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Research Article

Visual Outcome after Cataract Surgery at Bhaktapur Eye Centre

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Abstract

Objective: The aim of the study is to evaluate the visual outcome after cataract surgery at Bhaktapur eye centre.

Methodology: This was the retrospective study that included 161 eyes of 159 patients fulfilling the inclusion criteria who underwent cataract surgery either phacoemusification or manual small incision cataract surgery from September 2019 to November 2020 in Bhaktapur eye centre secondary level provided with permanent infrastructure to deliver outpatient and operation theatre services. The preoperative details, type of cataract surgery performed, intraoperative and postoperative complications and visual acuity at first day, first week and sixth to eighth postoperative week were retrieved.

Results: Maximum cases that underwent surgery were between 65 - 75 years followed by 75 - 85 years. The mean age was 67.7 ± 10.36 years and the male to female ratio was 0.51:1, 55 males and 106 females. 21.38% cases had associated comorbid diseases. Phacoemusification was performed in 67.8% and manual small-incision cataract surgery in 32.2%. At presentation, more than half that is 52.7% had best corrected visual acuity BCVA of less than 3/60. Intraoperative complications were found in 3.1% and corneal edema was the most common among postoperative complications. At 6 - 8 weeks follow up after surgery, 88.81% had BCVA 6/6-6/18, 9.93% had BCVA of 6/18-6/60.

Conclusion: This study showed that cataract surgery whether manual small incision cataract surgery or phacoemulsification offered good visual rehabilitation in maximum number of patients. Proper and timely management of complications and provision of refraction facility postoperatively would be a good way to improve visual outcome.

Keywords: Cataract Surgery; Visual Outcome; Cataract

Introduction

Blindness and vision impairment affect at least 2.2 billion people around the world. This high volume comprises 123.7 million due to unaddressed refractive error followed by 65.2 million cataract [1]. In 2010 the survey done to evaluate blindness worldwide showed one in three blind people and one of six visually impaired people was due to cataract [2].

Cataract is characterized with the opacity on the crystalline lens, can markedly restrict the routine activities of patients, such as reading, writing and eventually reduce the quality of life [3-5]. Epidemiology and blindness study done in Nepal in 2012 showed the prevalence of blindness 2.5% in people aged 50 and more and the prevalence of severe visual impairment 3% and of moderate visual impairment 11.6%. Cataract remained the major cause of bilateral blindness accounting 62.2% [6]. Though the prevalence of blindness (all ages) reduced from 0.84% in 1981 to an estimated 0.35% in 2011; a reduction of 58% according to NBS [6], the actual numbers are far less outspoken because the number of people aged 50 aged 50 plus were more than doubled between 1981 to 2011 and life expectancy at birth increased from 48 to 66 years.

Cataract is the main cause of avoidable blindness seen especially in the elderly and surgery is often effective in restoring vision [7,8]. Cataract surgery has evolved from intracapsular cataract extraction (ICCE) to extracapsular cataract extraction (ECCE), manual small incision cataract surgery MSICS and now to phacoemulsification. In recent years, phacoemulsification technique has brought cataract surgery results as close to anatomical perfection as possible. Visual outcome after cataract surgery depends on various factors intraoperative complications and postoperative complications and patient compliance. Cataract outcome has largely been a neglected field of research in developing countries. The outcome of cataract surgery is not always as good as previously assumed, and much more attention needs to be given to this aspect of surgical services [9]. Recent population based studies in Nepal [10], China [11] and India [12] showed 40 - 75% of people who have had cataract surgery have a presenting visual acuity of worse than 6/18 in the operated eye and 21-53% have less than 6/60.

The Bhaktapur community eye centre provided with OPD and OT infrastructure is rendering eye care services mainly in Bhaktapur and Kavre districts. Cataract surgery, one of the commonest ocular surgeries has been started in recent days. Since studies on visual outcome after cataract surgery outcome has been lacking, we conducted this study to evaluate the demographic profile of patients with cataract, to assess intraoperative and postoperative complications and to evaluate the visual outcome upto 6 - 8 weeks after cataract surgery and the percentage of visual acuity improvement.

Methodology

Retrospective analysis of medical records of patients who underwent cataract surgery under local anaesthesia from September 2019 to November 2020 at Bhaktapur eye centre were collected. The Ethics committee of Tilganga Institute of Ophthalmology approved this study. Paediatric cataract, traumatic cataract with subluxation, complicated cataract, cataract associated with glaucoma, cataract with dense corneal opacities were excluded from the study. Patients demographic profile included date of presentation to the hospital, age, sex, occupation, associated comorbid diseases, preoperative presenting visual acuity (PVA) with and without correction and detailed slit lamp examination findings.

