



PATTERN OF POSTERIOR CAPSULAR OPACIFICATION – A STUDY DONE AT GOVERNMENT MEDICAL COLLEGE, JAMMU, J&K, NORTH INDIA.

Ophthalmology

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ABSTRACT

Background: Posterior capsule opacification (PCO) is the post-operative complication which occurs after cataract surgery, causes significant deterioration of visual acuity & its incidence is about 18%-50%.

Aims: The present study was conducted to see pattern of posterior capsular opacification.

Materials & Methods: The present prospective observational study involved 100 patients who developed posterior capsular opacification after extracapsular cataract extraction. PCO was diagnosed by using slit lamp bio-microscopy & direct ophthalmoscopy with dilated pupil.

Results: The maximum number of PCO cases were in the age group of 61-70 years i.e 57%, males were 53%, Capsular fibrous variety was seen in 83%. About grading 55% patients had Grade 1+ PCO followed by Grade 2+ which was 35%.

Conclusion: PCO is mostly seen in the age group of 61-70 years with males preponderance having fibrous variety commonest & varying grades of PCO required laser capsulotomy.

KEYWORDS

Cataract, ECCE, Grades & Types of PCO, Posterior Capsular Opacification.

Introduction:

The most common long-term complication of cataract surgery that causes decreased vision, glare & other symptoms similar to that of the original cataract is posterior capsule opacification (PCO) and documentation of this complication was done by Sir Harold Ridley in his first case.^[1] The field of view during therapeutic and diagnostic procedures is decreased by PCO & is one of the cause of unioocular diplopia.^[2] Though there are many factors suggested to reduce posterior capsular opacification^[3] formation which include surgery related factors—hydrodissection enhanced cortical clean-up, in-the-bag fixation of the IOL, small Continuous Curvilinear Capsulorhexis (CCC) with edge on IOL surface and IOL related factors—biocompatible IOL to reduce stimulation of cellular proliferation, maximal IOL optic-posterior capsule contact, angulated haptic IOL optic geometry square, truncated edge^[4] but the incidence of posterior capsular opacification still exists considerably^[5] and has important medical, social and economic implications.^[5] The present study had been conducted to see the pattern of PCO as large number of patients were coming to our institute for posterior capsular opacification (PCO) after extra capsular cataract extraction (ECCE) with posterior chamber IOL surgeries.

Material and method:

The present study was conducted in the Out Patient Department of Upgraded Department of Ophthalmology, Government Medical College, Jammu, over a period of 1 year, on patients who had posterior capsule opacification after extracapsular cataract extraction. Clearance from Institutional Ethics Committee was taken prior to initiation of study. The informed written consent from all the patients were undertaken before inclusion in the current study. All principal of bioethics were followed in totality & the data was recorded by independent observer.

Inclusion Criteria: All cases of posterior capsule opacification having evidence of posterior capsular thickening / opacification on Slit lamp examination.

Exclusion criteria: Patients <8yrs age, less than 3 months interval between cataract surgery and development of posterior capsular opacification, cases with post-op complications like endophthalmitis, uncooperative subjects e.g. patients with mental retardation & neurological problems, PCO in aphakic eyes, any active ocular

infection, corneal pathology sufficient to cause difficulty in assessment of PCO, eyes with subluxated intraocular lens.

After meeting the inclusion & exclusion criteria patients were worked out in detail in the department of Ophthalmology as under:

- (1) Detailed history pertaining to personal data, ocular symptoms were recorded
- (2) The patients were subjected to a routine general physical examination.
- (3) Systemic examination
- (4) Every patient underwent a detailed ophthalmic examination as (a) External eye examination: includes examination of eyelids, conjunctiva, cornea, iris, pupil, lens. (b) Visual acuity and best corrected visual acuity was obtained by Snellen chart (c) Slit lamp examination: to visualize the anterior segment of the eye. (d) fundus examination to evaluate : optic disc, macula & peripheral retina (e) Baseline intraocular pressure measurement by Goldmann applanation tonometer.

Posterior capsule was examined with slit lamp biomicroscopy and graded with direct ophthalmoscopy using a standardized grading system.^[6]

- A) Grade 0 : Clear posterior capsule.
- B) Grade 1+ : Not visible on torch light but seen with slit lamp.
- C) Grade 2+ : Visible on torch light, but fundus details seen or dense opacification/plaque covering 1/3rd to 2/3rd of posterior capsule.
- D) Grade 3+ : Dense pearly white capsule, fundus details indistinct or, dense opacification/plaque covering more than 2/3rd of posterior capsule.

Statistical Analysis: Analysis of data was done using statistical software MS Excel / SPSS version 17.0 for windows. Data presented as percentage (%) as discussed appropriate for quantitative and qualitative variables.

