

REPORT SUMMARY

This preliminary report contains results from 3016 patients from 22 SDPs who had cataract surgery performed from January to March, 2002, and whose complete set of case record forms were received by the Cataract Surgery Registry Unit by June, 2002. The number thus did not reflect the true burden of cataract surgery in each centre. Data from one SDP were not analysed due to incomplete return.

1 PATIENTS' CHARACTERISTICS

- 1.1 The mean age of the 3016 patients was 64 years (youngest 4 months, eldest 97 years old). More than half of the patients (56%) was 65 years and older.
- 1.2 Gender distribution was equal among the male and female patients.
- 1.3 Thirty five percent of cataract surgery was performed in January (1049), 27% in February (815) and 38% in March (1152).
- 1.4 Centre E had the most number of cataract operation (n=321, 11%) followed by centre B, H, K, O (all have 8%) and centre U (7%).
- 1.5 One third (35%) of the operation were done as day care surgery and two third (65%) were done as in-patient. Centre E had most of the operation done as day care (89%). Seven centres have no day care service.
- 1.6 Two third of the patients (70%) had first eye operation while one third of the patient (30%) had second eye operation (i.e. fellow eye has had cataract surgery before).
- 1.7 Ocular co-morbidity was noted in 28% of the patients. The most common anterior segment ocular co-morbidity was glaucoma, and for posterior segment was diabetic retinopathy. Five percent of the patients had poor view of the posterior segment and thus the posterior segment could not be assessed.
- 1.8 Systemic co-morbidity was noted in 55% of the patients. Hypertension was the most common systemic co-morbidity (33%) followed by diabetes mellitus (28%), ischaemic heart disease (9%) and asthma/ COAD (6%).
- 1.9 Most patients presented with unaided vision of hand movement and refracted vision of 6/12. Sixty six percent of the patients presented with blindness in the eyes to be operated (blindness is defined as presenting vision of 3/60 or worse) but when refracted vision was recorded, only 30% of the eyes was in the blindness category.
- 1.10 Senile/age related cataract accounted for 93% and traumatic cataract accounted for 3% of the causes of cataract.

2 CATARACT SURGERY PRACTICE

- 2.1 Extracapsular cataract extraction (ECCE) was the most common type of cataract surgery performed. Fifty six percent of cataract surgeries were ECCE, 38% were phacoemulsification (PE), 3% PE convert to ECCE, and 3% lens aspiration. Centres E, G, H, L and T performed 50% or more PE. The rest of the centres performed ECCE more frequently than other type of surgeries. Three centres i.e. I, N and R performed purely ECCE with no other type of cataract surgery.
- 2.2 Only 4% of the cataract surgery had some form of combined surgery. Centre C performed the highest number of combined surgery at 10%. Centre I was the only centre that did not perform any combined surgery.
- 2.3 Almost all cataract surgeries were performed for elective reasons with only 1% of the cases requiring emergency cataract surgery. Emergency cataract surgery was performed at the range of 1% to 5% at all sites.
- 2.4 Ninety four percent of cataract surgeries were performed under local anaesthesia (LA). The frequency of LA utilisation ranged between 86-100% at the various centres. Six percent of all cataract surgeries were performed under general anaesthesia (GA). Centres F, N, T, U and V utilised GA more frequently than other sites and this varied between 10-14%.
- 2.5 For cataract surgeries performed under LA, the type of LA most commonly performed was the subtenon anaesthesia (48%). This was followed by retrobulbar anaesthesia (30%), peribulbar anaesthesia (19%) and topical anaesthesia (7%).

Generally more than one type of LA was utilised at each centre. Though there was usually a preference towards one type of LA at each centre. Six centres (A, C, I, J, N, R) however, performed purely one type of anaesthesia. Centre C and N performed only retrobulbar, centre A and J only subtenon, and centre R and I only peribulbar local anaesthesia.

Facial block was given to prevent over action of the orbicularis oculi and not for pain relieve during surgery. This was performed at only 8 of the 22 centres and centre C and R performed it on all cataract surgeries.

- 2.6 Cataract surgery in some cases may require more than one type of LA to provide adequate anaesthesia. Of the 94% cataract surgeries requiring LA, 84% needed only one type of LA with the remaining 16% requiring more than one type of LA. There were 11 centres that did not utilise multiple LA. This was in contrast to centre C and R where more than 90% of the patients were given more than one type of LA.
- 2.7 More than half (55%) of cataract surgeries undergoing LA did not have any form of sedation. Centre A, H, S, and Q did not use any form of sedation.

Among the 45% of patients who were given sedation, oral sedation was the commonest sedation used (37%). Intravenous, intravenous plus oral and intramuscular were infrequently used and ranged between 2 to 4%.

- 2.8 Posterior chamber (PC) intraocular lens (IOL) was the normal placement of an IOL in uncomplicated surgeries. PC IOLs were placed in 97% of the cataract surgeries. Three centres (C, I, and Q) achieved 100% PC IOL placement.

Anterior chamber (AC) IOL were placed in 3% of cases and this ranged between 0-8% at the various centres except for centre A where 20% of cases required AC IOL placement.

