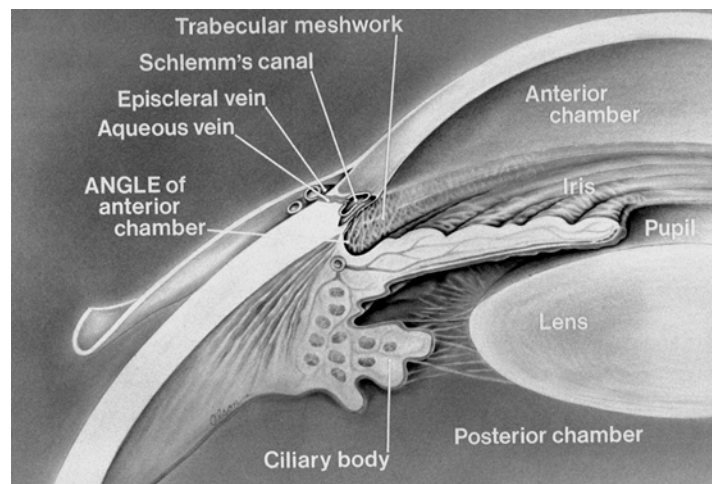


Glaucoma: An Introduction

Glaucoma is a major health problem and it is estimated that 3 million people in the United States have this disease, and that as many as half of them may be unaware of the problem. Every year over 100,000 Americans develop glaucoma. In the United States glaucoma is the second most common cause of legal blindness. Approximately 100,000 Americans are legally blind from glaucoma and many more have visual impairment. Glaucoma is the leading cause of preventable blindness. Even though there is no cure for glaucoma, with proper treatment, blindness can be prevented in 90% of the cases.

What causes glaucoma?

Glaucoma, for reasons that are not completely understood, is a disease that causes damage to the eye's optic nerve. It typically occurs when the normal fluid pressure inside the eyes rises. I like to make the analogy that your eye is filled with fluid (the aqueous humor which fills the anterior chamber) like a tire is filled with air. The more air in the tire, the higher the pressure will be. In the case of the eye, there are glands (in the ciliary body) that secrete fluid into the eye and there are outflow channels (Trabecular meshwork, Schlemm's canal, Episcleral veins, and Aqueous veins) where the fluid drains out of the eye. In glaucoma, the outflow channels don't work as well so fluid is coming in faster than it is going out; consequently the pressure of the eye gradually builds. The pressure, we think, can build to a level where it affects the circulation of blood to the optic nerve. If the optic nerve does not get enough blood nerve fibers die, and over a period of time, vision loss can occur.



Another theory is that the pressure of the eye simply compresses the optic nerve fibers and eventually destroys them. The optic nerve fibers that typically die first in glaucoma are the ones responsible for side vision. Since a person's side

vision is so wide, oftentimes they are unaware of side vision changes until the damage from glaucoma is already occurring.

Although glaucoma typically occurs from high-pressure, sometimes it can occur when the pressure of the eye is in a normal range or even lower than normal.

What are the different types of glaucoma?

1. Open angle glaucoma, sometimes referred to as "primary" or "chronic" glaucoma is the most common type. The pressure of the eye gradually builds over time without any symptoms during the early stages.
2. Closed angle glaucoma, sometimes referred to as "acute" or "narrow angle" glaucoma, causes a rapid buildup of pressure in the eye, resulting in severe eye pain, nausea, blurred vision, and the appearance of rainbow colored halos around lights.
3. Normal tension glaucoma, sometimes referred to as "low tension" glaucoma, causes damage to the optic nerve in people where the eye pressure is in either an average range or even lower than average range. This can sometimes occur when there is compromised blood flow to the optic nerve due to carotid or cardiovascular disease. Sleep apnea is another condition that may be a predisposing factor.
4. Congenital glaucoma occurs in children born with a defect in the drainage system of the eye. Generally these children have obvious symptoms such as cloudy eyes, sensitivity to light, and excessive tearing. If treatment (typically surgery) is done promptly, these children have an excellent chance of having good vision.
5. Secondary glaucomas can develop as complications of other medical conditions. They are sometimes associated with eye surgery, advanced cataracts, eye injuries, certain eye tumors, excessive pigment or pseudoexfoliation in the eyes, corticosteroid drug use, or in association with diabetes.

What are the symptoms of glaucoma?

Unless a person has "closed angle glaucoma" there are no symptoms in the early stages, which is why glaucoma is often called the "sneak thief of sight"; vision stays normal, and there is no pain. However, as the disease progresses a person may notice his or her side vision gradually failing. Objects in front may still be seen clearly but objects to the side may be missed. Eventually "tunnel vision" may occur, and at the end stage of the disease little or no vision may remain. Even though sight lost to glaucoma cannot be restored, glaucoma can usually be controlled 90% of the time if detected early.

