



## Case report

## Episodes of monocular blurring of vision during breastfeeding



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## ABSTRACT

**Purpose:** To describe the occurrence of visual loss secondary to dispersion of cells deriving from an iris strand during pupil dilation in a 35-year-old woman.

**Observations:** A 35-year-old woman presented complaining of blurring in the Left Eye 15–30 minutes following breastfeeding at night hours. On clinical examination, the uncorrected visual acuity was 20/20 in both eyes and slit-lamp examination demonstrated cells in the anterior chamber (26–50 cells in field/3+ SUN working group grading) whereas the examination of the right eye was unremarkable. Dilated examination revealed a thin pigmented strand of iris in the Left Eye spanning from one edge of the iris to the other (1st to 8th h). This strand was connected at a single point to the anterior capsule of the lens and from the point of connection red blood cells flowed in a linear configuration that ended at the lower part of the anterior chamber.

**Conclusions and importance:** In this case report a patient with persistent pupillary membrane in the form of an individual iris strand connected to the anterior lens capsule presented with episodes of monocular vision loss. This occurred due to red blood cell dispersion from the iris strand during mesopic light conditions and pupil dilation while breastfeeding. To the best of our knowledge, this is the first report in the literature.

## 1. Introduction

The nutritional and oxygen requirement of the crystalline lens during gestation is provided by two main capillary networks that anastomose at its equator.<sup>1,2</sup> The tunica vasculosa lentis forms the first network at the posterior lens surface and the anterior pupillary membrane forms the second network at the anterior lens surface deriving from the ciliary veins.<sup>1,2</sup> These blood vessels undergo remodeling and regression and finally disappear shortly before birth. Dysfunction of this programmed cell death process may lead to remnants of the tunica vasculosa lentis that appear as a small opacity or strand at the posterior lens surface. Remnants of the pupillary membrane are often visible as pupillary strands.<sup>2</sup>

The persistent pupillary membranes (PPMs) represent a common congenital ocular anomaly occurring in 95% of normal newborn babies.<sup>3</sup> Extensive PPMs, occluding the visual axis and resulting in reduced visual acuity, are relatively uncommon<sup>4</sup> and they usually appear as persistent membranes or fine iris strands along the pupil.<sup>5</sup> Sometimes they can get attached either to the anterior lens capsule forming a cataract or to the corneal endothelium.

The purpose of the present case report is to describe the occurrence of visual loss secondary to dispersion of blood cells deriving from an iris strand during pupil dilation in a 35-year-old woman.

## 2. Case report

A 35-year-old woman presented to the First Ophthalmology Department of the University of Athens, Greece complaining of visual loss over the last 2 months. She described a blurring in the Left Eye (LE) 15–30 minutes following breastfeeding at night hours. She did not use a smart phone during the night and the blurring of vision persisted when the lights were turned on. She is a mother of a 2-month old baby. She does not describe any similar event in the past and her past medical, ocular and family history are unremarkable. This is the second time she presented to the emergency Department for the same reason.

On clinical examination, the uncorrected visual acuity was 20/20 in both eyes. The intraocular pressure was 15 mmHg bilaterally and she had normal direct and consensual pupillary response in both sides. Ocular motility and color vision were normal. Slit-lamp examination demonstrated cells in the anterior chamber (26–50 cells in field/3+ SUN

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working group grading) whereas the examination of the right eye was unremarkable. In both eyes the lens was clear with no opacities. No angle pigmentation was noticed on gonioscopy in either eye.

Dilated examination revealed a thin pigmented strand of iris in the LE spanning from one edge of the iris to the other (1st to 8th h). This strand was connected at a single point to the anterior capsule of the lens and from the point of connection cells flowed in a linear configuration that ended at the lower part of the anterior chamber. No similar finding was noted in the RE and fundus examination was within normal limits in BE. Blood pressure measurement was 120/70 mmHg. Humphrey visual field test was also unremarkable.

At re-examination, three months later, the patient was asymptomatic (she stated that the episodes gradually decreased in frequency and eventually stopped) and the iris strand could still be detected after dilation of the left eye, it's connection with the anterior lens capsule remained but no cells were detected in the anterior chamber.

### 3. Discussion

Persistent pupillary membrane (PPM) represents a congenital abnormality that is either asymptomatic or if extensive may result in reduced visual acuity due to occlusion of the visual axis or due to cataract formation. Nonetheless, the reports of visual loss due to non-extensive PPM are very limited. Cases of a spontaneous unilateral hyphaema in a 75-year-old woman and a 45-year-old man have been described due to bleeding from iris vessels related to a remnant of the pupillary membrane.<sup>6,7</sup> Histological examination of these strands show that the fibrils often contain thin vessels empty of blood. Sometimes the membrane may be attached to the lens and less frequently to the cornea. In addition, recently, kadomoto et al.<sup>8</sup> reported that PPM has vascular flow by using anterior segment OCTA.

