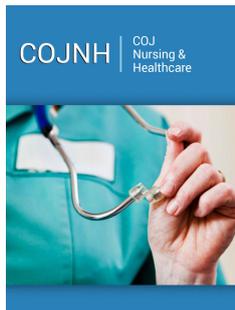


A Juvenile Bilateral Persistent Pupillary Membrane with Deprivation Amblyopia and Based Treatment

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Abstract

Persistent Pupillary Membrane (PPM) is a congenital ocular anomaly which originated from neonate. The incomplete involution of it leads to persistent pupillary membrane, which can be unilateral or bilateral and can be variable in size, shape and density. This case is a report of bilateral persistent pupillary membrane with deprivation amblyopia and good visual recovery with no iatrogenic cataract.

Keywords: Bilateral persistent pupillary membrane; Deprivation amblyopia; Medium-size pupils; Surgical treatment

Case Report

A 11-year-old girl was found pupillary membrane during physical examination. She was born 2 months early and was diagnosed as neonatal jaundice. And her whole sister, who was term delivery, was not found any abnormalities in eyes. Other past medical history was normal. Her uncorrected visual acuity, as determined with the use of the Log MAR chart, was 0.20 OD and 0.40 OS. Her Best Corrected Visual Acuity (BCVA) was 0.10 OD and 0.40 OS. The routine slit-lamp examination confirmed the existence of pupillary membrane, which performed radial membrane extending along pupils (Figure 1), having no effect on light reflex. Transparent cornea, clear aqueous fluid, deep anterior chamber and open angle of anterior chamber were also exhibited. The anterior segment optical coherence tomography showed the membrane was not adhered to the corneal endothelium or to the anterior lens surface. Axial length of her eyeballs was 20mm, much below normal. Other examination and parameters were within normal limits. A diagnosis of bilateral persistent pupillary membrane with deprivation amblyopia in the left eye was made definitively.

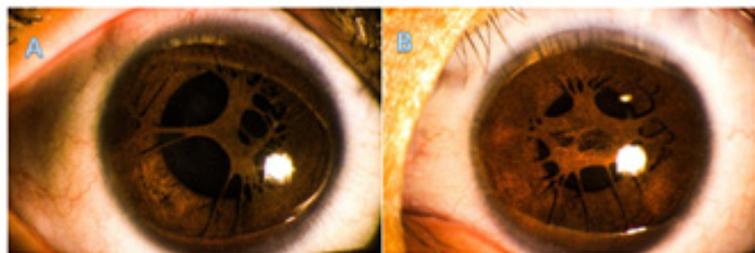


Figure 1: Slit-lamp photomicrographs of pupillary membrane before dilation. The membrane in the left eye(B) blocks visual axis more than right eye(A).

Considering that the patient was only 11 years old, her retina and macular still had the potential to develop into the normal with the stimulation of light. Excising PPM was a better choice. Besides, her membrane was presented as thick lacy strands extending along iris. Laser therapy probably have no effect on thick membrane or even cause damage to lens accidentally. After informing her parents of advancing of disease and benefit and risk of surgery, a surgery was operated. Ophthalmic knives were used to make a superior clear

primary corneal incision and an auxiliary corneal incision at 11 o'clock and 1 o'clock. After which viscoelastic material was injected into anterior chamber using choppers putting apart membrane, exactly speaking, between PPM and lens. Then PPM was excised with capsulotomy vannas scissors, and the tissue was removed by capsulorhexis forceps from anterior chamber, which was sent for histopathological examination. And remained viscoelastic material was excised with flushing needle by irrigation. Finally, the superior clear corneal incisions were proved in closure state carefully with sterile balanced salt solution after surgery. Histopathological examination of the tissue revealed typical features of normal iris tissue which contained massive pigmentation. Postoperatively, the pupils were round and light reflex was normal (Figure 2), and fundus was visible and seen normally using digital wide field. There was no evidence of intraoperative or postoperative surgical complications, such as iatrogenic cataract. At 1 year postoperatively, her uncorrected visual acuity was 0.10 OU, while BCVA improved to 0.00 OU.

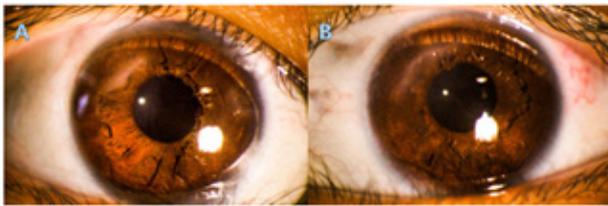


Figure 2: Slit-lamp photomicrographs of ocular anterior segment before dilation postoperatively. (A) right eye; (B) left eye.

Discussion

Persistent Pupillary Membrane (PPM) is a congenital ocular anomaly which originated from neonate. It provides nutrition to lens in fetal life, the involution of which begins from six month. The incomplete involution of it leads to PPM, whose prevalence is about 4-5% [1]. Besides, PPM also can be in combination with other ocular pathologies, such as congenital cataract, amblyopia, strabismus, macular hypoplasia, etc. The treatments of PPM include conservative management [2,3], laser therapy [4] and surgical therapy [5].

In the case, the size of pupils was the key point, which was emphasized in the operation. If pupils were too large, PPM would be stretched and attached to anterior lens capsule, making it more difficult to inject viscoelastic material behind the iris to separate PPM from lens and increase the risk of injuring lens. If pupils were too small, PPM and iris would be accumulated. In the condition, it's not easy to differentiate PPM from iris, and ophthalmologists may hurt iris when using capsulotomy vannas scissors, even causing bleeding. Above where the reasons why surgery was operated under medium-sized pupils. Intraoperatively, ophthalmologists used chopper as an intermediary tool to separate PPM from lens, to inject as much viscoelastic material as possible behind PPM and reduce the amount of viscoelastic material leaking into anterior surface iris or hole of PPM. Above is another surgical skill in this case. Bilateral PPM and short axial length in this case probably be related to premature delivery. Although PPM rarely causes blindness among ocular anomaly, it does harm to vision. For young patients, their retina is still in developing stage, best option is excising PPM to let light irradiate macular.

Acknowledgement

We thank the patient's parents for providing permission to share the patient's information.

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