

ROLE OF B-SCAN USG AS ESSENTIAL ADJUVANT TO UNMASK POSTERIOR SEGMENT PATHOLOGY IN PATIENTS WITH MATURE CATARACT IN A TERTIARY EYE CARE CENTRESooraj Singh Kubrey¹, Kavita Kumar², Shubhangi Kursange³, Sanchit**HOW TO CITE THIS ARTICLE:**

Sooraj Singh Kubrey, Kavita Kumar, Shubhangi Kursange, Sanchit. "Role of B-Scan USG as Essential Adjuvant to unmask Posterior Segment Pathology in Patients with Mature Cataract in A Tertiary Eye Care Centre". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 13, March 31; Page: 3538-3542, DOI: 10.14260/jemds/2014/2317

ABSTRACT: **AIM:** to evaluate the nature of intraocular pathologies in patients with mature cataract with help of B-scan ultrasonography. **METHOD:** in a prospective observational study included 100 eyes with mature cataract during period from April 2013 to February 2014 in a tertiary eye care centre at Bhopal. **RESULT:** Out of 100 eyes with mature cataract, 52 were females and 48 males. 27 eyes(27%) were shown to have some ultrasonically detectable posterior segment pathology. 9 eyes with RD, 5 eyes with PVD. vitreous hemorrhage, asteroid hyalosis were detected in 1eye (1%) respectively. coloboma choroid/disc were detected in 2 eyes (2%). **CONCLUSION:** Knowledge of hidden posterior segment pathologies by B-scan helps the surgeon in explaining prognosis and expected outcome of surgery to patients.

KEYWORDS: DO-direct ophthalmoscopy, PVD-posterior vitreous detachment, RD-retinal detachment, B-scan ultrasonography.

INTRODUCTION: Ultrasound is an acoustic wave that consists of an oscillation of particles within a medium provides cross sectional view of tissues and is valuable in detecting posterior segment diseases e.g. vitreous opacities, retinochoroidal lesions, retrobulbar soft tissue masses, Identification, localization and measurement of non-radio opaque/Radio-opaque foreign bodies etc. over the last 30 years ultrasonography has greatly advanced and this has enabled us to study posterior segment of the eyes with media opacification. The purpose of the study was to visualise the status of posterior segment with the diagnostic tool of B-scan ultrasound in pre-operative mature cataractous patients, to find out any posterior segment lesion in such cases.

MATERIAL AND METHOD: Over a period between April 2013 to February 2014, 100 eyes with mature cataract were selected from eye camps in a tertiary level of eye care centre at Bhopal. Due to very hazy media posterior Segment examination was not possible with Direct/Indirect ophthalmoscope; B-scan ultrasound was done for the evaluation of posterior segment and to detect any underlying pathology. Patients were explained about the procedure. A+B scan machine EZ-5500 sonomed was used with 10 MHz probe. Patient was seated on a chair and B-scan ultrasound examination was performed. Basic screening was performed initially at high gain (i.e. 80 dB) setting followed by examination under lower sensitivity. Kinetic echography was done by keeping the probe still and asking the patient to move the eyes in different gazes to determine the after movements of membranous structures. Any solid lesion detected was evaluated topographically. Quantitative echography was performed to determine the internal reflectivity of a solid lesion. The clinical and ultrasound findings were recorded in proforma.

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RESULTS: In this study 100 eyes with mature cataract with inability to see beyond lens by direct or indirect ophthalmoscope were investigated with B-Scan ultrasound. There were 48 male (48%) and 52 female (52%) eyes. Age of patients range were 23-85 (mean = 59) years. Out of 100 eyes evaluated for posterior segment, 73 eyes were within normal limits. 27 eyes (27%) were shown to have some ultrasonically detectable posterior segment pathology. 9 eyes (9%) were shown to have retinal detachment. 9 eyes (9%) were having vitreous opacities, 5 eyes (5%) were shown to have PVD. vitreous hemorrhage, asteroid hyalosis, silicon oil were detected in 1 eye (1%) respectively. coloboma choroid/disc were detected in 2 eyes (2%).

| Sex | No. of cases | Percentage (%) |
|--------|--------------|----------------|
| Male | 48 | 48 |
| female | 52 | 52 |

Table 1: Gender wise distribution: (n=100)

| SL. No. | B-scan findings | No. of eyes | Percentage (%) |
|---------|-------------------------------|-------------|----------------|
| 1 | Vitreous opacities | 9 | 9% |
| 2. | Retinal detachment | 9 | 9% |
| 3. | Posterior vitreous detachment | 5 | 5% |
| 4 | Coloboma of choroid and disc | 2 | 2% |
| 5 | Vitreous hemorrhage | 1 | 1% |
| 6. | Asteroid hyalosis | 1 | 1% |

Table 2: Posterior segment lesions: (n=27)

DISCUSSION: over past few years, ultrasonography technique has become more advanced that enabled us to see posterior segment lesions whenever opaque media does not allowing us to see beyond lens. Ultrasound was first used in ophthalmology in 1956 by American ophthalmologists Mundt and Hughes¹ B-scan provides cross sectional display of diseased tissues and is valuable in detecting unsuspected posterior segment diseases. The frequency used in the diagnostic ophthalmic ultrasound for posterior segment is 8-10 MHz.

