

Visual Outcome in Posterior Polar Cataract after Small Incision Cataract Surgery at Navodaya Medical College, Raichur

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Abstract

Posterior polar cataract is a rare form of congenital cataract. It is usually inherited as an autosomal dominant disease, yet sporadic. It is highly associated with complications during surgery, such as posterior capsule rupture and nucleus drop. The reason for this high complication rate is the strong adherence of the opacity to the weak posterior capsule. *Objective:* To evaluate the visual outcome in posterior polar cataract after small incision cataract surgery. *Methods:* A Prospective study of 50 eyes of 50 pts with posterior polar cataract were reviewed. All pts underwent small incision cataract surgery. The surgical techniques used, intraoperative complications, preoperative and postoperative visual acuity and the causes of impaired visual acuity after surgery were examined. *Results:* 50 eyes of 50 pts presenting, high incidence was noticed in females (58%) mean age of presentation was 53.125Yrs. 27(54%) eyes had pre op visual acuity between PL+ and CF2Mts. During surgery 3eyes (6%) had PCR and were aphakic.PCR in 1(33.33%) eye occurred during nucleus prolapsed and in 2(66.66%) eyes during cortical wash. Snellens Visual acuity on day 1 was >6/18 in 13 cases (26%), on day 7 in 34 cases (78%) and BCVA after 6weeks was >6/18 in (98%) cases. AC reaction was seen in 4 cases (8%). *Conclusion:* Visual outcome in pts with posterior polar cataract is good when surgery done after proper pre-op assessment, with thorough planning. Experienced surgeons with proper knowledge of the technique during the surgery and about vitrectomy.

Keywords: PPC, SICS, Hydrodelineation, Intraoperative complications, Visual Outcome

Introduction

Cataract can have a wide variety of presentations ranging from a white dot in the anterior lens capsule to dense total opacity involving all the lens structures. It can be morphologically classified as zonular, nuclear, subcapsular, polar, sutural, total and membranous [1]. One of the important morphologies of lens opacity is the posterior polar cataract. The posterior polar form is a clinically distinctive cataract that consists of a white, well demarcated disk-shaped opacity located on the central posterior capsule [2]. The indication for surgery consists of visually significant cataract impairing the patient's quality of life and activities of daily living.

Posterior polar cataract present a unique challenge

to cataract surgeons as it is associated with the high risk of posterior capsule rupture [3-4]. Incidence of PPC ranges from 3 to 5 in 1000 [5]. It is found to be bilateral in 65% - 80% of the cases [4,6]. There is no sex predilection in general. An important clinical feature of posterior polar cataract is the significant incidence of extreme capsular weakness in the area of polar opacity [7]. In approximately 20% of cases, an association with a congenital defect in the posterior capsule is seen [3].

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Generally two types of posterior polar cataract are described in the literature stationary and progressive [7]. In stationary-type central opacity is localised on the central posterior capsule, and in progressive type changes take place in the posterior cortex in the form of radiating rider opacities. Both stationary and progressive posterior polar cataracts may become symptomatic.

The lens may have evidence of a small opacity at birth, but there are cataractous changes later in life, usually at 30–50 years of age. Glare while driving at night and difficulty in reading fine print are typical symptoms. The indication for surgery consists of visually significant cataract impairing the patient's quality of life and the activities of daily living.

Aims and Objectives

1. To study the visual outcome of posterior polar cataract after Small incision Cataract Surgery with Posterior Chamber Intra Ocular implantation done at Navodaya medical college and hospital Raichur.
2. To study the complications occurring intra operatively and post operative

Materials and Methods

The present study was conducted in

Results

Table 1: Age distribution in patients with PPC

Age in yrs	Frequency	Percentage
<30	2	4
31-40	4	8
41-50	15	30
51-60	22	44
>61	7	14
Total	50	100

Of 50 patients, 2 patients were of <30years, 4 patients were between 31-40 years., 15 patients were between 41-50 years., 22 patients were between 51-60 years., 7patients were >60years.

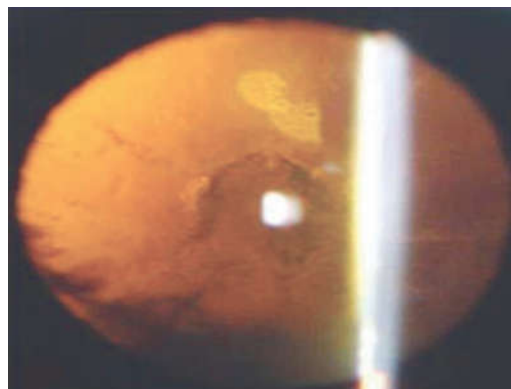


Fig. 1: Appearance of posterior polar cataract under operating microscope.

ophthalmology department at Navodaya Medical College Hospital and Research centre, Raichur. Institutional ethical committee clearance was taken for the study and informed consent was taken from all the patients.

