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## Visual Outcome of Cataract Surgery

Farzeen Khalid Hashmi, Qazi Assad Khan, Tanveer Anjum Chaudhry and Khabir Ahmad

### ABSTRACT

The aim of this study was to assess whether the visual outcome of cataract surgery in the institution was in accordance with the World Health Organization recommendations. In this retrospective case series, all patients who underwent cataract surgery by a single surgeon from January 2009 till June 2011 were included. Data were collected from medical records on age, gender, visual acuity and causes of sub-optimal outcome. The main outcome was best-corrected visual acuity in the operated eye, measured 4 – 6 weeks after surgery. Data on visual outcome was grouped using WHO's classification. Of the 495 eyes that underwent cataract surgery, 58% were female. Overall, 93.3% of the operated eyes had good visual outcome, while 4.4% and 2.2% had borderline and poor outcomes, respectively. Pre-existing diseases accounted for 93.9% of the borderline/poor outcome. The study showed good visual outcome of cataract surgeries performed using phacoemulsification with intraocular lens (IOL) insertion.

**Key words:** *Phacoemulsification. Cataract surgery. Visual outcome.*

Cataract surgery has been one of the most commonly performed surgical procedures worldwide. Over the last two decades, the number of surgeries performed annually has increased three folds, from 5 million in 1988 to around 15 million in 2008.<sup>1</sup> Although high volumes of surgeries are being performed, there are concerns about the quality of outcomes.<sup>2</sup>

WHO recommends that after surgery at least 80% of the operated eyes should have a presenting visual acuity of 6/6 – 6/18 which is referred to as good visual outcome. After best correction, at least 90% of the eyes should achieve this level of vision.<sup>3</sup> Only a few centres in developing countries including Pakistan have reported their experience. Malik and colleagues reviewed the visual outcome of cataract surgery at the Layton Rahmatullah Benevolent Trust (LRBT) Eye Hospital, Lahore, a charity health centre with a high surgical volumes.<sup>4</sup> Good visual outcome after correction was seen in 69.9% eyes. The authors audited the results of cataract surgery at the Aga Khan University Hospital in Karachi to determine the extent to which WHO standards are being met.

This retrospective case series included all cataract surgeries performed by a single surgeon (TAC) during January 2009 to June 2011 at the Aga Khan University Hospital, Karachi, Pakistan. Traumatic cataract surgeries were excluded. The main outcome measure was best-corrected visual acuity (BCVA) in the operated eye, measured 4 – 6 weeks after surgery, using

Snellen's chart. Data were collected from medical records by two trained research medical officers, using a structured proforma. Data were collected on age at surgery, gender, BCVA before and 4 – 6 weeks after surgery, and causes of borderline/poor outcome (VA < 6/18), as reported by the physician. Ethical approval was obtained from the Ethics Review Committee of the Aga Khan University, Karachi. IBM SPSS Statistics (version 19, SPSS Inc, an IBM company, Armonk, NY) was used to analyze the data. The visual outcomes (best-corrected) were categorized according to the WHO classification: good 6/6 – 6/18, borderline < 6/18 – 6/60 and poor < 6/60.<sup>3</sup> Frequencies and proportions were calculated to display the data.

A total of 542 cataract surgeries were performed during the review period. Complete follow-up data were available for 495 (91.3%) surgeries, and hence included in the analysis. The mean ( $\pm$  SD) age at surgery was 60.8  $\pm$  10.0 years (ranging from 25 to 88 years). Out of the 495 operated eyes, 58% were among women. Phacoemulsification with intraocular lens (IOL) implantation accounted for 99.4% of the surgeries while the remaining (0.6%) were Extra-capsular Cataract Extraction (ECCE) with IOL. Injectable IOLs were implanted in 95% of the eyes, while foldable IOLs were implanted in the remaining ones.

Pre-operative (BCVA) in 57.9%, 25.3%, and 16.8% of the eyes was 6/6 – 6/18, < 6/18 – 6/60 and < 6/60, respectively. Overall, 93.3% (462/495) of the operated eyes had good visual outcome while borderline and poor outcomes were observed in 4.4% and 2.2% of the eyes, respectively (Table I).

Pre-existing ocular conditions—diabetic retinopathy followed by glaucoma, age related macular degeneration, amblyopia, myopic degeneration, and retinal degenerative disorders—accounted for most (93.9%) of

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**Table I:** Visual acuity of eyes assessed before and after cataract surgery (n = 495).

Level of VA	Best corrected visual acuity	
	Before surgery No. (%)	After surgery No. (%)
6/6 – 6/18 (Good)	287 (57.9)	462 (93.3)
< 6/18 – 6/60 (Borderline)	125 (25.3)	22 (4.4)
< 6/60 (Poor)	83 (16.8)	11 (2.2)
All	495 (100)	495 (100)

**Table II:** Causes of borderline / poor visual outcomes (n = 33\*).

Pre-existing conditions	No. (%)
Diabetic retinopathy	10 (30.3)
Glaucoma	5 (15.2)
Age related macular degeneration	4 (12.1)
Myopic degeneration	4 (12.1)
Amblyopia	3 (9.1)
Retinal degenerative disorders	2 (6.1)
Corneal opacity	2 (6.1)
Others**	4 (12.1)
Postoperative causes	
Early PCO	2 (6.1)

\* Percentages add up to more than 100 as some patients had more than one causes of poor/borderline outcome. \*\* Others include: central serous retinopathy, pale-cupped optic disc, hazy corneal graft.

the borderline/poor outcome. Early posterior capsular opacification (PCO) was responsible for poor vision in two cases (Table II). No case of postoperative endophthalmitis was seen.

This study showed that visual outcome in most of the operated eyes was good. Only around 7% of operated eyes had borderline or poor visual outcomes, the cause of which was mainly pre-existing ophthalmic comorbidities such as diabetic retinopathy, glaucoma and macular disease.

These results are better than those of a recently conducted multi-country study which showed that 77% to 87% of the operated eyes in three developing countries achieved good outcome after correction.<sup>5</sup> Refractive errors, pre-operative comorbidities and surgical complications were the reasons for poor or borderline outcomes. In a study conducted at LRBT, Lahore, Pakistan, out of a total of 176 eyes that underwent cataract surgery, 69.9% had good visual outcome after correction, while 17.6% had borderline and 12.5% had poor outcomes.<sup>4</sup> ECCE was performed in majority of the cases. Only 22% of the patients underwent phacoemulsification with IOL insertion. Another hospital-based study conducted in Karachi,

achieved good visual outcome in 97.2% of the operated eyes. However, the study had a very high (57.2%) lost to follow-up rate.<sup>6</sup>

Good visual outcome is essential both from the perspective of visual function and patient's satisfaction. In order to achieve good results, it is important that surgeons and eye care centres audit their performance regularly.<sup>7</sup> Phacoemulsification with IOL insertion was the procedure performed on nearly all the eyes that were operated upon in our centre. In our region as well as in other developing countries, many centres still do not routinely use this procedure. Population studies from developing countries reveal that majority of the operated eyes do not achieve the WHO recommended levels of visual outcomes.<sup>2</sup>

The strengths of this study include a high follow-up rate (more than 90%), a relatively large sample size, routine use of modern surgical technique (phacoemulsification) with IOL implantation, and surgeon's expertise. Although the hospital caters to a relatively wide population base, the study population is not adequately representative of the general population. Financial impediments lead most of the patients with poor socioeconomic status and advanced cataract to seek medical care from other low-cost centres.

In conclusion, this study shows good visual outcome of cataract surgeries performed using phacoemulsification with IOL insertion. Regular auditing is essential to improve the quality of surgery.

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