Original article

Outcome of extra-capsular cataract extraction with posterior chamber intraocular lens implantation performed at a cataract surgical campaign

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Abstract

Background: Cataract is the leading cause of blindness and visual impairment in many developing countries. It accounts for 20 million bilaterally blind people worldwide.

Objectives: This study was conducted to evaluate the visual outcome, complications and patients' satisfaction during a cataract surgical campaign.

Methods: Patients who participated in the cataract surgical campaign from and who had ECCE with PC IOL insertion done were included in the study. Three expatriate ophthalmic surgeons using similar surgical techniques operated all patients. Follow up was done on the first postoperative day, and fourth and eighth week.

Results: Of the 214 patients who had ECCE with PC IOL done 174 (81.3%) were followed for the whole eight weeks. The final corrected visual acuity was 6/18 or better in 109(63.4%) of patients and less than 6/18 in 65(37%) of patients. Of the 68 preoperatively bilaterally blind people (VA less than 3/60 in the better eye) 57(83.8%) had final corrected VA of greater or equal to 6/60. 84 (48.3 %) of patients said they have very much improved vision and another 84 (48.3 %) of patients said they had better vision than the preoperative state. Only 3.4 % said their vision remained the same or worsened.

Conclusions: The visual outcome of the cataract surgical campaign was gratifying both from the patients' and physician's point of view. The study showed that eye camp surgeries involving ECCE with PC IOL are feasible in African settings. We recommend that future cataract surgical campaigns should consider using ECCE with PC IOL insertion as their surgical procedure.[*Ethiop. J. Health Dev.* 2002;16(1):77-83]

Introduction

The current global estimate indicates that blindness affects close to 45 million people with 9 out of 10 living in developing countries (1). Cataract is the leading cause of blindness and visual impairment in many developing nations, leading to bilateral blindness in an estimated 20 million people worldwide (2,3,4,5). In sub-Saharan Africa 3.5 million people are believed to be blind from cataract. And as the population grows and ages, this figure is likely to increase (6,7,8). In Ethiopia blindness is estimated to affect 1.5 % of the total population.

The pathogenesis of this disease is believed to be multifactorial and is not completely understood up to now (9,10). The majority of cases of cataract are age related (11,12,13) and causes bilateral visual impairment. Other important causes of cataract also include drug induced, trauma, metabolic disorders and nutritional diseases (14). Even though lots of medical treatment for cataract have been studied and many treatment modalities are described (9,10) there is no medical treatment that has definitely been proven to delay, prevent or reverse the development of cataract in adults. Currently, therefore, the only treatment available for cataract is surgery.

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The surgical treatment of cataract is an ancient art that spans two millennia. Surgeons in ancient India practiced couching as early as 800 BC (14). Couching is the technique of pushing the white opacity downwards and backwards using a needle. In modern times there are two basic ways for the removal of cataract. One is intracapsular cataract extraction (ICCE), which is the complete removal of the cataractous lens with its capsule. The other is extracapsular cataract extraction (ECCE), which can be supplemented with posterior chamber (PC) intraocular lens (IOL) implantation (14,15). Currently the later is the preferred technique.

Eye camp cataract surgery has been carried out in Ethiopia previously and ICCE was the method used in most cases. Detailed report on the outcome of cataract surgery in these campaigns has not been made. This study was conducted to evaluate the visual outcome, complications and patients' satisfaction of ECCE with PC IOL insertion done during a cataract surgical campaign carried out at Menelik II Hospital.

Methods

This study was conducted at the Department of Ophthalmology, Menelik II Hospital between October 9 and 13, 1999. During this period cataract surgical campaign, which was sponsored by Rotary Club, was carried out at Menelik II Hospital. The source population was all patients who came for operation during the "cataract surgery campaign" after an announcement through the mass media. All patients who came to the hospital for visual problem during this time were examined for ocular and systemic diseases by ophthalmologists and ophthalmology residents.

Only patients with mature cataract in one or both eyes were considered for operation. Cases who, in addition to cataract, had other ocular diseases such as glaucoma, external infections, and trichiasis or entropion were excluded. Those patients with untreated or uncontrolled systemic illness such as hypertension or diabetes Mellitus were also excluded from being operated. Therefore, the study population was those patients who underwent cataract surgery with posterior chamber intraocular lens implantation (ECCE with PC IOL) during this campaign. Patients were informed about the need for a prolonged follow up after surgery.

Three expatriate ophthalmic surgeons performed all the operations. The surgical technique used was basically the same for all the surgeons. The operation routine was as follows. Peribulbar anesthesia was given including Bupivacaine 2cc, Lidocaine 3 cc and hyaluronidase. Pressure was applied to the globe for 10-15 minutes with a ball. Instruments were either sterilized in an autoclave or soaked in a sterilizing solution. After limbal incision, continuous curvilinear capsulorexis (CCC) was done. Viscoelastic was injected into the anterior chamber following which nuclear extraction was done with syringe irrigation. Then, cortical material was aspirated. Finally, PC IOL was inserted and the incision closed with sutures. One surgeon for demonstration did four sutureless operations.

