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## **Glaucoma**

How does the optic nerve get damaged by open-angle glaucoma?

Several large studies have shown that eye pressure is a major risk factor for optic nerve damage. In the front of the eye is a space called the anterior chamber. A clear fluid flows continuously in and out of the chamber and nourishes nearby tissues. The fluid leaves the chamber at the open angle where the cornea and iris meet. When the fluid reaches the angle, it flows through a spongy meshwork, like a drain, and leaves the eye.

In open-angle glaucoma, even though the drainage angle is "open", the fluid passes too slowly through the meshwork drain. Since the fluid builds up, the pressure inside the eye rises to a level that may damage the optic nerve. When the optic nerve is damaged from increased pressure, open-angle glaucoma—and vision loss—may result. That's why controlling pressure inside the eye is important.

Another risk factor for optic nerve damage relates to blood pressure. Thus, it is important to also make sure that your blood pressure is at a proper level for your body by working with your medical doctor.

Some people with high eye pressure do not develop glaucoma, and some people develop glaucoma without having high eye pressure.

### **Glaucoma Symptoms**

At first, open-angle glaucoma has no symptoms. It causes no pain. Vision stays normal. Glaucoma can develop in one or both eyes.

Without treatment, people with glaucoma will slowly lose their peripheral (side) vision. As glaucoma remains untreated, people may miss objects to the side and out of the corner of their eye. They seem to be looking through a tunnel. Over time, straight-ahead (central) vision may decrease until no vision remains.

Questions: 1. What is open-angle glaucoma? Summarize it to the best of your ability.

2. What happens to vision if glaucoma is not treated?

## **Cataracts**

### **What is a cataract?**

A cataract is a clouding of the lens in the eye that affects vision. Most cataracts are related to aging. Cataracts are very common in older people. By age 80, more than half of all Americans either have a cataract or have had cataract surgery.

A cataract can occur in either or both eyes. It cannot spread from one eye to the other.

In a normal eye, light passes through the transparent lens to the retina. Once it reaches the retina, light is changed into nerve signals that are sent to the brain.

The lens must be clear for the retina to receive a sharp image. If the lens is cloudy from a cataract, the image you see will be blurred.

Types of cataracts:

1. **Secondary cataract.** Cataracts can form after surgery for other eye problems, such as glaucoma. Cataracts also can develop in people who have other health problems, such as diabetes. Cataracts are sometimes linked to steroid use.
2. **Traumatic cataract.** Cataracts can develop after an eye injury, sometimes years later.
3. **Congenital cataract.** Some babies are born with cataracts or develop them in childhood, often in both eyes. These cataracts may be so small that they do not affect vision. If they do, the lenses may need to be removed.
4. **Radiation cataract.** Cataracts can develop after exposure to some types of radiation.

Questions: 1. Which eye structure is affected by cataracts?

2. Why would a cloudy lens blur an image, knowing what you know about the retina?

3. Summarize secondary cataracts.

Macular degeneration

Macular degeneration, or age-related macular degeneration (AMD), is a leading cause of vision loss in Americans 60 and older. It is a disease that destroys your sharp, central vision. You need central vision to see objects clearly and to do tasks such as reading and driving.

AMD affects the macula, the part of the eye that allows you to see fine detail. It does not hurt, but it causes cells in the macula to die. There are two types: wet and dry. Wet AMD happens when abnormal blood vessels grow under the macula. These new blood vessels often leak blood and fluid. Wet AMD damages the macula quickly. Blurred vision is a common early symptom. Dry AMD happens when the light-sensitive cells in the macula slowly break down. You gradually lose your central vision. A common early symptom is that straight lines appear crooked.

Regular comprehensive eye exams can detect macular degeneration before the disease causes vision loss. Treatment can slow vision loss. It does not restore vision.

Questions: 1. Compare and contrast wet and dry macular degeneration. What seems to be the biggest difference?

2. Is macular degeneration curable?