

Study of Visual Outcome in Monocular Patients After SICS

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Abstract

Purpose: To evaluate the best corrected visual acuity (BCVA) outcomes and surgical complications in a consecutive series of functionally monocular patients who had small incision cataract surgery with IOL implantation.

Method: An interventional study done between December 2017 to May 2018 which included monocular patients who underwent SICS under local anaesthesia by same surgeon. Intraoperative and post operative complications were studied. Patients were reviewed upto 6weeks postoperatively.

Results: A total of 50 eyes of 50 monocular patients with cataract underwent SICS. Out of 50, 30 were male and 20 were females. 38 eyes had BCVA between 6/6-6/18, 10 had BCVA between 6/18-6/60, 2 had BCVA between <6/60 due to aphakia.

Conclusion: The common causes for poor vision in unoperated eye were Leucomatous corneal opacity, post traumatic pthisisbulbi, post traumatic iridocyclitis, glaucomatous optic atrophy, pseudophakic bullous keratopathy, and retinal detachment, traumatic optic neuropathy. A thorough eye examination is must before operating such cases for surgery and surgeon should be cautious while operating monocular cases.

Keywords: Intra Operative Complications; Monocular Patients; Post Operative Complications; SICS.

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Introduction

Patients were considered to be monocular if snellens best corrected visual acuity in their fellow eye (not having the surgery) was worse than 6/60 [1].

Monocular cataract patients, where one eye is untreatable for various reasons and the second eye has cataract.

Monocular patients in general fall in two categories those who, due to apprehension, wait longer than they would if they had two good

eyes and those who want surgery earlier because a cataract in their only good eye creates a greater impairment. This seems to help them to sort out their thoughts [2].

Prevalence of one-eyed blindness is 0.8%.

The most common cause for monocular vision in the study group was broadly categorised into surgical and medical causes.

Surgical causes included: Pseudophakic bullous keratopathy

Medical causes included: Glaucomatous optic atrophy, retinal detachment, Leucomatous corneal opacity, Post traumatic iridocyclitis, post traumatic pthisisbulbi and traumatic optic neuropathy.

Material and Methods

This was an intervention al study conducted in department of ophthalmology, NMCHRC, Raichur.

The study was done for a period of 6months

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between December 2017 to may 2018.

A total of 50 monocular patients admitted for cataract surgery of age above 50years of either sex were included in the study.

Institutional ethical committee clearance was obtained before the start of the study.

Reason for poor vision in the unoperated eye , co-morbidities in the operated eye.

All patients underwent detailed preoperative ocular examination including clinical history and systemic examination, measurement of uncorrected and best corrected visual acuity , intraocular pressure (IOP) by Goldmann Applanation tonometry. A-scan biometry was also used to measure the power of the cornea (keratometry) and axial length of the eye, B-scan for posterior segment evaluation and using this data to determine the ideal intraocular lens power.

Detailed slit lamp biomicroscopy under maximal mydriasis was performed to assess cause of poorly dilating pupil (<6mm> like pseudoexfoliative material on the anterior capsule of lens, pupillary border, posterior synechia, type and grade of cataract, and the presence of phacodonesis or zonulolysis. Cataract was graded using "lens opacity classification system" Gonioscopy was done and the angle was graded by Shaffer's system of grading. A detailed fundus examination was conducted with slit lamp biomicroscopy using +90D and indirect ophthalmoscopy using +20 lens. All observations and demographic data were carefully recorded using a protocol sheet.

Prophylactic antibiotics drops moxifloxacin 0.5% eye drops started one day before surgery. Patients were dilated with tropicamide and phenylephrine 0.5% eye drop and non-steroidal anti-inflammatory drops flurbiprofen sodium 0.03% was used 3 times every 15 minutes to maintain the dilatation

Surgical Technique

All patients underwent small incision cataract surgery with posterior chamber intraocular lens implantation by experienced surgeon.

After peri-bulbar block with 5 ml of with 2% lignocaine with adrenaline (1: 20, 0000) with 150 units/ml of hyaluronidase. Povidine-iodine 5% was instilled into the conjunctival sac. For SICS a fornix base conjunctival flap was made, scleral incision was made with bard parker knife with 15 no. Blade temporally or supero-temporally and sclerocorneal tunnel was constructed with crescent. Continuous curvilinear capsulorhexis (CCC) aimed at 5mm to

5.5 mm was done using the needle cystitome.

