

Early experience with intraocular lens implantation surgery in University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria

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Abstract

Background: Cataract affects some 16 million people globally. In Rivers State, Nigeria, it is responsible for half the 2.5% prevalence of blindness. The treatment is mainly surgical.

Aim: To assess cataract operations in the Ophthalmic Unit of the University of Port Harcourt Teaching Hospital

Methods: All patients with cataracts operated upon in the University of Port Harcourt Teaching Hospital between the period of January and December 2004 were included. Records of follow-up till 12 weeks post surgery were examined and analyzed manually with statistical backup using student's t-test with 95% significance. Visual outcome was categorized as good with visual acuity (VA) better than 6/18, fair with VA between 6/18 and 6/60, poor with VA less than 6/60.

Results: A total of 43 eyes were operated on in the period. Patients' ages ranged between 7 months and 84 years (average 50.9 years). Only 25 patients failed

to attend follow-up at 12 weeks after surgery. Postoperative visual recovery at 6 weeks was good in 20.9%, fair in 46.5% and poor in 23.3%. Those older than 50 years had more patients with good visual outcome but this was not statistically significant. The males appeared to have more patients with good outcome but this was not statistically significant ($P=0.46$). Those with primary level of education and housewives also appeared to have a better chance of achieving at least a fair outcome but this was not statistically significant ($P=0.35$ and 0.38 respectively). Postoperative vision was significantly better among those with simple, uncomplicated senile cataract rather than with traumatic, subluxated and dislocated cataract ($P=0.00021$).

Conclusion: Only 25% of the 43 eyes operated on had good outcome at 6 weeks.

Key words: Audit, Cataract, University of Port Harcourt, Extra capsular.

Introduction

Cataract is a major cause of blindness in the world and affects an estimated 16 million people globally both in the developing and developed world¹⁻³. The prevalence of blindness in sub-Saharan Africa is about 1.4% with cataract accounting for 43.7%¹. In Nigeria, the prevalence of blindness is about 1%⁴ and this means that out of about a population of 100 million there are at least one million people blind. Blindness from cataract is estimated to be about 50% of this number⁴. The prevalence rate of blindness in Rivers state is 2.5%, out of which cataract is responsible for up to two-thirds of those

who are blind⁵.

The only known treatment for cataract is surgical removal and subsequent correction of the optical error that develops⁶. There are numerous surgical methods of extraction of the cataract. These methods include extracapsular cataract extraction (ECCE) with insertion of an intraocular lens implant (PCIOL), phacoemulsification, intracapsular cataract extraction (ICCE) among others. ECCE with PCIOL is however an acceptable method of surgical correction in the developing world¹. This method of cataract surgery with intraocular lens insertion was adopted exclusively within the period of this study at the

ophthalmic unit of the University of Port Harcourt Teaching Hospital, Rivers state, a centre which previously offered ICCE to clients.

The figure of 2.5% in prevalence of blindness in Rivers state is way above the national prevalence of 1% with cataract being responsible for half of this rate⁴. The aim of this paper is to retrospectively analyse the epidemiology and outcome of these first few cases seen, with a view to improve the outcome and hopefully make an impact on the prevalence of cataract in the catchment areas of the hospital with time.

Patients and Methods

A retrospective study of all cataract patients who were actually operated upon in the year 2004 was carried out using information obtained from the operation register in the eye theatre and medical folders retrieved. Forty-three eyes (n=43) of 37 patients were operated upon. Details about age, sex, occupation, level of education, associated medical conditions, preoperative visual acuity (VA), clinical findings, slit lamp findings, intraocular pressure (IOP) readings and postoperative course till 12 weeks post operation were assessed. Biometry was not done as at the time this audit was being written. Other information obtained include the intraocular lens power inserted, the type of sutures used and the type of anaesthesia given. Medically stable patients were admitted 2 days before surgery into the ophthalmic ward and prepared for surgery as follows: preoperative instillation of topical antibiotics, 500 mg oral acetazolamide the night before and on the morning of surgery, trimming of lashes, and dilation of the pupils with 10% Phenylephrine and Mydriacyl one drop every 10 minutes, three times. All adult patients had their surgery under local anaesthesia (facial block and peribulbar injections) using 2% xylocaine with adrenaline. Premedication was not routinely used. Children had their surgery under general anaesthesia. Viscoelastic material was used to maintain the anterior chamber depth during the surgery with normal saline as the irrigating fluid. A range of intraocular lens power of between 18.5D-