Patients attending ophthalmic OPD who had Posterior Polar Cataract were included in the study.

Source of Data

Study will be conducted on patients with posterior polar cataract attending the out patients department of ophthalmology, in Navodaya Medical College, Raichur.

Methods of Collection of Data

- A cross sectional prospective clinical study conducted on 50 patients with posterior polar cataract attending the out patients department of ophthalmology in Navodaya Medical College and Teaching Hospital, Raichur and willing to participate in this study.
- Sampling Method: Complete enumeration of the 50 patients with posterior polar cataract attending the out patients department of Ophthalmology, NMC are selected on the basis of simple random selection technique and included in the study.

Table 2: Pre-operative vision

Visual acuity	Frequency	Percentage (%)
>6/18	47	94
<6/18-6\60	-	-
<6\60	03	06
Total	50	100

Of 50 patients:
 27 patients had snellens vision between PL+ – CF2mts.
 20 patients had snellens vision between CF3mts – 6/60.
 3 patients had snellens vision <6/60.

Table 3: Post operative vision after 6 weeks

	Frequency	Percentage
With PCR	03	06
Without PCR	47	94
Total	50	100

Of 50 patients:
 47 patients had snellens vision >6/18.
 3 patients had snellens vision <6/60.

Table 4: PCR

	Frequency	Percentage
Aphakia	03	06
Pseudophakia	47	94
Total	50	100

Of 50 patients:
 3 patients had PCR.

Table 5: Aphakia

Anterior vitrectomy	Frequency	Percentage
Done	03	06
Not done	47	94
Total	50	100

Of 50 patients:
 3 patients were left aphakic.
 47 patients were pseudophakic.

Table 6: Anterior vitrectomy

	Frequency	Percentage (%)
Nuclear prolapse	1	33.33
Cortical wash	2	66.66
Total	3	99.99

Of 50 patients:
 Anterior vitrectomy was done in 3 patients.
 Anterior vitrectomy was not done in 47 patient

Table 7: Stage at which rent occurred

Pre op Vision	Frequency	Percentage
PL+---CF2mts	27	54
CF3mts – 6/60	20	40
<6/60	3	06
Total	50	100

Of 3 patients with PCR:
 In 1 patient PCR was during nuclear prolapse.
 In 2 patients PCR was during cortical wash.

Discussion

Present study was conducted in ophthalmology department at Navodaya medical college hospital and research centre Raichur on 50 patients with posterior polar cataract who underwent small incision cataract extraction during June 2014-July 2015.

Posterior polar cataract is a white, well-demarcated disc-shaped opacity located on the central posterior capsule. It has been reported that posterior polar cataract is usually inherited in an autosomal-dominant manner, although other sporadic cases exist. Molecular genetic analyses have demonstrated that an autosomal-dominant posterior polar cataract is a genetically heterogenous disease. Cataract surgery in posterior polar cataract is very challenging because of thin posterior capsule and its predisposition to posterior capsular tear.

Following precautions are to be taken while operating.

1. Equally experienced surgeons performed the surgeries.
2. All surgeries were carried out under peribulbar anaesthesia.
3. Big Continuous curvilinear capsulorhexis was performed under an ophthalmic viscosurgical device (OVD) using a 26-gauge bent needle.
4. All patients underwent hydrodelineation in different quadrants using minimal fluid.
5. Hydrodissection was avoided in order to prevent posterior capsule rupture.

Age Distribution in Patients with PPC

In our study, the age of the patients varied from 20-70yrs, but high prevalence was between 50-70yrs (44%) followed by 41-50yrs (30%). With mean age of 53.125yrs.

In study done by Ken Hayashi, MD, et al the mean age of the 12 men and 8 women with posterior polar cataract was 49.6 years \pm 16.4 (SD) (range 23 to 74 years). Similar to that of our study.

H Siatiri in their study reported Mean age at presentation as 33.5 years (from 19 to 65 years), which is converse to our study.

RB Vajpayee in their study reported the mean age of the patients was 43.75 yrs.

Sex Distribution in Patients in PPC.

Female preponderance in our study was seen with

58% of total cases. Where as in study done by Das et al there were 48 men (79%) and 11 women (21%), which is in contrast to our present study.

Ken Hayashi, in their study reported that 12 men and 8 women with posterior polar cataract were involved.