Small pupils were managed with multiple sphincterotomies, viscomydriasis. A thorough hydrodissection was performed to separate cortex from nucleus. Nucleus was delivered by visco expression. Irrigation and aspiration was done with Simcoe's two way irrigation and aspiration cannula. Rigid, single piece, biconvex, polymethyl meth acrylate posterior chamber intraocular lens (IOLs) with optic diameter of 5.25 mm was implanted in bag.

Intraoperative and post operative complications were noted

Post-operatively, patients were put on topical antibiotics and steroids tapered over 4-6 weeks depending upon the post operative inflammation. Patients were followed on the post-operative day 1, day 7 and day 14 and at weekly intervals for 6weeks to evaluate corneal edema, intraocular pressure spikes, presence of intraocular inflammation and decentration/tilt of intra ocular lens. Postoperative uncorrected visual acuity was recorded every week and best corrected visual acuity was recorded at 6th week.

Results

A total of 50 eyes of 50 monocular patients underwent small incision cataract surgery by experienced surgeon after pharmacologically dilating with tropicamide and phenylephrine 0.5% eye drop.

Of 50 patients, 20 (40%) were females and 30 (60%) were males. The ages of 50 patients in this study was between 50 and 70 years with a mean age group of 66.8years. Out of these 28 (56%) were in 50-60 year age group and 22 (44%) were in 60-70 year age group.

Reason for poor vision in the unoperated eye, co-morbidities in the operated eye, intraoperative and postoperative complications were recorded.

Out of 50 monocular patients 19 (38%) patients had Leucomatous corneal opacity, 7 (14%) patients had Pseudophakic bullous keratopathy, 9 (18%) patients had Glaucomatous optic atrophy, 4 (8%) had Iridocyclitis, 8 (16%) patients had post traumatic pthisisbulbi, 1 (2%) patient had traumatic optic neuropathy, and 2 (4%) retinal detachment. Comorbidities like diabetic retinopathy and age related macular degeneration in the operated eye were not included in our study.

Mean intraocular pressure (IOP) was 18.23 ± 2.10

mm Hg.

Pre operative visual acuity and grading of cataract according lens opacification classification system iii was recorded, shown in table 1.

Table 1: Grading of cataract

Grade of cataract	Pre operative visual acuity	Number of patients 'n'
G I NS with central thick PSC	6/18	10
G II NS with PSC	6/36	12
G III NS	6/60	28
Total		50

G- Grade of cataract; NS- Nuclear sclerosis; PSC- Posterior subcapsular cataract.

Out of 50 eyes 04 (8%) eyes showed some evidence of pigment dispersion mainly on the anterior surface of the lens and back of cornea. None of the eyes showed frank subluxation of lens.

All patients underwent cataract surgery using SICS technique. Surgical complications are listed in (Table 2). 4 (8%)cases required sphincterotomy to facilitate capsularhexis and nucleus delivery. Zonular dialysis seen in 1 (2%) cases, posterior capsular tear with vitreous loss seen in 1 (2%) due to difficulty in surgical maneuvers, iris trauma occurred in 4 cases (8%).

Table 2: Intra op complications table

Complications	Number of patients 'n' (%)
Zonular dialysis	1 (2%)
PCR with vitreous loss	1 (2%)
Poorly dilating pupil	4 (8%)

PCR: Posterior capsule rupture

Patients were followed on the post-operative day 1, day 7, day 14 and at weekly intervals for 6weeks to evaluate intraocular pressure spikes, intraocular inflammation, decentration/tilt of intraocular lens and corneal odema.

Post-operative hazy cornea (corneal odema) was seen in 6 (12%) cases. Anterior chamber reaction in 4 (8%)cases, irregular pupil seen in 4 (8%)cases (Table 3).

