

ASSESSMENTS OF ONE-YEAR FOLLOW UP OF PATIENTS WITH ECCE-PCIOL SURGERY AT UNIVERSITY OF ILORIN TEACHING HOSPITAL, KWARA STATE, NIGERIA

FG ADEPOJU, JFA OWOEYE, DS ADEMOLA-POPOOLA

Faculty of Health Sciences, Department of Ophthalmology, University of Ilorin, Ilorin

Summary

Objectives:

1. To assess the visual outcome and complications during a one-year follow-up period of all patients who had extracapsular cataract extraction (ECCE) with posterior chamber intraocular lens PCIOL implant.
2. To assess the average intraocular lens (IOL) power required to achieve emmetropia before the availability of the keratometer and A-Scan ultrasound machine in our centre.

Materials and methods: All cases of ECCE-PCIOL done at the University of Ilorin Teaching Hospital, over a period of eighteen months (Jan 2001-July 2002) were included in the study. Visual acuity, ocular status and complications for each patient were assessed before the surgery and also at regular periods during the one-year follow-up.

Results: A total of 105 patients (116 eyes) were operated. Eleven patients (9.4%) had bilateral surgery. The patients' age range was 7-89 years with a mean of 64 years and a male to female ratio of 1:1.2. Sixty-six (57%) patients had right eye (RE) surgery, while 50 (43%) had left eye (LE) surgery; 98% of them had a preoperative visual acuity of $<3/60$ in the operated eye.

The types of cataract seen were: senile 81.0%, presenile 11.2%, congenital (for secondary implant) 1.7%, post traumatic 2.5%, and post uveitic 1.7%. Five eyes (4.2%) with phacomorphic glaucoma were omitted during the analysis.

At discharge, 9.1% of the patients had VA of 6/6-6/18 unaided, while 73.8% had VA of 6/24-3/60; 17.1% remained blind with a VA of $<3/60$.

At one month follow-up, 33.7% had VA of 6/6-6/18 while 62.1% had VA of 6/24-3/60, and 4.2% remained blind with a VA of $<3/60$. Ninety-five of the patients (86.4%) came for follow-up assessment.

During assessment at two months with refraction,

83.8% had VA of 6/6-6/18; 13.2% had 6/24-3/60 VA and 2.9% remained blind. A total of 68 patients (61.3%) came for this second follow-up.

At the 6 month follow-up, 77.3% had VA of 6/6-6/18, while 22.6% had VA of 6/24-3/60. Thus 100% had VA $>3/60$. Only 54 patients (49%) showed up for this follow-up assessment.

VA at one year: 78.7% had VA of 6/6-6/18, and 10.74% had VA of 6/24-3/60. About 10% had become blind with VA $<3/60$, mainly from posterior capsular opacity. Only 47 of the patients (42.7%) came for this follow-up assessment.

Peri-operative complications included: pupillary distortion (26.1%), striae keratopathy (23.4%), residual cortical matter (13.5%), and posterior capsular rent (6.3%). Wound dehiscence, raised IOP, lens dislocation, and corneal oedema had between 1.5-2.5% occurrence.

Complications at one year: pupillary distortion (31.1%), posterior capsular opacity generally (23%), but 10.3% had posterior capsular opacity dense enough to give VA $<3/60$, 2.1% of the patients had persistent corneal oedema and another 2.1% developed pupillary membrane.

The average IOL power likely to give emmetropia in an adult in situations where it is not possible to calculate IOL power is 20 diopters, as shown by the assessment of the outcome of refraction and the IOL power used.

In conclusion, cataract surgery by ECCE-PCIOL implant is a safe and rewarding method of cataract surgery even in a developing nation like Nigeria. The complications are amenable to correction where facilities are available. Outcome can be improved when basic requirements like A Scan, keratometry, and YAG laser are available. The absence of any case of endophthalmitis is also worthy of note.

