



PROSPECTIVE STUDY ON POSTERIOR POLAR CATARACT: ITS INCIDENCE, COMPLICATIONS AND VISUAL OUTCOME SEEN IN BUNDELKHAND REGION.

Ophthalmology

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ABSTRACT

Posterior polar cataract (PPCs) is a rare form of congenital cataract. PPCs present special challenges to the cataract surgeon. These are often associated with weakness/dehiscence of the posterior capsule and thus could lead to intraoperative posterior capsule rupture. We carried out this Prospective study to know the Incidence, Complications and visual outcome following cataract surgery in the Department of Ophthalmology, M.L.B Medical College, Jhansi, Uttar Pradesh, over a period of 6 months from Oct. 2017 to March 2018. In total 50 patients presented with posterior PPCs out of total 450 patients with different types of cataract (incidence 11.1%). Out of 50 patients 44% were male and 56% females, no systemic association were seen, 82% were bilateral while only 18% were unilateral, most common complication were posterior capsule rent seen in 6% cases other than this no other complication seen ,post operatively 48% achieved vision better than 6/12, 44% achieved vision better than 6/9 while 8% remained amblyopic.

KEYWORDS

PPCs, dehiscence of posterior capsule, congenital cataract.

I. INTRODUCTION

Posterior polar cataract is a rare form of congenital cataract with incidence ranging from 3 to 5 in 1000. [1,13,15]. It is bilateral in 65–80% of the cases with no gender predilection.[1]A posterior polar cataract is a dense white opacity that is situated on the central posterior capsule. It consists of characteristic concentric rings around the central opacity (bull's eye). A posterior polar cataract presents a special challenge to the surgeon because of its predisposition to posterior capsular dehiscence during surgery. [1,2]. Depending on the clinical presentation, PPC can be divided into three categories: (1) PPC with imminent posterior capsule dehiscence, (2) PPC with preexisting posterior capsule dehiscence (3) Spontaneous dislocation.

Two types of PPC have been described : stationary and progressive. Stationary PPC is characterized by the classical central, opacity with concentric rings around the central plaque. The opacity has a cone-shaped projection in the subcapsular region or central posterior cortex. This type of PPC is compatible with good vision. Patients with progressive opacity become more symptomatic as the peripheral extensions of the central plaque enlarge.[3].

The lens may have evidence of small opacity at birth, but there are cataractous changes later in life, usually at 30–50 years of age. The typical symptoms are increasing glare while driving at night and difficulty in reading fine prints. Other symptoms include intolerance to light. The cause of glare, reduced contrast sensitivity, and decreased visual acuity is forward light scattering (light scattering toward the retina). The reasons for delayed presentation might be increasing density of the opacity, age-related pupillary miosis. If it is visually significant since childhood, it might present with strabismus.

The diagnosis of a posterior polar cataract is evident on slit-lamp examination and does not require special diagnostic procedures beyond a full ophthalmic examination. Slit-lamp examination and pupillary retroillumination allow a good evaluation of the visual significance of the opacity Surgical indications- Difficulty in carrying out daily activities is the main indication for surgery. And possibility of amblyopia in visually significant cataract in childhood.

Few salient features about the phacoemulsification procedure used in PPCs in order to avoid PCR are discussed are here^[4-10]

Incision-Most surgeons now prefer clear corneal incisions. Self-sealing incision architecture is crucial to maintain a closed chamber both during and after surgery. The smallest incision size compatible with the surgeon's technique and phaco tip/sleeve should be used Capsulorhexis- It is important to fashion an adequately sized continuous curvilinear capsulorhexis. An adequate size would be somewhere around 5 mm. Too small a rhexis makes prolapse of

nucleus into the anterior chamber difficult. On the other hand, a larger opening may not provide adequate support for a sulcus-fixated IOL in case the posterior capsule is compromised.^[1,2]

Hydroprocedures - Hydrodissection [5]can lead to hydraulic rupture and should be avoided.[1,2] It would be logical to perform hydrodelineation to create a mechanical cushion of the epinucleus.[1,2,4,11-15]. "Inside-Out Delineation" technique differs from conventional hydrodelineation in that it can precisely delineate the central core of the nucleus.^[16]

Rotation - Any attempt to rotate the nucleus can lead to PCR and is best avoided.^[2]

Epinucleus removal - is one of the most difficult parts of PPC emulsification. The first step should be to cleave the epinucleus from the capsular fornices and the second step is to aspirate it.[2,11,12,15] Cortex removal- Bimanual automated I/A optimizes control, ensures anterior chamber maintenance, and aids in the complete removal of the cortex.^[12]

Posterior capsule vacuum polishing - avoided even if the posterior capsule is intact due to its fragile nature.[1,2,12,13,15,16]. An Nd:YAG capsulotomy maybe preferred at least 4–6 weeks postoperatively since the blood aqueous barrier stabilizes by this time.

II. MATERIALS AND METHODS

A total of 50 patients presenting with PPCs were included in this Prospective Analytical study conducted in the Department of Ophthalmology, M.L.B Medical College, Jhansi, Uttar Pradesh, India over a period of 6 months from Oct. 2017 to March 2018. The procedures followed were in accordance with the ethical standards committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 2000. The necessary permission from the Ethical and Research Committee was obtained for the study.

