Evaluation of visual outcome of cataract surgery in five consecutive rural eye camps

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Abstract
Objective: To audit the result of cataract surgery performed in five consecutive eye camps.
Participants: Fifteen hundred and forty five patients who underwent cataract surgery in Rural eye camp from 2005-2009.
Methods: Pre and post operative visual acuities and surgical complications were recorded in 1545 eyes underwent cataract extraction for age related cataract in rural eye camp annually held in southern Punjab from 2005-2009.
Results: Of 1545 eyes operated 93.2% had a visual acuity of less than 3/60 preoperatively and 61.4% had bilateral cataract. At discharge 67.3% of eyes had visual acuity of 6/18 and 21.4% had visual acuity of 6/18 or better. All except 21 eyes had posterior chamber intra-ocular lens implanted. Endophthalmitis develop in only one eye, corneal edema in 11 eyes, seven eyes had vitreous loss.
Conclusion: Acceptable results can be obtained from rural eye camps with experienced ophthalmologist and adequate theatre environment. Posterior chamber intra ocular lens implantation and even use of phacoemulsification by experienced surgeons appeared to give satisfactory results.

Keywords: Cataract, Eye camp surgery, Phacoemulsification

Introduction:
Pakistan is the Sixth most populour country in the world with more than 170 million people1. More than 65% of population lives in rural areas of Pakistan2. Life expectancy at birth is 63 years for females and 62 years for males as of 2006, about 20% of the population live below the international poverty line of US$1.25 a day3. The prevalence of blindness is three to four times higher in low income countries than in industrialized countries4. A survey published in 2007 concluded that cataract still accounts for over half of the causes of blindness in Pakistan and they concluded that blindness is associated with poverty in Pakistan. To reduce blindness, strategies targeting poor people will be needed5. In order to focus people living in social and economically deprived remote areas free eye camps are a constant feature in Pakistan and other countries of Asian subcontinent. We present our experience of free eye camps organized by local non governmental organization in the rural area of southern Punjab for five consecutive years. This camp provides inexpensive surgery close to where the majority of people live. The results of surgery in eye camps are often not evaluated. This audit looks at the visual outcome of patient undergoing cataract surgery in eye camp and analyses the cause of poor outcome.

Patients and Methods:
This study included 1545 eyes with senile cataract which underwent cataract extraction with intra-ocular lens implantation(IOL) in eye camp conducted by Fatima Welfare Society of Mian Mukhtar Law Associates at Dunyapur road Lodhra District Multan,over a five year period from 2005-2009. IOLs are routinely available and im-
planted free of cost, phacoemulsification was performed on selected cases.

Before surgery, visual acuity was recorded using the WHO categories of visual impairment (Table 1). Slit lamp bimicroscopic examination was performed and ophthalmoscopic examination done where needed. Patients having diabetes, corneal problems and suspicion of glaucoma were excluded. Patients with bilateral cataract or having mature white cataract were preferred for surgery. Surgery was performed under local anesthesia. ECCE with IOL implantation is the preferred choice of surgery. Patients were discharged on 2nd post-operative day after removal of dressing and record of visual acuity and examination for any complication. A follow up was conducted at the same camp site 4-6 weeks after surgery and vision was recorded and operated eye examined.

**Results:**

A total of 1545 patients with senile cataract were included in the study. There were 691 (44.7%) males and 854 (55.3%) females. The age range was 40-85 years.

Bilateral cataract was present in 949 (61.4%) patients, unilateral cataract in 98 (6.3%) patients and 57 (3.7%) patients had cataract in their only eye, and where as 441 (28.5%) patients were having pseudophakia in their one eye and they came for operation of second eye.

Extra capsular cataract extraction with intra-ocular lens implantation (ECCE e IOL) was performed in 1086 (70.3%) eyes and Phacoemulsification in 438 (28.4%) eyes and 21 (1.3%) eyes were left aphakic due to posterior capsular tear and vitreous loss. Most of these patients were found to have phakodonesis and subluxated lens due to either hypermature cataract or hard nuclear cataract.

Of 1545 eyes operated 93.2% had a visual acuity of less than 3/60 preoperatively and 61.4% had bilateral cataract. At discharge 67.3% of eyes had visual acuity of 6/18 and 21.4% had visual acuity of 6/18 or better (Table 2).