Key words: - cataract, outcome, ECCE-PCIOL, complications, one-year, follow-up

* Author for correspondence

INTRODUCTION

Cataract remains the commonest cause of blindness worldwide and also accounts for over 50% of blindness in Nigeria.¹ Kwara State is located in the north central region with a population of 1.5 million.² The people are predominantly farmers and low-income earners. The University Teaching Hospital, Ilorin serves Kwara State as well as certain parts of Oyo, Osun, Kogi and Niger states. Until recently, the method used in cataract surgery at the University of Ilorin Teaching Hospital, like in many other tertiary centres in Nigeria and in some other developing countries, was intracapsular cataract extraction with aphakic correction.^{3,4,5} Presently, ECCE-PCIOL implantation is beginning to receive the desired acceptability in tertiary institutions in Nigeria with increasing rate of conversion among ophthalmologists. There is also increased documentation of improved outcome of surgery, not only in Nigeria but also in other developing countries.^{3,6-9} Although trained personnel in ECCE-PCIOL have been available since 1999 in our centre, intraocular lens implant could not commence until January 2001 due to non-availability of consumables and other logistics.

Auditing of cataract surgery, like any other medical service, is a useful tool for improving medical service, and this evaluation follows previous recommendations.^{10,11} The first set of ECCE-PCIOL cases done without biometry was assessed for long-term visual outcome, residual refractive error and complications. The main aim of the study is to improve the quality of care to our cataract patients. It is also meant to serve as future reference for comparison of outcome with the patients now undergoing the same surgery in our centre after biometry.

MATERIALS AND METHODS

All patients billed for ECCE-PCIOL implants between January 2001 and July 2002 were included in the study and followed up for a period of one year. Pre-operative information obtained included age, sex, and occupation. Also, relevant past medical and surgical history was reviewed. Pre-operative assessment included unaided and aided visual acuity, pupillary responses to assess optic and retinal nerve integrity. Slit lamp examination, tonometry with the Perkins or Goldman tonometer and refraction (where possible) were done. Pupils were dilated with mydriacyl and oral acetazolamide 250mgbd was given on the day of admission and at 6 a.m. on the day of surgery. No biometric studies were done because the equipment was not available. The surgeries were done by four consultants; only a few were performed by residents under supervision using the scanoptic operating microscope.

Pre-medication with diazepam and pentazocine 30mg were given to apprehensive patients. Local anaesthesia was used for all cases except in the two children aged 7 and 9 years who had general

anaesthesia. Ocular massage was done for 5-10 minutes to ensure a soft eye before surgery. The fornix-based conjunctival flap was raised, the limbal groove incision made, and a stab incision into the anterior chamber using blade fragment or size 11 surgical blade made.

Hydroxyl methylcellulose viscoelastic was used. Anterior capsulotomy was done using an improvised cystotome, and the nucleus was delivered by counter pressure. Irrigation and aspiration of cortical materials were done with simcoe canular using normal saline. The IOL was then inserted. IOL power was taken arbitrarily from the available stock of 19-22 diopters. Although, in some cases the refractive status of the second eye served as a guide to the choice of IOL power used.

Final centration of the IOL was done using the Sinsky hook. Viscoelastic material and remnant lens matter washed out with irrigating fluid. The limbal incision was closed using available sutures: 8-0 virgin silk or 9-0/10-0 nylon. Subconjunctival gentamycin 20mg and dexamethasone 4mg were given, topical antibiotic instilled and the eye padded overnight. Postoperative drugs used include topical steroid, antibiotic and tropicamide. Postoperative assessments of visual acuity with and without pinhole, intraocular pressure checks and slit lamp examinations for any complications were done at intervals. Patients were discharged as from the second postoperative day on their topical eye drops. Follow-up was at 1 week, 4 weeks, 8 weeks, 6 months and 1 year. Retinoscopic refraction was done as from 2 months post-operation.

RESULTS

A total of 116 cataract extractions were performed during the period under review. The mean age was 64 years with a range of 7-89 years. The 111 eyes operated for non-complicated cataract were analysed together. There were 47 males and 58 females, with a male to female ratio of 1:1.2. The operations were done in 66 (57%) right eyes and 50 (43%) left eyes.

At the time of discharge, 17.1% remained with a visual acuity of <3/60 as opposed to 98% prior to surgery. Also, 9.1% had 6/6-6/18 visual acuity at the time of discharge and the percentage in this group progressively improved to 78.7% at 1 year as presenting visual acuity. The general trend of visual acuity and follow-up rate is as shown in table 1.

Major peri-operative complications (table 2) included pupillary distortion (26.1%), striae keratopathy (23.4%), remnant cortical mater (13.5%), and posterior capsular rent (6.3%).

