pigmentosa, who several years following uneventful phacoemulsification, first developed bilateral anterior capsule phimosis, and then dislocation of the IOLs from the bags to the anterior chamber.

Case report

An 82 year old man with retinitis pigmentosa that was diagnosed 55 years ago (1952), has been treated in our department since the year 1997. At first examination his visual acuity was as follows: RE counting fingers from 4 m and LE counting fingers from 1,5 m. A pupils of both eyes were wide, stiff with paracentral downward displacement (for 40 years, as the patient reported). Visual field was restricted to 10-20° and in the periphery of the retina typical pigmentary lesions – osseous cells were observed. Incipient cataract was diagnosed in both eyes.

In February 1998, phacoemulsification of cataract of the left eye with 5.5 mm, 22 D PMMA PC IOL implantation (Alcon) was performed. Soon after the operation the BCVA of the left eye was 0.3 and 0.5 on the second follow up visit. Since March 1998, a gradual loss of the visual acuity (c.f.) due to extensive anterior capsule contraction with an upward displacement of the severely reduced primary capsulotomy, has developed. A YAG anterior capsulotomy in the left eye was performed creating new central opening in the anterior capsule. BCVA improved to 0.2 in LE. In June, posterior capsule opacification with an additional IOL decentration was diagnosed with the deterioration of the BCVA to 0.16. An improvement of the BCVA of LE to 0.3 was obtained after posterior YAG capsulotomy (Fig. 1).

In April 1999, phacoemulsification of cataract of the right eye with 5.5 mm, 22 D PMMA PC IOL implantation (Alcon) was performed. At first postoperative visit the change of the BCVA from 0.1 before the operation to 0.4 after the operation was

Fig. 1. Picture of the left eye several months after Phaco+ PC IOL (photo December 1998) and removed posterior IOL within the capsular bag 9 years later (2007 y).

Ryc. 1. Oko lewe kilka miesięcy po fakoemulsyfikacji ze wszczepem tylnokomorowym (zdjęcie z grudnia 1998 r.) i wszczep tylnokomorowy w torebce soczewki, który został usunięty 9 lat później (2007 r.).

noted. In November 1999, a radial anterior capsulotomy due to anterior capsule contraction with the YAG laser was performed, with BCVA of RE 0.3 and LE 0.16 (Fig. 2). After the capsulotomy patient reported a moderate visual acuity improvement (January 2000). However, a loss of the visual acuity was progressing gradually to the counting fingers from 2 m in March 2000. In January 2001, second anterior capsulotomy of the left eye was performed. The improvement of the visual acuity was inconsiderable and amounted to counting fingers from 3.5 m. In August 2002, it was observed that a haptic part of the IOL was displaced in front of an anterior surface of the iris. The patient came back again in 2006 reporting the worsening of the UCVA of both eyes: RE 0.2, LE counting fingers from 2.5 m. In both eyes the IOLs' decentration was diagnosed (Fig. 2, 3).

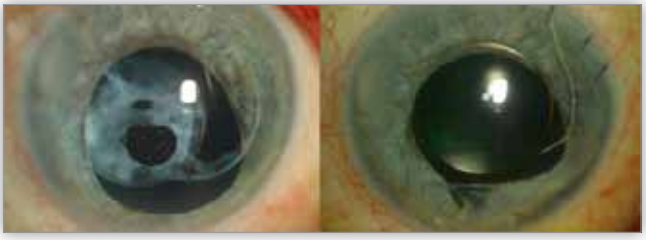

Fig. 2. Picture of the right eye that underwent Phaco + PC IOL in 1999 (photo 2007 y.) and recent picture after removal of the posterior IOL and implantation of the anterior chamber IOL (photo 2008 y).

Ryc. 2. Oko prawe po fakoemulsyfikacji ze wszczepem tylnokomorowym, zabieg przeprowadzono w 1999 r. (zdjęcie z 2007 r.), i ostatnie zdjęcie tego oka po usunięciu wszczepu tylnokomorowego i implantacji wszczepu przedniokomorowego (zdjęcie z 2008 r.).

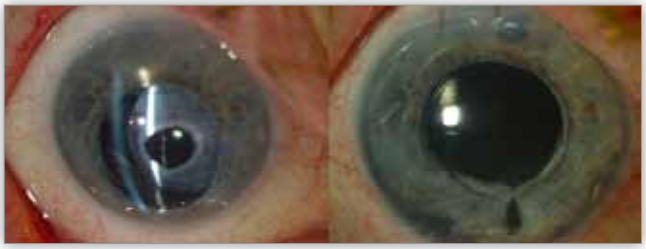

Fig. 3. Picture of the left eye that underwent Phaco+PC IOL in 1998 (photo 2007 y.) and recent picture after removal of the posterior IOL and implantation of the anterior chamber IOL (photo 2007 y.).

