



Biometric Parameters of Pseudoexfoliative Eyes With Occludable As Well As Open Angles

Dr. Praveen V*, Dr. Anita T. Girish, Dr. Ankush Weginwar
(Department of ophthalmology, JSS Medical College / JSS university, India)

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ABSTRACT:-

Aim: To compare biometric parameters of eyes with Pseudoexfoliation and occludable as well as open angles.

Methods: This prospective study carried out at JSS Hospital, Mysore consisted of 100 consecutive patients with Pseudoexfoliation who presented to the outpatient department between January 2015 to December 2015. Ocular evaluation along with Axial length, Anterior chamber depth, Lens thickness measured by contact A scan was done for eyes with occludable as well as open angles. Relative lens position which characterizes the relative position of the centre of the lens in the eye was calculated

Results: Male to Female ratio was nearly 3:2. Mean Anterior chamber depth in pseudoexfoliative eyes with open and occludable angles was found to be 2.46 ± 0.44 mm and 2.18 ± 0.4 mm respectively. Mean lens thickness in pseudoexfoliative eyes with open and occludable angles was found to be 4.28 ± 0.54 mm and 4.56 ± 0.21 mm respectively. Mean Relative lens position in pseudoexfoliative eyes with open and occludable angles was found to be 2.23 ± 0.28 and 2.08 ± 0.12 respectively.

Conclusion: Progression of cataract and (or) zonular instability leads to the development of occludable angles in Pseudoexfoliative eyes.

Keywords: Anterior chamber depth, Lens thickness, occludable angle, Pseudoexfoliation, Relative lens position

I. INTRODUCTION

Pseudoexfoliation syndrome may be defined as a discrete clinical entity characterized by the synthesis and deposition of fine white granular material, upon and within ocular and orbital tissues. [1] Glaucoma associated with Pseudoexfoliation has been primarily reported as the open-angle type and angle-closure glaucoma is considered much less common. Clinically shallow anterior chamber depth is associated with occludable angles in patients with Pseudoexfoliation. [2]

The purpose of this study is to compare biometric parameters of eyes with Pseudoexfoliation and occludable as well as open angles.

II. METHODS

This prospective study was carried out at JSS Hospital, Mysore. The study population consisted of 100 consecutive patients with Pseudoexfoliation who presented to the outpatient department between January 2015 to December 2015.

The diagnosis of Pseudoexfoliation was made based on:

- Deposition of Pseudoexfoliation material on the pupillary margin.
- Deposition of Pseudoexfoliation material on the anterior capsule of lens.

Preferably Right eye of the patient was considered for the study. Left eye was considered if right eye was pseudophakic.

Patients were then subjected to following Ophthalmic evaluation:

- Recording of relevant ocular history, recording of visual acuity for distance using Snellen's chart.

- Gonioscopy was performed with sussman 4-mirror gonioscopes. Occludable angle was diagnosed if the pigmented trabecular meshwork was not visible in more than 180° of the angle in dim illumination.
- Axial length, Anterior chamber depth and lens thickness was measured using contact A-scan.
- Relative lens position which characterizes the relative position of the centre of the lens in the eye (calculated distance from the center of the lens to the corneal endothelium) was calculated as follows:

$$\text{Relative lens position} = \frac{\text{Anterior Chamber Depth (ACD)} + \frac{1}{2} \text{ lens thickness (LT)}}{\text{Axial length (AXL)}} \times 10$$

The Chi-square significant/Fisher Exact test was carried out to find out significance of proportions between mean Anterior chamber depth, mean Lens thickness, mean Relative lens position in Pseudoexfoliative eyes with occludable and open angles.

III. RESULTS

In this prospective study there were 100 patients (eyes) with the evidence of Pseudoexfoliation. This included 62 eyes with open angles and 38 eyes with occludable angles.

3.1 Age and Gender distribution

The age and gender distribution of the subjects enrolled in the study was as below: (Table 1).

Table 1: Age and Gender distribution

Age in years	Female		Male		Total
	Open angle	Occludable angle	Open angle	Occludable angle	
40-50	1	1	1	1	4
51-60	12	4	13	7	36
61-70	14	7	16	10	47
>71	1	3	4	5	13
Total	28	15	34	23	100

There was a linear increase in the number of Pseudoexfoliation patients with age upto the age of 70 years. Most of the patients were seen in the 61-70 years age group. There were more males with Pseudoexfoliation than females in the study (57 Males vs. 43 Females). Patients with Pseudoexfoliation and occludable angles were slightly older than those with Pseudoexfoliation and open angles.