Complications at 1 year were pupillary distortion 31.1%, posterior capsular opacity 23%, corneal oedema and pupillary membrane 2.1% each.

Fifty-nine patients had retinoscopy done 2 months after surgery, and the residual refractive error against the IOL power used is as shown in figure 1 and table 3.

Table 1. Presenting Visual acuity of PC-IOL patients during the period of review

Period	6/6-6/9 No(%)	6/12-6/18 No(%)	6/24-6/36 No(%)	6/60-3/60 No(%)	<3/60 No(%)	Total No(%)
Pre op	-	-	-	2	109	111
At <1/52	1(0.9)	9(8.1)	43(38.7)	39(35.1)	19(17.1)	111(100)
1/12	6(5.3)	26(27.7)	48(50.5)	11(11.6)	4(6.5)	95(86.3)
At 2 /12 a	9(9.8)	31(33.7)	41(44.6)	5(5.4)	6(6.5)	92(83.6)
At 2 /12b	37(54.4)	20(29.4)	7(10.3)	2(2.9)	2(2.9)	68(61.8)
At 6/12	21(39.6)	20(37.7)	8(15.1)	4(7.5)	-	54(49)
At 1 year	24(51.1)	13(27.6)	3(6.3)	2(4.)	5(10.6)	47(42.7)

Note: a - without refraction
b - with refraction

Table 2. Intraoperative and immediate postoperative complications

Complication	Number	Percentage
Pupillary distortion	29	26.1
Striae keratopathy	26	23.4
Residual lens matter	15	13.5
Fibirinoid exudate	13	11.7
Pigments on IOL	11	9.9
Posterior capsular rent	7	6.3
Wound dehiscence	4	3.6
Raised IOP	4	3.6
Lens dislocation	3	2.7
Persistent corneal oedema	2	1.8
Hyphaema	2	1.8

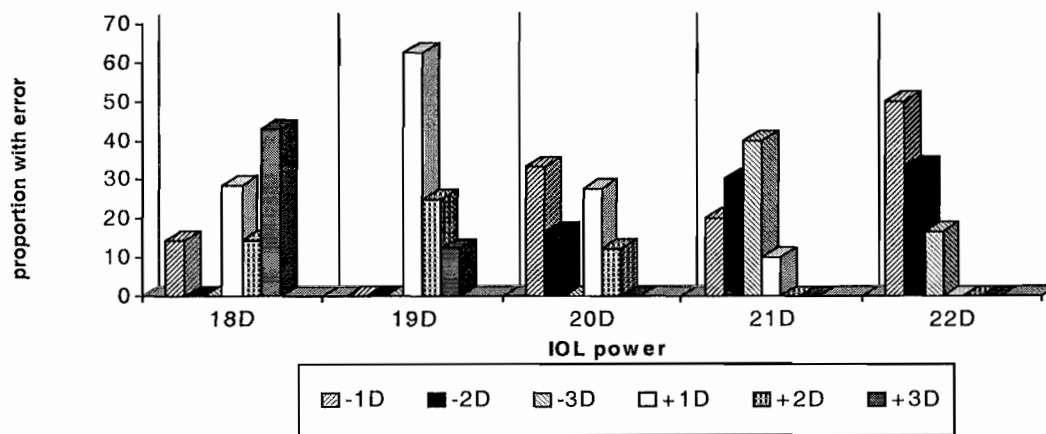
Patients that had 21 or 22 diopters lens inserted tended to have myopia while patients with 18 and 19 diopters had more of hypermetropia.

At two months, one patient had decentration of IOL, necessitating removal.

Table 3. Refractive error of patients versus the IOL power used

Power (IOL)	No used	Outcome					
		Myopia			Hypermetropia		
		-1	-2	-3	+1	+2	+3
18	9	1(14.3)	-	-	2(28.6)	1(14.3)	3(42.9)
19	18	-	-	-	5(62.5)	2(25)	1(12.5)
20	22	8(33.3)	3(16.6)	-	5(27.7)	2(12.1)	-
21	32	4 (20)	6 (30)	8(40)	2(10)	-	-
22	11	3 (49.8)	2(33.2)	1(16.6)	-	-	-

Note: Only patients that had retinoscopy were analysed above.



Average cylindrical correction of 1-2.5 with the rule.

