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Original Article

Outcome of Cataract Surgery among Eye Camp Patients of Eastern Nepal

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Abstract

Background

Outreach camp is helpful for reducing the prevalence of blindness due to cataracts and refractive error. The objective was to evaluate the visual outcome of cataract surgery among camp patients operated at a high volume center of Eastern Nepal.

Materials and Methods

Descriptive cross sectional study design was used. The comprehensive eye screening program was conducted and those having cataracts were referred to base hospital for cataract surgery, patients were reexamined at the base hospital again and a small incision cataract surgery with posterior chamber intraocular lens was implanted at Biratnagar Eye Hospital, Biratnagar and Sagarmatha Choudhary Eye Hospital, Lahan. The pre-operative vision was taken during screening and post-operative vision was taken after one-month by performing refraction by trained personnel. Data were extracted from the hospital record; analysis was done using SPSS version 17.0. Descriptive analysis by using frequency, percentage and association was done by using Chi square test with a P-value <0.05 considered as significant.

Results

A total of 1426 camp patients were operated. Among them 1113 (78%) were visited after one month post operative follow up at the campsite. There were 744 (52%) female and bilateral affected eyes were 735(52%). Pre-operative presenting visual acuity was <3/60 (37%), which was reduced to (0.2%) after one month follows up of cataract surgery. There was a significant association in pre-operative VA with aided one month to follow up VA.

Conclusion

The outcome of the cataract surgery of camp patients operated at base hospitals was good in high-volume hospitals. Follow up after one month was good practice to provide services and measure the outcome of cataract surgery.

Keywords: *Blindness, Cataract, Nepal, Screening*

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Introduction

Cataract is the leading cause of blindness in developed and developing countries [1]. Cataract surgery is the best method to reduce blindness [2]. In 1981, the prevalence of blindness in Nepal was 0.84% [3] which was decreased to 0.35% but cataract is still the leading cause of avoidable blindness (62.2%). Cataract surgical coverage was 84% in Nepal [4]. More than 29 million cataract surgeries were performed globally despite this cataract blindness is projected to increase to 61 million by 2050 [5]. Cataract surgery aims to rehabilitate blind or visually impaired persons by restoring their eyesight so that their quality of life and ability to function are returned to normal or as near normal as possible [6]. There is good evidence to show that cataract surgery improves Visual Acuity (VA) [7].

Ophthalmologists are constantly striving for a "20/20" vision from their patients [8]. Eye camps are done on regular basis to overcome the blindness backlog cases. In Nepal, most of the people in the community are waiting for an eye camp where they got the opportunity of free cataract surgery with transportation facilities. Reporting outcome after cataract surgeries are important indicators but there are less chances of collecting the follow up data after cataract surgeries.

Hence this study aimed to find out the outcome of cataract surgery among camp patients operated at high volume hospitals.

Materials and Methods

Descriptive cross sectional study design was used. The study site was six districts, 3 districts from Koshi province with population of Sunsari (753,328), Morang (9,60,876), Udaypur (315,429) and 3 districts of Madhesh province were Siraha (636,360), Saptari (625,573), and Mahotari (624,696)[9]. There were 55 cataract screening camps conducted from Jan to Dec 2017. For the cataract screening camp, coordination was done among the local organizer by the outreach department of both hospitals to fix the date and the prior advertisement was done by using pamphlets and miking. A medical team from the base hospital visited the campsite and examined the patients which included visual acuity assessment, refraction, and prescription of glasses. Anterior segment examination was done by using a torch light examination, and the posterior segment examination was done by using an ophthalmoscope. Counseling was done for operable cataracts and other ocular disorders, medicines were prescribed as per the need and eye health education was given by using posters and pamphlets. The referral slip was given to the patients who needed hospital consultation depending upon the nature of the problem. For the cataract case, patients were brought by the hospital bus to the hospital for cataract surgery. The study population included those who visited the eye hospital for cataract surgery. The inclusion criteria were senile or acquired cataracts, without any associated ocular co-morbidity. The patients who came to the hospital other than cataract surgery were excluded.

