Original Article

Cataract: trends in surgical procedures and visual outcomes; a study in a tertiary care hospital

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Abstract

Objective: To determine the current procedures in practice and visual outcome following a cataract surgery.

Methods: The study was conducted from January 7 to April 7, 2011 in the Eye Unit of the Lady Reading Hospital, Peshawar, involving 181 patients. Basic demographics of the patients as well as the type of cataract surgery were noted. Risk factors like diabetes mellitus and glaucoma were also noted for each patient. A pre-operative visual acuity was determined. The patient was examined after two months to determine the visual improvement.

Results: Out of 181 patients, 117 were males and 64 were females. Age ranged from 5 years to 83 years with a median age of 60. Most common procedure performed (60.2%) was extra capsular cataract extraction with posterior chamber intraocular lense (ECCE), followed by Phacoemulsification (24.3%). Visual outcome was good in 88.3%, borderline in 8.3% and poor in 3.3% patients. The main reasons for poor visual outcomes were diabetic retinopathy 42.8%, glaucoma-related vision loss 19.0%, history of trauma with retinal detachment 9.5%, and age-related macular degeneration 9.5%. Poor visual outcome was found in diabetic and Glaucoma patients. Surgical complications (3.8%) were rare.

Conclusion: Overall a good visual outcome was noted in cataract surgery, which was similar to World Health Organisation guidelines. Extra capsular cataract extraction was the most common procedure followed by Phacoemulsification.

Keywords: Cataract procedure, Visual outcome, Cataract complications (JPMA 62: 209; 2012).

Introduction

Cataracts are the leading cause of blindness worldwide. Age is the most important risk factor for cataract. Almost one in five people between the ages of 65 and 74 develop cataracts severe enough to reduce vision, and almost one in two people older than 75 years have this disease. In Pakistan, there are estimated to be 570, 000 adults (225, 000 men, 345, 000 women) who are blind due to cataract, which is the most common cause (51.5%) of avoidable blindness in the country.[1]

The main contributing factors include injury to the eye, inflammatory and infectious eye diseases, and diseases such as diabetes mellitus. The only treatment that provides a cure for cataracts is surgery. There are two types of cataract surgery: intracapsular and extracapsular. Intracapsular surgery is the removal of both the lense and the thin capsule that surround the lense. This type of surgery was common before 1980, but has since been replaced by extracapsular surgery. Extracapsular cataract surgery is the removal of the lense whereas the capsule is left in place. There are two methods for extracapsular cataract surgery. The common method is Phacoemulsification. A tiny incision is made and an ultrasonic probe is used to break the cataract into minute pieces. However, if the lense is too hard, the surgeon will use a different conventional extracapsular technique requiring a larger incision. Complications after cataract surgery are rare.[2] Economy in a Third World country like Pakistan also determines the procedures being carried out.[1] This study explore the results of current procedures performed in a major tertiary care hospital in Peshawar along with the details of vision improvement after the surgery and any complications associated with it. The surgery offered in a government setup differs from that in a private setup in terms of affordability. High-end procedure like Phacoemulsification is offered only to those who can afford the procedure. Conventional Extra Capsular Cataract Extraction (ECCE) is usually performed in cases where the cost of the foldable intraocular lenses is an issue. Such restraints are not observed in a private setup.

This study was undertaken to determine the procedures used for cataract surgery and the outcome in a

tertiary care public sector hospital.

Methods

The study involving 181 patients was conducted from January 7 2011 to April 7, 2011 in the Eye Unit of Lady Reading Hospital, Peshawar, Pakistan. It was a hospital based quasi-experimental study and convenience sampling methodology was used. All patients requiring surgical treatment for cataract were selected. These patients did not have any previous surgery of the treated eye and had no pre-existing ocular disorder. Patients who had systemic diseases like diabetes were also included in the study. Patients not receiving surgical treatment for any reason and patients in whom follow-up was not possible were excluded.

Basic demographics, like age and gender of the patient, were noted. The visual acuity of the patient before surgery was noted in both the eyes in SI Metric system. Patients who were unable to view letters on Snellen chart were asked to count fingers at 1m distance. Hand movement perception at 0.5m was used for patients who were unable to count fingers. Light perception or no perception of light was used as an indicator for totally blind people.

