

Monitoring Cataract Surgical Outcome in a Public Hospital in Orlu, South East Nigeria

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SUMMARY

Objective: To determine the proportion and causes of poor visual outcome of cataract operations done in a public hospital in southeast Nigeria and propose actions to improve the cataract surgical outcome.

Method: A prospective observational analysis of the initial hundred cases of cataract operations done in Imo State University Teaching Hospital, Orlu between October, 2007 and June, 2009. The Manual Cataract Surgical Record System developed by the International Center for Eye Health, London was used. Consecutive patients undergoing cataract operation were examined on admission, at discharge, 4-8 weeks follow up and information entered in cataract surgical record forms was collated in manual tally sheets and analyzed. The WHO target guidelines on the visual outcome of cataract surgery were used.

Result: Total of 108 eyes operated (100 available for 4-8 weeks follow up). All were extracapsular cataract extractions with intraocular lens implants. The proportions of cases with poor outcome were 19.5% at discharge and 9.0% at 4-8 weeks follow up. The causes of poor outcome at discharge were uncorrected refractive error 8.3%, surgical complications 7.4% and coexisting disease 3.7%. The causes of poor outcome at 4-8 weeks follow up were surgical complications 5%, coexisting disease 2% and post-operation sequelae 2%.

Conclusion: There is need to improve the quality of cataract operations in the hospital. Recommended actions include provision of irrigation/aspiration cannulas, improved preoperative examination of cases, provision of biometry facilities and retraining of surgeons.

Niger Med J. Vol. 50, No. 4, Oct.–Dec., 2009: 77–79.

Key words: monitoring, cataract, visual outcome, surgical complications

INTRODUCTION

Cataract blindness is a global public health problem. In Nigeria, cataract accounts for 43% of all causes of blindness.¹ The nationwide survey in 2005–2007 estimated that 'operable' cataract (i.e. visual acuity of <6/60) affects 400,000 people and

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the number is expected to increase to 600,000 by the year 2020 assuming the prevalence of cataract blindness/severe visual impairment and cataract surgical coverage remain unchanged.¹ To tackle this enormous problem will require an increase in the number of cataract operations in the country. Increasing the quality of cataract operations is also pertinent since it has been shown that fear of not regaining sight is an important barrier to cataract surgical uptake.²

Although cataract surgery has been shown to be one of the most cost-effective health interventions, the outcome of cataract surgeries is often not optimal especially in Africa and Asia.³⁻⁵ Poor visual outcome following extracapsular cataract extraction with intraocular lens (IOL) implant have been reported in 9.7-15.5% of operated eyes in hospital-based studies in Nigeria.⁶⁻⁸ This is not satisfactory based on the World Health Organization (WHO) target guidelines of less than 5% for poor outcome.⁹ Monitoring the outcome of cataract surgeries in any setting is the key to improving the quality of cataract surgeries. In Kikuyu Eye Unit, Kenya, prospective monitoring of outcome increased the proportion of cataract operations with good outcome from 77.1% to 89.4% in one year.¹⁰ Another study involving eight centers in Africa and Asia showed that monitoring can sensitize surgeons to quality control which can lead to decrease in complication rates and improved visual outcomes.¹¹

Most of the previous studies of cataract surgical outcome in Nigeria were done without standardization of variables.^{7,8} These variables include; exclusion criteria, duration at discharge, duration at follow up and uncorrected/corrected/pinhole visual acuity. The Manual/Computerized Cataract Surgical Record System was developed to standardize and simplify the prospective recording and analysis of these variables.¹² To the best of the authors' knowledge, this is the first prospective study in Nigeria using this protocol.

The aim of our study was to determine the proportion and causes of poor outcome of cataract operations done in a rural, public hospital in southeast Nigeria and to propose actions to improve the cataract surgical outcome.

