

Is there a Role for ACIOLs in Developing Countries?

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Background

The use of anterior chamber intraocular lenses (ACIOLs) in the 1970s produced a flood of late complications mainly from corneal decompensation and uveitis with secondary glaucoma plus hyphaema (UGH syndrome). This led to the development and widespread use of posterior chamber intraocular lenses (PCIOLs) and to ACIOLs receiving a bad reputation. The ACIOLs used were of a non-flexible closed loop design.¹

During the 1990s a flexible open loop ACIOL has been increasingly used in the western world for secondary implantation, or if planned extracapsular cataract extraction (ECCE) with PCIOL has not been possible due to capsule rupture.

Recent studies in Asia and Africa have evaluated the open loop ACIOL following intracapsular cataract extraction (ICCE) in order to determine whether ICCE + ACIOL is a safe procedure. If so, this could be used as an alternative to ICCE with aphakic spectacles for surgeons who are not able to perform ECCE/PCIOL surgery.

Results

In Nepal, Hennig, Evans and colleagues undertook a clinical trial to compare ICCE with aphakic spherical spectacles against ICCE with a standard 19 dioptre ACIOL. There were approximately 1000 eyes in each group and a 91% one year follow-up was achieved. The functional, poor outcome, defined as a patient seeing less than 6/60 in the operated eye with no added correction, was 5.1% in the IOL group and 5.4% in the spectacle group at one year. The major causes of poor outcome in the ACIOL group were refractive error (2.4%) and uveitis (1.5%).²

The preliminary results of the 2-5 years follow-up in Hennig's study indicate that long-term complications are uncommon. There has been no case of corneal decompensation. The poor outcome (corrected visual acuity less than 6/60) in the ACIOL group, is the same as in the spectacle group, but there are many more functionally blind people in the spectacle group due to lost or broken spectacles. There is preliminary evidence that secondary glaucoma may be more common in the ACIOL group, but the data needs further analysis. Some of the patients with poor outcome at one year have recovered vision in the later follow-up

Several small studies evaluating ACIOLs in Africa are on-going. Cook has followed 63 eyes with ACIOLs to 6 months.³ Seven patients had a functional vision of less than 6/60, but all these improved to 6/60 or better with correction. Approximately one third of eyes in the ACIOL group had some uveitis, compared to half this figure in a similar group receiving ECCE/PCIOL.

Comments

Many surgeons in Asia and Africa routinely perform ICCE surgery. Aphakic spectacles are problematic due to distorted vision in the short-term and loss/breakage in the long-term.

A safe ACIOL would give an alternative to aphakic spectacles for patients having ICCE surgery. The emphasis of the ACIOL studies has therefore been to document poor visual outcome so as to determine whether the new open loop ACIOLs cause problems or not.

ICCE surgery has more complications related to vitreous disturbance (i.e., cystoid macular oedema, retinal detachment and corneal decompensation) than ECCE. However, posterior capsule opacification has to be considered as a potential long-term problem after ECCE in patients who do not return for follow-up.

An ACIOL should only be inserted after an ICCE if the vitreous face is not protruding and the anterior chamber is deep. It is recommended that an ACIOL should not be inserted if vitreous has been lost or is present in the anterior chamber. It is essential to obtain secure wound closure, with at least 5 interrupted sutures, if an ACIOL is implanted.



After cataract surgery right eye. Maturing cataract, left eye

Photo: Murray McGavin

Conclusion

The evidence so far suggests that the open loop ACIOL is a safe lens in the hands of experienced ICCE surgeons. Uveitis, secondary glaucoma and cystoid macular oedema are complications, but relatively uncommon provided a good ICCE is performed. These surgical complications are less common than poor outcome due to correctable refractive errors.

Further experience with ACIOLs in heavily pigmented African eyes is needed, to see if increased inflammation is associated with poor visual outcome or can be adequately managed.

It is not suggested that ICCE/ACIOL should replace a well performed ECCE/PCIOL procedure, but rather that it is another option, which may be the appropriate procedure in certain situations, and preferable to ICCE with aphakic spectacles, provided an uncomplicated ICCE has been performed.

As more evaluation of the results of PCIOL and ACIOL surgery in developing countries becomes available, it is self-evident that all IOLs require a well trained competent surgeon if they are to be used safely. To use an analogy – it is not so much the car (IOL) that causes the accident, as the driver (surgeon)!

References

- 1 Apple DJ et al. Anterior chamber lenses. *J Cataract Refract Surg* 1987; 13: 157-89.
- 2 Hennig A et al. Randomised controlled trial of anterior chamber intraocular lenses. *Lancet* 1997; 349: 1129-33.
- 3 Cook CD, Evans JR, Johnson GJ. Is anterior chamber lens implantation after intracapsular cataract extraction safe in rural black patients in Africa? A pilot study in KwaZulu-Natal, South Africa. Submitted for publication.