

Case Report

Visual Outcomes after Cataract Surgery in an Adult Patient with Presumed Amblyopia and Anisomyopia

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Abstract

Purpose: To report the visual outcomes of cataract surgery in an adult with axial high myopia and presumed anisomyopic amblyopia, and to highlight that significant postoperative visual improvement can occur even when amblyopia is suspected.

Case Report: A 46-year-old woman presented with reduced vision in the right eye, high myopia, and early cataract changes. Preoperative best-corrected visual acuity was 6/24 in the right eye with an axial length of 25.51 mm. Slit-lamp examination revealed nuclear cataract grade 1–2 with mild posterior subcapsular opacity. The eye was managed with uncomplicated phacoemulsification and intraocular-lens implantation. Postoperatively, the right eye showed rapid and sustained visual recovery: 6/12 on day 1, 6/6 by day 9, and maintained 6/6 vision through one month. The improvement contradicted the initial presumption of amblyopia, indicating that optical media opacity and anisomyopia were the primary contributors to reduced preoperative acuity. The fellow eye had only early cataractous changes.

Conclusion: Marked visual improvement after cataract surgery in this high-myopic patient suggests that reduced acuity attributed to presumed amblyopia may, in some adults, be reversible once cataract-related blur is removed. Accurate differentiation between true amblyopia and vision loss from refractive or cataract-related causes is essential when evaluating surgical candidates.

Keywords: Cataract Extraction; Phacoemulsification; Amblyopia; Myopia; Axial Length; Visual Acuity; Treatment Outcome.

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Introduction

Myopia affects approximately 25 % of the general population and a larger proportion of Asians ¹. Axial myopia is defined as an axial length ≥ 25 mm, while high myopia refers to an axial length ≥ 26.5 mm ². High myopia has been reported to affect about 2.7 % of the global population ³. High myopia refers to an axial length ≥ 26 mm ⁴.

According to the Beaver Dam Eye Study and the Blue Mountains Eye Study, myopia is associated with nuclear cataract ⁵. The Blue Mountains Eye Study also found that myopia in younger patients (< 20 years) is associated with posterior subcapsular cataract formation ⁵. The Singapore Malay Eye Study determined that patients with high myopia have a three- to five-fold increased risk of nuclear cataract and a 30 % higher risk of posterior subcapsular cataract. Praveen et al., ⁶ similarly reported that high myopia is a powerful risk factor for cataract development in younger individuals. This is a case report of an Indian patient demonstrating the association of nuclear and posterior subcapsular cataract with axial high myopia. The purpose of the study was to assess the visual outcomes after cataract surgery in an adult with presumed amblyopia and anisomyopia.

Case Report

Written informed consent was obtained from the patient for publication of this case report and all accompanying clinical information. All identifying data have been removed to preserve anonymity. Institutional ethics committee approval was obtained for this single-patient case report.

A 46-year-old woman presented in late January to Tamojyoti Netralaya with the complaint of reduced vision. A comprehensive ophthalmological examination was performed,

including best-corrected visual acuity (Snellen chart), refraction by objective and subjective methods using retinoscopy and autorefractometry, intraocular pressure measurement by non-contact tonometer and Goldmann applanation, and fundus evaluation. Nuclear cataract was graded using a slit beam at a 30-35° angle, and cortical and posterior subcapsular cataracts were graded under retroillumination according to the WHO criteria ⁷.

Preoperative Findings

Best corrected visual acuity (BCVA) was 6/24 in the right eye (RE) and 6/6 in the left eye (LE). Intraocular pressure measured 16 mm Hg in the RE and 15 mm Hg in the LE. Axial length was 25.51 mm.

Distance refraction for the right eye was $-7.50/-0.50 \times 030$ with a visual acuity of 6/24, and for the left eye is $-2.50/-0.50 \times 155$ with a visual acuity of 6/6. Near addition is +2.00, giving N12 in the right eye and N06 in the left eye.

On slit-lamp examination, the RE had nuclear cataract grade 1-2 with mild posterior subcapsular opacity. The optic disc was tilted with a cup-disc ratio (CDR) of 0.3; posterior vitreous detachment (PVD) was present, and the fundus showed tessellation with a positive foveal reflex. The LE had early cataractous changes, a tilted disc with CDR 0.55, tessellated fundus, and normal foveal reflex. Axial length was measured by IOLMaster 700, and keratometry was performed by auto-keratometry. IOL power was calculated using the SRK/T formula.

Treatment Plan

Right-eye phacoemulsification with intraocular-lens implantation was planned and performed under local anaesthesia. Surgery

was conducted under strict aseptic precautions.

Post-Operative Day 1

The patient was comfortable one day after phacoemulsification with PCIOL implantation. Uncorrected visual acuity (UCVA) was 6/12 pinhole in the RE and 6/36 pinhole in the LE. The RE showed a clear cornea and quiet anterior chamber, and the central fundus was normal.

Medication plan: Pred Forte 8 times/day for one week then taper, Homide 2 times/day for one week, Moxifloxacin 4 times/day for one week, and lubricating drops (Soft Drop Liquigel) 4 times/day for one month.

Post-Operative Day 9

UCVA was 6/6 pinhole in the RE and 6/36 pinhole in the LE. The RE remained stable with a normal central fundus. Medications were tapered: Pred Forte 6 times/day for one week, Homide once daily for one week, Moxifloxacin 4 times/day for one week, and lubricants continued.