METHOD

This was a prospective, observational analysis of the initial hundred cases of cataract operations done in Imo State University Teaching Hospital, Orlu, southeast Nigeria between October 2007 and June 2009. The Manual Cataract Surgical Record System developed by the International Center for Eye Health London for monitoring cataract surgical outcome was

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employed in this study.¹² Consecutive patients undergoing cataract operation in the hospital had cataract surgical record forms completed, one for each eye operated. The records were completed on admission, at discharge (the day after operation) and 4-8 weeks follow up. Information from the forms were collated in Manual Tally Sheets and analyzed. The WHO target guidelines on the visual outcome of cataract surgery were used i.e. good: 6/6-6/18, borderline: 6/24-6/60, poor: <6/60.⁹

All the operations were extracapsular cataract extractions (ECCE) with intraocular lens (IOL) implants done by two ophthalmologists in the base hospital. The operation procedure included limbal section, can-opener capsulotomy, hydrodissection, nucleus expression under viscoelastic, Simcoe irrigation/aspiration, IOL placement in capsular bag/sulcus, wound closure with 3-4 sutures. The hospital does not have facilities for ocular biometry. The IOL power used was determined by availability and refraction of the other eye where possible. All traumatic cataract cases, combined procedures and cases under the age of 20 years were excluded from the study. The ethical committee of the hospital approved the study and written consent was obtained from each patient.

RESULTS

This analysis is for the initial 108 eyes operated, out of which 100 eyes (92.6%) were available for review at 4-8 weeks follow up. There were 63 (58.3%) males and 45 (41.7%) females. Male-female ratio was 1:0.7. The age range was 32-85 years with an average of 63.3 years. Eleven patients had bilateral cataract operations. All (100%) of the eyes had IOL implants: 105 (97.2%) in the posterior chamber and 3 (2.8%) in the anterior chamber. IOL power used ranged from 21.0-22.5 Diopters for posterior chamber IOL and 19.0 Diopters for anterior chamber IOL. Nine eyes (8.3%) had surgical complications at operation. Retained lens matter was the most common complication, occurring in 5 (4.6%) of the eyes. Three eyes (2.8%) had vitreous loss while 1 (0.9%) had capsule rupture without vitreous loss. At discharge one day after operation, 32 (29.6%) of the eyes had good outcome, while 21 (19.5%) had poor outcome. Fifty-five (50.9%) of the eyes had borderline outcome at discharge.

The causes of poor outcome at discharge were as follows: 9(8.3%) due to uncorrected refractive error, 8 (7.4%) due to surgical complications and 4 (3.7%) due to co-existing disease in the operated eye. At 4-8 weeks follow up, the results were: 59% had good outcome while 9% had poor outcome and 32% had borderline outcome (for the 100 eyes that were available for 4 weeks review). Table 1 shows the visual acuity before operation, at discharge and at 4-8 weeks follow up. Analysis of the 100 eyes available for 4-8 weeks follow up revealed that 32 out of 52 eyes with borderline outcome at discharge improved to good outcome while 2 deteriorated to poor outcome at 4-8 weeks follow up. Similarly of the 20 eyes with poor outcome at discharge,¹³ improved to borderline outcome but none achieved good outcome at 4-8 weeks follow up. Only 1 of the eyes with good outcome at discharge deteriorated to borderline outcome at 4-8 weeks follow up. This overall improvement with visual outcome with time is illustrated in Table 2.

The causes of poor outcome at 4-8 weeks follow up were as

follows: 5% due to surgical complications (vitreous loss-3 eyes, capsule rupture without vitreous loss and retained lens matter-1 eye each); 2% due to co-existing disease (glaucoma and retinal detachment-1 eye each) and 2% due to post-operation sequelae (iris prolapse and corneal decompensation-1 eye each). No case of endophthalmitis was seen.

Table 1: Visual acuity before operation, at discharge and at 4-8 weeks follow up.

Visual Acuity	Before operation	At discharge	4-8weeks follow up
6/6-6/18	0(0%)	32(29.6%)	59(59.0%)
6/24-6/60	7(6.5%)	55(50.9%)	32(32.0%)
<6/60	101(93.5%)	21(19.5%)	9(9.0%)
Total	108(100.0%)	108(100.0%)	100(100.0%)

Table 2: Changes in visual outcome with time (for the 100 eyes available for 4-8 weeks follow up).

Visual outcome at discharge	Visual outcome at 4-8 weeks follow up		
	Poor	Borderline	Good
Good - 28	-	1	27
Borderline-52	2	18	32
Poor-20	7	13	-
Total-100	9	32	59

DISCUSSION

The volume of cataract operations in our eye unit is low. This may be because the unit is young (3 years old) and many people are not yet aware of the availability of cataract surgical services in the hospital. Action is therefore required to improve public enlightenment and begin outreaches into the remote communities to increase the demand for cataract operations. All the operations were done with IOL implants. This is appropriate since visual rehabilitation following cataract surgery is known to be better with IOL than with aphakic spectacles.^{13,14} However, the lack of facilities for biometry made it difficult to determine the IOL power required in individual cases.

