



Glaucoma

What is glaucoma?

Glaucoma is a painful condition in which the pressure within the eye is higher than it should be. It is considered to be an ocular emergency because glaucoma can lead to irreversible blindness if not the eye pressure is not quickly controlled.

What are signs that my dog may have glaucoma?

Dogs with glaucoma may develop redness and cloudiness of the eye, squinting, vision loss, dilation of the pupil, reduced appetite, or reduced activity level. These signs can be subtle, especially early on in the course of the disease and when only one eye is affected. When the eye pressure remains elevated chronically, the eye can actually enlarge. Once this happens, the eye is almost always irreversibly blind.

What causes glaucoma?

In general, glaucoma results when the fluid within the eye cannot appropriately exit the eye, thus building up and causing the pressure within the eye to increase. As the eye pressure increases, the retina and optic nerve can be damaged.

There are two main categories of glaucoma: primary and secondary. Primary glaucoma is associated with a congenital abnormality (one that has been present since birth) within a portion of the eye called the drainage angle (the portion of the eye through which fluid exits the eye). This abnormality is called goniodysgenesis. Most dogs with goniodysgenesis never develop glaucoma, and those that do typically develop glaucoma in middle age. However, once these dogs develop primary glaucoma in one eye, most will develop glaucoma in the fellow eye within 6-8 months.

Secondary glaucoma occurs due to some other identifiable disease process within the eye. There are many potential causes of secondary glaucoma, including long-standing inflammation within the eye (called uveitis), a tumor within the eye, lens luxation (dislocation of the lens), trauma, or prior intraocular surgery (including cataract surgery).

How is primary glaucoma treated?

Primary glaucoma can be treated with medications and/or surgery. Medical therapy includes a combination of medications (usually eye drops) that help to control the eye pressure by either decreasing the production of fluid within the eye or by increasing the outflow of fluid from the eye. Medical therapy alone for primary glaucoma is only temporarily effective at controlling the eye pressure and maintaining vision (often for only a period of weeks to months). Surgery can help to control glaucoma for a longer period of time in some cases, but still does not provide



life-long control for this disease. In addition, continued medical therapy is still necessary, even after surgery.

The surgical options for primary glaucoma, like the medical options, work by either decreasing the production of fluid within the eye or by increasing the outflow of fluid from the eye. The least invasive procedure involves using a laser to destroy a portion of the fluid-producing cells of the eye. This procedure is called cyclophotocoagulation. This is a relatively quick procedure that is performed under a short general anesthesia. However, this procedure often results in severe inflammation within the eye initially after surgery and often a temporary increase in the eye pressure that in some cases can cause further damage to the retina and optic nerve. Another surgical option is to place a tube, or shunt, within the front chamber of the eye to act as an accessory drain for the fluid to exit the eye. This shunt is called a gonio-implant. This shunt tends to become clogged and stop functioning within a period of weeks to months, and therefore is not a long-term solution. In addition, this procedure involves a longer general anesthesia and higher cost than the laser procedure. For many cases, the best option for control of eye pressure is to first place a gonio-implant, and then two to three weeks later perform cyclophotocoagulation. The gonio-implant helps to control the temporary increase in eye pressure that is expected after the laser procedure, and the laser helps to provide longer-term control of eye pressure after the shunt becomes clogged.

Unfortunately, treatment for primary glaucoma is always temporary, and even with aggressive treatment most eyes affected with primary glaucoma become blind within one year of diagnosis. When this occurs, surgery to remove the eye (called an enucleation) or to remove the inner contents of the eye and replace them with a prosthetic ball (called an evisceration with intrascleral prosthesis) is recommended because uncontrolled glaucoma is painful.

The treatment for secondary glaucoma involves addressing the underlying cause, if possible, and using medications to control the eye pressure as needed.

Prevention of glaucoma:

Once a dog develops primary glaucoma in one eye, it is important to start prophylactic treatment for the fellow (unaffected) eye. Prophylactic treatment of the fellow eye has been shown to delay the onset of glaucoma in this eye from an average of 6-8 months (without prophylactic treatment) after the onset of glaucoma in the first eye, to an average of 31 months (with treatment). It is also important to carefully monitor for signs of glaucoma (as described above) in this eye, and to have your pet evaluated immediately if these signs are noted to provide the best chance to preserve vision.