

Glaucoma

Glaucoma is a blinding disease in dogs. Glaucoma indicates that the pressure inside the eye (intraocular pressure) is elevated and results in degeneration of the cells within the optic nerve (connection from the eye to the brain) and the retina (light receptors in the back of the eye). Cats and horses may be able to retain some degree of vision/retinal function even after prolonged periods of elevated pressure (glaucoma).

The symptoms of glaucoma are as follows in the dog:

- Pain (eye sinks into the orbit and a pink membrane protrudes)
- Haze of the cornea
- Red/thick blood vessels of the white of the eye
- Dilated pupil
- Blindness

In most dogs the onset of glaucoma is sudden. The only suggested explanation to this sudden onset is that when the dog wakes up in the early morning there is a release of adrenaline/epinephrine, which dilates the pupil. This sudden dilation of the pupil may be linked to the sudden onset of increased intraocular pressure.

Glaucoma may be primary or secondary in origin. Primary glaucoma denotes a type of glaucoma, without previous intraocular disease. Secondary glaucoma denotes a type of glaucoma with previous intraocular disease such as inflammation (uveitis), lens luxation (displaced lens), neoplasia (cancer) or retinal detachment.

Glaucoma may occur in any animal, although we most commonly see this disease in the following dog breeds:

- Basset Hound
- Chow
- American Cocker Spaniel

Many medications have been developed to treat glaucoma in man, but only a few of these medications significantly reduce the intraocular pressure in dogs, the commercially available effective agents include:

- Carbonic anhydrase inhibitors: Methazolamide (Neptzane®) and Acetazolamide (generic or Diamox®). Both agents are given orally and reduce the intraocular pressure by reducing the production of water (aqueous) in the eye.
- Prostaglandin analogues: Travatan® (travoprost) and Xalatan® (latanoprost)

For the immediate reduction in intraocular pressure the following medications may be used (osmotic agents):

- Mannitol (given intravenously), Isosorbide (given by mouth), Glycerin (given by mouth).

For the long term control of glaucoma surgery is often necessary. Recent advances in glaucoma surgery in the dog are promising and should be mainly reserved for potentially visual eyes.

Laser surgery for glaucoma in the dog:

There are different types of laser surgery for glaucoma, and as an owner you should be aware of these differences. All glaucoma laser surgery in the dogs aim to damage the cells, which secrete fluid (aqueous) in the eye:

- **TransScleralCycloPhotocoagulation (TSCP)** : laser energy is delivered from the *outside* of the eye and haphazardly *blasts tissue* inside the eye. This type of surgery has shown to be un-predictable and may even result in intraocular hemorrhage and/or retinal detachment
- **EndoCycloPhotoCoagulation (ECPC)**: laser energy is delivered from the *inside* of the eye after a small incision in the cornea. The laser energy is delivered to the cells that produce the aqueous under direct visualization and the *energy is titrated* to result in mild blanching and contractions of the ciliary processes. This technique is only available at few veterinary ophthalmology clinics, but offers the highest success rate and predictably reduces the intraocular pressure. Some veterinary ophthalmologists perform the ECPC procedure after removing the lens by phacoemulsification (see cataract surgery information).

Glaucoma Shunt surgery in the dog:

This procedure allows the fluid (aqueous) within the eye to flow. Medical grade silicone tubing is used to provide an alternative route for fluid to leave the eye. Tubing may be used to construct these devices, alternatively commercial implants (ie. Ahmed Glaucoma Valve, Molteno Implants) may be implanted. Anti-scarring agents are usually used to prevent/delay the onset of scarring after surgery. Scarring is the main complication after Glaucoma Shunt surgery and may result in the return of high intraocular pressure resulting in blindness. Repeated injections around the eye of anti-scarring agents may be necessary after this type of surgery. Injections of “clot-busting factors” (Tissue Plasminogen Activator) may be necessary in the immediate post-operative period.

Should you have any further questions about glaucoma or glaucoma surgery please call our office and ask to speak to Dr. Clinton or Dr. Evans.