

Glaucoma in Dogs

Glaucoma is elevated pressure within the eye. Glaucoma is often characterized by acute pain and cloudiness in the affected eye. You may also notice increased tearing, redness, enlargement of the eye, elevation of the third eyelid, blindness and even decreased appetite and energy.

In order to appropriately diagnose glaucoma a machine called a tonometer is used to measure eye pressure. The eye is normally producing fluid within the eye called aqueous humor. This fluid, once produced, flows through the eye and then out the drainage angle. The production and drainage of fluid is normally in harmony and keeps the pressure within 15-24mmHg. When there is obstruction of the drainage pathway the pressure increases causing pain.

Uncontrolled glaucoma is painful and potentially blinding, therefore it is critical for your pet to receive therapy as soon as possible. Topical anti-glaucoma medications can be administered in all cases of glaucoma but any additional therapy depends on the cause of the glaucoma. Determining if your pet has primary or secondary glaucoma is key in directing appropriate treatment.

Primary glaucoma is from a malformed drainage angle and this is common in many purebred dogs. In cases of primary glaucoma the area where fluid drains out of the eye, iridocorneal angle, is often narrow or collapsed. This formation is called goniodysgenesis and is present in both eyes. Even though the angle is formed abnormally from birth most animals do not develop an elevated eye pressure until later in life.

Primary glaucoma is diagnosed with a complete ophthalmic examination which may also include gonioscopy and high-resolution ultrasound. Gonioscopy is a test performed by an ophthalmologist using a special lens called a goniolens. This lens allows direct visualization and formation of the drainage angle. Goniodysgenesis is observed in cases of primary glaucoma. Goniodysgenesis is often found in both eyes even though only one eye may have elevated eye pressure. Ultimately the same problem will develop in the other eye.

Secondary glaucoma is caused by obstruction of the drainage angle by another condition. This is not due to a malformation in the angle. Conditions such as inflammation (uveitis), red blood cells, cancer, infection or autoimmune-diseases can clog the drain where fluid leaves the eye subsequently causing the eye pressure to elevate resulting in glaucoma.

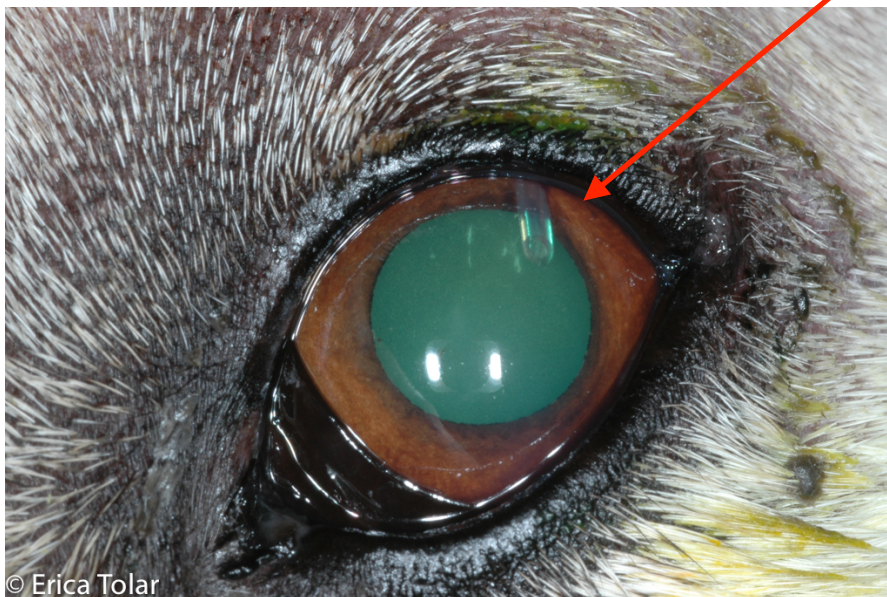
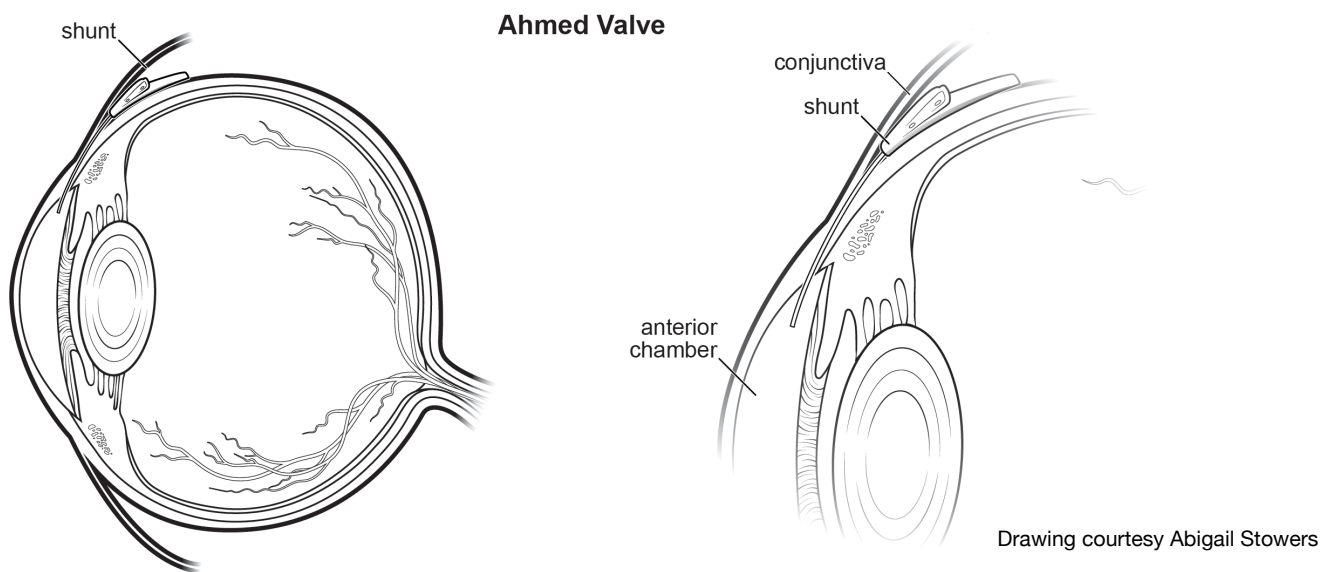
Both primary and secondary glaucoma require topical glaucoma eye medications. Additional therapy in the form of surgery may be possible to maintain vision. If maintaining vision and comfort is not possible there are procedures available to restore long-term comfort.

