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Case Report
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# Surgical Management of Bilateral Persistent Pupillary Membrane

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## Abstract

Persistent Pupillary Membrane (PPM) represents an incomplete regression of the *tunica vasculosalentis*. If this process of involution remains incomplete, strands of connective tissue may attach to the iris collarette. There are very few reports for surgical treatment of patients with PPM. We present a case of a 43 year-s-old old female patient with bilateral large and dense PPM, who was treated by surgical removal of the membranes. Good anatomical result and improvement of vision in both the eyes confirms that surgery may constitute a treatment of choice for selected patients with PMM.

## Introduction

Persistent Pupillary Membrane (PPM) represents an incomplete regression of the *tunica vasculosalentis*, which normally involutes during the sixth month of gestation. If this process of involution remains incomplete, strands of connective tissue may attach to the iris collarette.

About 95% of newborns and 20% of adults have PPM. The extremely thick PPM may be confused with Accessory Iris Membrane (AIM), which is exceedingly rare condition. Although these two conditions have similar origin, their clinical presentation differs. PPM presents as a translucent or an opaque membranous structure that extends across the pupil, while AIM presents as the iris tissue strands that arise from the iris collarette and extend along the pupil. The AIM resembles the normal iris tissue in colour and thickness. Thus, it presents a second pseudopupil aperture in the center; however PPM presents no such pseudopupil. PPM can be unilateral or bilateral and may vary in appearance, size, density and configuration. On the contrary, all the reported cases of AIM have been bilateral [1-20].

In most cases of PPM connective tissue remnants do not affect the vision. However, if the condition becomes symptomatic, mydriatic agents may be used to extend the partially obstructed aperture. Larger and thicker membranes may disturb the visual axis, resulting in visual symptoms which may increase the risk of deprivational amblyopia. Treatment options of symptomatic PPM may include administration of mydriatics in patients with good visual acuity, and Nd: YAG laser therapy or surgical excision for patients with bad visual acuity. The surgical treatment should be performed very gently to avoid complications such as traumatic cataract, anterior capsular lens rupture, hyphema or pigment dispersion [5-7,10,14,15].

## Case Presentation

We present a case of a 43 year-s-old old female patient with bilateral large and dense PPM, who was admitted to the Department of Ophthalmology, Medical University of Lodz, Poland in June 2018. She complained of reduced bilateral visual acuity. The patient was otherwise healthy, with no family history of eye diseases.

Eye examination revealed Best Corrected Visual Acuity (BCVA) of 0.7 for the right eye (with cor. +1.75 Dsph-1.5 Dcyl/170°) and 0.3 for the left eye (with cor. +3.0 Dsph-1.0 Dcyl/150°). The left eye was amblyopic.

Slit-lamp examination revealed clear corneas and normally reacting pupils. Dens strands of tissue were attached to the iris along the pupil, which appeared identical in both the eyes (Figure 1). The patient was treated by surgical removal of the membranes. The time between two surgeries was 60 days. The left eye, having worse visual acuity, was operated first. No intraoperative complications appeared.

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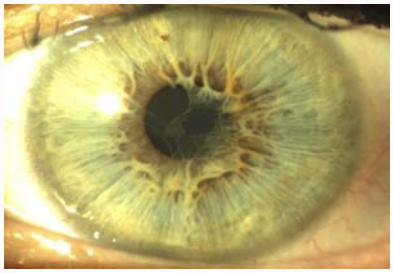

**Figure 1:** Dens strands of tissue were attached to the iris along the pupil in both the eyes.

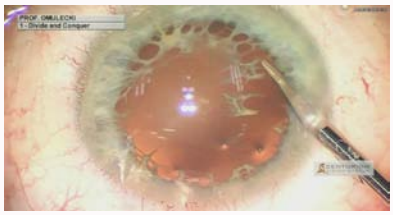

**Figure 2A:** PPM strands were cut all around the iris pupillary margin with micro-scissors.

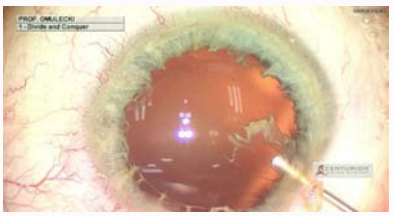

**Figure 2B:** The strands were removed via corneal incision with the viscoelastic injection.

The surgeries were similarly performed in both eyes under peribulbar anesthesia the one-plane temporal clear corneal incision was made with a 20-gauge steel knife. The anterior chamber was filled with the viscoelastic medium (ProVisc Alcon). Subsequently, PPM strands were cut all around the iris pupillary margin with micro-scissors, which were removed via corneal incision and the viscoelastic injections behind the cut strands (Figure 2A and 2B). The anatomical result of surgery was very good (Figure 3).

The patient is still under ambulatory control. She confirmed subjective improvement of vision in both the eyes. The postoperative examination performed after two months of the surgery revealed a BCVA 0.9 for the right eye (with cor. +1.5 Dsph -2.0 Dcyl/170°) and 0.4 for the left eye (with cor. +3.0 Dsph- 1.5 Dcyl/150°).

## Comment

There are very few reports for surgical treatment of patients with PPM. Such reports have shown that the surgical removal can be a good treatment option for patients with extensive, thick PPM membranes, and decreased visual acuity [5,15,16]. In this report, we presented a case of bilateral, extensive, numerous, and thick membranes. We had suspected that the surgical treatment may substantively improve visual acuity.

The use of micro-incision techniques, gentle surgery and proper use of viscoelastics enable to achieve good anatomical and functional result and avoid complications.

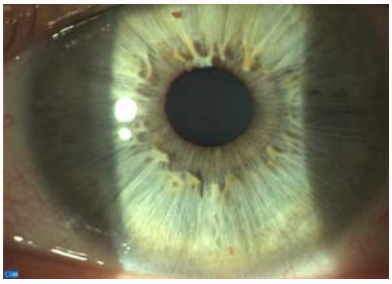

**Figure 3:** The postoperative appearance of the eyes was very good.

In conclusion, this case confirms, that surgery may constitute a treatment of choice for selected patients with PMM.

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