

Glaucoma: Oda's Journey and Hope for the Future

by John May

Our journey with eye issues began in May of 2018 with a diagnosis of a specific type of cataracts that have affected a significant number of breeding Entlebuchers in North America and Europe. Both of our dogs—Oda and her son Tanner—have been diagnosed with these cataracts. I want to share Oda's journey and why we have hope for the future.

Eye Issues Spotted During Annual Exam

At Oda's annual eye exam in 2018, small posterior polar cataracts were observed. She was four years old.

Posterior polar subcapsular cataracts are one of several types of hereditary cataracts that can affect dogs. They have a very distinctive appearance—an irregular opaque shape which can look like a distant galaxy, rather than the more common evenly opaque cataracts.

Posterior polar cataracts are not as benign as they were once thought to be. As we learned more about the prevalence of glaucoma in the Entlebucher Mountain Dog, we took Oda to the Cornell University Companion Animal Hospital for a gonioscopy. The results of this exam showed severe goniodysgenesis (a disease of the eye associated with high internal pressure caused by developmental aberrations) but no significant change in the cataracts or her vision.

At Oda's next annual eye exam (2019), the cataracts showed no significant change but the visual acuity in one eye had decreased. Our daughter Jennifer, who had just finished her education as a veterinary technician, was concerned and warned us there was a strong possibility that glaucoma was in Oda's future. She had just completed an ophthalmology rotation where the correlation between cataracts and glaucoma was emphasized. While a definitive link has not yet been proven, there are reasons to believe there is a connection.

With some skepticism we booked an appointment at Cornell, and after three separate consults they concluded there were signs of glaucoma, specifically primary angle-closure glaucoma. The attending veterinarian, who had extensive experience with glaucoma, was concerned with some



Oda's eye during a sudden pressure spike.

minimal darkening at the optic nerve root. Oda's ocular pressures were tested at multiple visits and each time the readings were normal, which is often the case with primary angle-closure glaucoma. However, pressure spikes frequently occur at night (this is what we think happened to Oda several times) and then return to normal. This complicates making a glaucoma diagnosis.

Oda's Eyes Get Worse

Since the Cornell veterinarian suspected Oda had developed glaucoma, he prescribed mild preventative drops in hopes of keeping Oda's ocular pressures normal. A follow-up visit and advanced testing were planned.

Then the coronavirus pandemic hit, and all appointments were suspended. The hospital at Cornell was closed except for life-threatening emergencies. In the meantime, over the next several months Oda lost all vision in her right eye and had an emergent event (most likely a spike in the internal eye pressure) in her left eye resulting in the temporary loss of all vision. We took her in for an emergency visit and started treatment, which helped for a short time.

Trying the Ahmed Device

Not long after this, another pressure spike in her left eye temporarily took away Oda's vision. The vet recommended trying an Ahmed device, a drain shunt which could save the vision in her remaining eye. We opted to try it, and also had her right eye removed (enucleated) to eliminate pain. Glaucoma is very painful, said to be the equivalent of a major migraine for dogs.

The Ahmed device restored some vision but involved considerable aftercare, including a complicated eight-week schedule of drops and pills multiple times a day. Oda also had to wear an Elizabethan collar to prevent her from scratching at her eye or accidentally bumping it on something.

Unfortunately, right after Oda was cleared to resume normal activity, an uncontrolled pressure spike took her vision permanently. An aggressive course of eye drops was prescribed to manage the situation and try to keep the internal eye pressure under control. This worked for several weeks, but we reached a point where

the treatments were no longer effective. This is often the case with glaucoma.



Several weeks after Oda's first surgery.

FEATURES *continued*

We decided to remove the remaining eye to eliminate Oda's pain and discomfort. Since her surgery, Oda has been adapting to a life of blindness and is slowly becoming more confident and comfortable with her new situation. It is extremely difficult to watch a very active, talented young dog become limited in such a debilitating way.

Help from University of Wisconsin-Madison

At the same time these events were transpiring, NEMDA President Joyce MacKay reached out to Dr. Gillian McLellan, a veterinarian and associate professor who specializes in the genetics and pathology of glaucoma at the University of Wisconsin-Madison, to discuss eye issues in our breed. Dr. McLellan runs a lab and several clinical studies where the main research focus is comparative glaucoma and diseases of the retina and optic nerve in animals and humans.

The timing was right, and we were able to join a study Dr. McLellan is doing in conjunction with the AKC (American Kennel Club) Canine Health Foundation. This study will identify the genetic biomarkers of primary angle closure glaucoma so that preventative screening tests and treatments can eventually be developed. The Cornell University Companion Animal Hospital sent Oda's enucleated eyes and surrounding tissues, as well as blood samples, to the University of Wisconsin Comparative Ophthalmology Department for study.



One day after Oda's second surgery.

Additionally, Brian Klein, former NEMDA Health and Genetics Chair, spoke with Dr. McLellan, and she is interested in starting a project with NEMDA to study eye diseases in Entlebuchers. I will be working with Brian and Dr. McLellan to look at applying for some grants, most likely from the Morris Animal Foundation and the AKC Canine Health Foundation. Dr. McLellan and Brian have discussed two potential small studies that will build on the genomes of the six dogs NEMDA has already

sequenced. Oda was part of this genome sequencing project, which should provide beneficial information for the University's study. (Oda's data can be found at <https://www.ncbi.nlm.nih.gov/biosample/17045983> and the data from all six dogs is at <https://www.ncbi.nlm.nih.gov/sra/?term=SRS7955189>.)

