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Professional paper

Posterior Capsule Opacification After Piggyback Intraocular Lens Implantation

V. Pfeifer and K. Morela

University Eye Clinic Ljubljana, Ljubljana, Slovenia

A B S T R A C T

This is a case report on piggyback lens implantation with late hyperopic shift occurrence associated with Elschnig pearl formation in the peripheral interface between two lenses.

Case report

Piggyback posterior chamber intraocular lenses (IOLs) for correction of high hyperopia in eyes undergoing cataract extraction or refractive lensectomy have become increasingly popular[1]. We present a case report on piggyback lens implantation in a patient with late hyperopic shift associated with Elschnig pearl proliferation in the peripheral interface between two piggyback lenses.

A 49-year-old man with hyperopia had best corrected visual acuity (BCVA) 1.0 in both eyes, with refraction of +7.0 sphere in the right eye and +7.0 sphere in the left eye. Anterior segment examination gave normal results. Measured axial lengths were 21.44 mm in the right eye and 21.66 mm in the left eye.

In August 1997, phacoemulsification with implantation of 15.0 and 19.0 diopters (D) IOLs (model H60M) through clear corneal incision was performed in the right eye. Two IOLs were placed in a piggyback configuration in the capsular bag with haptics aligned parallel. In the left eye the identical procedure was performed two months later with implantation of +19.5 and 15.0 diopters IOLs (model H60M). Postoperative best-corrected visual acuity was 1.0 with refraction of +1.25 ×90 in the right eye and –1.5 +1,75 ×100 in the left eye. The patient was asymptomatic and satisfied with his vision.

In November 1999 he noticed decreased visual acuity in the right eye. Visual acuity in the right eye with refraction of +6,0 sphere was 1.0. Anterior segment

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examination showed posterior capsular opacification and Elschnig pearls were noted in the peripheral interface between the IOLs in the right eye. To determine the cause of patient's hyperopic shift keratometric and biometric measurements were repeated. At that time we had extracted two IOLs and implanted one +30.0 diopters IOL (model H60M) into the capsular bag. The postoperative refraction in the right eye was +1.25 × 90. Visual acuity was 1.0. In June 2000 we implanted another +5.0 IOL (model P359UV) into the sulcus. The final visual acuity was 1.0 with refraction of –0.75 +1.50 × 90.

Discussion

In one eye with implanted piggyback posterior chamber IOLs clinically significant hyperopic shift was noted 27 months postoperatively. Anterior segment examination showed posterior capsular opacification with proliferative Elschnig pearls visible in the peripheral interface between the IOL optics. The cellular material proliferating in the peripheral interface between the lenses appears to cause posterior displacement of the posterior IOL, explaining at least a part of hyperopic shift. Another possible cause of hyperopic shift is separation of the two optic surfaces peripherally, which can affect zonular tension and consequently cause posterior displacement of the IOL/ capsular bag complex. As the IOL optics are spread farther apart by the material proliferating in the interface between them, tension is relieved from the loops and the bag equator, and capsulo-zonular apparatus can move posteriorly, which is similar to a nonaccommodative state[2].

Finally, the third possible cause includes Elschnig pearl material proliferating under the capsulorhexis and displacing the pair of IOL optics posteriorly[2]. The effect of haptic orientation on the incidence and magnitude of Elschnig pearl ingrowth and late hyperopic shift has also been studied[3].

All patients receiving piggyback IOLs should be informed about the possibility of Elschnig pearl ingrowth and late hyperopic shift. More troublesome than the refractive shift is the possibility of Elshnig pearl proliferation in the interface between the lenses, causing the reduction in BCVA. Should Elshing pearl proliferation impinge upon visual axis, it would not be amenable to Nd:YAG laser treatment and would require surgical aspiration of cellular material[2] or even explantation of IOLs, like in our case.

Since the long-term incidence of this complication in eyes with piggyback IOLs is unknown, it is recommended that piggyback IOL implantation be approached with caution. This should be particularly considered when there are alternatives to piggyback implantation, such as in eyes requiring less than +30,0 diopters of total IOL power[2]. On the other hand, piggyback IOL implantation can be of great help in situations such as keratoconus[5] or eyes after penetrating keratoplasty[4]. Further studies are needed to better define the role of piggyback IOL implantation.

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V. Pfeifer

University Eye Clinic Ljubljana, Zaloška 29a, 1000 Ljubljana, Slovenia

OPACIFIKACIJA STRAŽNJE KAPSULE NAKON IMPLANTACIJE PIGGYBACK INTRAOKULARNE LEĆE

S A Ž E T A K

U ovome radu dajemo prikaz slučaja pojave kasne hiperopije nakon implantacije Piggyback leće povezane s formiranjem Elschnigovih perli u perifernom međuprostoru između dvije leće.