Table 3: Post op complications

Complications	Number of patients 'n' (%)
Corneal edema	6(12%)
AC reaction	4(8%)
Irregular pupil	4(8%)

AC- Anterior chamber

Final visual acuity was recorded after 6 weeks of surgery (Table 4). At the end of 6 weeks, 38

(76%) cases had visual acuity between 6/6-6/18, 10 (20%) patients had visual acuity between 6/18-6/60 and 2 (4%) patients had visual acuity less than 6/60 rendered aphakia due to zonular dialysis and posterior capsular rent with vitreous loss.

Table 4: Final visual acuity

Visual acuity	Number of patients 'n' (%)
6/6-6/18	38 (76%)
6/18-6/60	10 (20%)
<6/60	02 (4%)
Total	50 (100%)

Discussion

As cataract surgery becomes more accessible and patient outcomes continue to improve, the decision of when to operate on cataract in monocular patients is not always clear [3].

This debate is especially significant in monocular patients because there is an increased risk for the same degree of benefit after cataract extraction.

These patients are often very symptomatic and want the cataract out of the good eye [4]. Their monocular status confers a greater risk for reduced vision as a result of surgical complications.

The safety of surgical procedure and experience of the surgeon explain the small number of complications.

This study highlights thorough pre-operative consideration and potentially life changing outcomes that an ophthalmologist can make [3].

Patient counselling is critical because despite a perfect surgical technique infection, retinal detachment and other post operative complications can still occur [5].

Causes of monocular vision in this study included, 19 (38%) patients had Leucomatous corneal opacity, 7 (14%) patients had Pseudophakic bullous keratopathy, 9 (18%) patients had Glaucomatous optic atrophy, 4 (8%) had Iridocyclitis, 8 (16%) patients had post traumatic pthisisbulbi, 1 (2%) patient had traumatic optic neuropathy, and 2 (4%) retinal detachment.

Certain eyes are at a higher risk of complication during cataract surgery. Operations on such 'high-risk' eyes are also more likely to yield a poor visual outcome (defined as best corrected vision less than 6/60 after surgery).

Learning to recognise when eyes are at greater risk, and acting accordingly, will help you to avoid

complications. Even so, before the operation takes place, it is good practice to explain to such patients that a poor outcome is a possibility. This makes these patients' expectations more realistic and improves postoperative compliance and follow-up.

In the present study, most frequent problem encountered was a poorly dilating pupil of not more than 6 mm in spite of use of standard mydriatic drops. We resorted to sphincterotomy, viscomydriasis. Sphincterotomy have the disadvantage of causing post-operative distorted pupil, which may even lead to the pupillary capture.

Intra operative complications encountered were Zonular dialysis in 1 (2%) cases, posterior capsular tear with vitreous loss in 1 (2%) cases due to difficulty in surgical maneuvers, iris trauma occurred in 4 (8%) cases. Post-operative hazy cornea (corneal edema) was seen in 06 (12%) cases. Anterior chamber reaction in 4 (8%) cases, irregular pupil seen in 4 (8%) cases. After 6 weeks 38 (76%) cases had visual acuity between 6/6-6/18, 10 (20%) patients had visual acuity between 6/18-6/60 and 2 (4%) patients had visual acuity less than 6/60 rendered aphakia due to zonular dialysis and posterior capsular rent with vitreous loss.

We did not encounter complications like decentered IOL, retained cortical matter, postop hyphema as seen in other studies.

In a retrospective observational study by De Monchy and C Rohart⁶ conducted for a period of 4years on 50 monocular patients. Preoperative median BCVA in the operated eye was 6/36.

The final BCVA reflecting efficacy of cataract surgery improved in 50% of patients.

In our study preoperative median BCVA in the operated eye was 6/60 and the final BCVA after cataract surgery improved to 76%.

In a study by Trotter W, Miller KM [7] conducted on 100 monocular patients had median preoperative BCVA of 6/18 in the operated eye and the final BCVA improved by 3 lines.

In our study the final BCVA after cataract surgery improved by 4 lines.

Conclusion

This study serves as the reminder of the importance of carefully evaluating cataracts in monocular patients before making the decisions to operate but that delaying surgery unnecessarily might increase the risk for complications associated with dense cataract.

Avoiding unnecessary complications in our patient was especially imperative because this surgery was the only measure left for visual restoration.

This study highlights pre operative considerations and potentially life changing outcomes that we as ophthalmologist can make.

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Conflicting Interest:

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