22.5D was used, depending on what was available per time. Immediately following the procedure, a subconjunctival injection of a mixture of 0.3 ml of depo medrol^R and 0.5 ml of 80 mg gentamicin^R was given. Topical drops of Maxitrol^R, Gentamicin^R and Mydriacyl^R was instilled (and also used postoperatively for maximum of 8 weeks) and the eye padded. No oral antibiotics are given routinely postoperatively. Refraction was carried out at 8 weeks post surgery after tapering off medication. Postoperative visual outcome was assessed as follows:

Good outcome was assessed as VA of better than 6/18, fair outcome was assessed as VA of between 6/18 and 6/60, while poor outcome was graded as VA of less than 6/60.

The results were analyzed manually and statistical analysis was carried out with EPI Info version 6.1 and student's t-test at 95% level of significance.

Results

A total of 43 eyes of 37 patients were operated upon in the period under review (January to December of year 2004) with an average of 3.5 surgeries /month.

Their ages ranged from 7 months to 84 years with an average age of 50.9 years. The male to female ratio was 3:2 (Figure1).

The most frequent occupations were civil servants and farmers (20.9% and 14% respectively). Other patients were business people, housewives and retirees (Table 1).

Table 1. Occupation of subjects

Occupation	number of eyes	%
Business	4	9.3
Fisherman	2	4.7
Farmer	6	14.0
Trader	2	4.7
Housewife	4	9.3
Preschooler/student	6	14.0
Civil servant	9	20.9
Retiree	5	11.6
Tailor	1	2.3
Clergyman	2	4.7
Technician	2	4.7
Total	43	100

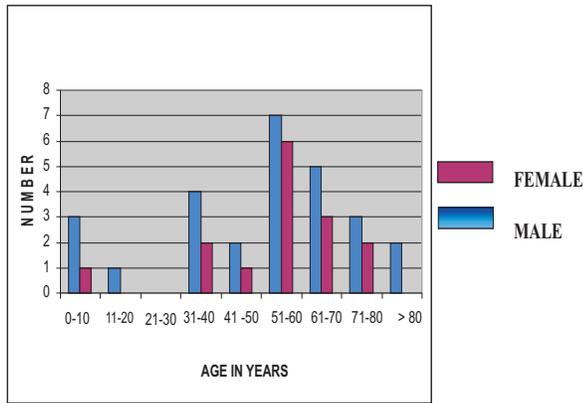


Figure 1. Age/Sex distribution of subjects

Only one person (2.3%) had no formal education with 32.6% each having at least primary or secondary education. Seven percent had tertiary education. Approximately sixty percent (62.8%, n=27) had fully mature age related cataracts while only 16.3% (n= 7) had traumatic cataracts. Less than 10% (9.3%, n=4) had diabetes associated with their cataracts. One patient had bilateral congenital cataracts (Table 2).

About half of the subjects (48.8%) had cataracts in both eyes. Over a quarter (27.9%) had the condition in the right eye only while 23.3% had it in the left eye only.

Majority (19 eyes, 44.2%) had visual acuity of at least hand movement preoperatively in the affected eye while one patient had a medical indication for an ECCE in an NLP eye (Table 3).

The intraocular pressure was documented in only 27 of 43 eyes and it was only abnormal in 4 cases. The IOP was less than 21 mmHg in 53.5% and above 21 mmHg in 9.3% of them. The 5th day postoperative IOP was within normal in 25 eyes (58.1%) of those checked while about 4.7% (n=2 eyes) had higher IOP than 21mmHg. The IOP in eighteen eyes were not checked. Most cases had

their surgery under local anaesthesia (95.4%). There was retrobulbar haemorrhage in one subject. General anaesthesia was mostly reserved for paediatric cases.

The standard surgery preferred in the centre as at the time of audit was extra capsular cataract extraction (ECCE) with posterior chamber intraocular lens insertion (PCIOL). This was carried out in 41 eyes while only 2 eyes had no lens inserted due to subluxation or dislocation of the lens.