The type of procedure done in cataract was noted for each patient. Procedures done were conventional ECCE (posterior camber intraocular lense) with stitches, lense aspiration (with posterior chamber intraocular lense), Phacoemulsification, Phacoemulsification converted into ECCE (posterior chamber) due to difficulty in Phacoemulsification, and ECCE (with anterior chamber intraocular lense).

Each patient was examined 2 months post-operatively to assess the improvement in vision. Visions in both of the patient eyes were noted. If poor vision was noted after the cataract surgery, the reasons for that were assessed. Good visual outcome was defined as vision equal or better than 6/18. Low post-operative visual outcome or borderline visual outcome was defined as visual acuity equal or less than 6/24 but better than 6/60. Poor outcome was defined as visual acuity equal or less than 6/60 but patient being able to count fingers. Patient who could either perceive hand movements or light and those who were unable to do so were grouped in the blind category.

In addition to age-related macular degeneration, other risk factors for poor vision like diabetes mellitus, history of severe trauma and glaucoma were noted prior to the surgery. Any complications from the cataract surgery were also noted. The data were collected on a specially designed proforma for these patients. Pearson's chi-square test was used as the statistical tool for testing the significance of relation between variables. A p value of < 0.05 was considered significant. All data were analysed using the Statistical Package for the Social Science (SPSS) version 16.0.

Results

A total of 181 patients were operated upon. The age of the patients ranged from 5 years to 83 years with a median of 60 (Table-1). Of the total, 89 patients were treated for cataract in the right eye, while 92 had it in the left eye. Besides, 54.7% patients were suffering from bilateral cataract, while 45.3% had unilateral eye cataract. Eight-five (47.0%) patients suffered from diabetes mellitus and 4 (3.3%) from glaucoma. Lense aspiration with posterior chamber intra ocular lense was the exclusive method in patients under 10 years (n=4) of

Table-1: Basic demographics.

S. No.	Variable	Number (percentage)
	Age	
1.	<10 years	4 (2.2%)
2.	10-20 years	6 (3.3%)
3.	20-40 years	20 (11%)
4.	40-50 years	18 (9.9%)
5.	50- 60 years	67 (37%)
6.	60 -70	44 (24.3%)
7.	>70	22 (12.2 %)
	Sex	
1.	Male	117 (64.6%)
2.	Female	64 (35.4%)

Table-2: Procedures in cataract surgery.

S. No	Procedure	Eye	Number(Percent)	Number(Percent)
1.	Conventional Extracapsular cataract extraction (ECCE) with posterior camber Intraocular Lense	Right	51 (28.2%)	109 (60.2%)
		Left	58 (32.0%)	
2.	Lense aspiration with Posterior Chamber Intraocular Lense	Right	20 (11.0%)	22 (12.1%)
		Left	2 (1.1%)	
3.	Phacoemulsification with Intra Ocular Lense	Right	14 (7.7%)	44 (24.3%)
		Left	30 (16.6%)	
4.	Phacoemulsification converted into ECCE with Posterior Chamber Intraocular Lense	Right	2 (1.1%)	2 (1.1%)
		Left	0 (0)	
5.	ECCE anterior chamber Intraocular Lense	Right	2 (1.1%)	4 (2.2%)
		Left	2 (1.1%)	
	Total		181 (100.0%)	

Table-3: Visual Acuity before and after the surgery.

S. No	Visual Acuity (VA)	Number(Percent)	Presenting Visual Acuity	Number(Percent)
Visual Acuity before surgery				
1	24-Jun	9 (6.6%)		36 (18.8%)
2	Jun-36	12 (5.0%)	Borderline	
3	Jun-60	52 (28.7%)		
4	Counting fingers	67 (37.0%)		
5	Hand movements	7 (3.9%)	Poor	80.10%
6	Perception light	32 (17.7%)		-145
7	Undetermined	2 (1.1%)		1.10%
Visual Acuity after surgery				
1	6-Jun	59 (32.6%)		
2	9-Jun	36 (19.9%)	Good Vision	158 (88.3%)
3	12-Jun	53 (29.3%)		
4	18-Jun	10 (5.5%)		
5	24-Jun	5 (2.8%)	Borderline vision	
6	Jun-36	6 (3.3%)		15 (8.3%)
7	Jun-60	4 (2.3%)		
8	Counting fingers	6 (3.3%)	Poor	6 (3.3%)
9	Undetermined	2 (1.1%)	Undetermined	2 (1.1%)

age, and was particularly common in the under-30 age group (72.7% n=16/22) (Table-2). Visual acuity of the operated eyes before and after the operation was noted (Table-3). The main reasons for borderline outcome (<6/18) were diabetic retinopathy 9 (42.8%), glaucoma-related vision loss 4 (19.0%), history of trauma and repeated retinal detachment 2 (9.5%), age-related macular degeneration 2 (9.5%), surgical complications like IOL (intra-ocular lense) displacement 2 (9.5%) and posterior chamber opacity 2 (9.5%).

