Glaucoma

What is glaucoma?

Glaucoma is an eye disease where the pressure increases inside the eye because the fluid produced inside the eye cannot escape. This pressure causes pain and blindness. Glaucoma also occurs in humans and other animals, but it is generally worse in dogs. It is one of the most common causes of blindness in dogs.

What causes glaucoma?

In the normal eye, the chamber in front of the iris and lens is filled with a fluid called the aqueous humour. The chamber behind the iris and lens is filled with a gel called the vitreous humour. Both the fluid and the gel are transparent, so they allow light to reach the retina and allow vision.

The aqueous humour is produced by the ciliary body, which sits behind the iris, and it provides nutrients and oxygen for the inside of the eye. It flows through the eye until it leaves through the drainage angle between the iris and the cornea – the iridocorneal angle. The ciliary body acts as a 'tap', and the drainage angle acts like the 'plughole'. Production and drainage have a balance so that the IOP is constantly within normal values (10-25mm/Hg).

Whenever this balance is broken due to a reduction in the drainage (a blocked 'plughole'), the pressure rises, and clinical signs of glaucoma become apparent.

Why does glaucoma happen?

Because the inside of the eye is very precisely arranged, many eye diseases can obstruct the drainage route and therefore cause glaucoma as a result of the original disease.

The fluid drainage route to and through the plughole can be blocked by:

- cells produced in response to inflammation within the eye
- swelling of the lens (cataract) or slipping of the lens (luxation)
- movement of the vitreous gel through the pupil (due to lens luxation)

Some individuals in certain breeds such as the Basset Hounds, Great Danes, Samoyeds, Siberian Huskies, English/American Cocker Spaniels, English/Welsh Springer Spaniels, Golden/Labrador Retrievers and Welsh Terriers can be born with deformed drainage angles which decrease drainage and even completely block it. These animals are said to have primary glaucoma. Some animals with abnormal drainage angles develop glaucoma earlier in life. Some do not show any signs of the disease for years.

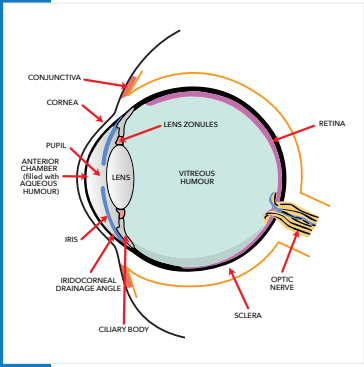


Diagram of the eye and intraocular structures.

Primary glaucoma showing the blue colour of the cornea resulting from increased pressure within the eye.

eye vet

01928 714040
admin@eye-vet.co.uk
www.eye-vet.co.uk

How is glaucoma diagnosed?

The signs and symptoms discussed are suggestive of glaucoma, but a definite diagnosis is required.

The pressure inside the eye is measured using a machine called a Tonometer, which calculates the pressure based on a number of readings. It is a non-invasive test that does not cause any pain or discomfort to the patient.

Normal intraocular pressure for a dog is 15-25mmHg.

Normal intraocular pressure for a cat is 15-30mmHg.

Any reading above these numbers is diagnostic of glaucoma.

Tonometer in operation

How is glaucoma treated?

Glaucoma is an emergency. It requires urgent treatment to reduce the high pressure, or the eye quickly becomes permanently blind. Glaucoma almost always requires lifelong treatment, as the disease can be only be controlled rather than cured.

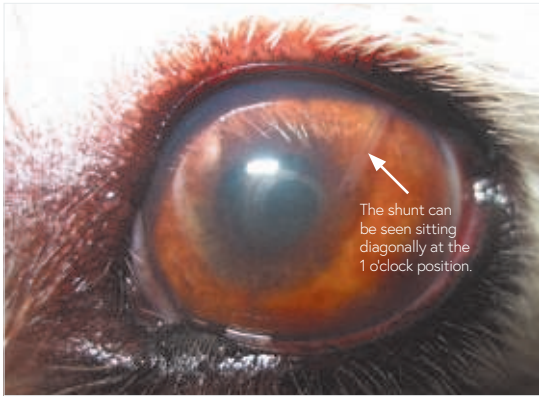
Initially, medical treatment is used with the application of topical eye drops. There are two main types. The first slows the production of fluid from the ciliary body ("turning down the tap"). Examples of these are Azopt and Trusopt. The second type opens up the drainage angle ("opening up the plughole") to allow more fluid to exit the eye. Examples of these are Xalatan and Travatan.

What if the eye drops can't control the pressure?

If medical treatment fails to control the pressure, then a variety of surgical procedures can be used. We can perform a technique to temporarily drain fluid from the eye to reduce the pressure (called an aqueocentesis). A permanent surgical shunt can be placed to bypass the blocked drainage. A laser can be used inside the eye to "turn off the tap" by targeting half to three-quarters of the ciliary body to reduce aqueous humour production.

The effects of such surgeries can be good, but lifelong medication is also required, and further surgeries may be necessary. It is important to remember that glaucoma cannot be cured. Our aim is to control the disease and the comfort of the patient.

If none of the treatments are able to control the intraocular pressure or pain in an eye which has become permanently blind, then it may be necessary to remove the eye to aid in the comfort of the patient. Most dogs cope exceptionally well with one eye and are generally much happier when the source of the pain is removed.



Ahmed® shunt valve placed in a patient with glaucoma.

What happens next?
Your ophthalmologist will discuss all treatment options available to provide the best outcome for your canine companion. Your pet will be prescribed medications which they will be on for life, and it is important you follow all instructions carefully.