The plan is one study will focus on a known group of affected Entles and their offspring, and the other study will focus on just

It's an important two-way street — not only do breeders need to notify their "puppy" families, but pet owners need to let their breeder know if their Entle develops an eye disease. We can act only if we know about the problem!

affected adults. We will also pursue the development of a test to screen for cataracts so breeders will be able to make informed breeding choices in the future.

Doing the Right Thing

In 2018, we retired Oda from breeding as required by the NEMDA Breeders' Code of Ethics (BCOE). Our stud Tanner (Oda's son) was also recently diagnosed with a posterior polar cataract in one eye. He is four years old. As a result, we decided to discontinue our breeding program.

Tanner sired two litters of puppies, one born in 2018, another in 2019. We contacted the owners of the bitches so they would be able to follow up with the puppy owners. They both are following up with all their puppy owners strongly encouraging them to have their Entles' eyes checked. It's about follow-through, which is so important in managing eye diseases in the our breed.

What Can We All Do Now?

In conclusion, I have a few recommendations that all of us as Entlebucher owners can do.

First, please take your Entle in annually for an eye exam and every two years for a gonioscopy by a board-certified veterinary ophthalmologist.

NEMDA BCOE breeders are required to get annual eye exams for their dogs, so breeding Entles are the population we have data on. We don't have data on the majority of Entlebuchers

because there isn't a requirement for non-breeding dogs to have annual eye exams, and NEMDA does not track those who do unless owners also report issues via the NEMDA Health Reporting Form (https://docs.google.com/forms/d/e/1FAIpQLSc2pshZ398EWCACc4qiFln6dl5Ra49Mv_gbl_VH_1Pzdx0nw/viewform?c=0&w=1).

So, this is my second recommendation: *please help NEMDA determine how common various eye problems are among our beloved Entles by filling out the NEMDA Health Reporting form if your dog has been diagnosed with cataracts, glaucoma, or any other eye diseases.*

Finally, my third recommendation: *it is so important for both breeders and Entle owners keep the lines of communication*



Breeder's Corner

Breeder's Corner is a new series to introduce NEMDA's recommended Entlebucher breeders. All of these breeders have promised to abide by NEMDA's Breeder Code of Ethics, welcome inquiries, and are willing to be contacted about their breeding programs. As such, these breeders are called BCOE breeders.

Each issue of the Entlebook starting with this one will feature an interview with a BCOE breeder. If you're curious, you can see who they are on NEMDA's website where they are listed at <https://nemda.org/entlebucher-breeders/>.

To Our Readers: If you have a question or two you would like us to add to future interviews, please email them to the Breed Committee at breeding@nemda.org.

Interview with BCOE Breeder Paula Lacker Blue-Jay Ently's

How long have you been involved with dogs?

I have been involved in the dog world since 1976. Hanna, my first Entlebucher Mountain Dog, joined our family in 1995.

Why or how did you start?

I was hooked after showing my German Shepherd, Heidi, when I was in 4-H. After Heidi earned her CDX obedience title, I decided I wanted a show dog, so in 1978 I bought a Miniature Pinscher. For the next 37 years, I raised dogs and competed in obedience and conformation, earning multiple Championships and Obedience titles.

Finally, I decided I wanted a rare breed to show and settled on an Entlebucher. My father had chosen the breed from a book, and wanted one. Coincidentally, growing up we had a mixed

open and be forthright about any eye health issues their dogs develop. It's an important two-way street—not only do breeders need to notify their “puppy” families, but pet owners need to let their breeder know if their Entle develops an eye disease. We can act only if we know about the problem!

It is crucial that health issues like the eye diseases described in this article are given the attention they deserve. The newly approved Entlebucher Preservation Foundation will provide key resources for tackling eye diseases and the many other health issues our breed faces (see [page 21](#) for the exciting news about the foundation). Through education and the funding and guidance of health-related projects, the foundation will be incredibly effective in ensuring the healthy future of our cherished Entlebucher breed.

breed dog that resembled an Entlebucher. Two years later, we had our first Entlebucher, Hanna, who arrived from Switzerland.

What have been the greatest highs of your breeding career?

I'm very proud of being the Breeder and Owner/Handler of the first Champions and Grand Champions for both males and females in the Entlebucher Mountain Dog breed. This is a culmination of years of hard work. I also earned the first Obedience and Rally Obedience titles for Entlebuchers.

What have been your most memorable moments?

I've attended two World Dogs Shows: one in Milan, Italy and the other Amsterdam, The Netherlands. I've also attended the Ankörung evaluations in Switzerland and the Crufts Dog Show in England (twice). My travels have given me the opportunity to meet many incredible breeders and to learn about breeds and dogs from all over the world. This has added to my breed knowledge and my appreciation of this amazing breed.

I enjoyed showing at Westminster Kennel Club the first year Entlebuchers were accepted by the AKC. As part of the breed's introduction to the public, I had the great fortune to participate in a press conference in New York that included a parade of new breeds. I was also showcased on