3.2. Mean Anterior Chamber Depth in Pseudoexfoliative eyes with open and occludable angles

Mean Anterior chamber depth in patients with pseudoexfoliative eyes with open and occludable angles was found to be 2.46 ± 0.44 mm and 2.18 ± 0.40 mm and this was statistically significant ($p < 0.05$). (Fig 1).

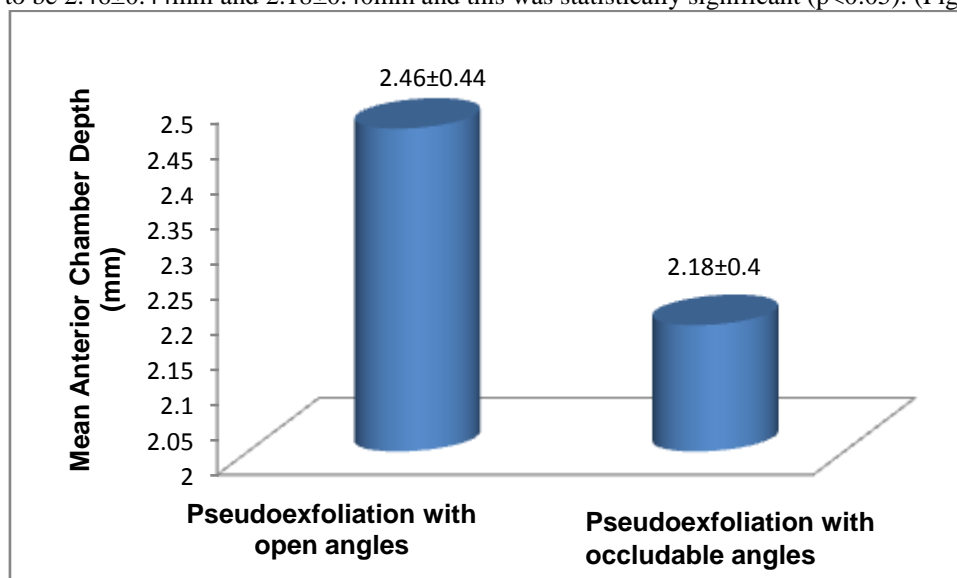


Fig 1. Mean Anterior Chamber Depth in Pseudoexfoliative eyes

3.3 Mean Lens thickness in Pseudoexfoliative eyes with open and occludable angles

Mean lens thickness in patients with pseudoexfoliative eyes with open and occludable angles was found to be 4.28 ± 0.54 mm and 4.56 ± 0.21 mm and this was statistically significant ($p < 0.05$). (Fig 2).

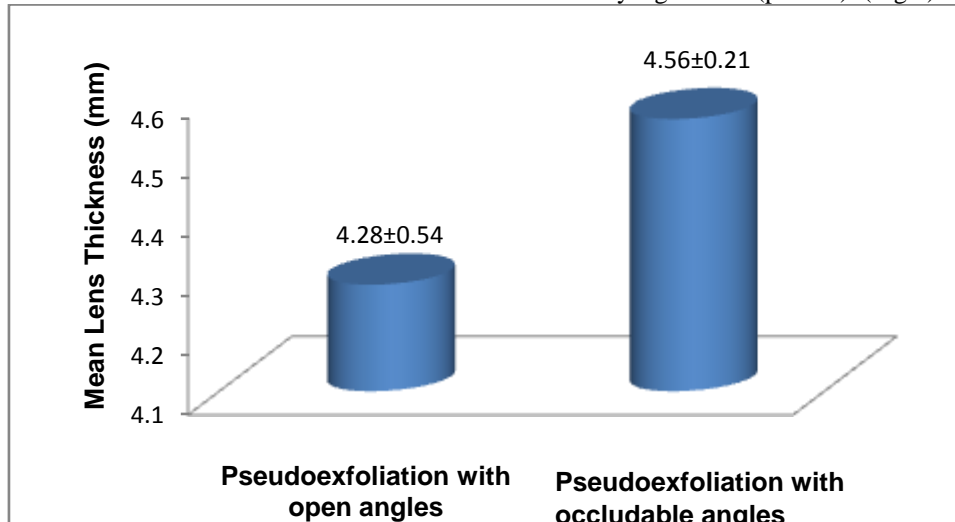


Fig 2. Mean Lens Thickness in Pseudoexfoliative eyes

3.4 Mean Relative lens position in Pseudoexfoliative eyes with open and occludable angles

Mean Relative lens position in patients with pseudoexfoliative eyes with open and occludable angles was found to be 2.23 ± 0.28 and 2.08 ± 0.12 and this was found to be statistically significant ($p < 0.05$). (Fig 3).