Table 2. Type of cataract

Type of cataract	Number	%
Senile cataract	27	62.8
Congenital	2	4.7
Traumatic/dislocated	7	16.3
Diabetic	4	9.3
Postuveitic	1	2.3
Posterior subcapsular	2	4.7
Total	43	100

Table 3. Preoperative visual acuity

Visual acuity	No of eyes	%
6/24 -6/60	3	7.0
3/60	11	25.6
Hand motion	19	44.2
Light perception	9	20.9
No light perception (NLP)	1	2.3
Total	43	100

Table 4. Complications

Complication	Number of eyes	%
Intraoperative		
Descemet's Membrane stripping	0	0
Hyphaema	0	0
Posterior capsular rent	2	4.7
Vitreous loss	2	4.7
Zonular dehiscence	1	2.3
Not recorded	38	88.4
Total	43	100
Immediate postoperative		
Striate keratopathy	17	53.1
Cortical remnants	1	3.1
Pupil capture	2	6.3
Iris prolapse	3	9.4
Endophthalmitis	0	0
Postoperative uveitis	5	15.6
Shallow anterior chamber	1	3.1
Hyphaema	1	3.1
Corneal ulcer	1	3.1
Conjunctival Discharge	1	3.1
Total	32	100
Late postoperative		
Dropped lens	1	2.3
Rubeosis iridis	1	2.3
Bullous keratopathy	1	2.3
Phthisis bulbi	2	4.6
Total	5	11.5

Table 5. Visual acuity on 1st postoperative day, on discharge (5 days later), 1 week, 6 weeks, 12 weeks after surgery

Visual acuity	1stDPO	5 th DPO	1wk postop	6wks postop	12wks postop
	No of eyes %	No of eyes%	No of eyes %	No of eyes %	No of eyes %
6/6 -6/18	--	1 (2.3)	8 (18.6)	9 (20.9)	11 (25.6)
6/24 -6/60	--	17 (39.5)	15 (34.9)	20 (46.5)	6 (14.0)
<6/60	40 (97.7)	21 (48.8)	16 (37.2)	10 (23.3)	7 (28)
NLP	1(2.3)	2 (4.7)	1(2.3)	1 (2.3)	2 (4.7)
Lost to follow up	nil	nil	2 (4.7)	3 (7.0)	17 (39.5)
VA Not recorded	2 (4.7)	2 (4.7)	1 (2.3)	nil	nil
No left attending	all	all	41	38	25
Total	43	43	43	43	43

DPO = Day postoperation, **WK** = Week,
Postop = Postoperation, **No** = Number

Table 6. Visual outcome

Features:	Good	Fair	Poor
Age :			
Less than 50 years	2	7	7
More than 50 years	8	12	4
Sex :			
Male	5	12	8
Female	6	6	4
Type of cataract :			
Senile	7	14	5
Traumatic	0	4	2
Diabetic	3	0	1
Posterior uveitis	0	0	1
Dislocated/subluxated	1	0	1
Occupation :			
Business	2	7	7
Farmer	2	3	1
Housewife	3	1	0
Civil servant	1	6	1
Retiree	0	3	2
Student	0	3	1
Others	3	3	4
Educational level :			
Primary	6	3	5
Secondary	4	7	4
Tertiary	0	2	1
None	1	4	0

The IOL power most favoured was between 20-21D (79.1%) as biometry was not routinely performed in most cases as at the time of writing this paper. Rigid single piece IOLs are used routinely since they are cheaper and more widely available^{4,7}. Wounds were mostly closed with 10-0 nylon sutures (98% of cases) unless not available, in which case 8-0 sutures were used.

Intraoperative complications were not seen in 38 cases (88.4%) while posterior capsular rupture and vitreous loss was seen in less than 10% of the cases operated upon (4 eyes, 9.4%). The first postoperative day showed corneal striae in the majority of cases (53.1%, n=17), pupil capture was

seen in 3 cases (6.3%) while marked postoperative uveitis was present in 5 cases (15.6%). Late postoperative complications like dropped lens, bullous keratopathy etc were seen in 5 eyes by the 12th week (Table 4).

