Free-floating fragments have previously not been documented.

Several techniques for NdYAG laser delivery have been described.[7] These include cruciate, circular, horseshoe, or spiral delivery. Each technique has its own advantages and disadvantages. Circular application of laser was used in this case, in order to avoid pitting of the lens within the visual axis. However, it was because of this method that probably led to the free-floating remnant, since the other techniques cause contraction of the capsule or lead to the lasered portion 'flopping' out of the visual axis.

NdYAG capsulotomy, in addition to causing photodisruption of the posterior capsule, causes disruption of the anterior vitreous face in about 33% of cases.[8] It is likely that in many cases, where isolated remnants of the posterior capsule remain, these fragments settle into the vitreous cavity. In our case, it is likely that the anterior vitreous face was undisturbed after the initial laser treatment. As a result, the fragment was freely mobile in the retrolental space and unable to move into the vitreous cavity. After the second laser session, despite only minimal damage to the fragment itself, disruption of this anterior hyaloid face may have allowed the fragment to settle into the vitreous cavity and thereby move out of the visual axis.

This case illustrates the aetiology and treatment for one potential complication of circular application of laser in NdYAG capsulotomy.

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Sir,

Refractive error following cataract extraction with the implantation of a standard power intraocular lens in a rural African blindness prevention programme

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Age-related cataract accounts for approximately 50% of blindness in Africa, affecting an estimated 3.5 million people.[1] It is common practice in many African blindness prevention programmes to implant a standard power intraocular lens (IOL); however, in developed countries the calculation of the IOL power is now routine ophthalmological practice. We looked at the refractive outcome following the implantation of a standard power lens in Zulu patients.

Methods

A total of 100 patients had intracapsular cataract extraction (ICCE) with implantation of a 17.5D (A constant 114.5) anterior chamber intraocular lens (AC IOL), and a 100 patients had extracapsular cataract extraction (ECCE) with implantation of a 22 D (A constant 118.5) posterior intraocular lens (PC IOL). Using the SRK II regression formula, lens powers were anticipated to give a postoperative refraction in the AC IOL group of −1.36 D and in the PC IOL group of −1.76 D, according to measurements in an average Caucasian eye. All surgery was carried out using a standard limbal-based incision, and closed with sutures.

Postoperatively patients were offered an incentive for reattendance. The refraction was measured on a Topcon RM-A6000 autorefractometer after 8 weeks and after 6 months. Sutures were removed at 8 weeks to adjust the refraction if more than 2 D with the rule astigmatism was present. The spherical equivalent of the 6 month refraction was calculated.

Table 1 Results of refraction at 6 months in 103 patients undergoing cataract surgery and lens implantation (demonstrates the number and percentage of patients within *X* diopters of emmetropia)

Diopters from emmetropia	*ACIOL+PCIOL*		*ACIOL*		*PCIOL*	
	n	%	n	%	n	%
±1	51	50	29	54	22	45
±2	29	28	14	26	15	31
±3	16	15	8	14	8	16
±4	4	4	2	4	2	4
±5+	3	3	1	2	2	4
Total	103	100	54	100	49	100
Mean (SD)	−0.015 (1.98)		0.333 (1.64)		−0.398 (2.25)	

Results

The refraction was measured in 103 patients who were seen at 6 months.

Discussion

Our study shows a spread of patients similar to that found in Eritrea and East Africa (Table 1). In Eritrea they found that use of a standard 22 D lens should result in 48% of patients being within ±1 D of emmatropia and 73% of patients within ±2 D of emmatropia.[2] In East Africa without biometry and a 20–22 D lens (depending on availability), they found that 45% of patients were within ±1 D of emmatropia and 77% of patients were within ±2 D of emmatropia.[3]

What the above fails to emphasize is how many people are being left with large refractive errors (≥+2.00 D; ≤−3.00 D). In total, 17 (16.5%) of our patients fell within this category. By WHO definitions these patients will be either visually impaired (<6/60) or functionally blind (<3/60).[4]

Routine biometry requires time, trained personnel, expensive equipment, and large stocks of different power lenses. However, it has been shown that doing it significantly lowers the risk of large spherical errors and therefore reduces the numbers of patients made visually impaired or blind by virtue of cataract surgery.[2]

There is also a hyperopic shift to emmetropia from an anticipated refraction of approximately −1.5 D. This is most probably because of ethnic differences in biometric parameters and emphasizes the point that biometric parameters should be established for the target populations.

Do the benefits of biometry justify the means in developing countries? Within our parameters, 17% of individuals are left with refractive errors ≤−3.00 D or ≥+2.00 D. Although the surgery is most frequently changing an individual from light perception to good navigational vision, this is still an undesirably large proportion with high refractive errors. Solutions to this problem may be:

1 Preoperative biometry and a stock of three standard power IOLs.
2 Autorefraction at 1 or 2 days postoperatively and IOL replacement if extreme error.
3 Refraction with glasses postoperatively.

Clearly, the first would be the preferred option; however, because of the reasons listed above it may not be practical or appropriate in every setting.

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