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Research Article

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Surgical Outcome of Posterior Polar Cataract in Adults

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Abstract

Introduction: *Posterior polar cataract (PPC) is a relatively uncommon form of congenital cataract accounting for around 0.5% to 2% of the total cataract. A posterior polar cataract presents a special challenge to the phaco surgeon because of its predisposition to posterior capsular dehiscence during surgery. Incidence of posterior polar cataract ranges from 3 to 5 in 1000.*

Methodology: *Prospective descriptive study done at Biratnagar Eye Hospital from December 2016 to March 2017. A detailed slit-lamp biomicroscopy of the anterior segment, intraocular pressure and dilated fundus examination was performed in all patients after checking for visual acuity and refraction.*

Result: *Total of 60 eyes of 59 patients was included in the study, out of which only 5% had posterior capsular rupture during surgery. Mean age of patients in our study was 49.35 +_ 9.5yrs (range 35-73yrs). There were 34 male patients and 26 female patients. Mean axial length was 23.40mm. Out of 60 eyes, 12 eyes had bilateral posterior polar cataract. Mean preoperative visual acuity was 0.949 while first post-operative day visual acuity was 0.5137, which was statistically significant (P < 0.0001) (paired t test).*

Conclusion: *Intraoperative complications during posterior polar cataract surgery can be minimized by careful and appropriate surgical procedure.*

Keywords: Posterior capsular defect, Axial length, Capsulorhexis, Viscosurgical device

Introduction

Incidence of posterior polar cataract ranges from 3 to 5 in 1000 [1]. It is found to be bilateral in 65% - 80% of the cases [2,3]. There is no sex predilection in general. It has been recognized that posterior polar cataracts seemed to follow an autosomal dominant inheritance pattern although it is occasionally sporadic [4,5]. Positive family history was found in 40% - 55% of the patients [6,7].

A posterior polar cataract presents a special challenge to the phaco surgeon because of its predisposition to posterior capsular dehiscence during surgery [6,7]. It seems that the high incidence of posterior capsule rupture during surgery for those patients might be because of two reasons. First, there might be tight adherence of the plaque to an otherwise normal capsule. Second, the posterior capsule itself underlying the plaque is exceptionally thin that ruptures to minimal trauma [8]. Although incidence of posterior capsular dehiscence has been reported to be 36% -7.1% [6,9].

Purpose

To evaluate the surgical complications and results of phacoemulsification surgery in eyes with posterior polar cataracts.

Methodology

Prospective descriptive study done at Biratnagar eye hospital from December 2016 to March 2017. A detailed slit-lamp biomicroscopy of the anterior segment, intraocular pressure and dilated fundus examination was performed in all patients after checking for visual acuity and refraction. Diagnosis of posterior polar cataract was made on its characteristic appearance. Informed consent was taken from all patients before surgery. Patients were counseled about the risk of posterior capsule tear. The surgical techniques, intraoperative complications, preoperative and postoperative visual acuities and the causes of impaired visual acuity after surgery, were analysed. All patients underwent phacoemulsifion. Posterior capsule was not polished after the surgery. All patients were prescribed topical ciprofloxacin 0.3% and dexamethasone 0.01% eye drop for 6 weeks in tapering dosage. Patients were followed up on 1st postoperative day, 1st week, 1 month, 2nd month and 3rd month. Out of 60 eyes 3 eyes were lost during follow-up after 1 month.

Counseling

During the preoperative examination, the patient was informed of the possibility of intraoperative posterior capsular rupture, dropped nucleus, relatively longer surgical time, secondary posterior segment intervention, and possibly delayed visual outcome.

Surgical Techniques

All surgeries were carried out under retrobulbar and or peribulbar anaesthesia. Continuous curvilinear capsulorhexis of approximately 5 mm in size was performed under an ophthalmic viscosurgical device (OVD) using a capsulorhexis forceps. Hydrodissection was avoided and hydrodelineation was done in different quadrants with minimal fluid in order to prevent posterior capsule rupture. In all cases sclerocorneal incision was made and procedure was converted to small incision cataract surgery in case of any surgical complication. Nucleofractis parameters were: bottle height 50 cm, vacuum 100 mm Hg, and aspiration flow rateat 20 ml per minute. Epinucleus removal and cortical clean-up was done using bimanual irrigation and aspiration.

Statistical Analysis

The data were analyzed using SPSS version 17 (SPSS Inc., Chicago, IL, USA). To compare the difference in visual acuity before and after surgery paired sample t test was used. A P value of <0.05 was considered statistically significant.

Results

Total of 60 eyes were included in the study. There were 34(56.7%) male patients and 26(43.3%) female patients in the study. Mean age of patients in our study was 49.35 +_ 9.5yrs (range 35 - 73yrs). Total of 4 eyes (6.6%) had posterior capsular rupture. In 3(75%) cases after posterior capsular rupture, anterior chamber intraocular lens was implanted since the posterior capsular defect was large, in 1(25%) case sulcus placement of posterior chamber intraocular lens was done. There was no case of cortical or nuclear matter drop in the vitreous. Out of 60 eyes, 12 eyes had bilateral posterior polar cataract. Mean preoperative visual acuity was 0.949, while first post-operative visual acuity was 0.5137 and this improvement in vision was statistically significant ($P < 0.0001$) (paired t test). Out of 60 cases, 1(5%) patient had macular scar. One patient in our study had undergone bilateral cataract surgery.

Discussion

The incidence of posterior capsule rupture in posterior polar cataract has been reported to be 26%, 36% and 7.1% by Osher, et al., Vasavada and Singh, et al. and Hayashi, et al. respectively [6,7,9]. In contrast, it was only 6.6% in our study. This markedly decrease in posterior capsular rupture may be due to precautions that we took during surgery, which were first avoidance of hydro dissection, second nucleus was emulsified very gently with low power and low vacuum settings to minimize stress on the posterior capsule, third epinucleus and cortex was gently removed with bimanual irrigation and aspiration technique, fourth whenever there was difficulty we converted to small incision cataract surgery, fifth rotation of the nucleus was avoided to prevent posterior capsular rupture and finally aspiration of the nucleus within the cushion of the epinucleus so as to protect and tamponade the posterior capsule. In our study, all the cases of posterior capsular rupture occurred during cortex removal while in a study by Servet Cetinkaya, et al. four of them occurred during hydrodissection, and two of them occurred during the removal of the cortex.

In a study by kumar, et al. patients operated before 50 years, 1 out of 15 (6.66%) had posterior capsule rupture. Although this difference was statistically not significant ($P = 0.27$). Similarly, in our study posterior capsular defect and age of the patient was not statistically not significant (p=0.875).

Conclusion

Intraoperative complications during posterior polar cataract surgery can be minimized by careful and appropriate surgical procedures. Avoid hydro dissection, perform hydro delineation, use Slow motion phacoemulsification settings, and do not Polish the remaining posterior polar remnant.

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