The visual acuity (VA) postoperatively was less than 6/60 (corresponding to VA at least CF at 3 meters) in 40 eyes on the first postoperative day (poor outcome). Five days later, on discharge, the VA had improved to better than 6/60 in 18 of these eyes with 17 of them with a VA between 6/18 and 6/60 (fair outcome) and one patient with a VA between 6/6 and 6/18 giving a good outcome (Table 5).

At one week after discharge, 8 eyes had improved in VA to between 6/6 and 6/18 while the VA of 16 eyes were between 6/18 to 6/60. The VA remained at less than 6/60 in 16 eyes. By six weeks post surgery, only 10 eyes still had a VA of less than 6/60. Three people were already lost to follow up by now. Twenty-nine eyes had a VA of better than 6/60 (20 eyes with VA of 6/18 to 6/60, falling into the fair outcome group; 9 eyes with VA of between 6/6 and 6/18, falling into the good outcome group).

At 12 weeks post surgery, the number lost to follow up had risen sharply from 3 to 17 eyes. The number of patients with VA better than 6/60 had dropped from 29 to 17 eyes. (11 eyes with VA between 6/6 and 6/18 and 6 eyes with VA between 6/18 and 6/60) (Table 6).

There were more males with a poorer outcome than females though this was not statistically significant ($P=0.58$), although there was no sexual predilection in the good outcome group. Outcome seemed to be better in those older than 50 years ($P=0.45$). Outcome also seemed to be better with people with primary education and among housewives and farmers, though these were also not statistically significant ($P=0.44$ and 0.08 respectively). However the outcome was better if the patient had a simple senile cataract, rather than a traumatic, post uveitic or dislocated cataract. This was statistically significant ($P=0.00021$).

Discussion

In the University of Port Harcourt Teaching Hospital, over 500 cataracts are diagnosed every year. However, less than half of these are booked for various reasons, with only a fraction of this number actually turning up for operation. These reasons could be fear, ignorance, cost, and long distance to the facility, irregular light and long waiting list among others as earlier reported elsewhere⁸.

Studies have shown that most people particularly those who go for the traditional method of cataract extraction (couching) did not understand the aetiology of cataract⁹. It has been reported that only 37% of patients booked for cataract extraction understood what a cataract actually was and less than half understood what surgery involved till they had actually had surgery, despite adequate preoperative counselling¹⁰. The same study indicated a similar number thought that cataract surgery was completely risk free at first surgery, while the number virtually doubled (80%) at surgery of the second eye having seen that there is absolutely nothing to worry about. So to actually get patients to submit themselves to surgery particularly for the first eye, they need adequate and tirelessly rendered counselling and must be well motivated from seeing neighbours and friends who have undergone these procedures successfully. A study has shown that common ocular conditions like cataract and glaucoma can be better understood by the patient than other relatively obscure ocular conditions¹¹. Since the cure for cataract is surgery, population education and patient counselling which has been known to improve surgical uptake will encourage more patients to submit themselves for surgery¹². This is gradually being put in place more consistently in our centre. Most patients are operated upon when their visual acuity is at least CF at 3 meters (3/60 VA) and still have to be booked to wait their turn before they can have their surgery. A study involving two hundred and thirteen patients on an ophthalmic surgical waiting list showed that three quarters of them who were over 65 years were listed for surgery in one year. Three years later, only a little over half (56%) had received their cataract

surgery⁸. The rest had either died, gone elsewhere or were still on the waiting list. This may also be a factor in the low turnout on the days of admission. The patient having waited for so long may have gone elsewhere. There is no system put in place to follow-up patients who don't turn up on the day slated for admission. Attempts are currently being made to collect their phone numbers (if any) apart from a correct house address on the day they are booked for surgery. This might enhance follow-up and thus improve uptake of our services. This low turnout may not likely be related to the cost of surgery as it costs less than half what it costs in a private setting to go through the procedure in our centre.

Most of the patients diagnosed were elderly which correlates with well known documentations^{1,13,14}. The male to female ratio of 3:2 noted, indicating a male preponderance, in this study is a finding which was also observed by other workers^{1,15,16}. This may be a reflection of the role of males as breadwinners who must be able to fend for their family and also may indicate the still relatively passive role of women in the society.

