

MANAGEMENT OF CATARACT SURGERY IN A HIGH MYOPE – A Case Report

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SUMMARY

This is a report of cataract extraction in a 65-year-old female trader with previously undiagnosed high myopia. An axial length of 30.42mm, calculated intraocular lens (IOL) power of 3.0D by SRK 1 formula in the right eye (RE) and a B scan report of retinal detachment in the fellow eye alerted us to the presence of high myopia. Preoperative visual acuity (VA) was hand movement and this improved to 6/24 unaided after extracapsular cataract extraction (ECCE) without IOL implant, as the IOL with a power of 3.0 dioptres was not readily available.

Although intraocular lens implant is routinely done in many parts of the developing world without biometry, in this case, it would have been disastrous. This case emphasizes the need for biometry while preparing a patient for intraocular lens implant, particularly in Nigeria where many refractive errors remain undiagnosed. Availability of B scan to review cases of doubtful axial length is important. This provides the surgeon with the information he needs on the risks and benefits of the surgery to the patient, as well as likely challenges and possible complications. This case also highlights the management challenges of cataract surgery for a high myope.

Key words: cataract surgery, high myopia, operative challenges

INTRODUCTION

Myopia is the condition of the eye in which parallel rays of light from infinity come to a focus in front of the sentient layer of the retina with the eye at rest.¹ Apart from refractive error, other well-documented causes of impaired vision in high myopia include posterior cortical opacity, vitreous degeneration, open angle glaucoma, macular degeneration and retinal detachment.^{1,2} High myopia presents peculiar challenges for cataract extraction, not experienced in most other cataract patients.³ Full fundal examination is mandatory

preoperatively and where this is not done it should be carried out post operatively in order to check for myopic degeneration, such as peripheral retinal breaks, which may require treatment.³

The sheer size and possible posterior staphyloma of the eyeball make retrobulbar and peribulbar anaesthesia inadvisable; the risk of globe penetration from retrobulbar anaesthesia is well documented.⁴ While the fluidity of the vitreous and the predisposition to retinal detachment make the eye less ideal for surgery and the prognosis guarded. A recent report has suggested, however, that the risk of detachment is less with phacoemulsification than in earlier surgery procedures.⁵ The aforementioned problems make it mandatory for the ophthalmic surgeon to give detailed information on the risks and benefits of the surgery to the patient in order to obtain an informed consent.^{3,6,7} The patient in this paper presented with a number of challenges: the history was not suggestive of myopia, the appearance of the eyes was not typical of myopia, while the posterior features of myopia were masked by a dense cataract in one eye. Cataracts mask more than vision! The aim of this case report is to present the challenges encountered and the management modality offered.

CASE REPORT

A 65-year-old female trader residing in Oyo presented at the eye clinic of the University of Ilorin Teaching Hospital on May 24, 2005 on account of poor vision in both eyes for about five years duration. The poor vision which was worse in the right eye was painless and progressive. Although, there was no history of ocular trauma, the patient reported a history of floaters and flashes of light in the left eye. She had never used glasses and there was no significant systemic or ocular history.

Examination revealed an elderly woman in good clinical state. Her blood pressure was 120/90 mmHg and her pulse rate was 78/minute. Ocular examination revealed a visual acuity of hand movement (HM) in the RE and counting finger in the left eye (LE). Although both eyes appeared normal in size the right eye was actually slightly bigger than the left eye. The anterior

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segments were normal. The lenses in both eyes were opaque but worse in the right eye. The intraocular pressures were 20 mmHg (RE) and 22mmHg (LE). Examination after dilatation of the eye with 1% tropicamide revealed good mydriasis bilaterally (BE), posterior subcapsular opacity, and nuclear sclerosis dense enough in the right eye to prevent a view of the fundus. Fundoscopy in the LE revealed a diffused chorioretinal scar and an old retinal detachment. The diagnosis made was bilateral cataract and retinal detachment in the LE query cause.

The patient consented to right eye cataract extraction and the results of investigations conducted were as reported below: fasting blood sugar 5.7 mmol/L and packed cell volume 38%. The vertical (K1) and horizontal (K2) keratometry readings were 43.00. The axial length for the RE was 30.42mm and for the LE 28mm.

Biometry reading:

A1 = 118.2 A2 = 115.3

PC IOL Error AC IOL Error

3.5 - 0.54 0.5 - 0.44

3.0 - 0.04 0.0 + 0.06

2.5 - 0.46 0.5 + 0.56

A repeat biometry was done and a -3.0D would give a -0.04 error.

A B-scan ultrasound of BE showed an irregular echogenic component within the vitreous and cataract in the RE. A linear elevation of the retinal layer along the posterior wall was noticed in the left eye which was suggestive of retinal detachment and axial lengths of 30mm RE and 29mm LE. The above findings enabled a diagnosis of cataract (BE) and retinal detachment LE in a high myope. Based on these findings, the patient was informed on the guarded prognosis of post cataract extraction.