H Siatiri in their study had 12 males and 11 female patients.

Modalities of surgical techniques are conventional ECCE, manual SICS and phacoemulsification.

In our study SICS was performed in all the cases. Adequate hydrodelineation was done. Prolapsing the nucleus into the anterior chamber was done with utmost care in order to avoid PCR.

The viscoelastic substance was filled above and below the nucleus and then nucleus was delivered out by sandwich method with the help of wire vectis and Sinskey hook.

Thorough wash was given and all the cortical matter was aspirated.

Allen and Fine suggest viscodissection of the epinucleus performed by injecting a viscoelastic (Healon 5 or GV and Viscoat, respectively) under the capsular edge to mobilize the rim of the epinucleus. It is removed with a two way irrigation-aspiration (I/A) Simcoe cannula.

If PCR was present with vitreous loss, anterior vitrectomy was done and the IOL was placed in the sulcus. In absence of PCR, IOL was placed in the bag.

Preoperative Vision

In our study more number of patients presented with pre-op vision between PL+ and CF2mts i.e around 54%, (27 of 50 cases) followed by CF3mts – 6/60 around 40%, (20 of 50 cases) least incidence below 6/60 around 6% (3 of 50 cases).

Selçuk Sýzmaz in their study reported mean preoperative visual acuity was 20/80. Converse to that of our study.

S Das in their study Preoperatively only (22%) had visual acuity of 20/30.

BCVA

In our study 49 of 50 pts (98%) had BCVA at post operative 6 weeks of <6/18 by Snellen's visual acuity. 1 pt (2%) had between 6/18-6/60.

Selçuk Sýzmaz reported The postoperative visual acuity was worse than 20/20 S Das et al in their

study reported the postoperative visual acuity in 76 eyes (94%) was 20/30 or better similar to that of our study.

Complications

Intra Operative Complications;

Posterior Capsular Rupture:

Complications noticed in our study are PCR and aphakic state of patient. Of 3 cases with PCR seen in our study, 1 case occurred during nucleus delivery and in 2 cases it occurred during cortical wash.

S Das et al reported the rate of posterior capsule ruptures in their series to be (31%) where as in our study it was just 6% and he also reported that rupture occurred during emulsification of the nucleus in the phacoemulsification group in nine of 15 and during nucleus expression in the extracapsular extraction group in five of nine cases.

In study done by Selçuk Sýzmaz, et al Posterior capsule rupture occurred in 4 (15.3%) eyes. PCR occurred during removal of the posterior plaque.

Osher et al. reported the incidence of posterior capsule rupture to be 26%–36%. In contrast to our study, which showed a low incidence of posterior capsule rupture (6%).

Hayashi et al, Lee and Lee cases, Liu et al reported PCR occurrence in 7.1% 11.1% , 16.7% respectively.

H Siatiri reported that posterior capsule rupture occurred in none of their cases. Where as 6% of our cases had PCR.

Nucleus Drop

S das et al reported two eyes had nucleus dropped into the vitreous during phacoemulsification.

No case of nucleus drop were seen in our study.

Ken Hayashi reports the lens nucleus dropped into the vitreous cavity in 1 patient.

S das et al Sixty intraocular lenses (74%) were implanted in the bag and 21 (26%) in the sulcus.

In 94% of cases in our study IOL was placed in the bag.

Post operative Complications:

In 8% of cases in our study AC reaction was noticed on post operative day 1.

Other complications like PCO, Retinal detachment,

Macular edema were not seen in our case.

Hatem Kalantan, MD, FRCS stated other complications of the surgery are retinal Detachment, macular edema.'

Summary and Conclusion

The present study of posterior polar cataract was conducted in Navodaya Medical College Hospital and Research Centre, during the period of June 2014- July 2015. The main objective of this study were to study the visual outcome in posterior polar cataract after small incision cataract extraction.

The study sample included 50 cases of posterior polar cataract.

1. The range of age of presentation was 51-60yrs with mean age of 53.125years.
2. Sex predominant: Females(56%) and Males (42%).
3. Almost equal presentations in RE (58%) and LE (42%)
4. Complications like PCR in 3 cases (6%).
5. Snellens Visual acuity on day 1 was >6/18 in 13 eyes of 26% cases.
6. Snellens visual acuity on day 7 was >6/18 in 34 eyes of 78% cases.
7. BCVA after 6weeks was >6/18 in 49 eyes of 98% cases.

The reasons for minimal complication rate in our study were:

1. Proper pre-operative assessment.
2. Thorough planning.
3. Experienced and skilled surgeons.
4. Proper knowledge of the proper technique during the surgery and about vitrectomy.

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