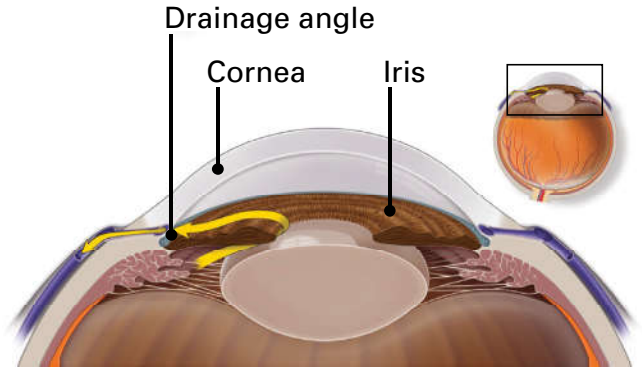
Pigment Dispersion Syndrome

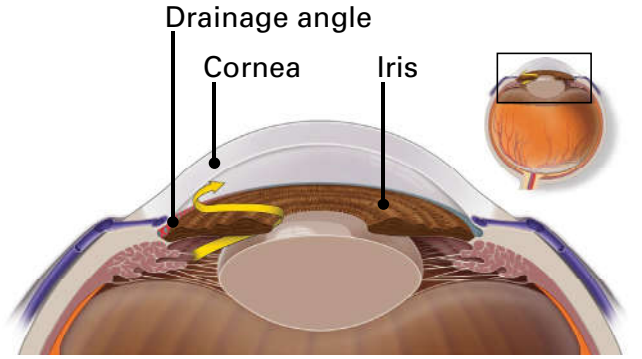
What is pigment dispersion syndrome?

Pigment is the material that gives your **iris** its color. Pigment dispersion syndrome (PDS) happens when the pigment rubs off the back of your iris. This pigment then floats around to other parts of the eye. The tiny bits of pigment can clog your eye's **drainage angle**. This can cause eye pressure problems.

Your eye maintains a healthy eye pressure by constantly making a fluid called **aqueous humor**. As new aqueous flows into your eye, the same amount should flow out. If enough fluid doesn't leave the eye, pressure inside the eye (intraocular pressure, or IOP) builds up over time and damages the **optic nerve**. This is called glaucoma. When PDS has progressed to this stage, it is called pigmentary glaucoma. Not everyone who has pigment dispersion syndrome will develop pigmentary glaucoma.



In a healthy eye, fluid leaves the eye through the drainage angle, keeping pressure stable.



If the drainage angle is blocked, fluid cannot flow out of the eye, causing pressure to increase.

What are symptoms of pigment dispersion syndrome?

Many people with PDS do not have any symptoms. Some people may have blurring of vision or see halos.

Even if you have pigmentary glaucoma, you may not notice any symptoms. In time, as the optic nerve becomes more damaged, you may notice that blank spots begin to appear in your field of vision. You usually won't notice these blank spots in your day-to-day activities until the optic nerve is significantly damaged and these spots become large. If all of the optic nerve fibers die, blindness results.

Who is at risk for pigment dispersion syndrome?

PDS is more likely to be diagnosed at a young age, when people are in their 20s or 30s. Other types of glaucoma are more commonly diagnosed after the age of 40. The disease is more common among males and Caucasians and may be inherited (passed from parent to child). People with myopia (nearsightedness) are also more likely to be diagnosed with pigment dispersion syndrome.

How is pigment dispersion syndrome diagnosed?

Because there are often no symptoms, PDS is usually diagnosed during a regular eye exam. That is why it is so important to have an eye exam with your ophthalmologist.

During a thorough eye exam, your ophthalmologist will:

- check your eye pressure
- do other tests like a gonioscopy, if PDS is suspected. This lets your ophthalmologist look at the eye's drainage angle. He or she can see if something is blocking the fluid from leaving the eye.

