Original Article

Positive Impact of Good Visual Outcome on the Acceptance of Cataract Surgery in Sub-Saharan African Population.

Salahuddin Ahmad, Khawaja Khalid Shoaib, Muhammad Fayyaz, Teyyeb Azeem Janjua

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See end of article for authors affiliations

Correspondence to:
Salahuddin Ahmad
Consultant Eye Specialist
CMH
Gujranwala

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Purpose: The aim of the study was to document the visual outcome of cataract surgery in Sub-Saharan African population and to correlate this with acceptance of cataract surgery in the same population.

Material and Methods: This study was conducted in the Level II hospital UN mission, Feb 2006 to Nov 2006. All the patient undergoing cataract surgery in our field hospital were recruited in study. The preoperative and postoperative visual acuity was compared. The numbers of surgeries performed per month were documented for each of the eight months. The patients filled a proforma about the level of satisfaction with their visual outcome at six weeks.

Results: A total of 141 eyes of 136 patients who completed the minimum 6 weeks follow-up were included in the study. The average age of the patients at surgey was 57 years (age ranged from 10-78 years). There were 88 (64.7%) females and 48 (35.3%) males. A corrected vision of 6/18 or better was achieved in 124 eyes (88%). An uncorrected vision of 6/18 or better was obtained in 102 eyes (72.3%) at their last follow up visit. More than 95% of the patients were satisfied with their visual outcome. The number of patient undergoing cataract surgery gradually increased and it was at the peak in the last two months. There were only 22 patients operated in the first four months compared to 119 in the last four months.

Conclusion: The cataract extraction with IOL implantation gives good visual results, which in turn adds to the confidence of the potential cataract surgery patient. Therefore more patients report for the cataract surgery and which would help in increasing the rate of cataract surgery in the African population.

Cataract is the leading cause of blindness; accounting for about half of all blindness in the world[1]. The average prevalence of blindness is about 0.7% in the world, ranging from 0.3% in Western Europe and North America, to more than 1% in parts of sub-Saharan Africa.[1] The cataract surgery rate in most African countries is 100-500 per million per year[2]. More so most of the cataract surgery done in Africa is ICCE without IOL implantation and the resultant uncorrected aphakia is adding to the visually disabled patients[3-5]. The IOL implantation has improved the visual outcome not only in the industrialized countries but also in some developing countries[6-8].

We did phacoemulsification or ECCE with IOL implantation in most of our cases and aim of the study was to document the level of patient satisfaction about their visual outcome. And to see if good post operative visual outcome influence the acceptance of cataract surgery in the African population. To the best of our knowledge, this has not been documented before so we undertook this study to help the policy makers of the WHO's Vision-2020 programme in chalking out the best route to the target.

MATERIAL AND METHODS

All the patients who had cataract surgery in level II hospital of Pakistan Armed Forces Contingent were included in the study. A detailed ophthalmic examination (including visual acuity, pupillary examination, slit lamp biomicroscopy, and applanation tonometry) was carried out. The hardness of the cataract was documented. Biometry was carried out for the estimation of lens power using the SRK-T formula. The aim was to make the patients emetropic after Intraocular (IOL) implantation. A detailed medical examination by the medical specialist was also done to rule out serious systemic diseases. Routine laboratory test included urine R/E, blood CP, and screening for hepatitis B, C and HIV.

All the operations were carried out under peribulbar anaesthesia except in children where general anaesthesia was given. The skin was cleaned with 10% povidone iodine solution and eye was irrigated with 5% povidone iodine solution immediately before surgery. Phacoemulsification was done in grade 1-4 and extracapsular cataract extraction in grade 5-6 nuclear sclerosis cataracts. Phacoemulsification was done through a 3.2mm clear corneal incision placed at 10 o'clock just inside the limbus. A paracentesis was made at 2 o' clock for the second instrument. The continuous curvilinear capsulorhexis (CCC) was done after filling the anterior chamber with viscoelastic (Hydroxpropyl methylcellulose/ HPMC). Hydrodissection was done to ensure free rotation of the nucleus. Phacoemulsification surgery proceeded in the usual way, using a 'divide and conquer' technique. The phaco parameters used were 30 to 70% phaco power (depending on the hardness of the nucleus), 60-80mmHg vacuum during trenching and 150-250mmHg during emulsification. The aspiration rate was 20 ml/min and the bottle height at 60 cm throughout the procedure. The cortical matter was removed by manual irrigation and aspiration with Simcoe cannula.

The patients with hard nuclei had extracapsular cataract extraction, where a one-stepped clear corneal incision was made just inside the limbus from 2 o' clock to 10 o'clock. The nucleus was expressed after can opener capsulotomy. The cortical matter was removed by manual irrigation and aspiration with Simcoe cannula. The incision was closed with 3 to 5 interrupted 10/0 nylon sutures after IOL implantation. The intraocular lens was placed in the bag or sulcus depending on the amount of capsular support available intraoperatively. In cases where there was no capsular support, primary anterior chamber (A.C.) IOL was not implanted because of non-availability of the A.C. IOL. Bimanual automated anterior vitrectomy was performed in cases with posterior capsule rupture and vitreous loss. In cases, where there was small tear in posterior capsule without vitreous loss, anterior vitrectomy was not done. The patients were discharged same evening and seen again next morning. Postoperatively, a steroid–antibiotic combination was used for first two weeks; only steroids were given in tapering doses for the next 1-3 weeks. Follow-up was done after 1 week, 6 weeks and 3 months. The patients were refracted 6 weeks after surgery.