Observation & Results:

The present study was carried over a period of 1 year, on 100 patients who had posterior capsule opacification after extracapsular cataract extraction in the upgraded department of ophthalmology, GMC Hospital, Jammu. In the present study, following observations were

made; Maximum number i.e 57% of PCO cases were in the age group of 61-70 years followed by 26% in 50-60yrs. Mean age of studied patients was 64.6 ± 6.62 years (Table no.1)

53% were males & 47% were females. The male : female was 1:0.89. (Table no. 2)

83% cases were fibrous variety while Elschnig's pearls were in 17%. (Table no.3)

PCO was of varying grades, 55% had Grade 1+ PCO, 35% Grade 2+ and 10% had Grade 3+ PCO respectively. (Table no.4)

Discussion:

The modern extra-capsular cataract surgery techniques has the most common long term complication called as "secondary cataract" or posterior capsular opacification (PCO) which is one of the most common cause of decrease in postoperative vision which is non-refractive.^[7]

In the present study, the majority of patients presenting with posterior capsule opacification belonged to age group of 61-70 years i.e 57% followed by 26% in 50-60yrs. Sridharo and Badrinath SS observed maximum number of patients in the age group of 41-60yrs.^[8] Singhal D et al found that maximum number of patients were in the age group of 41-60yrs in their study.^[9] Ganvit S et al in his study found that majority of patients 61% were in age group of more than 60 years while 33% were in 41-60 years. Most of the patients were in range of 41-80 years. This is perhaps the age at which the patients with age related cataract presents to ophthalmologists due to visual problem.^[10]

Mean age of studied patients was 64.6 ± 6.62 years in present study. Aslam TM et al. in his study found mean age was 75.2 yrs(52-90yrs).^[11] Oner et al. found that mean age was 64 ± 9.7 yrs in one group & 63.0 ± 8.4 yrs in other group in his study.^[11]

Out of 100 cases, 53% were males & 47% were females. Khan MY et al in his study found that, 67.2% were males whereas females were 32.8%. This is due to reason that female population less commonly undergo surgery for cataract or present to hospital for their reduced vision after surgery.^[12] Bari KN also found that 40 were male and 30 were female in a study.^[13] Gopinath GS et al in his study found that 62% cases were male while 38% were female.^[2] Gore VS in his study found male patients were 61.5% and females were 38.5%.^[3]

In the present study, 83% eyes had fibrous type of posterior capsular opacification followed by 17% eyes with Elschnig's pearls. This is similar to the findings reported by Nagamoto T et al who found higher incidence of fibrosis type of PCO in early postoperative period. Elschnig's pearls were reported late in postoperative period (months to years).^[14] A pilot study by Chowdhary S et al also reported higher incidence of 13% of fibrosis type of PCO as compared to pearl type of PCO (1.5%) which is consistent with our study.^[15] Similar findings have been reported by Hayashi K et al who reported incidence of capsular fibrosis more in early postoperative period.^[16] Ganvit S et al in his study found that 57% had capsular fibrosis while Elschnig's pearls in 21%.^[10] Bari KN also found that the predominant type of posterior capsule opacification was capsular fibrosis (57.04%) followed by Elschnig's pearls in 15 (21.42%).^[13] Khan MY et al in his study also found that 62% cases were of capsular variety in his study. The predominant type of PCO was capsular fibrosis as shown by incidence of different types PCO. The main mechanism of postoperative PCO is proliferation and migration of lens epithelial cells onto the posterior capsule, equatorial epithelial cells undergo fibrous metaplasia, causing fibrosis of posterior capsule while due to anterior subcapsular epithelium migration on to the posterior capsule Elschnig pearls formation occurs & appear like bladder cells.^[12]

Out of 100 eyes in present study, 55% had Grade 1+, 35% Grade 2+ & 10% had Grade 3+ PCO respectively. Prajna NV et al who in their study on 1,474 patients found that 81.9% had Grade 1, 8.6% had Grade 2 while Grade 3 posterior capsular opacification was seen in 0.5% eyes, one year after surgery.^[17] Salathia A et al in her study on 500 eyes, 408 had Grade 0 and 92 had PCO of varying grades. Out of 92, Grade 1+ PCO was seen in 55.47% cases, Grade 2+ in 34.78% & Grade 3+ opacification was observed in 9.78% of patients.^[5]

Conclusion:

From present study, it has been concluded that PCO is mostly seen in the age group of 61-70 years, fibrous variety is the most common, males affected more, varying grades of PCO i.e. Grade 1+, Grade 2+ & Grade 3+ PCO required laser capsulotomy.

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Declaration:

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee.

Table no. 1 Age distribution

Age (in years)	Number of patients	Percentage (%)
< 50	1	1
50-60	26	26
61-70	57	57
71-80	15	15
>80	1	1

Mean age of patients was 64.6 ± 6.62 years

Table no. 2 Sex distribution

Sex	Number of patients	Percentage (%)
Male	53	53
Female	47	47

Table no. 3 Type of Posterior Capsular Opacification

Type	Number of patients	Percentage (%)
Elschnig Pearls	17	17
Fibrosis type	83	83

Table no. 4 Grades of Posterior Capsular Opacification

Grades	Number of patients	Percentage (%)
Grade 1+	55	55
Grade 2+	35	35
Grade 3+	10	10

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