Figure 1. Proportion and magnitude of residual spherical error by IOL power

DISCUSSION

The age range of the patients was 7-89 years, with a mean of 64 years, reflecting the population with senile cataract, which formed the bulk of the operated cases as shown in figure 1. Fifty-six percent were rural farmers and petty traders and 27% were not gainfully employed. Many were mainly dependent on their children or others for social and financial support, which contributed to the delay in seeking help and made follow-up difficult.

Contrary to other reports of male preponderance,^{3, 4,8,9} there is a slight female preponderance in the ratio of 1:1.2 in this series.

Pre-operative acuity was <3/60 in 98% of the patients and those with perception of light (PL) and hand movement (HM) accounted for over 90%. This finding is similar to that in other parts of Nigeria and most developing countries.³⁻⁶ Majority had dense cataract, that would have made them unsuitable for phaco-emulsification.

Table 1 shows a progressive improvement in the visual acuity of operated patients as was also found in other studies.^{8,9,12-14} Out of the 98% with VA <3/60 at admission, 19% remained in this group at discharge mainly due to inappropriate IOL power, striae keratitis, and marked anterior chamber activities. Also, 19% were still blind at discharge, which is significantly higher than the experience at the National Eye Centre (NEC), Kaduna, where only 6.3% fell in this group and 7.3% in the series at Nepal.⁶ The possible reasons include lack of biometry and use of normal saline as irrigating fluid. Subsequently, as healing progressed, the percentage of patients with VA <3/60 reduced to 2.9%. With best correction at 2 months, 83.8% had a VA between 6/6-6/18, which is slightly below the 90% classified as good outcome by WHO. Another 10% had a borderline outcome of 6/18-6/60; while 6.2% had a poor outcome of <6/60 as against the 5% acceptable for borderline and poor outcome. At one year, however, of the 47 people who came for follow-up, 10.6 % had a drop in VA to <3/60, mainly due to posterior capsular opacity. All of these patients had earlier enjoyed vision better than 6/18.

Peri-operative complications were minimal as shown in table 2; 6.3% had posterior capsular rent, which is slightly higher than the 4.9% found by Nwosu and Bekibele, and the 2% at Nepal,¹⁴ but lower than the 14% which occurred in the early series⁴ in Kaduna. Most of the other complications were temporary and were resolved with management. There were no vision-threatening complications such as endophthalmitis or retinal detachment in this series. At one year, the major complication was posterior capsular opacity which occurred in 23% of the patients, and was dense enough to give a VA of < 3/60 in 10.3% of the cases. Ruit,¹³ in a review of 2-year post-operative assessment in Nepal found 21% of the patients had posterior capsular opacity

but the severity of the opacity was not given. Posterior capsular opacity was the major cause of poor vision at one year as in other series.^{7,16} The non-availability of YAG laser made surgical capsulotomy the only available option. The only other complication was persistent corneal oedema in one patient (2.1%) who could not have the benefit of corneal transplant. Hence the majority of the complications found are either non vision threatening or amenable to correction if facilities are available.

A 20D lens is the average lens power advocated in our Centre when facilities for biometry are not available, as it gave even distribution of myopia and hypermetropia in the low range. An important confounding factor to note however is the A constant of the lens in use. In this series, the same A constant was used for the patients, however, every centre needs to have biometry facility to improve patient care.

The follow-up rate as shown in table 1 was not encouraging, as is typical of studies involving long follow-up periods, particularly in developing countries.¹⁷ The relative measure of success in the follow-up was due to pre-study education, need for consultation on fellow eye or the little attempt at patient tracing. Major reasons deduced for not keeping the appointments include the cost of visits, satisfaction with visual outcome, ill health or death, and lack of understanding of the reason for repeat visits in the absence of any complaint. Only a small percentage reported for follow up voluntarily.

CONCLUSION

In conclusion, cataract surgery by ECCE-PCIOL implant is a safe and rewarding method for cataract surgery even in a developing nation like Nigeria. The complications are amenable to correction where facilities are available. Outcome can be improved if basic requirements such as A Scan, keratometry, and YAG laser are available. The absence of any case of endophthalmitis is also worthy of note.

ACKNOWLEDGMENT

We would like to acknowledge the contribution of other surgeons, the records officer, who helped in storing the information, and other staff of the eye clinic for their support.

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