The patients were asked to fill the proforma about the level of satisfaction with the help of local interpreters. The cataract surgery rate per month was documented for each of the eight months of the study period.

Statistical analysis was done using SPSS version 14 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were used to describe the data. P-value <0.05 was considered statistically significant.

RESULTS

A total of 141 eyes in 136 patients were included in the study. The average age of patients at operation was 57 years (SD 9.1). There were 88 (64.7%) females and 48 (35.3%) males. The postoperative follow up was attended for 6 weeks in 141 eyes (100%), 3 months in 38 (27%) eyes and 6 months in only 13 eyes (9.2%). None were followed for more than six months because of the end of our tenure in Sudan. The cataract surgery rate per month is depicted in the Fig. 1. It is evident that the rate has gradually built up from 3 surgeries in the first month to 44 in the last month (p value <0.001). There was no surgery done in July 2006 because the surgeon was on holidays. During the last two months we performed more than half of all the surgeries in the study.

SURGERY

Phacoemulsification was performed in 61 eyes (43.2%), ECCE in 77 eyes (54.6%), ICCE in 3 (2.12%) eyes with sublaxated lens or hypermature cataract with gross zonular dehiscence. The single piece PMMA IOLs were inserted in 136 eyes (in the bag in 131 eyes and in the sulcus in 5 eyes). The patients who had ICCE (3 eyes) or if the capsular support was inadequate (2

eyes), did not have any IOL implant because of non availability of the Anterior Chamber (AC) IOL which resulted in aphakia (5 eyes). The posterior capsule rupture occurred in 5 eyes (3.5%). Vitreous prolapse was managed by anterior vitrectomy followed by in the sulcus IOL implantation in 3 (2.12%) of these cases.

VISUAL RESULTS

The majority of the patients had marked improvement in the vision as shown in the Table 1. This table shows the preoperative and postoperative vision (uncorrected and corrected) in 141 eyes who completed 6 weeks' follow up. The mean spherical error in these patients was ± 0.93D. Preoperatively 112 of eyes (79.4%) had poor vision (best corrected acuity <3/60) compared to only 2 eyes (1.4%) postoperatively and a corrected vision of 6/18 or better was achieved in 124 eyes (88%) (p-value <0.001). An uncorrected vision of 6/18 or better was obtained in 102 eyes (72.3%) at their last follow up visit. Six patients (4.2%) had a poor visual outcome (best corrected vision less than 6/60). The causes of poor vision in six eyes are given in Table 2.

All the Patients who attended 6-week postoperative visit were given a proforma about the level of satisfaction and confidence on the surgical outcome and more than 95% of the patient gave positive feedback (Fig. 2). And more than 90% admitted that they were not only sent by patients who already had cataract surgery in our hospital but also convinced by them that it will improve their quality of life.

COMPLICATIONS

The most frequent complication was striate keratopathy followed by anterior uveitis (Table 3). One patient had iris prolapse on first Postoperative day which was reposed and additional corneal stitch was placed. There was no case of cystoid macular oedema or endophthalmitis or visually significant posterior capsule opacity.

DISCUSSION

The World Health Organisation estimated in 1994 that there were 38 million blind people in the world which increases by a million every year[1]. Precise figures for the incidence of cataract blindness in Africa are not available, but it is estimated that at least 600,000 Africans become blind from cataract each year[4]. Bilateral blindness is more likely to be because of central corneal opacities (44%) rather than cataract (22%)[9]. Corneal opacity is usually secondary to trachoma, vitamin A deficiency, and keratoconjunctivitis[9,10].

Table 1: Preoperative Visual acuity in 141 eyes and the Postoperative visual outcome uncorrected and corrected 6 weeks after operation.

Visual acuity	Pre-operative No. of eyes n (%)	Post-operative visual acuity No. of eyes n(%)	
		Un-corrected	Corrected
<3/60	112 (79.4)	2 (1.4)	2 (1.4)
<6/60-3/60	24 (17)	14 (9.9)	4 (2.8)
<6/18-6/60	5 (3.54)	23 (16.3)	11 (7.8)
6/18-6/6	0	102 (72.3)	124 (88)
Total	141 (100)	141 (100)	141 (100)

Table 2: Causes of poor visual outcome

Cause of poor vision	No. of eyes n (%)
Age related macular degenerations	2 (1.8)
Corneal opacities	1 (0.9)
Diabetic retinopathy	2 (1.8)
Hypermetropic amblyopia	1 (0.9)

Table 3: Complications

Postoperative Complications	No. of eyes n(%)
Striate Keratopathy	8 (5.68)
Iritis	5 (3.55)
Hyphema	1 (0.71)
Iris prolapse	1 (0.71)
Transient Glaucoma	4 (2.84)

The cataract surgery rate (CSR) is unfortunately low at 100-500 per million population per year in most of African countries compared to 2500-3500 in the industrialised countries[4]. To tackle cataract blindness, the World Health Organization, the International

Agency for Prevention of Blindness, and various governmental and non-governmental organisations, have launched "Vision 2020-the right to sight." This aims to increase the number of cataract operations from about 10 million per year currently to over 30 million per year by 2020 (in Africa to about 2000 per million per year)[5].