Post-Operative Week 3

UCVA was 6/6 in the RE and 6/60 in the LE. The RE showed a clear pseudophakia with PVD, tilted disc (CDR 0.3), positive foveal reflex, and tessellated fundus. The LE displayed early cataractous changes with a small-to-medium tilted disc (CDR 0.55) and mild temporal pallor. Pred Forte was reduced to 3 times/day for one week and tapered; lubricants continued. Refraction was planned for the next visit.

Post-operative Month 1

At one month and six days post-surgery, UCVA was 6/6 in the RE and 6/60 in the LE. The RE remained stable with pseudophakia, PVD, tilted disc (CDR 0.3), and tessellated fundus with a positive foveal reflex. The LE findings

were unchanged. Pred Forte was reduced to twice daily for one week and then stopped; lubricants continued for one month.

Final refraction

Final refraction showed right eye + 0.00 = 6/6 and left eye - 1.75/- 0.25 $\times$ 165 = 6/12 (under corrected due to doubling of vision), with near correction of RE +3.00 = N06 and LE +1.75 = N06, and patient consent and ethics committee approval were obtained.

Written informed consent was obtained from the patient for publication of this case report and all accompanying clinical information. All identifying data have been removed to preserve anonymity. Ethics committee approval was not required for this single-patient case report, according to institutional policy at Tamojyoti Netralaya, which follows the ethical standards of the Declaration of Helsinki (2013 revision).

Discussion

We analyzed the visual outcomes of cataract surgery with intraocular-lens implantation in an eye with high myopia and presumed anisomyopic amblyopia at Tamojyoti Netralaya. The patient presented for cataract evaluation without prior knowledge of amblyopia. In such cases, eyes with large inter-eye axial-length differences are often considered amblyopic and have traditionally been regarded as having a limited visual prognosis.

It has been estimated that approximately 3 % of all adult cataract surgeries are performed in eyes with pre-existing amblyopia⁸. Historically, these eyes were thought to derive limited benefit from cataract extraction in adulthood. However, the present case demonstrates that even in presumed amblyopia associated with anisomyopia, substantial improvement is possible.

In our patient, the operated eye achieved uncorrected 6/6 vision within one month postoperatively, despite a preoperative BCVA of 6/24. This improvement supports previous reports suggesting that removal of optical blur allows the visual system to function near its full potential even beyond the critical period of development. Patients with anisomyopia and longstanding inter-eye differences may present later when the better eye develops cataract-related blur, revealing the functional capacity of the previously amblyopic eye. The outcome in this case supports timely surgical intervention for age-related cataract in adults with anisomyopia and presumed amblyopia. With modern techniques, precise biometry, and appropriate postoperative management, excellent visual recovery can be achieved.

Conclusion

Marked visual improvement after cataract surgery in this high-myopic patient suggests that reduced acuity attributed to presumed amblyopia may, in some adults, be reversible once cataract-related blur is removed. Accurate differentiation between true amblyopia and vision loss from refractive or cataract-related causes is essential when evaluating surgical candidates.

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References

1. Rudnicka AR, Owen CG, Nightingale CM, Cook DG, Whincup PH. Ethnic differences in the prevalence of myopia and ocular biometry in 10- and 11-year-old children: the Child Heart and Health Study in England (CHASE). *Invest Ophthalmol Vis Sci*. 2010;51(12):6270-6.
2. Du R, Xie S, Igarashi-Yokoi T, Watanabe T, Uramoto K, Takahashi H, et al. Continued Increase of Axial Length and Its Risk Factors in Adults With High Myopia. *JAMA Ophthalmol*. 2021;139(10):1096-103.
3. Holden BA, Fricke TR, Wilson DA, Jong M, Naidoo KS, Sankaridurg P, et al. Global prevalence of myopia and high myopia and temporal trends from 2000 through 2050. *Ophthalmology*. 2016;123(5):1036-42.
4. Flores-Moreno I, Puertas M, Almazán-Alonso E, Ruiz-Medrano J, García-Zamora M, Vega-González R, et al. Pathologic myopia and severe pathologic myopia: correlation with axial length. *Graefes Arch Clin Exp Ophthalmol*. 2022;260(1):133-40.
5. Lim R, Mitchell P, Cumming RG. Refractive associations with cataract: the Blue Mountains Eye Study. *Invest Ophthalmol Vis Sci*. 1999;40(12):3021-6.
6. Praveen MR, Shah GD, Vasavada AR, Mehta PG, Gilbert C, Bhagat G. A study to explore the risk factors for the early onset of cataract in India. *Eye (Lond)*. 2010;24(4):686-94.
7. Thylefors B, Chylack LT Jr, Konyama K, Sasaki K, Sperduto R, Taylor HR, et al. WHO Cataract Grading Group. A simplified cataract grading system. *Ophthalmic Epidemiol*. 2002;9(2):83-95.
8. Hale JE, Murjane S, Frost NA, Harrad RA. How should we manage an amblyopic patient with cataract? *Br J Ophthalmol*. 2006;90(2):132-3.

Footnotes and Financial Disclosures

Conflict of interest:

The authors have no conflict of interest with the subject matter of this manuscript.