The Snellen lettered chart and the tumbling "E" chart was used to determine the distant VA for the literate and the illiterate respectively. Slit lamp biomicroscope was used for accessing the anterior segment while direct and indirect ophthalmoscopes were used for posterior segment evaluation. The diagnosis of cataract was done and classified according to LOCS classification. MSICS and phacoemulsification with intraocular lens implantation was done according to the cataract density i.e. MSICS was performed for matuare, hypermatuare and brown cataract and phacoemulsification was done for the rest all types of cataracts. The superior incision was given at 12 o'clock in cases of with the rule astigmatism and superior temporal position in cases of against the rule astigmatism. Details of date of operation, type of surgery, intraocular lens and intraoperative and postoperative complications were recorded. Follow - up visits were on the first day, first week and at 6-8 weeks. The visual acuity with and without refraction and eye examinations at these follow up visits were recorded. The visual outcome was categorized according to the World Health Organisation (WHO) visual outcome assessment with best correction or with presenting visual acuity as follows; good outcome 6/6-6/18 or better, borderline outcome 6/24-6/60 and poor outcome as worse than 6/60 [13]. The data was entered in Microsoft Excel 2007. Descriptive statistics frequencies, percentages, mean, standard deviation were determined. The data collected was analysed in a statistical package for social sciences software (SPSS version 16.0).

Results

Among 161 cases enrolled in the study who met the inclusion criteria, the mean age ± SD of the participants was 67.71 ± 10.36

years (range 35 - 88 years) males comprising 55 (34.16%) and females 106 (65.83%). Table 1 shows the demographic characteristics of cases included in the study. 87 patients had right eye cataract surgery and 70 patients had left eye cataract surgery and 2 patients had undergone both eyes surgery.

Age group	Male N (%)	Female N (%)	Total N (%)
35-45	1 (1.24)	3 (1.86)	5 (3.10)
45-55	7 (4.34)	7 (4.34)	14 (8.69)
55-65	12 (7.45)	26 (16.14)	38 (23.6)
65-75	18 (11.18)	35 (21.73)	53 (32.91)
75—85	14 (8.69)	34 (21.11)	48 (29.81)
85-95	2 (1.24)	1 (0.62)	3 (1.86)
Total	55 (34.16)	106 (65.83)	161(100)

Table 1: Age and gender distribution of total sample population.

Regarding the type of cataract, 82 cases had nuclear sclerosis, 29 posterior subcapsular cataract, 6 polar cataract, 16 had nuclear and cortical cataract, 21 had mature cataract and 7 had hyper mature cataract. 34 patient had comorbid conditions like hypertension, diabetes mellitus, chronic obstructive pulmonary disease, asthma, cardiac disease and benign prostate hypertrophy. 109 (67.8%) had phacoemulsification and 52 (32.2%) had MSICS. Table 2 shows the best corrected visual acuity before operation. 85 (52.7%) cases had presenting visual acuity of less than 3/60, 31(19.2%) cases had severe visual impairment VA between 6/60 -3/60 while 45 cases (27.7%) had visual acuity better than 6/60.

BCVA	Number	Percentage (%)
6/6-6/18	6	3.72
6/18-6/60	39	24.2
6/60-3/60	31	19.2
3/60-1/60	31	19.2
1/60-PL	54	33.5

Table 2: Preoperative best corrected VA at presentation: percentage.

Intraoperative complications were seen in 5 cases (Table 3). Observed complications were premature entry in 0.62%, posterior capsule rent (PCR) without vitreous loss in 1.24%, PCR with vitreous loss in 0.62%, Descemet's membrane detachment in 0.62%. Regarding postoperative complications, transient corneal edema was seen as the most common seen in 9 cases (5.59%) (Table 4). All these cases were treated with topical medications. 1 case with hyphaema underwent hyphaema wash the next day, 1 case with uveitis with fibrin was treated with subconjunctival dexamethasone injection 0.5ml for the consecutive 2 days along with topical medications. Case with aphakia underwent sclera fixated intraocular lens implantation after 4 weeks of cataract surgery at the main centre.

Intraoperative complications	N (%)
Premature entry	1 (0.62)
PCR without vitreous loss	2 (1.24)
PCR with vitreous loss	1 (0.62)
Descemet's membrane detachment	1 (0.62)
Total	5 (3.10)

Table 3: Distribution of intraoperative complications.

Postoperative complications	N (%)
Corneal edema	9 (5.59)
Hyphaema	2 (1.24)
Postoperative uveitis	3 (1.86)
Punctate keratitis	2 (1.24)
Aphakia	1 (0.62)

Table 4: Distribution of postoperative complications.

Table 5 shows postoperative VA at different follow up visits, first postoperative day, first postoperative week and 6 - 8th postoperative week with and without correction. Figure 1 shows the percentage of visual acuity improvement. 143 cases (88.81%) had good visual outcome and 16 (9.93) had borderline visual outcome at the end of 6 - 8th week post cataract surgery whereas 2 cases lost follow up after 1 week of surgery.