At the hospital, the type and grading of lens opacities were done by the Lens Opacities Classification System (LOCS) III [10] by using the slit-lamp examination. A detailed posterior segment examination were done by direct/indirect ophthalmoscopy. IOP was measured with Goldman Applanation Tonometer (GAT). Blood pressure and Blood sugar were checked to rule out systemic hypertension and diabetes respectively. IOL power was calculated by Keratometry and A-scan biometry for all patients. Information regarding the technique of surgery, the first post-operative day follow up and 4 weeks of the postoperative day follow-up were given to all the operated patients. Small Incision Cataract Surgery with Posterior Chamber Intra Ocular Lens was implanted at Biratnagar Eye Hospital and Sagarmatha Choudhary Eye Hospital. The dose of medicine and post-operative care counseling was done on discharge day. After 4 weeks of post-surgery, visual acuity measurement, anterior segment evaluation, refraction, and prescription of glass were performed and data were recorded. Levels of visual acuity after cataract surgery were categorized using the WHO guidelines—that is, the good outcome was defined as 6/6–6/18, the borderline outcome as 6/24–6/60, and the poor outcome as <6/60. Similarly, Visual Acuity was categorized as 6/6 to 6/18 normal, 6/24 to 6/60 Visual impairment, 5/60 to 3/60 Severe visual impairment and <3/60 to NPL Blind [11]. A total of 1,426 consecutive patients who visited the hospital for surgery during Jan to Dec 2017 were included in the study. The inclusion criteria ensured that only those diagnosed with cataracts and deemed suitable for surgery were referred for the procedure. During the outreach camps, a

total of 10,282 patients were examined. Of these, 1,426 patients (approximately 14%) met the inclusion criteria and proceeded to the hospital for cataract surgery. The sample size of 1,426 is sufficient to achieve over 90% power to detect an odds ratio of 3.5 for improvement after surgery, considering a 5% level of significance and a 0.9 proportion of discordant pairs [12]. Data were extracted from the camp medical record and analyzed using SPSS version 17.0. Descriptive analysis using frequency, parentage and association was done using Chi-square test with a P-value <0.05 considered as significant. The ethical approval was taken from Nepal Netra Jyoti Sangh (NNJS).

Results

A total of 10,282 patients was examined in the camps among them 2,002 (19%) patients were advised for cataract surgery but 1,426 (71%) patients came to the hospital for cataract surgery. At Biratnagar Eye Hospital 686 (48%) and Sagarmatha Choudhary Eye Hospital 740 (52%) surgery was performed. Out of total cataract surgery, 1113 (78%) came in one-month post-operative follow-up at the campsite. Female were 744 (52%) and bilateral cataract was found in 735 (52%) eyes. (Table-1)

Table 1: Demographic characteristics of the patients

Demographic characteristics	Frequency	Percent
Surgery done		
Biratnagar Eye Hospital	686	48
Sagarmatha Choudhary Eye Hospital	740	52
Follow up after one month		
Yes	1113	78
No	313	22
Gender		
Male	682	48
Female	744	52
Affected Eye		
Unilateral	691	48
Bilateral	735	52
Total	1426	100

Pre-operative presenting visual acuity <3/60 was 37%, 5/60 to 3/60 was 23%, 6/24 to 6/60 was 37%, and 6/6 to 6/18 was 3%, among them blind was found more in female (40%), and more than 80 years old age (44%). Best-corrected visual acuity at one month follow up <3/60 was 0.2%, 5/60 to 3/60 was 0.2%, 6/24 to 6/60 was 4.6% and 6/6 to 6/18 was 95%. Visual acuity was 6/6 to 6/18 in 40-49 age group (99%), followed by 50-59 age group (97%). (Table-2)

Table 2: Pre and post-operative visual acuity with gender and age group

Visual acuity (VA) Pre-operative presenting VA	Gender		Age group						
	Male n (%)	Female n (%)	<40	40-49	50-59	60-69	70-79	= 80	Total
6/6 to 6/18	20(3)	23(3)	1(6)	2(2)	10(4)	15(3)	12(3)	3(4)	43(3)
6/24 to 6/60	267(39)	259(35)	4(24)	28(32)	92(32)	227(41)	149(36)	26(34)	526(37)
5/60 to 3/60	163(24)	167(22)	5(29)	21(24)	74(27)	117(21)	99(24)	14(18)	330(23)
<3/60									527(37)
HM,PL,NPL	232(34)	295(40)	7(41)	37(42)	103(37)	197(35)	150(37)	33(44)	
Total	682	744	17	88	279	556	410	76	1426
Follow up one month presenting unaided									
6/6 to 6/18	349(63)	346(62)	7(63)	52(68)	160(71)	266(53)	177(57)	33(53)	695(63)
6/24 to 6/60	201(36)	204(37)	4(36)	24(32)	63(28)	155(36)	130(41)	29(47)	405(36)
5/60 to 3/60	2(0)	2(0)	0(0)	0(0)	2(1)	0(0)	2(1)	0(0)	4(0)
<3/60									9(1)
HM,PL,NPL	5(1)	4(1)	0(0)	0(0)	1(0)	4(1)	4(1)	0(0)	
Total	557	556	11	76	226	425	313	62	1113
Follow up one month aided									
6/6 to 6/18	520(94)	536(97)	10(91)	75(99)	217(97)	404(95)	292(93)	58(94)	1056(95)
6/24 to 6/60	34(6)	18(3)	1(9)	1(1)	7(3)	20(5)	19(6)	4(6)	52(4.6)
5/60 to 3/60	1(0)	1(0)	0(0)	0(0)	1(0)	0(0)	1(0)	0(0)	2(0.2)
<3/60									3(0.2)
HM,PL,NPL	2(0)	1(0)	0(0)	0(0)	1(0)	1(0)	1(0)	0(0)	
Total	557	556	11	76	226	425	313	62	1113

