

## Pupillary Membrane Persistence in a Feline

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### ABSTRACT

**Background:** Pupillary membrane persistence (PMP) is a congenital abnormality, which is not usually reported in felines. It is characterized by remnants of the fetal membrane that persist as filamentous tissue across the pupil. In general, this change does not cause any clinical signs. However, the filaments may either attach to the cornea and cause small opacities in it or attach to the lens and cause cataracts. In most cases, there is no visual impairment, so treatment is not required. This report aims to describe a case of PMP in a domestic cat diagnosed at the Veterinary Hospital of the State University of Santa Cruz (HV-UESC).

**Case:** A two-and-a-half-year-old mixed-breed castrated male cat was brought to the HV-UESC with dermatological complaints. Upon physical examination, the animal was alert with a body temperature, heart, and respiratory rate within the normal parameters for the feline species. The lymph nodes were non-reactive, and the coloration of the oral mucosa was normal. There was no ophthalmic complaint from the owner, nor any loss of visual acuity. In addition, the animal had moderate pruritus, redness, and alopecia in the region of the ears, head, neck, chest, and back. Bristle samples were collected for an optical microscope analysis and an infestation with lice (*Felicola subrostratus*) was confirmed. An endectocide containing selamectin (15 mg; single application every 30 days) was prescribed. During physical examination, filamentous tissue crossing from iris to iris through pupil was observed in both eyes. The eyelid, corneal, and pupillary reflexes were within normal ranges. An ophthalmic evaluation did not identify conjunctival hyperemia or episcleral vessel congestion, and the eyelid, corneal, and pupillary reflexes were determined to be within the normal range. A slit-lamp biomicroscopy did not detect any anterior chamber alteration besides the filamentous tissue previously mentioned. An examination of the fundus of the eye by direct ophthalmoscopy revealed that the lens, retina, optic nerve, and retinal vessels all looked normal with no other ophthalmic alteration. Thus, the diagnosis was PMP, and because of the absence of visual impairment or any other ophthalmic abnormality, no treatment was prescribed.

**Discussion:** Feline PMP is a rare condition. Since the present case, a few studies about this alterations in cats were found in the literature. As in cats, this ophthalmopathy is uncommon in horses and cattle. The present report describes a case of PMP, a poorly described alteration in veterinary medicine, which was diagnosed by ophthalmic examination and slit-lamp biomicroscopy. As reported previously, PMP was an incidental finding during physical examination, since most animals with this alteration present little impairment of visual acuity. However, in some cases, membranous filaments may attach to the cornea and/or lens causing opacities and/or cataracts that may result in vision defects. This did not occur in the present case. In previous studies too, other ophthalmic alterations beyond PMP were not observed, thus corroborating the findings of our case. In the present case, as there were no other ophthalmic changes, it was not necessary to prescribe any kind of treatment. In conclusion, the lack of information regarding the epidemiology of PMP in cats warrants further studies of this alteration. Although infrequent in cats, this condition can easily be diagnosed in the routine examinations of this species.

**Keywords:** developmental disorder, *Felis catus*, ophthalmopathy, pupillary membrane persistence, pupil.

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## INTRODUCTION

Pupillary membrane persistence (PMP) is a congenital alteration characterized by remnants of the fetal membrane that persist as filamentous tissue across the pupil [4].

In the fetal phase of mammals, the pupillary membrane functions as a source of blood supply to the lens [4]. Generally, it atrophies during the sixth week of ocular development from the central vascular arches towards the peripheral arches originating at the iris collar. This process occurs between the last three weeks of fetal development and the immediate post-natal period, and it may last up to eight weeks [4,5].

In animals, it has been observed in dogs but is rarely seen in cats, horses, and cattle [4,5]. In general, this condition does not cause any clinical signs. However, the filaments may connect to the cornea or to the lens; those that connect to the cornea may cause small opacities in it, and those that connect to the lens may cause cataracts [4].

In human medicine, treatments such as laser membranectomy and surgical excision, are described for PMP [3]. Animals may be treated with mydriatics or laser surgical section; however, in most cases of PMP there is no visual impairment, therefore no treatment is undertaken [1]. As mentioned previously, PMP is an unusual ophthalmic alteration in felines, thus, this report aims to contribute to a better understanding of this alteration in the feline species.