Subconjunctival injection of gentamycin 20 mg was given to all patients at the end of the operation. Patients were also given two bottles of a combination of Dexamethasone 0.1% and Chloramphenicol 1% eye drops to apply 4 times a day. Ciprofloxacin 500 mg po twice daily for 5 days and Ketrolac, a Non-Steroidal Anti-inflamatory Drug (NSAID) 30 mg po twice daily for 7 days was given for every patient. A follow up arrangement was then made on the first post-operative day and after one, four and eight weeks.

On follow up, visual acuity was taken at 6 meters using Snellen's illiterate "E" chart. Slitlamp biomicroscopic and direct ophthalmoscopic examinations were done to all patients who returned on their 4th and 8th week's of follow up. In those patients suspected of having raised intraocular pressure,

schiotz tonometry was used to confirm it. Patients were also asked to participate in an interviewer-administered questionnaire adopted from other similar researches (4,16,17) . It included demographics, patients' subjective satisfaction regarding visual improvement and their daily activity after the operation.

The data was entered into a computer in Epi Info version 6.04 and after cleaning; data analysis was done with the same program.

Results

A total of 214 patients had ECCE with PC IOL insertion done in the 5-day campaign. Out of the 214-study population, 174 (81.3%) were followed up to the 8th week and also completed the entire interview and examination. Seventy-six (43.7%) of the 174 patients were males and 98 (56.3%) were females. The age· and sex distribution of patients is given in table 1.

Table 1: **Age and sex distribution of the study population, Minilik II hospital 1999.**

	Sex		Total
Age (years)	Male	Female	
<20	8	1	9(5.2%)
21-40	6	5	11(6.3%)
41-60	33	49	82(47.1%)
61-80	28	42	70(40.3%)
>80	1	1	2(1.1%)
Total	76(43.7%)	98(56.3%)	174(100%)

The IOL power implanted ranged from 19 to 24 diopters. The uncorrected VA of the 174 patients was 6/18 or better in 74 (42.5%), while 100(57.5%) patients had low vision (<6/18) as seen in table 2. However, the final corrected post-operative visual acuity (VA) was 6/18 or better in 109 (63.0%) of the patients, and in 65(37%) patients it was found to be low (<6/18).

Table 2: **visual outcome of patients operated**

Visual acuity	Without correction	With pin hole
≥6/18	74(42.5%)	110(63.2%)
6/24-6.60	71(40.8%)	40(23.0%)
<6/60	29(16.6%)	24(13.8%)
Total	174(100%)	174(100%)

Several postoperative complications were noted. The most severe ones were wound gapping and secondary glaucoma. One case (0.57%) of wound gapping required second surgery. Secondary glaucoma occurred in two (1.14%) patients, with one patient requiring filtration surgery. Visually significant posterior capsular opacity (PCO) was seen in 9 (5.2%) of the patients as seen in table 3.

Table 3: **Postoperative complication**

Postoperative complications	Total No. of Patients (%)
IOL decenteration	10(5.7%)
Corneal edema	3(1.7%)
Glaucoma	2(1.1%)
Pupilary fibrinous material	3(1.7%)
Optic atrophy	1(0.6%)
Macular degeneration	6(3.4%)
Proliferative diabetic retinopathy	1(0.6%)
Wound gap	2(1.1%)
Vitreous in anterior chamber	1(0.6%)
Iridocorneal Touch	1(0.06%)
Loose stitchs	5(2.9%)
Cortical reminants	16(9.2%)
Uvieitis	13(7.5%)

Factors that contributed to a corrected visual acuity of < 6/60 was specifically sought for and it is presented in table 4. Sixty-eight (38.2%) patients of the 174 cases were bilaterally blind, i.e. preoperative VA of less than 3/60 in the better eye. Of these, the final uncorrected postoperative VA was 6/60 or better in 56 (81.0%), and the final corrected visual acuity was 6/60 or better in 57 (83.8%) of the patients.

In general, patients' responses regarding their postoperative visual outcome were positive. When asked how well they saw compared to their preoperative state, 84 (48.3%) of the patients reported marked improvement while 84 (48.3%) reported slight improvement of vision. Three (1.7%) cases said that their vision remained the same and another 3 (1.7%) reported a further reduction of vision (table 5).