There was a significant association between pre-operative VA with a month follow-up VA with aided (P-value =0.01) which showed a good outcome of cataract surgery. (Table-3)

Table 3: Association between pre-operative VA with Aided post-operative VA

		Follow up VA aided					
		<3/60 HM, PL, NPL	5/60 to 3/60	6/24 to 6/60	6/6 to 6/18	Total	P-value
Pre Op VA	<3/60 HM,PL,NPL	2	0	32	384	418	0.01* Chi-square test
	5/60 to 3/60	0	2	7	247	256	
	6/24 to 6/60	1	0	12	396	409	
	6/6 to 6/18	0	0	1	29	30	
Total		3	2	52	1056	1113	

* P value <0.05 considered significant

Discussion

The visual outcome of cataract surgery among the camp patient's was good in this study. There was significant difference in preoperative visual acuity and post operative visual acuity. Cataract blindness is a public health problem of major proportions in developing countries and cataract surgery is a cost-effective ophthalmic procedure [13]. Screening camps in rural area are very important community tools for early detection and proper referral andmanagement of ocular morbidities [14].

In present study, 71% came to the hospital for surgery the reason of high visit in this study might be due to proper counseling during eye screening. The provision of effective and accessible eye care services is key for effectively controlling

visual impairment including blindness. The majority of the patients were female (52%) as the prevalence of cataracts was more in females [15]. In this study, 78% came for one month follow up which was higher than the study done in India where 61.2% of patients came for follow-up after 6 weeks [16]. Community participation has great role in conducting screening camps in low resource setting [14]. The majority 73% operated patients were more than 60 years of age which was similar to the study done in Nepal 69%[17] which also suggests cataract is age-related ocular disorder. The preoperative presenting VA was <3/60 in 37 % of patients which was decreased to 0.2% post-operatively after best correction which was almost similar to a study done in India where it was 41% pre-operatively which was decreased to 1.6% [16].

In the present study, the majority 95% had a good outcome,which was similar to the study done in Nepal (90%) [17] and India (96%)[16]. The good outcome of cataract surgery was more in 40-49 years of age, the reason might be cataract was not so mature and there was less chances of having no pre and post-operative other ocular disorders and complications. In this study, the reason for the poor outcome was age-related changes in the retina. There was a significant difference in pre-operative VA with a month follow-up aided VA (P-value <0.01) which shows a good outcome of cataract surgery. The reason might be due to experienced team, good case selection, good organizational setup with quality service providers in Nepal. Eastern Regional Eye Care Program (EREC-P) has two tertiary level eye hospitals Sagarmatha Choudhary Eye Hospital, Lahan and Biratnagar Eye Hospital, Biratnagar with 34 eye care centers providing eye care services to Eastern Nepal and India for the last 38 years.

In Nepal most of the community people have trust on eye camps and are waiting for eye camps. Generally, surgical eye camps were done in remote and hilly region of Nepal. This eye screening program was not the surgical camp, but the screening was done at community level and patients were brought to base hospital for surgeries and follow up was done after one month in the same place of screening. Small incision cataract surgery with PCIOL implantation was the choice of surgery in our study. As it is cheaper and fewer complication and is suitable for high volume cataract surgery especially in developing nation [12]. All the surgeries were done at free of cost.

In this study we did follow up after one month at screening site where with the help of camp organizer and big sample size with six district data which was the strength of the study.

This study has important limitations. This was a retrospective study carried out on data collected from hospital records. The accuracy of data entered into the hospital records cannot be guaranteed all the time.

Conclusion

The outcome of the cataract surgery of camp patients was good in both hospitals of EREC-P. The best-corrected vision was found normal in most of the patients which shows good quality of service provided by the hospitals. Follow up after one month at the same venue is good practice to provide services and measure the outcome. A better surgical technique, trained surgeons, ophthalmic personnel, and a good organizational setup can provide better visual outcomes even in high-volume camp patients.

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Conflict of interest: None

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