**Glaucoma**

H. V. Desai Eye Hospital specialises in dealing with all types of glaucoma, including primary, secondary, paediatric and end-stage glaucoma. At present, glaucoma is the second most common cause of blindness. As compared to cataract, it causes irreversible vision loss. Hence, our main purpose is to preserve vision and avoid the progression of blindness. We are equipped with all the latest modalities for the diagnosis and treatment of glaucoma that is available in most modern healthcare centres.

**INTRODUCTION**

**What is Glaucoma?**

Glaucoma is a disease of the eye in which pressure within the eye, i.e. intraocular pressure, increases. If left untreated, it is likely to result in permanent damage to the optic nerve that transmits images to the brain, which results in complete and irreversible blindness. In most cases, the cause of intraocular pressure cannot be ascertained, however, in some cases, it has been found to be caused by either trauma or the usage of certain medications.

**What are the different types of Glaucoma?**

There are two main types of glaucoma: open-angle and closed-angle (angle closure) glaucoma. Normally, fluid in eye flows from behind pupil to a place between the iris and cornea, which is known as the angle of the eyes. This angle has a sieve-like structure that is known as the trabecular meshwork.

**Open-Angle Glaucoma (OAG)**

This is the most common type of glaucoma, which usually occurs in old age. In most cases, it affects both the eyes of a patient. In several cases, it goes undetected until it reaches a very advanced stage, as there are no prominent symptoms during its early stages. This type of glaucoma is usually. Hence, relatives of patients diagnosed with OAG are advised to undergo regular eye check-ups, which enables the early detection of the condition and helps prevent its progression to blindness.

**Closed-Angle Glaucoma (acute angle-closure glaucoma)**

This condition is usually detected when a patient experiences pain and rapid vision loss. Fortunately, permanent damage is uncommon due to this condition as patients normally seek immediate medical help for these symptoms, which leads to prompt diagnosis and treatment.

**Signs and symptoms of closed-angle glaucoma:**

* Eye pain, usually severe
* Blurred vision
* Eye pain is often accompanied by nausea and sometimes vomiting
* Lights appear to have extra halo-like glows around them
* Red eyes
* Sudden and unexpected loss of vision, especially in dim light

Other types of glaucoma: traumatic glaucoma, congenital glaucoma, drug-induced glaucoma, pseudoexfoliative glaucoma, etc.

**Who are at the High Risk of Suffering from Glaucoma?**

Most often, glaucoma occurs in adults aged over 40 years, however, it can also occur in young adults, children, and infants. Some of the cases that are highly likely to suffer from glaucoma are listed below:

* People aged over 40 years
* People with a family history of glaucoma
* East Asians, because of their shallower anterior chamber depth, as opposed to Caucasians
* People suffering from diabetes
* Some eye injuries, especially severe ones
* People with myopia (near-sightedness)
* Patients on long-term corticosteroids and metabolic disorders are highly likely to develop several different conditions, which include glaucoma. The risk is even higher in case of patients who regularly use eye drops that contain corticosteroids

**Tests for the Diagnosis of Glaucoma**

**Clinical Examination**

A routine eye check-up by an ophthalmologist is useful for the detection of glaucoma as well as the possibility of glaucoma, also known as glaucoma suspects. The following tests are used to confirm the diagnosis of glaucoma:

**Eye-Pressure Test**

This test involves the usage of a tonometer (applanation tonometer), a device that measures intraocular pressure (pressure inside the eye). An anaesthetic drop and a dye is administered into the cornea, following which the doctor holds a blue light against the eye to measure pressure. This test enables the determination of an increase in pressure in the eyes, which is a risk factor for open-angle glaucoma. The doctor also measures the corneal thickness, because it affects how the pressure inside the eye is interpreted.

**Pachymetry**

This test measures the central corneal thickness. It is useful for the determination of corrected intraocular pressure, which changes depending upon the thickness of the cornea.

**Gonioscopy**

This test involves the examination of the area where the fluid is drained out of the eye. It helps determine whether the angle between the cornea and the iris is open or blocked (closed). It also helps observe the narrow angle and open angle. It is performed routinely in all patients at our hospital.