When discussing glaucoma, fluid production and fluid drainage is like a shower. The fluid production is like the faucet and the drainage angle is the shower drain. There are only two places you can affect the system, you can turn down the shower or you can fix the drain. Surgery therapies for primary glaucoma include laser therapy which kills the cells that produce the fluid or goniovalve therapy which is like putting in a new drain allowing the fluid to drain out another way.

Laser therapy is performed under heavy sedation or general anesthesia depending on the procedure being performed. The laser energy is applied to the ciliary body epithelium which are the fluid production cells. These cells are destroyed slowing down the production of fluid within the eye which in turn decreases the eye pressure.

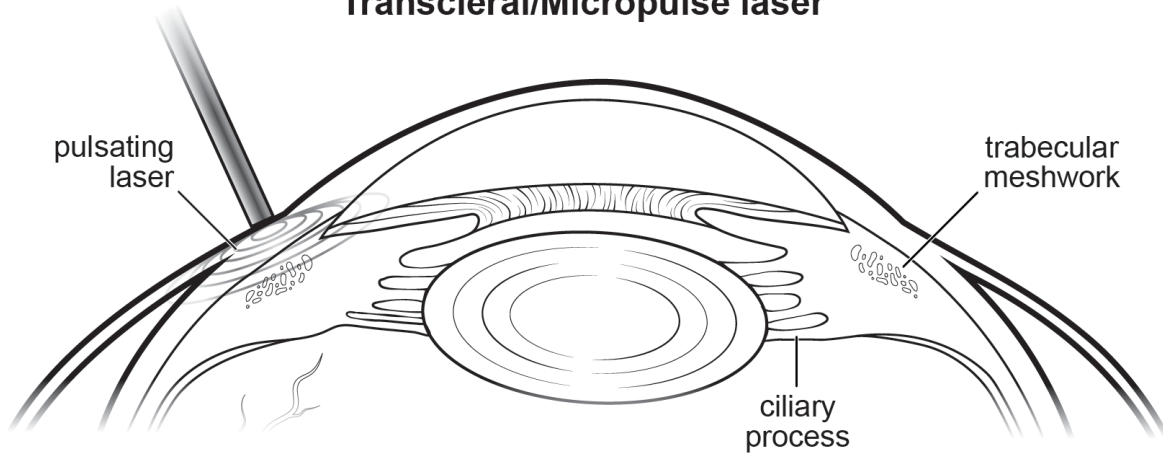
Goniovalve therapy is performed under general anesthesia. A small one-way valve is sutured to the white part of the eye and a small tube is inserted into the front of the eye. When the pressure is elevated the valve opens and allows fluid to flow out of the eye.

As with any medical procedure there are always the potential for complications. The complications and post-operative care should be discussed with Dr. Tolar depending on which procedure is performed and the overall health of your animal. If surgical options to try and prolong vision are not an option and your dog is painful and no longer visual the following options are available for comfort; enucleation or eye removal, intrascleral prosthesis or the fake eye and a pharmacologic ciliary body ablation.

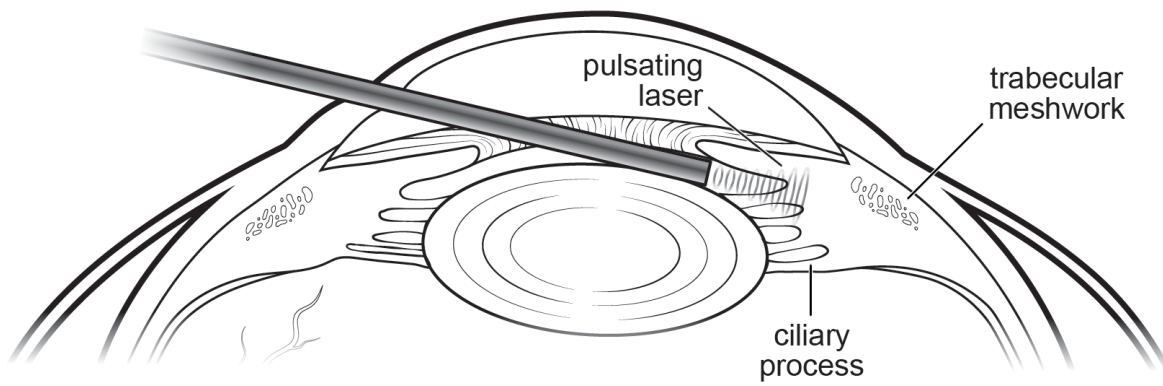


The anterior chamber goniovalve is identified in this picture with the red arrow.

Transcleral/Micropulse laser



Endolaser



Drawing courtesy Abigail Stowers