**Discussion:**

Cataract remains as the leading cause of blindness in Pakistan. The management of cataract will remain surgical extraction until preventive methods are developed to reduce the progression of lens opacification. One of the accepted ways to increase uptake of cataract services is by extending ophthalmic care facilities to the rural areas through eye camps, thereby providing cataract surgical services close to where the majority of the people live. There is little published information on the outcome of cataract surgery in eye camps although several authors have reported their experiences with various methods of conducting camps. This study attempts to evaluate the outcome of cataract surgery performed on a large scale in eye camps.

One of the most important factors for assessing the impact of cataract surgical services on national blindness programmes is to evaluate the number of “blind” patients (visual acuity less than 3/60 in the better eye) who regained vision after cataract surgery. The quality of cataract services can be assessed by the postoperative vision in the operated eye. In this study 93.2% of patients had a preoperative visual acuity less than 3/60 in the operated eye, and 41% of the operations were performed on bilaterally blind patients. After surgery, 48 (3.1%) of the 1545 patients remained blind at discharge, and thus vision was restored to 1497 “blind” patients. Of the 942 (61.2%) operated eyes examined at follow up, 35.2% of surgeries had been performed on bilaterally blind people and 1.6% remained blind after surgery. Those attending for follow up were similar in age, sex, and intraoperative complication rates to those who did not attend.

Table 1: Pre- and post-operative visual acuity in the better eye of 1545 patients operated for cataract in eye camps

<table>
<thead>
<tr>
<th>Visual acuity</th>
<th>Pre-operative (n=1545)</th>
<th>Post-operative (n=1545)</th>
</tr>
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<tbody>
<tr>
<td>6/6-6/18</td>
<td>315 (20.4%)</td>
<td>605 (39.2%)</td>
</tr>
<tr>
<td>&lt;6/18-6/60</td>
<td>318 (20.6%)</td>
<td>820 (53.1%)</td>
</tr>
<tr>
<td>&lt;6/60-3/60</td>
<td>278 (18.0%)</td>
<td>72 (4.6%)</td>
</tr>
<tr>
<td>&lt;3/60-NPL</td>
<td>634 (41.0%)</td>
<td>48 (3.1%)</td>
</tr>
<tr>
<td>Total</td>
<td>1545 (100%)</td>
<td>1545 (100%)</td>
</tr>
</tbody>
</table>
but had a lower proportion of preoperatively bilaterally blind patients.

The operative complication rates were generally low. Vitreous loss occurred in 5.6% of eyes. Lewallen and LeMesurier in Africa reviewed the extracapsular cataract extractions performed in Malawi and found a vitreous loss rate of 11%\textsuperscript{10}. They concluded that, besides other factors, a higher incidence of vitreous loss in developing countries may be attributed to the differences in the type of cataract in these countries compared with cataracts in developed countries. The incidence of endophthalmitis was 0.03%, which is low\textsuperscript{11}.

The outcome of cataract surgery depends on the preoperative ocular status, quality of surgery, and the postoperative correction of refractive error. Our study revealed that pre-existing ocular pathologies were responsible for two thirds of the cases of poor outcome in eyes with less than 6/60 at follow up. This shows that good patient selection is an important factor which affects the final visual outcome. At times, in spite of being aware of the bad prognosis, surgery is performed to salvage any remaining vision and prevent the eye from further deterioration.

Surgery for cataract blindness is undergoing a rapid transition. There is an increasing trend towards phacoemulsification surgery and extracapsular cataract extraction (ECCE) with posterior chamber intraocular lens implantation (PC-IOL) in the developing countries following the example of developed countries. In this series 28.4% eyes had phacoemulsification and 70.3% eyes had ECCE with IOL implantation. Visual rehabilitation was better in eyes with phacoemulsification. As the cases were not randomly assigned to the different techniques one cannot perform statistical comparisons; however, the good results obtained with phacoemulsification/PC-IOL surgery suggest that this procedure can be performed by experienced eye surgeons in good eye camps on selected patients with acceptable results. It is important to evaluate the results of alternative techniques in different situations so as to select the most appropriate method.

This study included 1545 eyes operated for senile cataract over a 5 year period. As evident from the output of surgery, mobile eye units have a role to reduce the prevalence of cataract blindness especially in rural areas where there is a perpetual shortage of treatment facilities and medical personnel.

Conclusion:
In conclusion the cataract surgery performed in well organised eye camps is comparable with surgery done in well equipped hospitals, and the incidence of complications are within acceptable limits. The aim remains to reach more blind people and to provide an improved standard of visual rehabilitation.

References: