PREOPERATIVE POSTERIOR SEGMENT EVALUATION WITH B SCAN ULTRASONOGRAPHY IN SENILE MATURE CATARACT IN A TERTIARY CARE HOSPITAL

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INTRODUCTION :

- Ultrasound is an acoustic wave that consists of an oscillation of particles within a medium. It was first used in ophthalmology in 1956 by the American ophthalmologists, Mundt and Hughes. [1]

- B (Brightness) mode is useful for a better demonstration of the shape and topographic relationship of lesions in the posterior segment. B-scan was introduced in ophthalmic practice by Baum and Greenwood in 1958 .

- B-scan provides cross sectional display of diseased tissues and is valuable in detecting unsuspected posterior segment diseases[2]

- Ophthalmic ultrasonography has become the most important imaging modality for evaluating lesions of posterior segment having opaque ocular media caused by anterior chamber opacities, dense cataracts, vitreous haemorrhage, which make clinical examination and ophthalmoscopic examination difficult [3]

- The frequency used in the diagnostic ophthalmic ultrasound for posterior segment is 8–10 Mhz. [4]

- The purpose of the study is to visualize posterior segment of eye with B-scan ultrasound and to find out any posterior segment lesions present in mature cataracts where fundus cannot be evaluated.

AIMS AND OBJECTIVES

- To study the role of B-SCAN as a diagnostic tool in preoperative evaluation of posterior segment in mature cataract patients posted for surgery.

METHODS

- The study was conducted in patients with mature cataracts attending tertiary care hospital from December 2020 to August 2021 .

- A total of 225 eyes of 200 patients aged above 50 years were taken into study of which 120 patients were male (60%) and 80 (40%) females.

INCLUSION CRITERIA

1.Age above 50yrs

2.Mature cataract patients

EXCLUSION CRITERIA

- 1.Previous history of ocular surgery
- 2.Patients already having posterior segment lesions
- 3.Presence of penetrating /blunt ocular injury

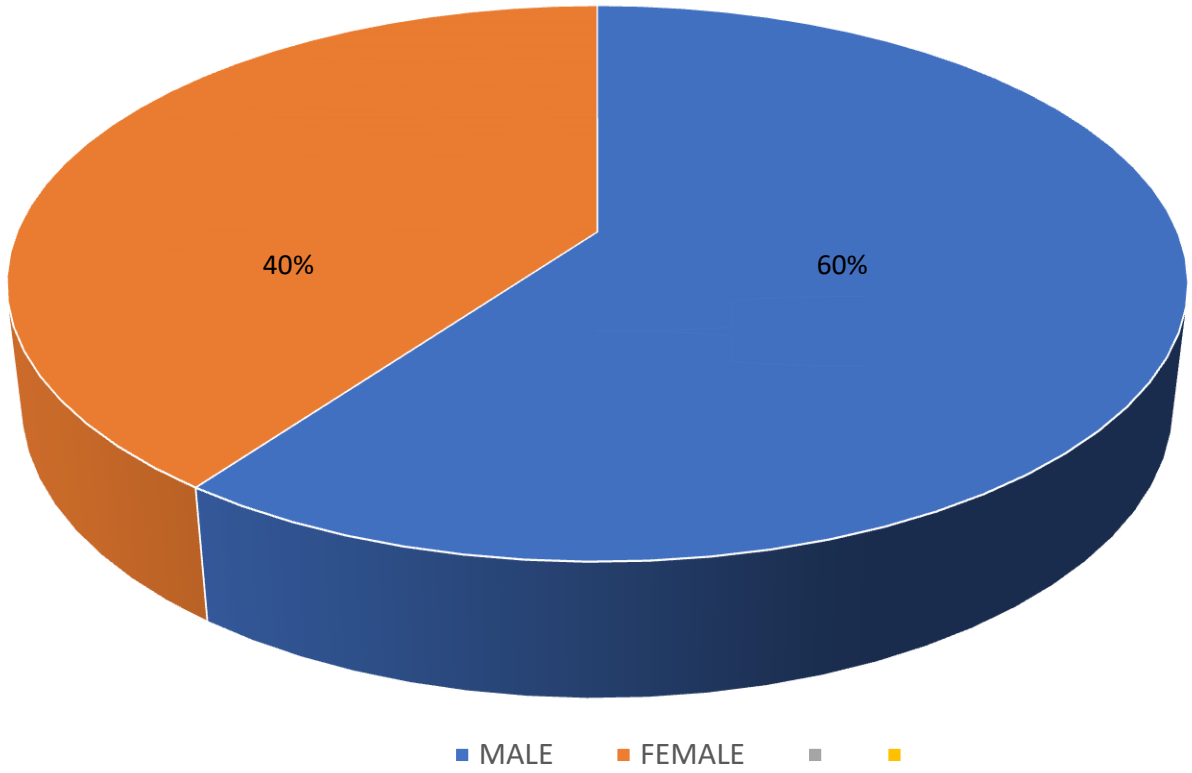
- Preoperative examination was done which includes determination of visual acuity, intraocular pressure, pupillary reaction, slit-lamp examination and biometry.

- B-Scan ultrasonography using a standard USG machine with a real-time high- frequency probe with the contact method was done.

- Ultrasonic probe was placed over the globe with closed lid after application of the gel and then transverse, anteroposterior and longitudinal scans were taken.