How is glaucoma diagnosed?

It has been said that diagnosing glaucoma can sometimes be more complicated than treating it. Glaucoma is detected through a comprehensive eye examination that includes:

1. Applanation Tonometry This is an instrument that measures the pressure inside the eye. This is the most accurate way to measure the pressure by making slight contact with the eye. It is done using numbing drops.
2. Pachymetry This is an instrument that measures the thickness of your eye. Research indicates that individuals with thin eyes can't withstand the pressure in the eye as well as thicker eyes. Also, a modification of the pressure determined by tonometry may need to be done related to the thickness of the eye.
3. Visual field test This test measures your peripheral vision which is the first area of vision loss in glaucoma.
4. Optical Coherence Tomography (OCT) This is a technologically advanced scanning of the optic nerve based on complex analysis of the reflections of light from the optic nerve and the nerve fiber layer to determine whether damage has occurred. OCT has greatly benefited both the diagnosis and management of glaucoma patients.
5. Optic nerve photography Since the appearance of the optic nerve changes during the course of this disease, having a photograph of the optic nerve for comparison purposes is valuable.

All of the above tests, excluding pachymetry, are also done on a routine basis during the management of the disease.

How is glaucoma treated?

Immediate treatment for glaucoma by lowering the pressure of the eye at the earliest possible stage can delay the progression of the disease and that's why early diagnosis is so important. Intermediate and advanced glaucoma is more difficult to treat resulting in a higher percentage of patients losing their vision.

1. Eye drops Glaucoma treatment most typically involves using eye drops. Some medications cause the eye to make less fluid and others lower the pressure by helping fluid drain from the eye.
2. Laser treatments or Surgery When eye drops fail to lower the pressure or the patient is noncompliant using their drops, surgery is the next option. Like eye drops, these procedures can be valuable in the improvement of fluid outflow or can be used to reduce the production of fluid. Laser treatments or surgery carry a greater risk of complications, including the development of cataracts, and repeat procedures may be required.

How should I use my glaucoma eye drops?

If drops have been prescribed for treating your glaucoma you need to use them properly. Proper use of your glaucoma medication can improve the medicine's effectiveness and reduce your risk of side effects. To properly apply your eye drops follow these steps:

- First, wash your hands.
- Hold the bottle upside down.
- Tilt your head back.
- Hold the bottle in one hand and place it as close as possible to the eye.
- With the other hand, pull on your lower eyelid; this forms a pocket.
- Place a drop into the lower eyelid pocket.
- Put pressure where your eyelids meet next to your nose using the thumb and index finger. You will feel a little bump on each side of the nose where the eyelids meet. This is called "punctual occlusion". Try to keep your eyes closed for 2 minutes after you place the drops in your eyes.
- If you are using more than one eye drop, be sure to wait at least five minutes before applying the second eye drop.

How often will I need to be examined?

Glaucoma, like other chronic diseases, requires an establishment of a strong physician-patient relationship, ongoing therapeutic regimen, and regular office visits. After the initial examination and diagnosis, the average patient needs to be seen 3-4 times yearly. The pressure of the eye will be checked regularly during the year, visual field studies and OCT testing will be done at least one time per year.

Glaucoma: A Family Matter

Open angle glaucoma, which accounts for 90% of glaucoma cases, can be hereditary in nature. According to a study by Johns Hopkins School of Medicine, blood relatives of people with glaucoma oftentimes don't realize they are at greater risk for developing this disease. Family members of those with glaucoma have a 10 times greater risk than the normal population. Johns Hopkins researchers discovered that the lack of knowledge about glaucoma risk factors, including heredity, stems from lack of patient education. Eye doctors, they say, have to do more than ask about family history. They need to say directly, "If you have glaucoma, your siblings and your children may be at risk, and they need a comprehensive eye examination".

The Johns Hopkins study is important because glaucoma is largely without obvious symptoms until the disease is well advanced. When glaucoma is caught early, eye drops, laser treatment, or surgery can delay its progression by lowering the elevated pressure in the eye that ultimately damages the optic nerve.

Blanco Eye Associates: Our Philosophy:

It has been said that to be successful at anything, two essential elements are required, intention and attention. We take our work very seriously and it is our intention to provide the highest quality of care in glaucoma management. I personally have made a commitment to give appropriate attention to stay abreast of every new development in the field of glaucoma care. This requires constant reading, seminars, and a system of e-mail alerts regarding new research and breaking news. It also requires a commitment to equip my office with the best/newest technology available, and to sincerely care about the visual well-being of our patients. We have made that commitment!

I sincerely appreciate the opportunity to be your doctor.

Thank you,
Jeffrey Blanco, OD