Discussion

The current study was done in 161 eyes that had undergone cataract surgery MSICS or phacoemulsification by the single surgeon. The age distribution of the patients revealed that the majority were between 65 and 75 years with the mean age of 67.71 (range 35 - 88 years) similar to other studies [14-17]. Our study showed number of males were 55 (34.16%) and females 106 (65.83%) consider-

	Preoperative n (%)	1st postop day n (%)	7th postop day n (%)	6-8th postop week n (%)	6-8th postop week BCVA n (%)
6/6-6/18	6 (3.72)	101 (62.73)	87 (54.03)	83 (51.55)	143 (88.81)
6/18-6/60	39 (24.2)	51 (31.67)	65 (40.37)	69 (42.85)	16 (9.93)
6/60-3/60	31 (19.2)	4 (2.48)	6 (3.7)	6 (3.72)	
3/60-1/60	31 (19.2)	2 (1.24)	2 (1.24)	1 (0.62)	
1/60-PL	54 (33.5)	3 (1.86)	1 (0.62)		
Total	161 (100)	161 (100)	161 (100)	159 (98.7)	159 (98.7)

Table 5: Visual acuity at different follow up.

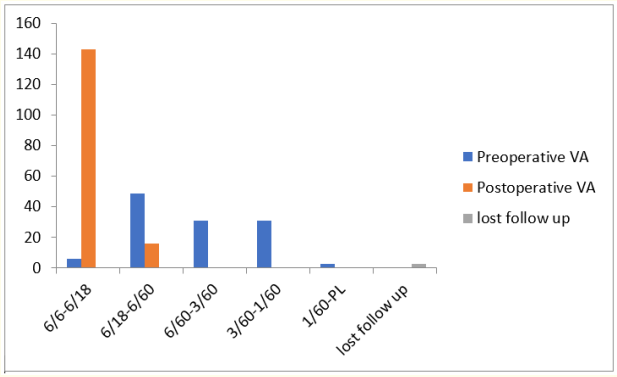

Figure 1: VA improvement after cataract surgery.

ably higher in women than men 0.51:1. This is in conformity with the distribution seen in study done by Sumathi Matta., *et al.* which showed 55.3% surgeries performed in female patients [17] and E Kobia-Acquah., *et al.* study which reported males 35 (42.2%) and females 48 (57.8%) [16]. However, the study done by Thevi Thanigasalam showed equal gender distribution [14] and the study done by Olawoye O.O. in Nigeria showed male to female ratio as 1.2:1 [15]. The reason of higher number of women that underwent surgery in our study may be due to the fact that women have equal access to healthcare facility as provided by Nepal government health insurance board in Bhaktapur district and we have more women population compared to men. The maximum cases underwent phacoemulsification 67.8% in our study similar to the study done by Thevi Thanigasalam [14] but in contrary to other study done by Sumathi Matta [17] in which most surgeries were MSICS. This may be due to the reason of provided health insurance service in that area. This study showed intraoperative complications in 5 cases (3.10%). Thevi Thanigasalam found intraoperative complications in 21% [14], Sumathi Matta., *et al.* study and Jyotee Trivedy study found intraoperative complications in 1.4% and 1.6% respectively [17,18]. Our study showed corneal edema in 5.59% as the commonest cause of postoperative complication seen after 24 hours followed by postoperative uveitis in 1.86%, punctate keratitis in 1.24%, hyphaema 1.24% and aphakia in 0.62%. Similar findings was seen in the study done by E Kobia-Acquah., *et al.* that showed corneal edema in 18.07% and Jyotee Trivedy study which showed the first postoperative day complications in 12.9%, transient cornea edema followed by shallow anterior chamber, iritis and peaked pupil [16,18].

This study showed VA of 6/6-6/18 in 62.73%, 6/18-6/60 in 31.67%, 6/60- 3/60 in 2.48% and 3/60-1/60 in 1.24% and 1/60-PL in 1.86% in first postoperative day following surgery. At 6 - 8 weeks follow up, 51.55% had UCVA of 6/6-6/18, 42.85% had 6/18-6/60, 4.34% had VA of less than 6/60. 88.1% gained BCVA of 6/6-6/18 falling in category of good visual outcome and 9.93% had BCVA of 6/18-6/60 with borderline visual outcome according to WHO standard guidelines. The strict selection of patients may be the reason for this favourable visual outcome. Study done by O.O. Olawoye showed 78.8% with good vision while 17.4% had borderline vision and 3.8% had severe visual impairment after refraction at eight weeks [15]. Sumathi Matta., *et al.* study showed 91.7% had a good visual outcome and 1.6% had less than 6/60 [17] at 4 - 11 weeks follow up. E Kobia Acquah., *et al.* study showed 69% had visual acuity of 6/18 or better, 48.19% had a visual acuity of 6/24-6/60 and 30.12% had visual acuity worse than 6/60 after 1 month of surgery [16].

Conclusion

Vision impairment caused by cataract can be corrected through surgical interventions in maximum number of patients. Our study

shows that the quality cataract surgeries could be performed with good systems availability at all levels of care, good state equipment service, and regular monitoring. As maximum patients achieved good visual function after surgery, this study indicates importance of timely management of complications endured during or after surgery. Refraction postoperatively at least after 1 month should be made mandatory.

Limitation of the Study

The limitation of this retrospective study was a short period of follow up and two patients also lost this short follow up. A study with at least a 6 months follow up period would have added more insight into the outcome of cataract surgery.

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Conflict of Interest

There are no conflicts of interest.

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