

# Understanding Glaucoma

## GLAUCOMA

### What is glaucoma ?

Glaucoma is the name for a group of eye conditions in which the optic nerve is damaged at the point where it leaves the eye. The optic nerve carries information from the light sensitive layer in your eye, called the retina, to the brain.

Your eye needs a certain amount of pressure inside it to maintain its shape. Eye pressure is not related to blood pressure. In some people glaucoma damage is caused by raised pressure in the eye. In others the eye has normal pressure but there is a weakness in the optic nerve.

### What controls pressure in the eye ?

The watery fluid inside the eye, called aqueous, is produced just behind the coloured part of the eye, called the iris. This fluid passes forward through the central hole in the iris, called the pupil. It then passes to the front angle of the eye between the iris and the cornea, the clear window at the front of the eye. In the angle of the eye lie tiny drainage channels. The fluid passes through these channels, leaving the eye and joining the blood stream.

Normally all the fluid produced, drains out of the eye easily. If however, the drainage channels become partially blocked, fluid cannot drain freely from the eye and the pressure inside the eye rises. Occasionally there is an increase in production of fluid above that which the drainage channels can handle. The result is the same, raised pressure in the eye.

Fig 1. Cross section of right eye from above showing 'open angle' in chronic glaucoma.

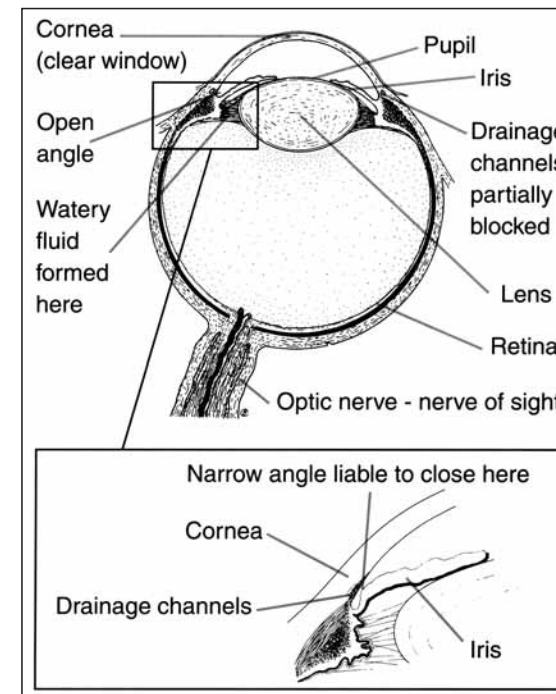


Fig 2. Enlarged view of inset in Fig 1. showing how acute glaucoma is caused by closure of a narrow angle.

### What problems are caused by increased eye pressure ?

If the optic nerve comes under too much pressure, it may be damaged. The amount of damage depends on how high the pressure is, how long it has been high for, whether there is poor blood supply to the optic nerve and whether or not there are other weaknesses in the nerve.

Really high pressure will damage the optic nerve immediately. A lower level of pressure causes damage more slowly.

## What are the different types of glaucoma ?

There are four main types of glaucoma:

- Chronic glaucoma

Chronic means slow. In chronic glaucoma, the angle of the eye is open (chronic open angle glaucoma) so the fluid can reach the drainage channels, but these are partially blocked. The eye pressure rises very slowly. There is no pain to show there is a problem, but the field of vision gradually becomes impaired.

- Acute glaucoma

Acute means sudden. This is much less common than chronic glaucoma. The angle of the eye is narrow and suddenly blocks off. The pressure suddenly rises and the eye becomes painful.

- Secondary glaucoma

Raised eye pressure caused by any other eye condition is called secondary glaucoma.

- Congenital glaucoma

Rarely, glaucoma can occur in babies. This is caused by a developmental malformation of the angle of the eye.

**Chronic Glaucoma**

**Who is at risk of chronic glaucoma ?**

There are several factors which increase the risk:

- Age

Chronic glaucoma becomes more common with increasing age. It is uncommon before the age of 40. It affects 1% of people over 40 and 5% of those over 65.

- Race

People of African origin are at increased risk of glaucoma.

- Family history

If you have a close relative who has glaucoma you should have a glaucoma check at regular intervals as advised by your eye doctor, especially if you are over 40. You should also advise other members of your family to do the same.

- Short sightedness

Short sighted people are more likely to develop chronic glaucoma.

- Diabetes

People with diabetes are more likely to develop chronic glaucoma.

**What effect does chronic glaucoma have on vision ?**

The danger with chronic glaucoma is that your eye may seem perfectly normal for many years. There is no pain to indicate that anything is wrong. Your eyesight will initially seem to be unchanged but is becoming progressively more damaged.