If the surgeon aware of these lesions preoperatively, he can modify his plan of surgery and can take certain measures to combat various predictable complications² Fresh vitreous hemorrhage appears as dots & short lines on B-scan. The more dense the hemorrhage, the more opacities are seen on B-scan; posterior vitreous hemorrhage (PVD) is more extensive in vitreous hemorrhage that settles inferiorly eventual due to gravity.³ In asteroid hyalosis, calcium soaps produce bright echoes on B-Scan,³ PVD produces a smooth membrane with low reflectivity whereas RD exhibits a more tethered and restricted after movement.^{4, 5} Muhammad Hanif MCPS, FCPS et .al. published an article (AL-Shifa Journal of Ophthalmology2007; 3(2):61-66 Pakistan), in 2003 studied on B-Scan USG in 209 eyes with age related mature cataract and found 29(13.87%) eyes with posterior segment pathologies. 10(4.78%) had vitreous haemorrhage, 9 eyes (4.30%) had PVD and 3 (1.43%) eyes were found to have with asteroid hyalosis.⁶

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In our study, Out of 100 eyes with mature cataract screened for posterior segment examination, 9 eyes (9%) were found to have retinal detachment. Out of these 9 eyes, 6 (6%) had intact projection of rays necessitate the B scan to be done preoperatively. These patients were explained about the prognosis and need of double surgery. 3 patients refused for the surgery and 6 patients were referred to retina clinic for further management. Later they were operated for both cataract and retinal detachment.

Out of these 9 eyes, 6 were found to be advanced diabetic causing tractional retinal detachment. 3 eyes had history of trauma. PVD was found in 5 eyes (5%). Vitreous opacities found in 9 eyes (9%) were operated for cataract.

CONCLUSION: B-scan USG has become an indispensable diagnostic tool & enhanced our ability to detect and differentiate many ocular and orbital diseases. USG is an acoustic wave that consists of an oscillation of particles within a medium.

Over the last 30 years ultrasonography has greatly advanced and this has enabled us to study posterior segment of the eye in the presence of opaque media. Pre-operative B-Scan ultrasonography in patients with mature cataract when posterior segment examination is not possible by direct and indirect ophthalmoscopy due to hazy media helps in diagnosis of additional posterior segment pathologies. Knowledge of these hidden posterior segment pathologies will then help the surgeon in explaining prognosis and expected outcome of surgery to patients. Surgeons can modify their plan of surgery and can also take measures to combat various predictable complications.



Fig. 1: left eye showing the dense cataractous lens with retinal detachment

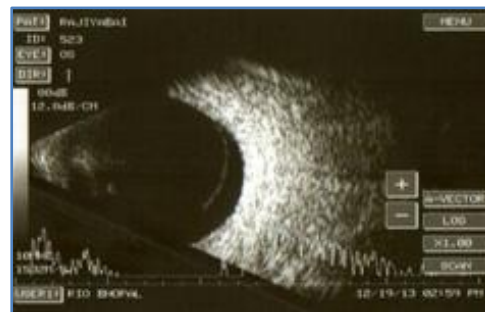


Fig. 2: Showing the left eye with PVD

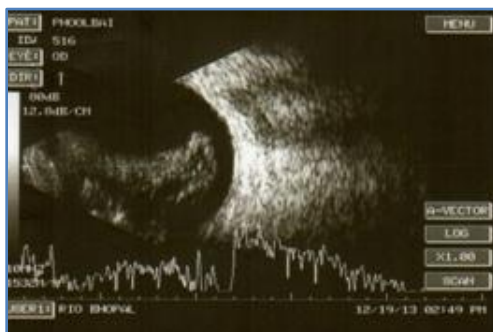


Fig. 3: showing the right eye with vitreous haemorrhage

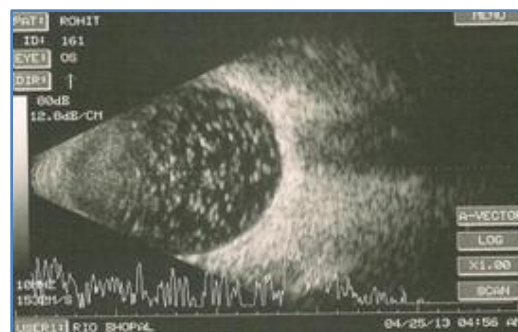


Fig. 4: Showing the left eye with asteroid hyalosis

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Fig. 5: Showing left eye with coloboma disc & choroid

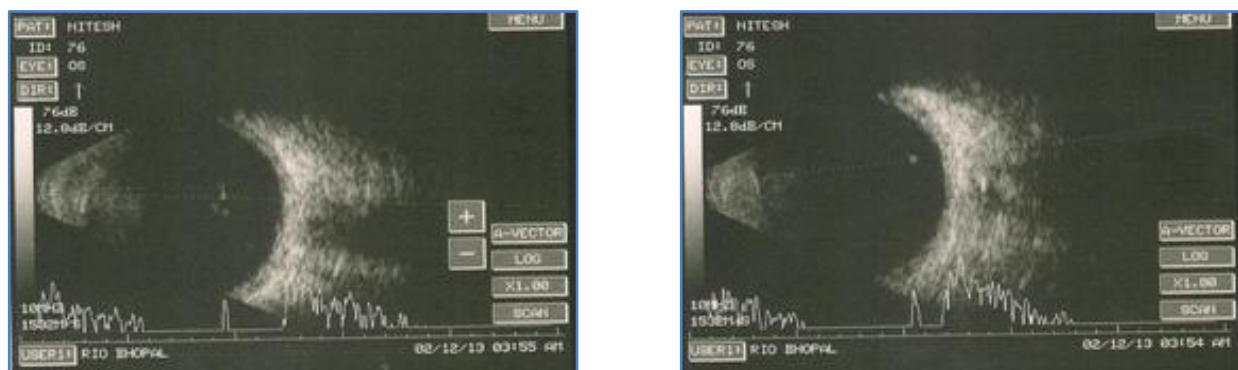


Fig. 6: Showing the left eye with vitreous opacities

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