Ryc. 3. Oko lewe po fakoemulsyfikacji ze wszczepem tylnokomorowym, zabieg przeprowadzono w 1998 r. (zdjęcie z 2007 r.), i ostatnie zdjęcie tego oka po usunięciu wszczepu tylnokomorowego i implantacji wszczepu przedniokomorowego (zdjęcie z 2007 r.).

Patient was scheduled to have both posterior chamber IOLs removed and the anterior chamber IOLs implanted. In October 2007, operation of the left eye comprising the removal of PC IOL, the implantation of anterior chamber IOL and reducing of the pupil diameter with nylon suture was performed. The BCVA of the left eye improved from counting fingers 0.5 m to 0.3. (Fig. 1, 3). In March 2008, similarly, operation of the right eye comprising removal of posterior chamber IOL, anterior vitrectomy, implantation of anterior chamber IOL and reducing of the pupil diameter, was performed. The BCVA of the right eye improved from 0.1 to 0.2 (Fig. 2). Visual field was unchanged in both eyes (1998 vs 2007). IOP was normal throughout whole follow up. In addition, in both eyes dry form of AMD was diagnosed.

Discussion

For the first time, we present retinitis pigmentosa patient with unusual deformation and displacement of the pupil, who having followed uneventful phacoemulsification for several years, finally developed bilateral anterior capsule phimosis and then dislocation of the IOLs from the bag to the anterior chamber.

According to Hayashi, postoperative capsule contraction, decentration and tilt of IOL is greater in retinitis pigmentosa eyes than in normal eyes (1). Lee and coworkers, for the first time, reported a case of bilateral spontaneous dislocation of haptic part of intraocular lenses within the capsular bag connected with minimal capsulorhexis contraction in a retinitis pigmentosa patient, a few years after successful operation of cataract in both eyes (4).

Dislocation of patient's own lens into anterior chamber with elevation of intraocular pressure in retinitis pigmentosa patient was also described. Intracapsular extraction of the lens (ICCE), anterior vitrectomy and scleral fixation of IOL was applied in these patients' cases (5).

Weakness of ciliary zonules is considered to be one of the major causes of anterior capsule contractions and dislocation of artificial intraocular lenses (1). Moreover, Lee et al. suggest, that phacoemulsification exert a greater stress on ciliary zonules than ECCE, because of high vacuum, irrigation and aspiration (4). Primary weakness of ciliary zonules is intensified by further surgical trauma, as well as laser YAG capsulotomy (2,4). As Hayashi and coworkers reported, dislocation of IOL within the capsular bag occurs a few years after cataract surgery and is considered to be a symptom of slowly advancing dehiscence of the ciliary zonules. The predisposing factors could be as follows: retinitis pigmentosa, pseudoexfoliation syndrome, myopia, previous vitrectomy, injury and cataract surgery complications (2). According to Rachipalli, weakness of ciliary zonules in retinitis pigmentosa is conducive to anterior capsule contraction, what causes the decrease of diameter or total occlusion of capsulorhexis (3). Some authors suggest using IOLs with strong haptics, therefore more suitable are PMMA than silicon IOLs (6). However, there are known retinitis pigmentosa patients who suffered from anterior capsule bag contraction, even though capsular tension ring and PMMA lens was applied (3).

Another cause of anterior capsule contraction can be the contact of IOL with the anterior capsule. It can lead to metaplasia of the lens epithelial cells and formation of circular fibrous

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membrane under anterior capsule. As a result, the anterior capsule contraction and restriction of capsulorhexis diameter occurs (3). The possible method to avoid anterior capsule contraction after cataract surgery is to perform larger capsulorhexis and to implant IOLs designed to provide maximal peripheral capsular bag expansion (7). According to Hayashi, this complication after cataract surgery in retinitis pigmentosa patients can be avoided by performing larger capsulorhexis and postoperative anterior laser YAG capsulotomy in a radial fashion (1).

Taken together, it may be assumed, that the above described complications i.e. capsule opacification and contraction, dislocation of intraocular lenses can be related to coexisting retinitis pigmentosa in described patient. The assessment of influence of lens-capsular factors on the visual acuity was hindered by the possible retinitis pigmentosa progression through the whole observation period of almost 10 years. The reason of deformation and displacement of the pupil remains unexplained.

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Reprint requests to/ Adres do korespondencji:
Anna Lekawa-Ilczuk, MD, PhD
Department of Ophthalmology Medical University in Lublin
ul. Chmielna 1
20-079 Lublin, Poland
e-mail: annalekawa@wp.pl