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## SHORT COMMUNICATION

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### Case report

# Ultrasound biomicroscopy in lens "Coloboma"

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**PURPOSE.** *To study the morphology of the Lens "Coloboma" using the technique of ultrasound biomicroscopy.*

**METHODS.** *We used the Paradigm 40 Ultrasound biomicroscope to study the morphology of the lens "Coloboma".*

**RESULTS.** *Ultrasound biomicroscopy of the lens "Coloboma" revealed a greatly increased sphericity of the lens and the deficiency of zonules in the "colobomatous" area.*

**CONCLUSIONS.** *Ultrasound biomicroscopy has helped in elucidating the pathology of the lens "Coloboma". (Eur J Ophthalmol 2002; 13: 390-1)*

**KEY WORDS.** *Ultrasound biomicroscopy, UBM, Lens Coloboma*

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## INTRODUCTION

Lens "coloboma" is a notch in the equator of the lens that is thought to be due to the absence or deficiency of zonules in that particular region. Hence there is no true coloboma of the lens, but rather a coloboma of the zonules in the colobomatous area of the lens. High-resolution ultrasound biomicroscopy (UBM) has been found well suited for *in vivo* study of the human zonular apparatus (1). We used UBM to study the lens 'coloboma' and its associated pathology.

## Case report

A 45-year old man presented with decreased vision in both eyes of 6-months duration. The best-corrected visual acuity was 6/18 OD (-4.0DS/-5.50 DC X 45) and 6/18 OS (-9.0DS / -2.50 DC X 135).

Anterior segment evaluation revealed presence of an atypical lens 'coloboma' in the right eye, extending from the nine o'clock to eleven o'clock region (Fig. 1a). In addition, both eyes also had an age-related cataract. There was evidence of sectoral cataract in the region of the lens coloboma.

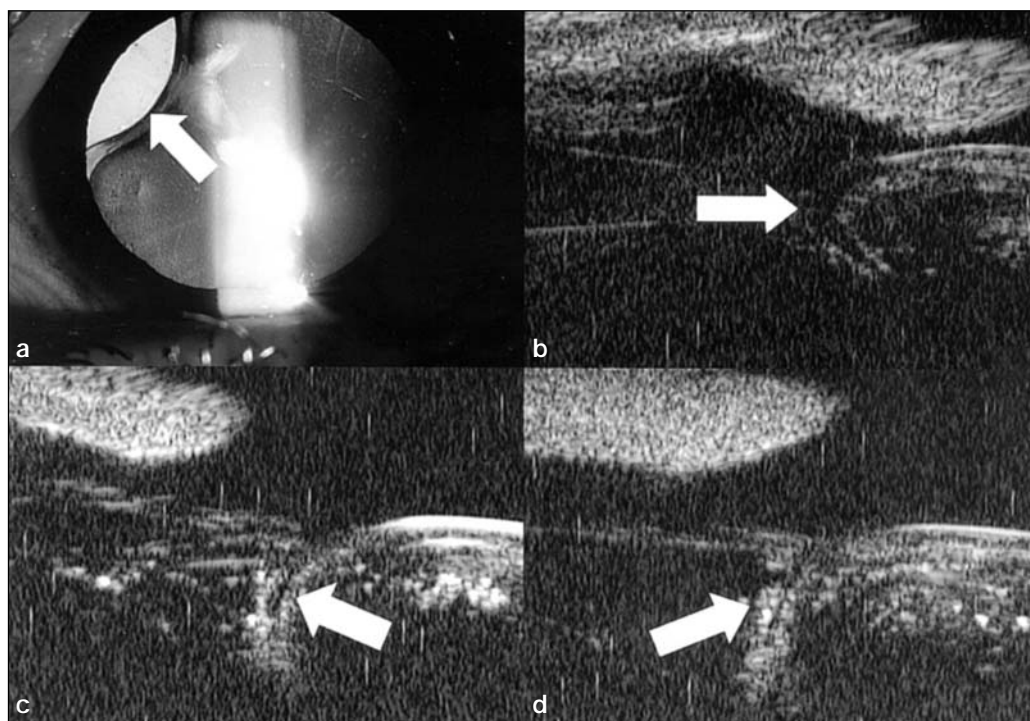
Fundus examination was done using indirect ophthalmoscopy with scleral indentation and Goldman 3 Mirror lens. There was no evidence of fundal coloboma or any fundal abnormality up to the pars plana region. Systemic examination was unremarkable.

Videokeratography was done using Orbscan 2 videokeratographer. This showed Simulated "K" astigmatism of 1.2 Dioptres at 87 degrees. This implied the cause of high astigmatism on refraction to be of lenticular origin.

UBM was done with Paradigm 40 Ultrasound biomicroscope at a frequency of 50 MHz to study the configuration of the lens and zonules. Radial images of the lens, zonules and the ciliary body region were taken in all clock hours. The edge of the lens had greatly increased sphericity (Fig. 1c) with increased antero-posterior thickness in the colobomatous area, whereas it was spindle shaped in the non-colobomatous area (Fig. 1b).

The zonular apparatus had a heterogeneous appearance in the colobomatous region. There was marked deficiency of zonules along with presence of zonular remnants (Fig. 1d). The ciliary body- lens distance was also increased in this area.

The patient was advised cataract surgery in the right eye, which he refused and remains under our follow-up.



**Fig. 1 - a)** (Arrow) showing the lens 'coloboma' in the right eye. Ultrasound biomicroscopic images of the right eye showing; **b)** (arrow) spindle shaped appearance of the lens in the non-colobomatous area; **c)** (arrow) increased sphericity of the lens; **d)** (arrow) zonular remnants.

## DISCUSSION

At the 26-mm stage of embryological development, the mesodermal tissue organizes in the paralenticular area, resulting in the appearance of a specialized region called the marginal bundle of Druault (2). The tertiary vitreous or zonules develop within this structure. Segmentally defective or absent development of the zonules results in a coloboma of the lens secondary to the flattening of the equator in the region of the zonular defect. Thus the term lens-coloboma is a misnomer as there is no actual loss of lens substance. The lens assumes a more spherical shape in that region which is thought to be the cause of high astigmatism (3).

The UBM findings in this case are consistent with those reported in disorders like Marfan's syndrome, homocystinuria and congenital spherophakia, which are known to carry zonular abnormalities (4). This confirms the fact that the pathology of the lens coloboma lies in the zonules and the defect that is seen in the lens 'coloboma' is a secondary mechanism. Thus UBM has helped to elucidate the pathology of the lens "Coloboma". More aptly, this clinical appearance should be termed as zonular coloboma.

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