**Optic Nerve Evaluation:**

A detailed evaluation of the optic nerve using special lenses.

**Perimetry Test**

It is also known as a visual field test. It determines which area of the patient's vision is missing. The patient is shown a sequence of light spots and asked to identify them. Some of the dots are located in a person's peripheral vision, i.e. the part of vision that is initially affected by glaucoma. If the patient cannot see those peripheral dots, it means that some vision damage has already occurred. This test is a gold standard in the follow up of glaucoma patients. It has to be repeated regularly to check the progression of the disease. H.V. Desai Eye hospital performs visual field analysis with the help of the Humphrey Field Analyser (perimeter) for visual field analysis.

**OCT**

This is one of the most advanced technologies available for the testing of glaucoma. This test provides an analysis of the optic nerve and nerve fibre layers that are mainly involved in glaucoma.

**Treatment for Glaucoma**

Glaucoma Treatments involve either improving the flow of fluid inside the eye, or reducing its production, and sometimes both. The damage caused by glaucoma is irreversible. Even the disease itself cannot be completely cured. However, regular check-ups and proper treatment can considerably slow down the progression of the disease, as well as prevent further loss of eyesight.

**Medications**

**Eye Drops**

In majority of cases, initial treatment includes the prescription of eye drops. As glaucoma lasts for a lifetime, patients are required to strictly adhere to regular medication for best results as well as to prevent undesirable side effects. They must follow the doctor's instructions carefully.

**Tablets**

If eye drops are not effective enough and the pressure is very high, the doctor is likely to prescribe certain tablets for a short period of time. Regular check-ups and the regular use of the prescribed medicines (eye drops) are very important to control glaucoma, as vision lost due to glaucoma is very difficult to restore.

**YAG Laser Surgery for Angle-Closure Glaucoma**



This laser procedure is usually carried out through the creation of a tiny hole in the iris, which allows fluids to pass into the trabecular meshwork. It is usually known as iridotomy. Even if only one eye is affected, the doctor is likely to decide to treat both eyes, because this type of glaucoma often affects the other eye as well.

**SLT (Selective Laser Trabeculoplasty)**



This laser is useful in cases of raised intra ocular pressure that cannot be controlled by multiple drugs, in case of patients who are unable to undergo surgery because of other physical conditions, as well as for patients who are not willing to undergo surgical procedures.

**Surgery**

Surgical intervention becomes inevitable in case drugs do not work or in cases where patients are unable to tolerate them. Usually, the aim of surgery is to reduce the pressure inside the eye. Some of the surgeries for the treatment of glaucoma are listed below:

**Trabeculectomy**

Trabeculectomy is a standard surgery for glaucoma. This surgery involves the creation of an opening in the eye wall to improve fluid outflow and decrease intraocular pressure. It reduces the need for anti-glaucoma eye drops. The success of this surgery can be improved by using an additional medicine called mitomicin C and an Ologen implant.

**Trabeculectomy with Ologen**

A biodegradable porous collagen-glycosaminoglycan copolymer matrix implant (Ologen) has become available for glaucoma surgery. This implant is useful for the prevention of the long-term failure of trabeculectomy surgery as it helps maintain a controlled outflow of aqueous and IOP under normal levels.

**Triple Surgery in Glaucoma**

This procedure is recommended for patients suffering from cataract with glaucoma. It is a combination of a cataract surgery (phaco emulsification) and the implantation of an intraocular lens with trabeculectomy.

**Trabeculectomy with Trabeculetomy**

This is a special type of surgery for new borns or infants suffering from glaucoma, in which early intervention is required to control intraocular pressure as well as to avoid the damage of the optic nerve at an early age.

**Faculty :**

**Consultants**

A team of two well-qualified and experienced glaucoma consultants are available at HVD:

Dr. Vidya Chelerkar

Dr. Kalyani V.K.S.

**Fellows**

There are two long-term fellows available for patient examination and evaluation.

**Optometrists**

We have a team of well-trained optometrists for primary work and to perform all the tests.

**Staff**

Ancillary staff is available for guiding patients to the proper stations and maintaining order.