International Journal of Medical and Pharmaceutical Research
Website: https://ijmpr.in/ | Print ISSN: 2958-3675 | Online ISSN: 2958-3683
NLM ID: 9918523075206676
Volume: 4 Issue:3 (May-June 2023); Page No: 374-377

Original Article

IJMPR

Prevalence, Complications and Visual Outcome of Posterior Polar Cataract(PPC) among Patients Undergoing Surgery at A Tertiary Care Center

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ABSTRACT

Purpose: To study the prevalence, complications and visual outcomes in patients with PPC undergoing small incision cataract surgery (SICS)

Materials & Method: This is a prospective study of 96 patients undergoing surgery for PPC. All surgeries were performed by a single surgeon. All cases were bilateral and present in young age so the possibility of amblyopia was explained. They were also explained about preexisting posterior capsular dehiscence. After completion of continuous curvilinear capsulorhexis, controlled hydrodelineation was done in case of immature cataract. In the case of mature cataracts with PPC nucleus was separated from the capsule using spatula. Anterior vitrectomy done in case of posterior capsule rupture (PCR) & IOL placed in sulcus.

Results: Total number of cataract surgery in one year was 6000. Prevalence of PPC was 1.6%. out of 96 cases overall rate of PCR was 10(10.41%). 3(3.1%) cases had cortical drop. 5(5.2%) cases showed cystoid macular edema (CME) as a complication which was treated with NSAID eye drop. All 96(100%) cases achieved a final visual acuity of 6/9 to 6/6 at 6 weeks follow up.

Conclusion: clinical diagnosis and typing of cataract are most important in case of PPC. Before surgery patients should be counselled about the possibility of preexisting dehiscence, PCR occurring on table and the possible postoperative complications. During surgery care should be taken to avoid hydrodissection. Surgery done with due precautions gives good results in PPC.

Key Words: *Hydrodelineation, posterior polar cataract*

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INTRODUCTION

Posterior polarcataract (PPC) is a type of developmental cataract which isconsidered to arise before birth or in early infancy [1]. Posterior polar cataract (PPC) is a relatively uncommon form of congenital cataract. The incidence of Posterior polar cataract ranges from 3 to 5 in 1000[2]. It is bilateral in 65–80% of the cases with no gender predilection[3][4]. Posterior polar cataracts posea great challenge to the surgeons, because of associated complications like posterior capsular rupture, vitreous loss and possible nucleus drop during surgery. A mature PPC presents as a dense, circular plaque with concentric rings in the posterior central part of the lens involving mainly the posterior subcapsular and capsular region. It has classically been described to have a "Bull's eye" or onion peel appearance. Duke- Elder classified it as stationary and progressive forms, of which stationary form is more common (about 65%), Schroeder graded posterior polar cataract in his pediatric patients based on its effect on pupillary obstruction in thered reflex. Singh classified posterior polar cataract into: Type 1: The PPC with posterior subcapsular cataract. Type 2: Sharply defined round or oval opacity with onion ring appearance with or without grayish spots at the edge. Type 3: Sharply defined round or oval white opacity with dense white spots at the edge often associated with thin or absent PC. These dense white spots are a diagnostic sign (Daljit Singh sign) of posterior capsule leakage and extreme fragility. Type 4: combination of above 3 types with nuclear sclerosis[2].

OBJECTIVES

1. To calculate the prevalence of PPC.
2. To determine the rate of complications
3. To assess visual outcome after surgery.

INCLUSION CRITERIA
Patients in the age group of 12- 86 years with PPC.

EXCLUSION CRITERIA
1. Paediatric cataract
2. Glaucoma
3. Posterior segment pathology

MATERIAL AND METHODS

This is a prospective study of 96 patients undergoing surgery for PPC. All surgeries were performed by a single surgeon. All cases were bilateral and present in young age so the possibility of amblyopia was explained. They were also explained about preexisting posterior capsular dehiscence. After completion of continuous curvilinear capsulorhexis, controlled hydrodelineation was done in case of immature cataract. In the case of mature cataracts with PPC nucleus was separated from the capsule using spatula. Anterior vitrectomy done in case of posterior capsule rupture (PCR) & IOL placed in sulcus.
Surgical technique

PRE-OPERATIVE
- Recording of uncorrected distance visual acuity (UDVA), corrected distance visual acuity (CDVA),intraocular pressure measurement with non- contact tonometer,
- slit- lamp biomicroscopy, and dilated fundus examination.
- If the fundus examination was precluded due to presence of a dense cataract B- scanultrasonography
- Biometry was performed