- 2.9 Of the 84 cases of cataract surgery in which no IOL was implanted, 67% were planned to have no implantation. Thirty three percent had been planned for IOL but lens implantation was not possible at the time of surgery.
- 2.10 IOLs made of PMMA were the most frequently used IOL (79%). This was followed by IOLs made of silicone (12%) and acrylic (10%) material. Seventy-seven percents of the eyes had non-foldable IOLs and 23% had foldable IOL. However, 77 of PMMA IOL material were recorded as foldable type, probably by mistake. While 17 of silicone IOL and 18 of acrylic IOL were recorded as non-foldable type, probably they were implanted without folding.

3 CATARACT SURGERY OUTCOMES

3.1 Cataract Surgery Complications- Intra-Operative

- 3.1.1 Overall, 11% of cataract surgeries had intra-operative complications. Posterior capsule rupture with vitreous loss was the commonest, contributing to 5% of total number of cataract surgery performed, followed by zonular dialysis with vitreous loss (2%).

As for surgical techniques, PE converted to ECCE cases had the highest complication rate (53%), followed by ICCE (42%). The rates of complication in ECCE and PE were almost similar, being 10% and 9% respectively.

- 3.1.2 In cases of combined surgeries, 16% had intra-operative complication. Complication was seen highest in those combined with vitreo-retinal surgery (40%). Of all the intra-operative complication, posterior capsule rupture with vitreous loss was the commonest (5%).
- 3.1.3 Nineteen percents of emergency cases had intra-operative complications compared to 11% of elective cases.
- 3.1.4 Twelve percents of the patients who had general anaesthesia and 11% of those who had local anaesthesia had intra-operative complications.

- 3.1.5 For local anaesthesia, subtenon, peribulbar, retrobulbar and topical anaesthesia contributed 15%, 10%, 9% and 8% of intra-operative complications respectively.
- 3.1.6 The occurrence of intra-operative complications was similar whether single (12%) or multiple (10%) local anaesthesia was given to the patients.
- 3.1.7 Intravenous (14%), intravenous plus oral (14%) and intra-muscular sedation (14%) had higher percentage of intra-operative complication compared to those given oral sedation alone (12%), or no sedation was given (11%).
- It seems that patients who were not given sedation had lower intra-operative complications. It may be due to the fact that sedation was given following the occurrence of intra-operative complications.
- 3.1.8 Patients who were given multiple sedation had higher intra-operative complication (40%) compared to those who had no sedation (11%) and those who had single sedation (12%).
- 3.1.9 Patients who had ACIOL implanted had the highest rate of intra-operative complications (76%) as compared to those who had PCIOL (8%) and those who had scleral fixated IOL (0%). It is obvious that most patients who had ACIOL had intra-operative complications, particularly posterior capsular rupture, rendered implantation of PCIOL not possible. Among patients who had ACIOL, 63% of them had posterior capsule rupture(51% with vitreous loss, 12% without vitreous loss).
- 3.1.10 For those without IOL implantation, patients who were planned but did not have IOL implanted had higher percent of intra-operative complications (76%), compared to those who were not planned to have IOL implantation (20%). Understandably, the earlier group was those who had intra-operative complication rendered IOL implantation impossible. Posterior capsule rupture with vitreous loss was the commonest complication among patients who were planned but did not have IOL implanted (14%).

3.2 Cataract Surgery Complications - Post-Operative

- 3.2.1 Overall, 14% of patients had post-operative complication. Central corneal oedema within 4 mm of visual axis (4 %) and astigmatism of more than 3 dioptres (4 %) were the most common complications.

3.3 Analysis On Cataract Surgery Visual Outcome

- 3.3.1 For patients who did not come for post-operative refraction, their median post-operative follow-up period was shorter, at 8.1 weeks. Two third of them had follow up period of 12.1 weeks.
- 3.3.2 For patients who had post-operative refraction performed, their median post-operative follow-up period was 10.9 weeks. Two third of them had follow up period of 13.9 weeks.

3.4 Post-operative Visual Acuity

- 3.4.1 Thirty-eight percents of the patients obtained postoperative unaided VA of 6/12 or better. The proportion of patient with this VA increased to 79% when refracted vision was used as the measurement.

Four percents of the operated eyes had post-operative refracted VA (7% with unaided VA) at the blindness range (VA 3/60 and worse).

In general, post-operative VA was better than pre-operative VA and the difference was more apparent when unaided VA was taken as the measurement.

- 3.4.2 As a whole, excluding patients who had secondary IOL implant, patients who had PE performed had the highest percentage of post-operative refracted VA 6/12 or better (86%), followed by ECCE (76%), PE converted to ECCE (71%). Patients who had ICCE had the lowest percentage (38%).

Patients who had PE seemed to have better visual outcome compared to ECCE, more apparent when we take unaided vision as the outcome measurement. This may be partly due to exclusion bias as 75 patients who had PE were converted to ECCE when there were intra-operative complications.

- 3.4.3 When comparing age group and visual outcome for ECCE group, patients older than 85 years had the worst outcome while for PE group, patients younger than 35 years had the worst outcome.

