ORIGINAL ARTICLE

Impact of Day Care Surgery on In-patient Surgery for Age-Related Cataract in Faisalabad

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ABSTRACT

Purpose: To establish reliability regarding the success, feasibility, cost-effectiveness of cataract extraction performed as day care surgery rather than in-patient procedure.
Study design: This was a comparative observational study conducted from February 2008 to July 2010 by comparing the postoperative complications and the final visual outcome after eight weeks in day care and in-patient surgery for age-related cataract.
Material and methods: Patients underwent surgery for age-related cataract at five cataract centers in Faisalabad, were included in this study. All patients underwent thorough ocular examination including anterior and posterior segment and made medically fit before surgery. Maculopathies, ocular fundus pathologies, glaucoma, previous ocular surgery, corneal opacity were excluded. Data was collected and analyzed by SPSS.
Results: A total of 1219 cases, out of which 1110(91%) were day care surgeries, while 109(09%) were inpatient surgeries. Mean age of the subjects in the inpatient group was 62.1 years (SD=6.49 years), while in the daycare group mean age was 64.4 years (SD=5.73 years). The results of the t-test showed that age was not significantly different in both groups ($p>0.05$). There is no statistically significant difference in early postoperative complication rates in the day care surgeries and inpatient surgeries. These complications have no clinically significant effect on final visual outcomes eight weeks postoperatively. The mean change in visual acuity (Snellen lines) of the operated eye eight weeks postoperatively was not statistically significant. Patients in day care surgeries were more satisfied due to shifting to home after one hour postoperatively. Costs were 20% more for the in-patient group and this was attributed to higher costs for overnight stay.
Conclusion: The success, safety, patient satisfaction and cost-effectiveness of cataract surgery as day care procedure appear to be acceptable. This study provides some evidence that there is a cost saving but no significant differences in final visual outcome between day care and in-patient cataract surgery.
Keywords: Cataract, in-patient, day-care, visual acuity, postoperative.

INTRODUCTION

More than 40% of cataract cases ultimately suffer from blindness, with the majority of blind patients being found in the developing countries of Asia.[1, 2] The results of Indonesian studies showed that 63% of bilateral blindness was due to cataract.[2] Because of the high prevalence of cataracts, the most frequently encountered cause of blindness, cataracts constitute a considerable community health problem requiring special attention. The prevalence of all-cause blindness is three to four times higher in low-income countries than in industrialized countries, and more than 75% of global blindness is either preventable or treatable[3]. For permanent improvement of visual functions, cataract surgery is the only treatment option[4].

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Phacoemulsification (phaco), a small incision sutureless surgery gives a better outcome than extra capsular cataract extraction (ECCE), which requires a larger incision and sutures[5]. Patients who have had cataract surgery done in both eyes have a better quality of life[6]. Cataract surgery has increased 400% during the last 10 years[7] to become the most common surgical procedure in the developed world, exceeding 1.6 million operations in the United States alone because of an aging population and dramatic expansion of indications following improvements in technology[8] Cataract surgery is a cost-effective intervention[9] and is more cost effective than other medical interventions[10]. When done as day care surgery, the current internationally preferred approach saves up to 20% of the cost and has similar outcome to in-patient surgery[11].

This difference in cost was largely due to the higher cost associated with an overnight stay in hospital, while the costs of surgical intervention and of follow-up were similar in both patient groups.[12,13]

While the patient is more comfortable living at home instead of in a hospital.