Inclusion criteria:

Patients in the age group 10-65 years
Both male and female patients.
Patient giving consent for the examination

Exclusion criteria:

Patients with common causes of red eye such as conjunctivitis, episcleritis and scleritis, keratitis, corneal ulcer, iritis.
Patients with cataracts other than PPCs
Patients with entropion and chronic dacryocystitis.

Counseling – we informed all the patient regarding the possibility of PCR, a relatively long operative time, possibility of requirement of

secondary posterior segment intervention, possibility of preexisting amblyopia, and a delayed visual recovery. In addition, we also discuss the Nd:YAG capsulotomy for residual plaque.[1,2,16]. Informed consent was obtained from all patients. Each patient's age, gender, medical history and ocular history were assessed at the initial visit. The diagnosis of PPCs was based on inspection under dilatation and then doing distant direct ophthalmoscopy followed by slit lamp examination. Clinical examination included complete ocular examination including inspection, intra ocular pressure measurement with indentation method, syringing, slit lamp examination and direct ophthalmoscopy was done to assess the status of disc macula and background. In case of dense PPCs USG B-scan was also advised. Investigation included complete blood count, fasting blood sugar and chest X ray for every patient. Following which all 50 patients underwent phacoemulsification under peribulbar anaesthesia, surgery was performed by the same surgeon.

I. RESULTS

Incidence of PPCs out of all cataract patients were 11.1% that is (50 patients out of 450 total patients) presented with posterior polar cataract in the OPD and underwent cataract surgery. There was no significant gender predilection seen in our study as 22 (44%) out of 50 patients were male and 28 (56%) were females. And also there was no systemic association with PPCs found in our study.

Table 1 showing laterality of PPCs

Laterality	No. of patients	Percentage
Bilateral	41	82%
Unilateral	9	18%
Total	50	100%

Above table showing PPCs commonly present as a bilateral condition. Table 2 showing complications following phacoemulsification for PPCs.

Complications	No. of patients	Percentage
PCR	3	6%
Nucleus drop	0	0%
Retinal Detachment	0	0%
Post Op Macular Edema	0	0%

Above table shows PCR was the only complication seen during cataract surgery in 3 out of 50 patients following phacoemulsification. Table 3 showing visual outcome following phacoemulsification as assessed 1 month post operatively.

Visual outcome (BCVA)	No. of patients	Percentage
$\geq 6/12$	24	48%
$\geq 6/9$	22	44%
Amblyopic	4	8%
Total	50	100%

Above table shows that best corrected visual acuity was satisfactory in majority of patients (92%) while 4 patients were found amblyopic.

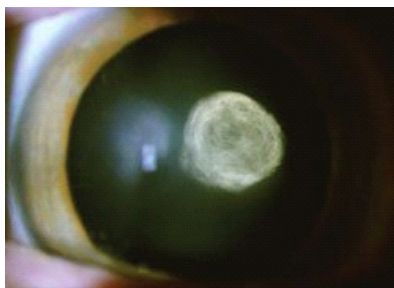


Figure 1 showing patient posterior polar cataract on slit lamp examination.

IV. DISCUSSION

Posterior polar cataract is a challenge for the cataract surgeon as these cataracts are associated with higher complication rate (PCRs and vitreous loss). The rate of posterior capsule rupture in posterior polar cataract cases ranges from 0–40% [6,12,14,16-19] as compared to

1.1% rate of posterior capsule rupture in cataract surgery.[20] In our study the incidence of PCR was 6%. Instead of hydrodissection, hydrodelineation was done because posterior polar opacities adhere firmly to the posterior capsule and strong hydrodissection may lead to PCR around the opacity.

Das et al. found a higher incidence of posterior capsular rupture in younger patient (40 years).[17] In other study by Osher et al.[1], no relation was found between PCR and age, sex, or family history. In our study we did not find any relation with age and sex.

Our study showed that PPCs were bilateral in 82% cases and our study was consistent with Vassavada AR et al [2] where PPC was bilateral in 90% cases, and has been reported to be bilateral in 70% cases in a previous study by Gavriş et al.[19]

We found no systemic association in our study similarly in previous studies as well no coexisting systemic or ocular anomalies have been reported in past, except for a report of retinitis pigmentosa in eyes with PPC.[12]

In our study visual outcome was satisfactory, as 48% achieved visual outcome $\geq 6/12$, 44% achieved visual outcome $\geq 6/9$ and 8% remained amblyopic this was consistent with study done by Kapoor. G Col et al which suggested. 41 eyes achieved a visual acuity of 6/12 or better (89.13%) and 39 eyes of 6/9 or better (84.78%). 4 patients had amblyopia (8.6%).[21]. Similar results were also found in other study done by Bharadwaj M et al which reported 63.87% patients with postoperative vision between 6/18 to 6/6.[22].

II. CONCLUSION

With modern technology and a better understanding of surgical techniques, outcomes of surgery can be improved. Posterior polar cataract is a true challenge for cataract surgeons because of its higher risk for surgical complication. These cataracts need more gentle maneuvering to reduce pressure over the weak posterior capsule. So avoidance of hydrodissection, nucleus rotation and capsule polishing lead to lesser complication and higher chances of good visual outcomes. Phacoemulsification leads to good visual outcome if done carefully with proper technique advised for PPCs.

III. REFERENCES

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