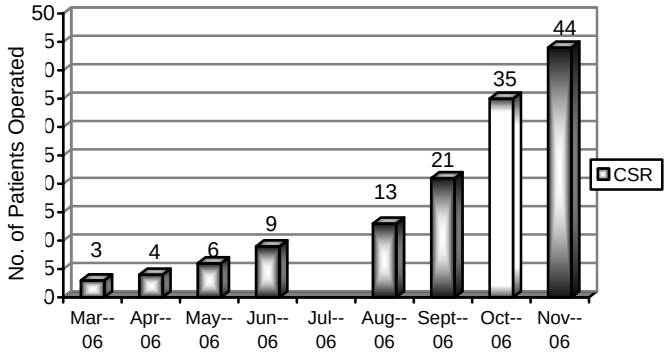

Fig. 1: Cataract surgery rate of each of the eight months of study

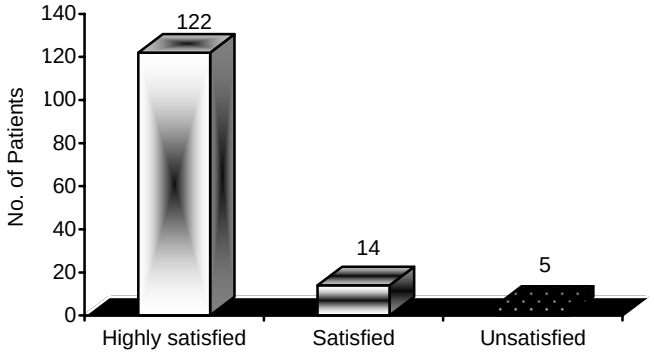

Fig. 2: The level of patient satisfaction about the visual outcome

The cause of low rate of cataract surgery performed in Africa as compared to the industrialised nation is multifactorial[6-8]. Poverty and limited resources is one of the leading causes. That is why most of the cataract surgeries in Africa are ICCE in free eye camps resulting in high complication rate and poor visual outcome. The uncorrected aphakia further adds to number of visually handicapped and unsatisfied patients[11-13] which, results in poor acceptance of cataract surgery. Therefore, the patients report for treatment when he is bilaterally blind with advanced cataract. This is evident in our study in which we performed more ECCE than Phacoemulsification because of the hard and hyper-mature cataracts which is just reverse in our population in Pakistan where we perform Phaco in most of our patients (>95%). The use of IOL although associated with increased cost, results not only in good visual outcome and satisfied patients but also earlier intervention and increase in number of cataract operation[14,15]. This is true in industrialized nations as shown in a population based survey in Australia where 89% of eyes achieved a corrected vision of 6/18 or better[14], and in the UK National Cataract Survey 87% of operated eyes achieved corrected vision of 6/12 or better[15]. In Kenya, a study reported 94.3% of patients achieving 6/18 or better after ECCE and PC-IOL[16]. This is also evident in our study where 88% patients achieved corrected visual acuity of 6/18 or better in a field hospital setting.

The good result definitely had positive impact on the acceptance of cataract surgery in our study. Initially, we had only one or two cases per list but after a few months our lists gradually improved because the patients of the area developed confidence in our treatment results. This is also admitted by most of the patients who filled the proforma that they convinced and brought or will bring more patients for surgery. During the last two months, there were hundreds of patients with cataract reporting to our hospital, so we had to give priority to patients with bilateral advanced cataracts in order to utilise our limited resources for the most deserving patients.

More than three quarter of the patients came after 1 month for follow up and one third after 3 months which is higher than most studies in Africa[17]. This is due to the fact that we were permanently based with easy access to the patient unlike most population based studies.

CONCLUSSION

Our study demonstrates how important is the visual outcome for patients' satisfaction, giving incentive to the potential cataract surgery patients to come forward for the surgery, which in turn improves the cataract surgery rate. Therefore, we should concentrate on establishing eye hospitals with experienced cataract surgical team, good equipment and full range of IOLs in the remote areas of Africa. This is how we can achieve the targets of the "Vision 2020—the right to sight" initiative.

Author's affiliation

Dr. Salahuddin Ahmad,
Consultant Eye Specialist
Combined Military Hospital
Gujranwala

Dr. Khawaja Khalid Shoaib
Combined Military Hospital
Rawalpindi

Dr. Muhammad Fayyaz
Combined Military Hospital
Rawalpindi

Dr. Teyyeb Azeem Janjua
Combined Military Hospital
Rawalpindi

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Family history is important

Risk of glaucoma is DOUBLED if a parent has the disease and QUADRUPLED if a sibling has glaucoma

Prof. M Lateef Chaudhry
Editor in Chief