## CASE

A two-and-a-half-year-old mixed-breed castrated male cat was brought to the HV-UESC, with dermatological complaints. At physical examination,

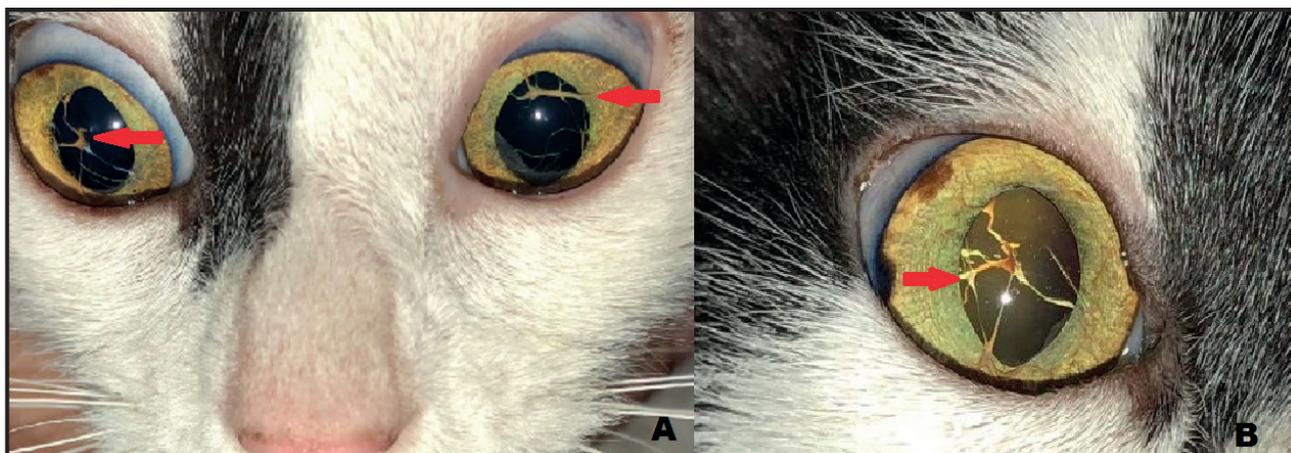
the animal was alert, with a temperature, heart, and respiratory rate within the normal parameters for the feline species. The lymph nodes were non-reactive and the coloration of the oral mucosa was normal. There was no ophthalmic complaint from the owner, nor any loss of visual acuity.

A dermatological examination revealed moderate pruritus, redness, and alopecia in the region of ears, head, neck, chest, and back. Bristle samples were collected for optical microscope analysis (40x) and it was confirmed that the cat was infested with lice (*Felicola subrostratus*). An endectocide with selamectin<sup>1</sup> (15 mg) as the active substance (single application every 30 days), was prescribed.

During physical examination, filamentous tissue crossing from iris to iris through pupil was observed in both eyes (Figure 1A and 1B- red arrows). An ophthalmic evaluation did not identify any conjunctival hyperemia or episcleral vessel congestion. Moreover, the eyelid, corneal, and pupillary reflexes were within normal ranges. With slit-lamp biomicroscopy, no other anterior chamber alteration was observed besides the filamentous tissue previously mentioned. An examination of the fundus of the eye through direct ophthalmoscopy revealed a normal appearance of the lens, retina, optic nerve and retinal vessels. No other ophthalmic alteration was found. Thus, the diagnosis of PMP was made, but because of the absence of any visual impairment or any other ophthalmic abnormality, no treatment was undertaken.

## DISCUSSION

Feline PMP is a rare condition [1]. Until now, few studies have been found in literature about this



**Figure 1.** A- A two-and-a-half-year-old mixed-breed castrated male cat diagnosed with PMP. Membranous filaments are present in the pupils of both eyes (red arrows). B- Illustrating the injury from a closer angle in the right eye.

alteration in this species. This ophthalmopathy is also uncommon in horses and cattle [4]. Thus, our current study aimed to contribute to a better understanding of the epidemiology of PMP in cats.

In the present study, PMP was diagnosed by an ophthalmic examination and slit-lamp biomicroscopy, as described by Albuquerque *et al.* [1]. Similar to our case, in a report by Aldavood & Montakhabi [2], PMP was an incidental finding during the physical examination, since most animals with PMP present little visual acuity impairment [1]. However, in some cases, membranous filaments may be attach to the cornea and/or lens causing opacities and/or cataracts that may result in vision defects [4,5]. This, however, did not occur in the current case.

In their report, Aldavood & Montakhabi [2] described that the animal did not present any other

ophthalmic alteration beyond PMP, thus, corroborating the findings of our current case. As there were no other ophthalmic changes in our case, it was not considered necessary to institute any kind of treatment [1,4].

## CONCLUSION

We conclude that PMP, although infrequent in cats, can be diagnosed in routine exams of this species, and for the majority of affected animals, no other ophthalmic alterations are observed. Lack of information about the epidemiology of PMP in cats suggests that more studies in cats are needed.

## MANUFACTURER

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**Declaration of interest.** The authors report no conflicts of interest. Authors are entirely responsible for the content and writing of the article.

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