Table 4: **Reasons for postoperative visual acuity <6/60**

Reason for postoperative VA<6/60	Total No. of Patients
Corneal edema	1(4.2%)
Decentered IOL	2(8.3%)
Cortical remnant	5(20.8%0
Pupilary fibinous membrane	2(8.3%)
Macular degeneration	4(16.7%)
Optic atrophy	1(4.2%)
Retinal detachment	1(4.2%)
Unknown	8(33.3%)

Table 5: **Responses to questions regarding the effect of vision on daily living**

Questions asked	Before surgery	After surgery
Ability to read*		
Nothing	29(51.8%)	1(1.8%)
Large print	15(26.8%)	27(48.2%)
Small print	12(21.4%)	28(50.0%)
Difficulty in walking without assistance due to visual problem		
Yes	57(32.8%)	1(0.6%)
No	117(67.2%)	173(99.4%)
Difficulty in working without assistance due to visual problem		
Yes	58(38.2%)	1(0.7%)
No	94(61.8%)	151(99.3%)
Difficulty in eating without assistance due to visual problem		
Yes	12(6.9%)	0(0%)
No	162(93.1%)	174(100%)
Patient's satisfaction about visual outcome		
Very much improved	84(48.3%)	
Slight improved	84(48.3)	
Remained the Same	3(1.7%)	
Worsened vision	3(1.7%)	

Of the 50 patients who were blind preoperatively 49 (98%) reported some form of visual improvement. 28 (63.6%) patients reported inability to work without assistance preoperatively but only 1(2.3%) needed assistant to work postoperatively (table 6).

Table 6: **Responses to questions regarding the effect of vision on daily living in patients with preoperative bilateral blindness**

Questions asked	Before surgery	After surgery
Ability to read*		
Nothing	11(22.6%)	0(0%)
Large print	2(4%)	6(12%)
Small print	2(4%)	9(18%)
Difficulty in walking without assistance due to visual problem		
Yes	30(60%)	1(2.3%)
No	20(40)	49(98%)
Difficulty in working without assistance due to visual problem		
Yes	28(63.6%)	1(2.3%)
No	16(36.4%)	43(97.7%)
Difficulty in eating without assistance due to visual problem		
Yes	8(16%)	0(0%)
No	42(84%)	50(100%)
Patient's satisfaction about visual outcome		
Very much improved	25(50%)	
Slight improved	24(48%)	
Remained the Same	0(0%)	
Worsened vision	1(2%)	

Discussion

Regular follow up of patients, like in other under developed countries, is a problem in our country too. Drop out from consecutive follow up is common and it increases with increased duration. The long distance travel as well as the cost of this travel is said to be the major factor for terminating successive visits[6,18,19]. In our study, 197 of 214 (92.0%) patients had a one month follow up and 174 (81.3%) patients had two months of follow up which was comparable to other similar studies (6,18,19,20).

The visual results are similar to other studies. Seventy-four (42.5%) patients had uncorrected VA of 6/18 or better and 145 (83.3%) patients had uncorrected VA of 6/60 or better. However, corrected VA was 6/18 or better in 109 (63.0 %) of patients and 6/60 or better in 149 (85.6 %) of patients. In a study done in Nepal uncorrected VA of 6/18 or better was seen in 47.9% of cases while corrected VA of 6/18 or better was seen in 77.4% of cases(20).

We feel that the number of cases with corrected VA worse than 6/60 could have been reduced if some of the patients with preexisting problems other than the cataract that decreased their post operative VA were screened out. The fact that intraocular complications were not documented during surgery limits the paper in this regard.

Unlike some other studies, (6,20,21) not a single case of endophthalmitis was seen in this study. With the high volume of surgery that was carried out during the 5 days of the campaign, this is very assuring. Visually significant posterior capsular opacity (PCO) was found in 9 (5.17 %) patients, which was comparable to another study conducted over a similar period of time (6). This relatively lower rate of PCO could be explained by the

fact that most of the patients had mature cataract pre-operatively, which is believed to reduce its rate (22). In addition, the follow-up time was short to reveal all patients who were likely to develop this complication.

Intraocular pressure was not measured with tonometer in all patients due to logistics and time limitation. This might have picked more cases of glaucoma post-operatively.

Even though foreign ophthalmologists conducted the surgery, the equipments and materials used are available in our country. Post operative findings of remnant cortical material and uveitis rate was slightly higher than other studies (20) but this can be corrected by increasing meticulousness during the surgical procedure. Viscoelastic materials were used for the insertion of IOL in all cases. We advocate that viscoelastic material be used in cases of ECCE with PC IOL implantation.

In conclusion, the visual outcome of cataract surgery with posterior chamber lens implantation performed during the campaign was gratifying both from patients as well as ophthalmologists view. The questionnaire also indicated good patients' satisfaction with the results achieved. Even though several eye camp cataract operations were done in Ethiopia previously using the Intra-Capsular Cataract Extraction (ICCE) method, there was no available report about the outcome of this procedure for comparison. In line with the report that uncorrected aphakia is an important cause of blindness in Africa, (11,12,23) the visual outcome of cataract surgery with intraocular lens implantation seen in our study was very encouraging to consider it in the future.

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