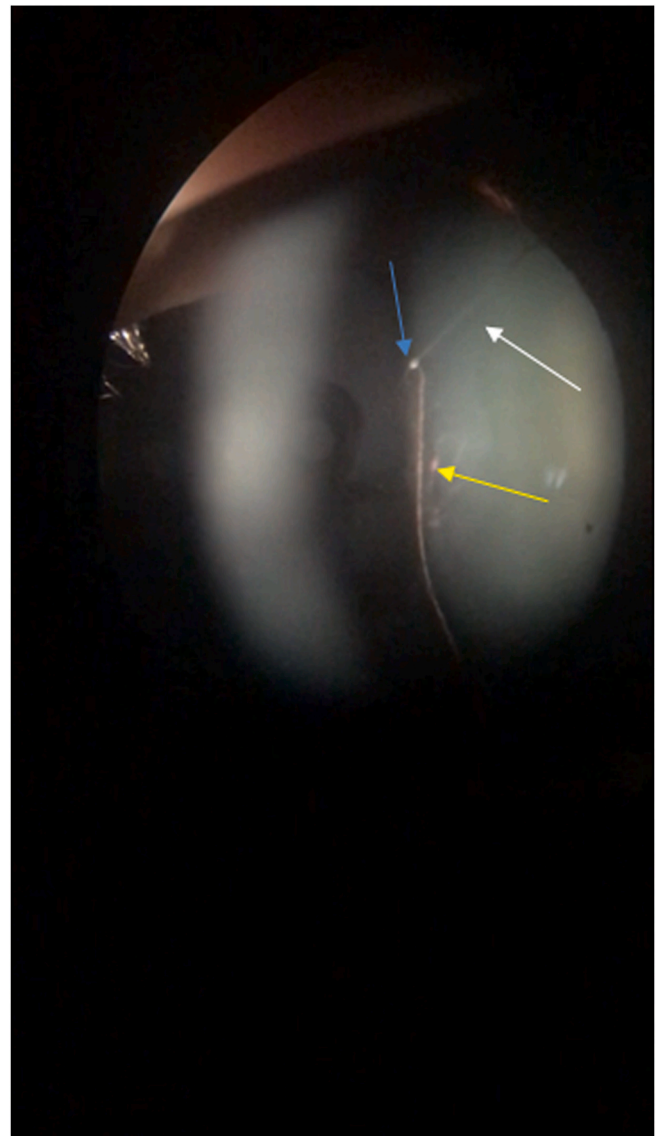
In our case, a strand of PPM was observed arising from the anterior surface of the iris and stretching horizontally across the pupil with an attachment on the anterior lens capsule in the LE. A continuous flow of cells was visible on top of the fibril releasing an amount of them into the anterior chamber and causing blurring of vision (Fig. 1, video). Also, it is possible that red blood cells (RBCs) from rupture of PPM due to iris movement caused vision loss. It is interesting that while this strand is congenital, the patient had not experienced any similar episodes in the past. Also, it is worth mentioning that she was in postpartum period. Moreover, the episodes took place only during night hours when the patient woke up to breastfeed her infant.

Mydriasis commonly alters the disposition of pupillary strands since they are usually distensible and stretch with the pupil.<sup>9</sup> Altay et al.<sup>10</sup> studied the pupillary diameter in pregnant women in the third trimester, in women in the postpartum period and at age-matched non pregnant women. Results showed a significant increase in photopic and mesopic pupil sizes in the third trimester of pregnancy and the second postpartum month in comparison to the control group. It is believed that this could be due to the fact that the iris dilator muscle is activated by sympathetic system.<sup>8</sup> In addition, pregnancy may result in a number of ocular and systemic changes that could explain the described episodes in our patient. It is known that oxytocin levels are increased during the breastfeeding period.<sup>11</sup> Oxytocin is also linked to increased pupil dilation.<sup>12</sup> We postulate that the iris movement was more frequent during breastfeeding and it is possible that this was the trigger factor for more red blood cells being released into the anterior chamber.

To the best of our knowledge, this is the first report of blood cells released in the anterior chamber from a strand of PPM during breast feeding causing blurring of vision.

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**Fig. 1.** Slit lamp photo of the left eye demonstrating the persistent pupillary membrane strand (white arrow) stretching across the iris horizontally with an attachment to the anterior lens capsule (blue arrow). This resulted in a flow of pigment cells in the anterior chamber (yellow arrow) under specific pupil diameter condition. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

#### Literature search

PubMed was searched on April 17, 2020, without date restriction, for English-language articles, using the following terms: persistent pupillary membrane, iris strand, vision loss during breast feeding, pigment in the anterior chamber during breast feeding, vision loss during pregnancy.

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#### Intellectual property

We confirm that we have given due consideration to the protection of intellectual property associated with this work and that there are no impediments to publication, including the timing of publication, with respect to intellectual property. In so doing we confirm that we have

followed the regulations of our institutions concerning intellectual property.

### Research ethics

We further confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript.

Written consent to publish potentially identifying information, such as details or the case and photographs, was obtained from the patient(s) or their legal guardian(s).

### Authorship

1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
2. Drafting the work or revising it critically for important intellectual content; AND
3. Final approval of the version to be published; AND
4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

All those designated as authors should meet all four criteria for authorship, and all who meet the four criteria should be identified as authors. For more information on authorship, please see <http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html#two>.

All listed authors meet the ICMJE criteria.

We attest that all authors contributed significantly to the creation of this manuscript, each having fulfilled criteria as established by the ICMJE.

### Declaration of competing interest

No financial or proprietary interest by any of the authors.

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ajoc.2020.100976>.

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