- OBSERVATION AND RESULTS

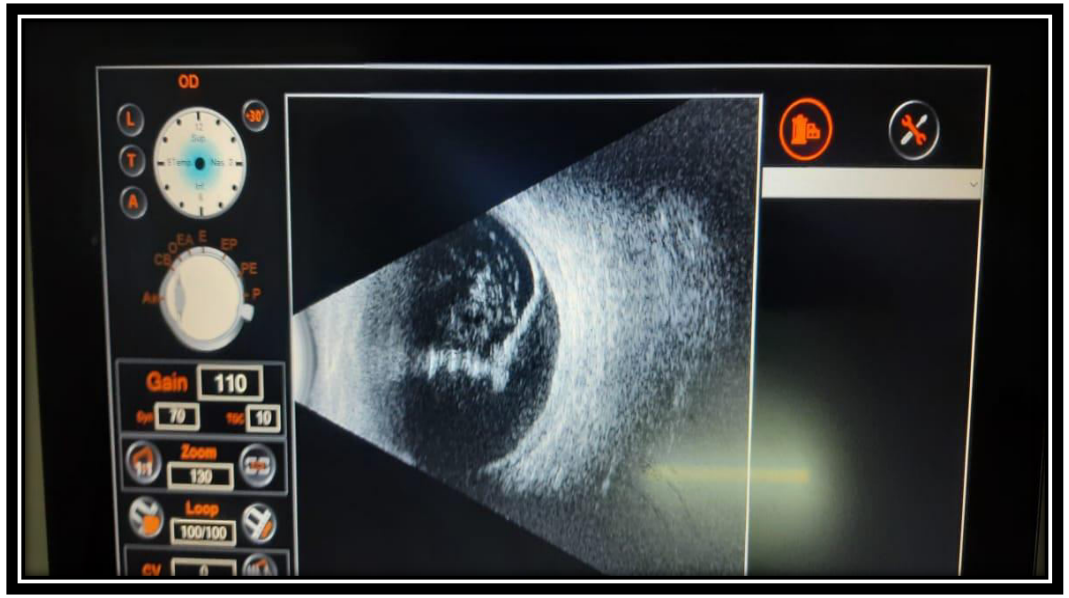
GENDER



Ultrasonography of globe shows PVD

Ultrasonography of globe shows posterior staphyloma

Ultrasonography of globe shows Retinal detachment



Ultrasonography of globe shows posterior staphyloma

- 225 eyes of 200 patients were included in the study .25 patients had bilateral mature cataract and 5 patients were one eyed. Mean age was 50 years .
- 120 patients were male (60%) and 80 (40%) females.
- On B scan 16(7.11%) eyes had posterior segment pathology.
- 7(3.08%) eyes had Posterior staphyloma, 4(1.77%) eyes had vitreous hemorrhage, intravitreal membrane, chorioretinal thickening, retinal detachment each was in 2 eyes (0.9%) and one optic disc edema (0.45%) .
- 209 eyes (92.10%) had no posterior segment pathology.

Demographic data of 200 patients

SEX	Rural	urban	Total
Male	44	76	120
Female	20	60	80
TOTAL	64	136	200

B SCAN FINDINGS

B scan findings	Frequency	Percentage
No Pathology	209	92.10%
Posterior staphyloma	7	3.08%
Retinal detachment	2	0.9%
Vitreous hemorrhage	2	0.9%
Intravitreal membrane	2	0.9%
Optic disc edema	1	0.45%

DISCUSSION

- Cataract is a one of the leading cause of treatable blindness in developing countries.
- visualization of fundus is important to provide accurate prognosis for vision after cataract surgery.
- Under such circumstances ultrasonographic examination can provide information regarding such abnormalities

- The most frequent abnormality was posterior staphyloma in 7 (3.08%) eyes, which is less than that reported by Ante by et al. (7.2%).[7]

- Retinal detachment was seen in 2 (0.9%) eyes in which 1 male and 1 was female. Both of these had inferior detachment.

- Chorioretinal thickening observed in 2 (0.9%) patients. Both were females. This was probably because of choroiditis.

- 01 female patient (0.45%) was found to have optic disc edema.

- Intravitreal membrane seen in 2 (0.9%) patients, these are not as visually significant as vitreous hemorrhage.

- When considering ocular features, presence of posterior synechiae, elevated intraocular pressure were associated with higher incidence of posterior segment pathology.

- Majority of the patients were having history of diabetes as vitreous haemorrhage is more common in proliferative diabetic retinopathy

- The most common posterior segment pathology detected in this study was posterior vitreous detachment which differs slightly from other studies done by Mohod et al where retinal detachment was the most common abnormality detected.[5]

- Nanda et al discussed in their study about vitreous hemorrhage being the most common posterior segment pathology detected on B scan followed by retinal detachment.[6]

- Study done by Hanif M and colleagues showed that 13.87% of the eyes were found to have significant posterior segment pathologies

- Males in our study having more incidence, approach hospitals relatively earlier.

- Ali and Rehman reported posterior segment lesions in11% non-traumatic cataract patients[8]

- In the study by Haile and Mengistu 66% incidence of detectable abnormalities of posterior segment were seen which was very high as compared to our findings of 7% [9].

CONCLUSION

- B-scan is a valuable prognostic tool for ruling out posterior segment pathology in opaque media but it is not a sensitive test for diagnosis of those pathologies.

- We concluded that two dimensional B-scan ultrasound is one of the diagnostic tools for the detection of hidden posterior segment lesions and can be performed routinely in pre-operative cataract patients, which would help in planning for surgical intervention.

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- THANK YOU