MATERIAL AND METHODS

All the patients having age-related cataract attended the eye OPD these eye centers, were included in this study. These patients were divided into two groups, those operated as day care cases and other operated as inpatient cases. All patients underwent comprehensive anterior and posterior segment examination along with systemic examination. The inclusion criteria used in this study was patients having mature senile cataract; intraocular pressure (IOP) <22 mmHg, blood pressure <140/90 mmHg, fasting blood glucose <150mg/dL, random blood glucose <200 mg/dL. Exclusion criteria was the case with maculopathies, ocular fundus pathologies, glaucoma, previous ocular surgery, corneal opacity. Keratometry and biometry performed in all cases. Routine blood tests, blood glucose, clotting time, bleeding time, screening for hepatitis B and C. Pre-medication included topical antibiotic and nsaid while systemic anxiolytic and diamox (250mg) given. Operative procedure performed as planned, routine ECCE with IOL implantation or Phaco with IOL implantation by senior eye surgeons. After the operation the patient received eye drops containing an antibiotic, corticosteroid, analgetic eye drops continued for six to eight weeks, and systemic antibiotic and analgesic for five days. The inpatient group was hospitalized for one day after surgery. The day-care group received care for one hour after surgery only, after which the patients were allowed to return home on similar treatment. Follow up was performed at the interval of one week, four weeks, six weeks, eight weeks post-operatively. Each patient was checked for visual acuity and any postoperatively complication at each follow up visit. Patients with visual acuity less 6/12(0.50) were checked for fundus pathologies like cystoid macular edema and managed. Final visual acuity (BCVA) was noted at eighth week postoperatively. Statistically analysis was done using the computer software program SPSS.

RESULTS

In present study included 1219 cases, 1110(91%) day care surgeries, while 109(9%) inpatient surgeries. Mean age of the subjects in the inpatient group was 62.1 years (SD = 6.49 years), while in the daycare group mean age was 64.4 years (SD=5.73 years). The results of the t-test showed that age was not significantly different in both groups (p>0.05). There is no statistically significant difference in early postoperative complication rates in the day care surgeries and inpatient surgeries. No wound leakage or iris prolapse was found in any case. Increased intraocular pressure (IOP) in 33(2.97%) in day care, 3(2.75%) in inpatient surgeries was noted during first post-operative week which was controlled with topical anti-glaucoma treatment. Post-operative uveitis 21(1.89%) in day care while 2(1.83%) in inpatient surgeries (table 2). These complications have no clinically significant effect on final visual outcomes eight weeks postoperatively (table 1).

Table 1: Differences in visual acuity values four weeks and eight weeks after surgery between inpatient and day-care subjects

Postoperative period	Day Care Cases	Inpatient cases	P value
4th week	6.0/9.0 (0.63)	6.0/9.0	0.352
8th week	6.0/6.0 (1.0)	6.0/6.0 (1.0)	0.352

Table 2: Postoperative Complications

Postoperative Complications	Day Care Surgery	Inpatient Surgery
Wound leakage	-	-
Raised IOP	33(2.97%)	3 (2.75%)
Iris proplase	-	--
Endophthalmitis	1(0.09%)	
Uveitis	21 (1.89%)	2 (1.83%)

Identical results were obtained at four and eight weeks after surgery, where median visual acuity values in both groups of subjects were identical (all amounted to 0.6 or 6/9 (p>0.05). In day care group one case (0.09%) reported with postoperative endophthalmitis which was controlled with immediate intra-vitreal antibiotic injections and visual acuity (BCVA) was 6/6 after eight weeks. Patients in day care surgeries were more satisfied due to shifting to home immediate postoperatively. Cost was 20 % more for the in-patient group and this was attributed to higher costs for overnight stay.

DISCUSSION

In this study included total 1219 surgeries, 1110(91%) day care, while 109(9%) inpatients surgeries. This study showed that majority (91 %) belong to day care group, while only 9%cases who opted for inpatient group. This shows a positive trend for day care surgery. Routine postoperative follow up was performed at first day, first week, fourth week, sixth week and eighth week and monitored for postoperative complications and visual acuity for both groups.

There is statistically no significant difference, found in early postoperative complication rates in the

day care surgeries and inpatient surgeries. Increased intraocular pressure (IOP) in 33(2.97%) in day care, 3(2.75%) in inpatient surgeries was noted during first post-operative week which was controlled with topical anti-glaucoma treatment. This may be due to residual of viscoelastic material left over in anterior chamber after aspiration. Post-operative uveitis in 21(1.89%) cases among day care while 2(1.83%) cases in inpatient surgeries.