The proportions of operations with poor outcome in our study; 19.4% at discharge and 9% at 4-6 weeks follow up were higher than the WHO recommended guidelines of <10% and <5% respectively. However our findings were lower than those reported previously in Nigeria. A retrospective study in Abak Nigeria reported poor outcome in 15.5% of cases at 4-11 weeks follow up and 14.6% at 12 weeks follow up.⁶ However the report wrongly included traumatic cataract cases and did not report the outcome at discharge. A study in Kaduna Nigeria reported poor outcome of 12.7% at discharge and 10.4% at 2-4 weeks follow up.⁷ However the study did not specify the duration at discharge. Another study in Onitsha Nigeria reported poor outcome of 9.7% at the last post-operation visit.⁸ This study also did not standardize the duration of last post-operation visit. This is necessary because the visual outcome tends to improve over time after cataract operation as shown in our study.

Similar studies in Kenya and Sierra Leone reported poor outcome at 4 weeks follow up of 1.5% and 18.9% respectively.^{13,15}

These studies had the advantage of better technology; keratometry, ultrasound and availability of all IOL powers. A study in India using standardized cataract surgical records reported poor outcome of 11.5% at 4-6 weeks follow up among 1806 eyes treated in hospitals.¹⁶ A national survey of 100 hospitals in the United Kingdom reported a significantly lower proportion of poor outcome; 3.0% at 12 weeks follow up.¹⁷ However 77% of the operations were done by phacoemulsification, a relatively better technique for cataract surgery.

Inadequate optical correction was the cause of poor outcome at discharge in 8.3% of the cases, but fell to zero at 4-8 weeks follow up in our study. This was attributable to the fact that at discharge only pinhole acuity was done due to difficulty in performing refraction in the immediate post-operation period. Our findings were lower than the 14.3% reported in Abak Nigeria at 12 weeks follow up.⁶ The proportion of operations with surgical complications in our study was 8.3%. This is lower than the proportion reported in Abak Nigeria (13.0%), Kaduna Nigeria (10.2%), Kenya (9.1%) and Sierra Leone (11.3%).^{6, 7, 13, 15.}

The relatively low surgical complication rate in our study may be because the surgeons had ample time to plan and execute each operation since the volume of surgeries in our center is low. The proportion of operations with posterior capsule rupture with or without vitreous loss, 3.7% was low compared to previous reports: Abak Nigeria (11.7%), Kaduna Nigeria (5.7%), Kenya (7.1%) and Sierra Leone (11.3%).^{6, 7, 13, 15} This is commendable because posterior capsule rupture is the commonest operative complication of ECCE that has a detrimental effect on visual outcome.¹⁸

The proportion of operations with retained lens matter in our study 4.6% was unacceptably high. Though it was lower than reported in Kaduna Nigeria (8.0%), it is very high compared to reports from Kenya (0.2%) and Sierra Leone (0.38%).^{7, 13, 15} The high proportion in our study was attributable to the paucity of Simcoe irrigation/aspiration cannulas in our hospital. No case of endophthalmitis was seen in our study. This is commendable because endophthalmitis has a devastating effect on outcome following cataract surgery.¹⁹ Previous studies reported endophthalmitis rates of 0.6% in Kaduna Nigeria, 0.2% in Kenya and 0.5% in Sierra Leone.^{7, 13, 15} Poor case selection (co-existing disease) was the cause of poor outcome in 3.7% of the cases at discharge and in 2.0% at 4-8 weeks follow up in our study. This was significantly lower than the 20.4% reported in Abak Nigeria, probably because the latter study wrongly included traumatic cataract cases.⁶ The proportion in our study is similar to the 4.0% reported in Kenya and Sierra Leone at 4 weeks follow up.^{13, 15}

CONCLUSION

This study demonstrates the need to improve the quality of cataract operations in our center. Recommended actions include; provision of irrigation/aspiration cannulas, improved pre-operative examination of cases to determine co-existing diseases, provision of biometry facilities and retraining of surgeons.

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