INTRA OPERATIVE

Cataract removal by manual SICS will be performed under peribulbar anesthesia (lignocaine 2% with adrenaline). Under aseptic precaution betadine painting and draping will be done. Fornix Based superior conjunctival flap raised. Superior sclerocorneal tunnel made. Side port entry done, followed by anterior capsule staining with sterile intracameral trypan blue stain through side port under air, followed by saline washing. Viscoelastic was injected to fill AC, and wide continuous curvilinear capsulorhexis was done. Entry done. Hydrodelineation was done. Nucleus prolapsed into AC, expressed out by visco and remaining cortical matter removed by irrigation and aspiration. IOL was inserted and dialed into position. Remaining visco removed.
Intracameral moxifloxacin was given. Stromal hydration done.AC formed, wound closed with subconjunctival dexamethasone.

POST-OPERATIVE
- Post-op follow up will be done at 1 week, 4 weeks, 6 week
- Postoperatively, patients were given a combination of moxifloxacin 0.5% and dexamethasone 0.1% 10 times a day, topical non-steroidal anti-inflammatorydrug (NSAID) 3 times a day
- Visual acuity evaluation will be done at the end of 6 weeks.

RESULTS

Mean age was range 12–86 years. Prevalance of PPC was 1.6%. Of the 96 patients included in the study, there were 53 (55.2%) males and 43(44.7%) females. Seven patients (7.2%) were less than 35 years of age. Of the 96 operated eyes,38(39.5%) were right and 58(60.4%) were left eyes. 25(26.0%) patients presented with bilateral cataract and 71(73.9%) with unilateral cataract.

out of 96 cases overall rate of posterior capsular rupture (PCR) was 10(10.41%). Intraocular lens was put in sulcus in these cases.3(3.1%) cases had cortical drop. 5(5.2%) cases showed cystoid macular edema (CME) as a complication which was treated with NSAID eye drop. Uncorrected visual acuity (UCVA) of 6/18 or better after surgery was seen in 90 patients(93.75%). 3 patients (3.12%) had UCVA of <6/60 due to corneal edema which improved to >6/18 on conservative management. All 96(100%) cases achieved a final visual acuity of 6/9 to 6/6 at 6 weeks follow up.

TABLE 1

Preoperative UCVA	Total
6/6-6/18	3(3.12%)
<6/18-6/60	10(10.41%)
<6/60-3/60	78(81.25%)
<3/60-HM	5(5.20%)
	96(100%)

Table 2

Postoperative UCVA	Total
6/6-6/18	90(93.75%)
<6/18-6/60	3(3.12%)
<6/60-3/60	3(3.12%)
<3/60-HM	-
	96(100%)

Table 3

Intraoperative complications	percentage
PCR	10(10.41)
Zonular dialysis	4(4.16)
Nucleus drop	0
Aphakia	0
Cortex drop	3(3.12)
Vitreous prolapse	3(3.12)
iridodialysis	2(2.08)

DISCUSSION

Posterior polar cataract is a challenge for the cataract surgeon as these are associated with higher complications. The chief complaint in patients with PPC is reduced vision in bright sunlight and glare and halos especially when exposed to strong sources of focussed light, forexample, headlights of on coming vehicles.

Table 4

Authors	Technique	Total no of eyesin series	PCR rate	Other outcomes
Osher et al[6]	Low power, low infusion, slow-motion phaco (+ hydrodissection)	31	26%(8 eyes)	Vitreous loss13% (4/31) Decentred IOL6% (2/31)
Vasavada and Singh[1]	Delineation	25	36%(9 eyes)	
Hayashi et al.[7]	Delineation	25	8%(2 eyes)	Dropped nucleus4% (1/25)RD 7%(2/28)
Lee and Lee[5]	Lambda technique' for nucleus removal	36	11.1%(4 eyes)	
Vasavada andRaj	Inside out delineation	25	8% (2 eyes)	Dropped nucleus4% (1/25)
Malhotra, et al.	V or lambda sculpting, Viscodissectionof epinucleus	80	7.5% (6 eyes) Pre-existing in 4 eyes Intraoperative in2 eyes 'On table PCR'- 2.6%	Decentred IOL-Nil Aphakia - 1.25% (1/80) Nucleus drop-nil
V.Pooja et al.		26	11.53%(3 eyes)	
Our series	hydrodelineation	96	10.41%(10 eyes)	Cortex drop-3.12%9(3/96) Zonular dialysis4.16%

CONCLUSION

We concluded that in our study prevalence of PPC was 1.6%. During surgery care should be taken to avoid hydrodissection. Hydrodeliniation is done in case of PPC. Most common complication was posterior capsular rupture. All cases achieved a final visual acuity of 6/6 to 6/9. If surgery done with due precautions gives good visual results in PPC.

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