Only one case (0.09%) had endophthalmitis in first week postoperatively, which was controlled with intravitreal antibiotic injections. And this patient gained 6/9 vision after eight weeks. As far as visual acuity for both groups is concerned no significant differences were found. Postoperative visual acuity at first day to first four weeks was almost identical in both groups which improved after four weeks. It might be due striate keratopathy, sometimes due to inflammation. Improvement in visual acuity was due to clearing of the corneal edema. As a rule corneal edema disappears spontaneously within 4-6 weeks[14] when the inflammatory process is considerably reduced.

The visual acuity in the fourth week postoperative week was identical in both groups, having the score of 0.6 (6/9). This may have been caused by stabilization of the wound repair process, by completion of corneal clearing, or by the absence of inflammation. To minimize the chances of astigmatism, the sutures handling was performed in fourth to sixth week postoperative period. The visual acuity in the eighth postoperative week was identical in both groups and also identical to the visual acuity in the sixth week (0.6 or 6/9). All patients of both groups in the present study received best correction of visual acuity, which was 1.0 (6/6) in all patients. In this postoperative period visual acuity was also not significantly different between both groups ($p>0.05$). These findings were consistent with a review by Fedorowicz et al., where no difference was found in visual acuity and risk in post-ECCE day-care patients and inpatients[1]. Similar results were found in the study by Castells in 2001, where visual acuity, safety, effectiveness and cost effectiveness did not differ between ECCE with postoperative day care and inpatient care[15]. One retrospective study in India showed that the number of patients wishing to undergo cataract surgery increased after the introduction of day care cataract surgery,[16] suggesting that day care cataract surgery is a viable health service in developing countries. A prospective studied 851 cataract surgery extraction at a tertiary centre in Vancouver showed after 3 months postoperatively, the visual acuity had improved in 786 eyes (92.4%), remained the same in 42 (4.9%) and had worsened in 23 (2.7%)[17]. Cataract is the leading cause of visual impairment and is associated with lower levels of self-reported quality of life[18]. A study showed a low cataract surgical coverage rate (19.3%) and even among urban subjects the rate was only 23.2%[19]. Cataract surgery visual outcome can be used as an indicator by ophthalmologists to monitor the quality of their services. The outcome can be assessed with full spectacle correction ('best vision') or with available correction ('functioning vision').

Good outcome is defined as 6/6-6/18 (available and best correction grades >85% and >90% respectively), borderline outcome as <6/18-6/ 60 (available and best correction <15% and <5% respectively), and poor outcome as <6/60 (available and best correction <5% for each type). These broad categories can further be subdivided into: 6/6 excellent, 6/9 very good and 6/12 good[20]. With advances in technology, it has been found that phacoemulsification and manual small incision cataract surgeries achieve excellent visual outcome with lower complication rates[20]. The VISION 2020 initiative aims for reduction of the number of people with blindness or impaired vision as a result of cataract, especially in low and middle-income countries.

The economic advantage of the day surgery has been emphasized in a recent randomized clinical study, which reported lower costs for outpatients than for inpatients. This difference in cost was largely due to the higher cost associated with an overnight stay in hospital, while the costs of surgical intervention and of follow-up were similar in both patient groups.[12,13] Cataract surgery is a cost-effective intervention[9] and is more cost effective than other medical interventions[10]. When done as day care surgery, the current internationally preferred approach, saves up to 20% of the cost and has similar outcome to in-patient surgery[11].

CONCLUSION

For age-related cataract, day care surgery appears to be safe, feasible and cost-effective procedure rather than inpatient surgery. This study provides some evidence that there is a cost saving but no significant differences in final visual outcome between day care and in-patient cataract surgery. However, further studies are required to establish the impact of day care surgery of age related cataract.

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