- 3.4.4 In general, post-operative visual outcome was similar among male (81%) and female patients (78%).

- 3.4.5 As a whole, patients without ocular co-morbidity (84%) had higher percentage of post-operative refracted VA 6/12 or better as compared to those with ocular co-morbidity (66%).

Among patients who did not have ocular co-morbidity, PE (90%), followed by ECCE (81%), PE converted to ECCE (71%), ICCE (67%) and lens aspiration (67%) had post-operative refracted VA 6/12 or better.

In general, presence or absent of systemic co-morbidity did not affect post-operative visual outcome. But for patients who had PE converted to ECCE, percent of good visual outcome was much higher among those who did not have systemic co-morbidity (90% vs. 62%).

- 3.4.6 In general patients who had intra-operative or post-operative complications have poorer visual outcome.

Sixty- six percents of patients with intra-operative complications had post-operative refracted VA 6/12 or better compared to 81% for those without intra-operative complications.

Among patients with post-operative complications, 62% of them had post-operative refracted VA 6/12 or better compared to 82% without post-operative complications.

In the absence of intra-operative or post-operative complication, PE had better outcome (88% and 87% respectively), compared to other types of surgery. It was also observed that, in the absence of intra-operative complications, patients who had PE converted to ECCE (77%) had similar visual outcome of 6/12 or better, compared to those who had ECCE (78%).

3.4.7 In general, patients who had elective surgery have better visual outcome (79%) compared to emergency cataract surgery (59%), except those who had ICCE where patients who had emergency cataract operation had better visual outcome (50% vs. 36%). This might imply that when ICCE is indicated, especially among patients with lens related complications such as phacomorphic, phacolytic or lens subluxation, it may be better to perform ICCE earlier, as emergency operation.

3.4.8 Patients who had local anaesthesia had better visual outcome compared to those who had general anaesthesia (80% and 60% respectively). This may be because majority of patients who required general anaesthesia were in the younger age group, or those who had pre-existing systemic or ocular comorbidity.

Patients who had topical anaesthesia had the highest percentage with good visual outcome (86%). This may be due to the fact that most of them had PE performed.

Percentage of good visual outcome was similar among those who had retrobulbar, subtenon, and subconjunctival anaesthesia (80%). Those who had peribulbar had the lowest percent of good visual outcome (78%).

There is no difference in visual outcome among patients who were served and those who were not served oral sedation.

3.4.9 In general, patients who did not have combined surgeries had better visual outcome (80%) compared to those who had combined surgery (63%). However, the difference in visual outcome among those who had PE alone and PE combined with other surgeries were not much (84% vs. 80%).

3.4.10 Understandably, patients who had IOL implanted had higher percentage of post-operative refracted VA 6/12 or better (81%) compared to those who did not have IOL implanted (18%).

Eighty-seven percents of patients with foldable IOL had postoperative visual acuity of 6/12 or better, compared to 79% of those with non-foldable IOL.

In PE and lens aspiration cases, those with foldable IOL had a slightly better visual outcome (89% vs. 84% for PE, 67% vs. 55% for lens aspiration).

When comparing PMMA, silicone and acrylic lens materials in PE cases, there is not much difference in terms of visual outcome (84%, 89%, 89% of the patients achieved post-operative refracted VA 6/12 or better respectively).

3.5 Post-Op Refracted VA Improved By One Or More Line Of Snellen Chart

- 3.5.1 Out of 3016 patients, only 225 patients had refracted vision for both pre-operative and post-operative assessment. Among these 225 patients, 91% of them had one or more line of visual improvement postoperatively, while 5% experienced no change in visual acuity and 4% had reduced vision. Among those with one line visual improvement, the highest percentage was ECCE (93%), followed by PE (91%), lens aspiration (86%) and PE converted to ECCE (67%). PE converted to ECCE had the highest percent of post-operative worsening of vision of one or more line (22 %), followed by lens aspiration (14%).
- 3.5.2 In the absent of ocular co-morbidity, visual improvement of one or more line was higher in ECCE (97%) and PE (91%) cases compared to PE converted to ECCE cases (63%).
- 3.5.3 In the absent of intra-operative complications, ECCE (93%) and PE (91%) have similar percentage of one line or more visual improvement.
- 3.5.4 In the absent of systemic co-morbidity, ECCE (93%) and PE (91%) have similar percentage of one line or more visual improvement.

3.6 Factors Contributing To Post-Op Refracted Visual Acuity Worse Than 6/12

- 3.6.1 Five hundred and three patients had postoperative visual acuity worse than 6/12, but causative factors were identified only in 75% of the patients (n=380).

Pre-existing ocular co-morbidity (34%) was the main cause for poor visual outcome followed by high astigmatism (19%), posterior capsular opacification (11%), clinical cystoid macular oedema (4%), corneal decompensation (3%), endophthalmitis (1 %), retinal detachment (1 %) and decentered IOL (1 %).

If we assumed that all patients who had endophthalmitis had post-operative VA of worse than 6/12, the estimated rate of endophthalmitis in the 3016 patients was 0.001%.