The patient had right extracapsular cataract extraction with careful peribulbar anaesthesia without intraocular lens (IOL) implantation because the calculated IOL power was not available. The patient had a small rent in the posterior capsule superiorly; anterior chamber formed by injected sterile air bubble to tamponade the capsular rent. Subconjunctival dexamethasone 4mg and 20mg of gentamycin were given postoperatively.

On the first postoperative day, the visual acuity (VA) was HM, with mild central striae keratopathy. This improved to 6/24 by the fourth postoperative day, when the cornea became clear. Fundoscopy showed a pale but enlarged disc with irregular margin with no cupping, diffuse chorioretinal degeneration and a posterior staphyloma.

The patient was discharged on the fourth postoperative day, and was to continue with guttae

spersadex every 6 hours, tropicamide 1% every 8 hours and chloramphenicol every 8 hours. The patient was to further review the peripheral retina at subsequent follow-up treatment in order to rule out peripheral degenerative lesion that may require treatment. She was, however, lost to follow up, despite full education about our findings.

DISCUSSION

The myopia in this case was an accidental discovery during the preoperative examination routine for cataract extraction in a patient aged 65 years. This is unusual because the myopia would have commenced in childhood but the patient simply ignored it, probably because the level of visual acuity was sufficient for her daily activities as a trader. The patient presented in the hospital like any other cataract patient without any clue of her myopic status. If she had undergone surgery without biometry there would have been a big refractive surprise and possible need for an explant. It has been documented that the commonest reason for IOL explant⁸ is the use of the wrong power IOL.

Although fundal examination under full mydriasis was attempted, the dense cataract masked the view of the fundus in the right eye. The presence of possible retinal breaks and posterior vitreous detachment could not, therefore, be ruled out preoperatively. A postoperative review was not possible because the patient was lost to follow up. Although visual acuity at discharge was 6/24 unaided, how long this improved vision would last is of great concern.

Information concerning cataract surgery and possible anaesthetic and surgical complications, particularly in a high myope, was given to this patient. The depth and accuracy of the information was possible due to the availability of biometry facility. Appropriate and adequate evaluation is important in cataract patients so as to prevent poor visual outcome, which could serve as a barrier to the uptake of cataract surgery.^{9,10}

Although in this case, peribulbar anaesthesia was administered successfully during surgery, neither retrobulbar nor peribulbar anaesthesia is a desirable option because of the risk of globe penetration.⁴ Topical anaesthesia or sub-tenon injection and general anaesthesia with the use of modern gaseous agents such as sevoflurane or intravenous propofol are preferred in high myope cases.³

This case emphasizes the need for biometry while preparing patients for intraocular lens implant.¹¹ Intraocular lens power calculation is problematic in high myopes.^{3, 12} Biometry may be inaccurate if the patient could not fixate due to posterior staphyloma or if fovea is not on the visual axis leading to wide angle kappa. The SRK formula used was appropriate in calculating IOL power for long eyes although the Holladay-2 formula is more desirable in view of the fact that it requires the entry of white to white corneal diameter as

a surrogate for 'anterior size' in the calculation.¹² The presence of posterior staphyloma found in the patient on the second postoperative day could explain our findings of +3D in one attempt and -3D in another attempt at biometry. The B scan ultrasound was done in this case to confirm the axial length determined by the A scan, to establish posterior staphyloma and retinal detachment. It is also useful to measure the anterior chamber depth as this may help to make the IOL calculation more accurate.

The non availability of the appropriate IOL power was a problem, so the patient had surgery without implant. The calculated IOL of 3.0 dioptres with axial length of 30.42mm agrees with the reported value of IOL range of -3 to +3 with an axial length of over 30mm. Lenses of this power are available as foldable or as polymethylmethacrylate (PMMA) rigid lenses, but until there is local production of IOL, the availability of lenses in extreme ranges will continue to be a problem.

Phacoemulsification would have been preferred in this patient as it offers the lowest risk of retinal detachment.⁵ The patient had extracapsular cataract extraction using limbal incision with canopener capsulotomy. There were associated complications of posterior capsular rent superiorly and vitreous loss. Continuous curvilinear capsulorhexis could have reduced the risk of the posterior capsular tear and associated vitreous loss. Vitreous loss is, however, not unexpected because capsular tear and liquefaction of the vitreous often occur in high myopes and in older people, as in this case. The occurrence of vitreous loss would however have doubled the risk of retinal detachment. The rent in the posterior capsule would, however, reduce the chances of poor vision from posterior capsular opacity and the risk of retinal detachment if she required YAG laser capsulotomy.^{5, 13} The fact that the patient was lost to follow up did not allow for final analysis or confirmation of the above possibility. The loss of patients to follow up, as in this case, is a problem that has been previously reported among Nigerian patients.¹⁴

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