The early loss in the field of vision is in the shape

of an arc above and / or below the centre of vision when you are looking straight ahead. Your ability to read an eye chart is initially not affected. If the glaucoma is not detected and treated, your central vision becomes more and more constricted until you develop **tunnel vision**. In long standing untreated glaucoma, complete blindness may result.

**How is chronic glaucoma detected ?**

There are four tests for glaucoma.

- Measuring the pressure in the eye with special instruments
- Looking through the pupil at the optic nerve at the back of the eye
- Checking for deficiencies in the visual field with a test that shows you a sequence of spots of light on a screen
- Measuring the thickness of the nerve fibre layer at the back of the eye

**How is chronic glaucoma treated ?**

Treatment for chronic glaucoma aims to reduce the pressure in your eye. Initially eye drops are used to do this. These act by reducing the amount of fluid produced inside the eye, or by opening up the drainage channels of the eye.

**An alternate or adjunct to drops is SLT Laser**

**What does Selective Laser Trabeculoplasty (SLT) involve ?**

SLT Laser, is a gentle but effective laser alternative which lower IOP in some patients. SLT uses short pulses of low energy light to target the melanin-rich cells in the trabecular meshwork. These gentle laser pulses stimulate the body's natural healing mechanisms. The meshworks is rebuilt with

increased porosity, increasing aqueous outflow and reducing IOP.

This form of treatment is less traumatic than previous surgical or laser interventions and lowers IOP without the side-effects and compliance issues associated with drug therapy.

**How is SLT performed?**

SLT is performed as an outpatient in Dr Hornsby's Rooms and only takes a few minutes. Eye drops are administered for anaesthesia and to prepare the eye prior to treatment. The laser is applied through a specially designed microscope.

There may be some minor visual disturbances following this procedure and we therefore recommend that you **do not drive home afterwards**.

People are selected on an individual basis for this treatment and SLT is not suitable for everyone with chronic glaucoma. It should be noted that some people may still require drug therapy or further SLT treatments following a single procedure.

**Surgery**

Some patients will require an operation called a Trabeculectomy. A small cut is made in the outer layer of the eye and a titanium tube is inserted to allow the fluid inside the eye to drain out in a controlled way. After the operation a small blister forms and remains under the upper lid. This blister contains the drainage fluid.

**Acute Glaucoma**

**What is acute glaucoma ?**

Acute glaucoma is very uncommon. In acute

glaucoma, the angle of the eye is very narrow and suddenly blocks off sending the pressure in the eye very high.

**What are the symptoms of acute glaucoma ?**

The sudden increase in pressure in the eye causes the eye to be very painful. The eye becomes red. There may be nausea and vomiting. In the early stages you may see misty rainbow coloured rings around white lights. Later the sight deteriorates and may even black out completely.

**Is acute glaucoma always severe ?**

Some people have a series of mild attacks. These usually occur in the evening when the pupil is more dilated, partially blocking off the angle of the eye. The vision may seem misty with coloured rings around white lights. There may be some discomfort in the eye.

If you think you are having mild attacks, you should contact your eye doctor. By examining the structure of the front of the eye, your eye doctor will be able to tell if you are at risk of developing acute glaucoma.

**What is the treatment for acute glaucoma ?**

If you have an acute attack you will need to be given eye drops and oral medication to lower the pressure in the eye and constrict the pupil to open the drainage channels of the eye. Drops to control inflammation will also be given.

When the cornea is clear enough, your eye doctor will use a laser to make a small hole in the periphery of the iris. This allows the fluid that is produced behind the iris, direct access to the drainage holes in front of the iris. This may be able to be done

immediately or may require several days of treatment first.

**What can be done to prevent an acute glaucoma attack ?**

Fot those people at risk of developing acute angle closure glaucoma a peripheral iridotomy (PI) or a lensectomy may be indicated.

A **Peripheral iridotomy** involves making a small hole in the iris with a laser. This is performed in the doctor's surgery and takes only a few minutes. There may be some minor visual disturbances following this procedure and we therefore recommend that you do not drive home afterwards.

A **lensectomy** is a surgical procedure involving the removal of the natural lens of the eye and replacing it with a thin plastic lens. The drainage of aqueous fluid is greatly improved by this intervention and should therefore assist in lowering the IOP. This procedure is performed at the Mater day surgery and requires local anaesthesia.

**Ocular Hypertension**

**What is ocular hypertension ?**

This is when the pressure inside the eye is higher than what is considered "normal". Unlike glaucoma however, there is no detectable damage to the optic nerve. Drops to reduce the pressure in the eye may be prescribed to reduce the likelihood of developing glaucoma in the future.

**Will I be able to drive ?**

Most people with glaucoma will still be able to drive if the loss of visual field is not too advanced. The visual field test will help to determine if you are still able to drive safely.