Most centres do day case surgery which improves uptake as most people prefer familiar surroundings rather than strange hospital wards which may be perceived as uncomfortable¹⁷. This is however not the practice in our hospital. Patients are admitted in the center after routine screening tests for a minimum of one week within which time topical antibiotics are given as part of their preparatory regimen, to sterilize the operating field. A metaanalysis by the Cochrane group has however shown no difference in the visual outcome except only reduced costs in the day case group as compared with the in-patient group¹⁸.

In our audit, there was no record of any visual loss due to endophthalmitis. This was however not the case in some series^{19,20}. It is therefore highly recommended that as well as choosing patients carefully, a quality assurance system be put in place to control infection²¹. One of the patients developed bullous keratopathy as was noticed in 11.3% of cases in a report from the northern part of Nigeria²². This created new demands on our service, with the centre not yet having access to corneal banks or potential donors.

To have a better visual outcome barring any

other complicating ocular problems, biometry is important²³. This procedure was however not carried out in the centre as at the time this paper was being written. This may have been responsible for some of the cases that fell into the poor outcome group who neglected to come for an overrefraction. However studies have shown that only 4% of biometricians or those who carry out biometry actually follow the guidelines suggesting varying formulae to be used depending on axial length²³, which may directly contribute to the not so perfect visual outcome in some series. Preoperative biometry which we plan to make functional very soon, however can improve the good outcome group by up to 10% as some workers have shown¹³.

Age-related cataracts mainly seen in this study correlates well with other studies^{16,20}. Diabetic cataracts from uncontrolled diabetes were also observed. Most of the cataracts done were cortical in nature with very few posterior subcapsular ones.

Over 78% had blinding cataract with VA equal to or less than 3/60 which is comparable to Eruchalu and Pam's study¹. It is preferable in our centre depending on the patient's occupation, for the patient's VA to be at least at this point before surgery is offered. However 3 of these eyes had a VA of between 6/24 and 6/60 (Table 5).

Local anaesthesia is usually used routinely in our centre which is comparable to most series^{1,17}. Less than 10% had posterior capsular rupture in our series, which is comparable to Bekibele's findings of 4.9% incidence¹⁶. However, Eruchalu and Pam¹ reported that this was not a problem. Using the World Health Organization's guidelines on visual outcome of cataract surgery, 40 eyes (97.7%) had VA of at least CF at 3 meters (or 3/60) on the first day postoperative (poor outcome). A similar study carried out in East Africa to evaluate outcome during transition from ICCE to ECCE+PCIOL however showed a best corrected VA of 6/18 in as high as 94.3% of patients (416 eyes)¹³. This is comparable to some audits carried out in Indian eye camps where up to 87.9% had good outcome after six weeks follow-up²⁴. Even under training conditions, a fair outcome was attained in up to 87.3% patients in a report of the outcome of a training course in ECCE+PCIOL in Nigeria²⁵.

However, a pilot multicentre study in the United Kingdom showed 45% of their patients having 6/12 or better after their surgery. In 1997, a similar study showed only 27% as having this level of VA¹⁷. So we expect a better outcome with time. Factors responsible for the poor outcome in this study may include poor patient selection, inadequate counseling, lack of biometry, evolving surgical techniques and poor follow-up. Lack of a standard Snellen's chart in the eye ward with which to check the accurate VA was also a handicap.

Although less than 10% had posterior capsular rupture (PCR) intraoperatively, there was no vision loss due to cystoid macular oedema (CMO) or retinal detachment (RD) and three out of the four patients with PCR had a fair outcome. Studies have shown those who fail to achieve good outcome lose their vision to either CMO or RD, glaucoma, endophthalmitis²⁶ which was not the case in this series.

Poor follow up is a problem in Africa, so it was not surprising that over a third (39.5%) of the initial 43 eyes were lost to follow up by 12 week¹³. It is possible that a better outcome would have been achieved if follow-up had been prolonged.

Conclusion

As the population increases in size and as life expectancy is extended with time, cataract may continue to remain a leading public health issue²⁷. Patient selection, adequate counselling, shorter waiting periods, biometry, possible day case surgery in selected cases, improved surgical techniques, proper follow-up both for surgery uptake and for painstaking postoperative care is therefore extremely important to allow for both qualitative and quantitative care of the cataract patient to give a good outcome. Proper application of these will definitely affect the visual outcome positively.

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