Complication of cataract surgery were rare in 7 (3.8%). Striate Keratitis on first post-operative day was observed in 2 patients, intraocular lense was displaced in 2 patients and zonular dehiscence occurred in 1 patient after Conventional ECCE procedure with posterior chamber lense. Posterior chamber opacity was found in 2 patients after Phacoemulsification. Age and gender were not significant variables in terms of visual outcome. Relatively poor visual outcome (<6/60) was found in people suffering from glaucoma (16.7%) and diabetes mellitus (4.7%) as compared to the general patients. (1.3%) (p=0.01).

Discussions

The most common procedure done was Conventional ECCE with posterior chamber intraocular lense (60.2%), followed by Phacoemulsification (24.6%). Phacoemulsification has a better visual outcome, low complication rate and is suture less with self-healing incision. Therefore, in general it is a much preferred technique. In underdeveloped countries like Pakistan, a large number of people cannot afford the cost of the foldable lense and the Phacoemulsification procedure.[3] In this study, ECCE with intraocular lense was the most common method of cataract surgery. These findings are consistent with other studies conducted elsewhere.[4,5] These two procedures are common worldwide, with Phacoemulsification being the preferred procedure.[6,7] Lense aspiration with posterior chamber intraocular lense was exclusively done in patients less than 10 years of age.

Complications with cataract surgery (3.8%) were rare. Few cases of Striate Keratitis, posterior chamber opacity, intraocular lense displacement and zonular dehiscence were reported. This is consistent with studies conducted elsewhere.[8]

The methods for determining the outcome of a cataract surgery used in the present study is measurement of visual acuity in the operated eye, with the available correction. However, the impact of a cataract surgery is best gauged by the change in the quality of life. This requires an assessment of how the patient functioned before and after the surgery and of the potential for employment and improved income. The advantage of using post-operative visual acuity is that it is simple and inexpensive to determine in all patients. Moreover, it is the indicator that probably matters the most to the eye surgeons and which the patient immediately recognises.

Most of the patients (80.1%) presented with very poor (<6/60) visual acuity, 18.8% presented with borderline visual acuity of (<6/18, >6/60). This was similar to other studies conducted in underdeveloped countries like Pakistan and India.[4,9]

The visual acuity post-operatively was found to be good most of the time. Few patients had borderline and poor visual outcomes. This showed a very good success rate of the cataract surgery. This was found better than previous studies conducted in similar underdeveloped areas.[9,10] but was similar to studies consisting predominately of procedures like

Phacoemulsion and Conventional ECCE with intraocular lense.[6,11,12]

In this study, 8.3% had borderline visual acuity, while poor visual acuity was found in 3.3% which was much in line with WHO guidelines that recommend a post-operative corrected visual acuity of less than 5% for borderline and poor visual acuity.[13]

Patients who were suffering from diabetes and glaucoma had higher percentage of poor visual outcome than the general patients. This was the highest in glaucoma patients (16.7%), followed by diabetes (4.7%) as compared to the general population (1.3%). Poor visual outcome relating to diabetes and glaucoma is well established.[14,15]

The main reasons for not attaining good vision were diabetic retinopathy, glaucoma and history of trauma. These were also found to be major reasons for poor visual outcome in studies conducted elsewhere.[16] Age-related macular degeneration, IOL displacement and posterior chamber opacity were other causes for poor/borderline visual outcome. These findings were consistent with other studies.[15,17]

Conclusion

Overall a good visual outcome was noted in cataract surgery, which was in line with WHO guidelines. ECCE was the most common procedure followed by Phacoemulsification. The main reasons for poor visual outcome were diabetic retinopathy, glaucoma and age-related macular degeneration. Complications with cataract surgery were rare.

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