

Persistent Hyaloid Artery: Jaclyn's Journey

Margaret F Ronis, O.D.

margaret.ronis@gmail.com

KISS January 15-17, 2022

Normal Development of Hyaloid Vasculature (1)

During the embryonic stages, there is a blood supply to form the crystalline lens of the eye. It branches out of the optic nerve to the back of the lens. Blood flow usually ceases at 7 months of gestation. Involution of the vasculature is usually at 36 weeks. Before regression, it usually ruptures without hemorrhages, in the center. The two ends retract and usually regress completely. Occasionally hemorrhages can occur and lead to Amblyopia.

What is Persistent Hyaloid Artery? (PHA)

Persistent Hyaloid Artery occurs when there is a failure of complete apoptosis of the vasculature. Persistent Hyperplastic Primary Vitreous (PHPV) is more severe. It is due to failure of the embryonic development of the vitreous beyond the earliest primary stage, with different severities. (2) The mildest form is Bergmeister's Papillae. This appears as a vessel often corkscrew, arising perpendicular to the disc. Usually, it does not cause visual problems unless there is attachment to the posterior surface of the lens. Mittendorf's Dot is the remnant of the fetal vasculature at its point of attachment on the posterior lens surface. PHA may appear like a cataract on retinoscopy and ophthalmoscopy.

References

- (1) **Pathology of Human Diseases**; Academic Press, Editors Linda M McManus, Richard N Mitchell, 2014. R Hobbs, MER Hartnett, Hyaloid Vasculature: Development, Regression, Structure, and Pathologies
- (2) **Clinical Pediatric Optometry**; Leonard Press, Bruce Moore, Butterworth-Heinemann, 1993, pages156-157

Jaclyn, a case of persistent Hyaloid Artery

Jaclyn's first eye exam was on **June 17, 2017**. She was an 8-year-old female, a selective mute who only whispered in her mother's ear when outside of the home. She was receiving therapy and taking fluoxetine and Prozac for severe anxiety. The history is that she was seen by 4 different pediatric ophthalmologists in 2 different hospitals in Montréal, and 1 optometrist. Her original diagnosis was congenital cataract in the OS. Most of the doctors told her there was nothing to do for the OS, "She has one good eye." One ophthalmologist told the mom to patch the OD 9 hours per day. The optometrist told her to patch OD 5 hours per week.

The mother heard of me from a friend whose child I had helped. The mother expected me to also say there was nothing to do for her child. She reported that the initial VA OS was 20/80.

Exam results were as follows: VA sc Lighthouse Cards: OD 20/20, OS 20/50

Refraction: OD plano VA 20/20

OS -0.25-1.00 x 90 VA 20/40

1^Base Down OU brought VA OS to 20/30!

Stereo 8/9 (50 sec)

Ophthalmoscopy: OD Normal findings

OS Persistent hyaloid artery with cloudy vitreous

Recommendations: Order glasses with above Rx, patch OD 30-60 minutes per day with fine motor eye-hand activities.

Progress Exams

Aug. 16, Dec. 4, 2017: VA no change. The glasses were not ordered. The mom wanted this doctor's opinion first.

Letter from the ophthalmologist at Sick Kids Hospital, Toronto, Nov.6, 2017:

"In the left eye the vitreous is hazy with significant amount of pigment cells and altered blood...minimal refractive error...I believe that Jaclyn's left eye does have a hazy vitreous which has been the cause for her reduced vision. Given the history

of persistent hyaloid artery it is possible that the hyaloid artery might have bled which has led to a vitreous hemorrhage causing clouding and the reduced vision to 20/80...and can explain why the vision has slowly improved. However, there is residual debris and pigment cells...which are causing the haziness of the vitreous. Considering at present the vision seems to be improving, I would allow for further spontaneous improvement rather than any intervention. Treatment would be a vitrectomy with risks of retinal detachment and cataract.”

Mom ordered the glasses on Dec. 4, 2017:

OD Plano, OS -0.25-1.25 x 90, 1^Base Down OU

Continued Progress Exams

Feb. 7, 2018: VA Snellen with Rx OS 20/25-

Refraction OS: -0.25-1.25 x 95 OU 1 Base Down VA 20/25+2

Wirt Stereo Acuity 9/9 (40 sec)

May 22, Nov. 12, Dec. 12, 2018: OS Persistent Hyaloid Artery with cloudy vitreous on all exams. There was some traction at the macula with Bergmeister’s Papillae.

Feb. 18, 2020: VA OS with above Rx was 20/25+. Mom reported they had done some patching with near activities. Jaclyn has a part-time shadow at school because of anxiety. Refraction was OS -0.50-0.50 x 90 VA 20/25+2. The glasses lens OS was changed.

Aug. 26, 2020: She said she sees better with her glasses. She was starting to talk!

Mom reports she is having school difficulties including Dysgraphia, difficulty writing and organizing her thoughts to write. She has been diagnosed with ADD but is not taking any medication. She enjoys reading.

October 13, 2020: Visual Perceptual Motor Evaluation (Age 11+)

Draw a person: She made a simple form without much detail.

Wold Visual Motor: posture of arm and body better with tilted work surface.

Davis Visual Scan: 10 years old

Groffman Visual Tracing: all correct

Digits: Forward (auditory) 6, Backwards (visualization) 3

Monroe 3 Visual Memory Test: 6 years old

YLF Diagonal Differentiation Test: (squares with lines in different orientations, must circle all like the sample diagonal) all over page, no spatial organization

MVPT: (up to 9 years old) missed 1 visual memory, 1 visual closure

Keystone Visual Skills: within normal ranges

Recommendations:

Use pencil grip, slanted working surface, continue with glasses, Vision Therapy

Vision Therapy targets:

Visualization, visual memory, visual processing speed, monocular and binocular hand-eye coordination activities

Vision Therapy

June 25, July 19, Nov. 22, 2021: She was asked to do 30 minutes of home VT daily. She was supposed to come once a month. She went to camp for the summer and there were holidays in the Fall.

Last Eye Exam

Sept. 23, 2021: VA cc OD 20/20, OS 20/20! Mom and Jaclyn are thrilled.

She sent me an orchid in the Fall and chocolates in the Spring to “thank you for what you did for my family.” Jaclyn is still doing her exercises. This is a case of a parent really advocating for her child!

Take Aways

Do not be afraid to take on something you haven't treated before.

Just because someone else says there is nothing to do to help, you don't have to listen, even if it is 5 ophthalmologists and 1 optometrist.

Do be ready to offer a parent to help their child, but don't make promises.

Do tell parents they have to be completely onboard and do their share of what you ask them to do.

I always tell parents, "I can't promise you (she) will get to 20/20, but I can promise you I will give it my best efforts."

Thank you.