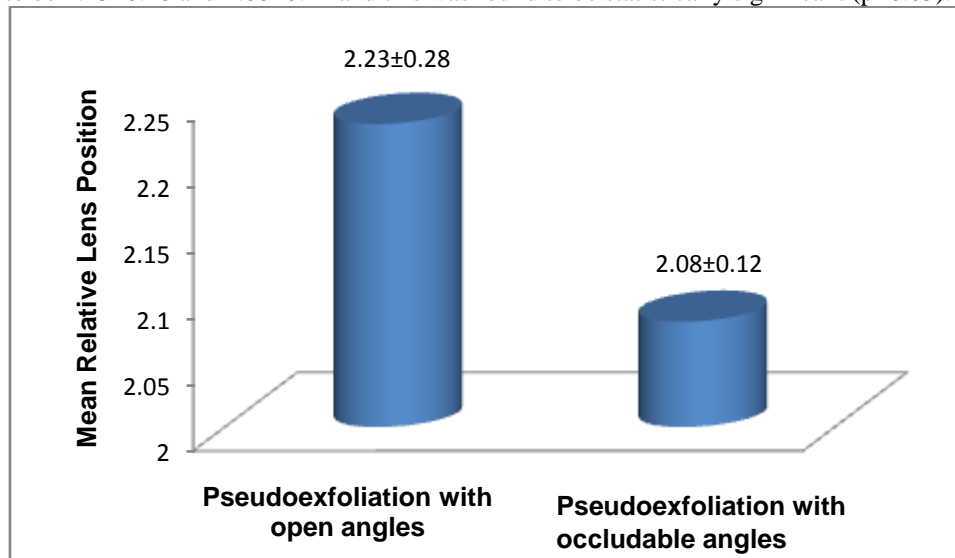


Fig 3. Mean Relative Lens Position in Pseudoexfoliative eyes

IV. DISCUSSION

4.1 Age distribution

The incidence of Pseudoexfoliation increased gradually with age in this study. This is similar to most other studies in India (Arvind H, Raju P et al) [3] and also in other countries (Forsius et al(Scandinavia)[4], Kozobolis VP, Papatzanaki M et al (Greece) [5]. Patients with Pseudoexfoliation and occludable angles were slightly older than those with Pseudoexfoliation and open angles. This is similar to study done by Damji et al [6].

4.2 Gender Distribution

Males predominated in this study. In Aasved's (1969) [7] large series collected from Norway, England and Germany, female Pseudoexfoliation patients were in the majority but the gender difference was not statistically significant. In Southern Europe, males were found in the majority (Montanes JM, Paredes AA et al Spain [8] 1989; Konsta et al Greece [9] 1996).

Most reports from dry and hot countries where the radiation from the sun is strong, show exfoliation syndrome to be more common in males, such as in India (Sood, 1968) [10], in Pakistan (Mohammed S and

Kazmi N 1986) [11] Saudi Arabia (Summanen P and Tonjum M 1988) [12] But Arvind H, Raju P et al found a higher incidence in females, which however was not statistically significant [3].

4.3 Anterior Chamber Depth

Mean Anterior chamber depth in pseudoexfoliative eyes with occludable angles was found to be shallow than eyes with open angles. Damji et al [6] in their study found Mean Anterior Chamber Depth was lower in pseudoexfoliation and occludable angles (1.88mm) than in eyes with pseudoexfoliation and open angles (2.37mm).

4.4 Lens thickness

Mean lens thickness in pseudoexfoliative eyes with occludable angles was found to be thicker than eyes with occludable angles. Damji et al [6] in their study had a similar finding.

4.5 Relative lens position

In our study, relative lens position in pseudoexfoliative eyes with occludable angles was found to be low than eyes with open angles. Damji et al [6] in their study found relative lens position was lower in pseudoexfoliation and occludable angles (2.27) than in eyes with pseudoexfoliation and open angles (2.31).

V. CONCLUSION

Pseudoexfoliative eyes with occludable angles had thicker lens and shallow anterior chamber depth than Pseudoexfoliative eyes with open angles. Progression of cataract and (or) zonular instability leads to the development of occludable angles in Pseudoexfoliative eyes.

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