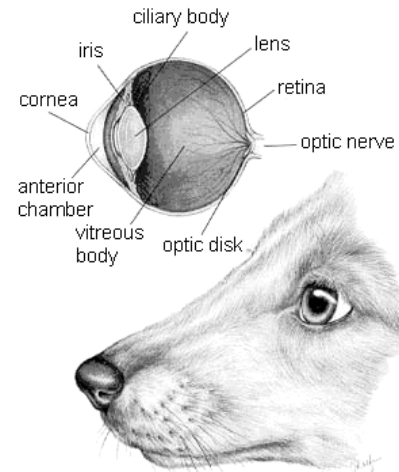


## Ophthalmology: Glaucoma

### What is Glaucoma?

The normal eye is filled with clear fluid to which serves to transmit light, provide nutrients to important ocular structures and maintain its shape. The fluid is constantly produced by the ciliary body and must drain at a certain rate in order to maintain normal pressure within the eyes. Glaucoma occurs when there is sustained increased pressure due to an obstruction of fluid drainage. Increased pressure can cause significant damage to sensitive structures within the eye, such as the retina and optic nerve head, that are essential for maintaining vision. Sudden, severe increases in pressure can result in irreversible blindness within hours to days. Chronic, modest increases in pressure can produce slow vision loss over several months.



### What causes Glaucoma?

There are many different causes of glaucoma. Broad classifications include 'primary' and 'secondary'. Primary glaucoma refers to an inherent problem within the drainage system. Primary glaucoma is often genetic and certain breeds such as American cocker spaniels, basset hounds, beagles, chow chows and Siberian huskies may be predisposed. This condition almost always affects both eyes. Therefore, even if only one eye is affected at the time of diagnosis, the other eye will often be started on prophylactic therapy. Secondary glaucoma indicates that there was a preceding condition resulting in an obstruction of fluid drainage. Conditions that may lead to the development of secondary glaucoma include inflammation within the eye, trauma, anterior lens luxation and others. Secondary glaucoma can affect one or both eyes.

### How do I know if my pet has glaucoma?

You may notice redness, squinting, swelling or cloudiness of the eyes, as shown in the photograph below. Vision impairment is not always noticeable when pets are in a familiar environment or if only one eye is affected. Since pressures can fluctuate, vision loss can also wax and wane initially. Human patients describe the discomfort associated with spikes in pressure comparable to a migraine headache. Your pet may seem a reluctant to eat, play or engage in normal activities. Signs of discomfort can be subtle and may only become obvious after they have resolved with treatment.

Early diagnosis is essential. Left unchecked, permanent blindness will occur. Glaucoma can be diagnosed by your family veterinarian or a veterinary ophthalmologist by performing a thorough eye examination. The diagnosis is usually confirmed by obtaining an elevated intraocular pressure reading.



### What are the treatment options?

Treatment is targeted at decreasing the pressure within the eye to provide comfort and preserve vision for as long as possible. Due to the nature of the disease, glaucoma is not curable but may be managed. There are several different topical glaucoma medications with varying mechanisms of action. Some medications act to improve fluid drainage while others target decreasing fluid production. Most patients require a combination of eyedrops for adequate pressure control. Drops are continued indefinitely and should never be stopped without first consulting your pets' ophthalmologist.



Unfortunately, surgical options for glaucoma treatment are limited at this time and are often reserved for blind eyes where the only goal is pain-relief. The exception is laser cyclophotocoagulation which can be performed on a functional eye in hopes of preserving vision. This procedure involves partial destruction of the ciliary body which is the tissue responsible for fluid production. It is not free of complications but may be of benefit for patients who are no longer responding to medical management.

When an eye is painful and blind and requires many expensive medications, sometimes a more permanent surgical solution is in the best interest of both the patient and the owner. One option is enucleation. This involves surgical removal of the eye and permanently suturing the eyelids closed. Patients typically recover within a couple of days and quickly feel better than they did prior to surgery. Also, topical medications are no longer needed on the operated side. In long-haired breeds, the surgery site is often barely noticeable once the fur grows back. A second option is evisceration with intrascleral prosthesis. This procedure involves removing the internal structures of the eye while maintaining the outer 'shell' (the cornea and sclera). A dark colored silicone ball is then placed within the shell to mimic the appearance of an intact eye. This procedure can be more cosmetically pleasing but does require a longer recovery period than enucleation. The cornea usually becomes slightly cloudy but the overall effect is generally satisfactory. There is slight risk of long-term complications including implant rejection and corneal damage. Another option is an intravitreal injection. This involves injecting an antibiotic called gentamicin into the back of the eye. Gentamicin causes a reduction in the activity of the ciliary body and therefore reduces fluid production and eye pressure. This procedure is minimally invasive and can be performed using a very brief period of anesthesia. This makes it a good choice for older or debilitated patients. The goal of this procedure is to provide lasting comfort while reducing the amount and frequency of topical medications. However, most patients are not able to stop medications completely. This procedure is generally about 75% effective. If results are not satisfactory, the injection can be repeated or an alternative can be considered.



Enucleation



Intrascleral prosthesis on the right side

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