These tests are the same used for a glaucoma diagnosis and will determine if you have pigmentary glaucoma. Your ophthalmologist will be looking for tell-tale signs of pigment floating in the eye (including at the back of the cornea) or small sections of pigment missing from your iris.

How is pigment dispersion syndrome treated?

Treatment for pigment dispersion syndrome varies depending on how it is affecting your IOP.

For pigment dispersion syndrome with normal or only slightly elevated IOP, there is a low risk of damage to the optic nerve. No treatment is needed other than seeing your ophthalmologist one time each year. He or she will monitor your condition by checking your IOP and looking for any changes in your vision.

Eye Words to Know

Aqueous humor: Clear liquid inside the front part of our eyes. It nourishes the eye and helps it hold its shape. (Aqueous is different from tears.)

Optic nerve: A nerve at the back of your eye that connects to your brain. The optic nerve sends light signals to your brain so you can see.

Drainage angle: The area of the eye where the aqueous humor drains from the front of the eye.

Iris: The colored part of your eye. It controls the size of your pupil to let light into your eye.

For pigment dispersion syndrome with elevated IOP, there is a greater risk of damage to the optic nerve. To lower IOP, you may be treated with medicated eye drops or laser therapy.

When IOP from PDS is so high that it damages the optic nerve, this is then called "pigmentary glaucoma." In this case, treatment is needed and it may be medicated eye drops, laser therapy, or surgery.

Treatments

Medicated eye drops. Glaucoma is usually controlled with eye drop medicine. Used every day, these eye drops lower eye pressure. Some do this by reducing the amount of aqueous fluid the eye makes. Others reduce pressure by helping fluid flow better through the drainage angle.

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Laser therapy. There are two main types of laser surgery to treat glaucoma. These procedures are usually done in the ophthalmologist's office or an outpatient surgery center.

- **Trabeculoplasty.** The eye surgeon uses a laser to make the drainage angle work better. That way fluid flows out properly and eye pressure is reduced.

  Even if laser trabeculoplasty is successful, most patients continue taking glaucoma medications after surgery. For many, this therapy is not a permanent solution. Nearly half who receive this surgery develop increased eye pressure again within five years. Many people who have had a successful laser trabeculoplasty have a repeat treatment.

  Laser trabeculoplasty can also be used as a first line of treatment for some patients who can't use glaucoma eye drops.
- **Laser iridotomy** is sometimes recommended for people with pigment dispersion syndrome. If their iris bows backwards, this causes the iris to rub against the lens and release too much pigment.

  A laser creates a small hole about the size of a pinhead through the outer edge of the iris (either at top under the eyelid, or at the side). This allows the iris to become more flat and decreases the amount of pigment floating freely in the eye. This treatment may also help control eye pressure in the early stages of pigmentary glaucoma. But it is not done if much damage to the optic nerve has already occurred. This hole is not visible to the naked eye in most patients.

Operating room surgery. Some glaucoma surgery is done in an operating room. It creates a new drainage channel for the aqueous humor to leave the eye. Two of the most commonly done surgeries are:

- **Trabeculectomy.** This is where your eye surgeon creates a tiny flap in the sclera (white of your eye). He or she will also create a bubble (like a pocket) in the conjunctiva called a filtration bleb. It is usually hidden under the upper eyelid and cannot be seen. Aqueous humor will be able to drain out of the eye through the flap and into the bleb. In the bleb, the fluid is absorbed by tissue around your eye, lowering eye pressure.
- **Glaucoma drainage devices.** Your ophthalmologist may implant a tiny drainage tube in your eye. It sends the fluid to a collection area (called a reservoir). Your eye surgeon creates this reservoir beneath the conjunctiva (the thin membrane that covers the inside of your eyelids and white part of your eye). The fluid is then absorbed into nearby blood vessels.

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Summary

Pigment dispersion syndrome (PDS) happens when the pigment rubs off the back of your iris. This extra pigment floats around in other parts of the eye, besides the iris, where it is supposed to be. This can cause eye pressure problems and lead to pigmentary glaucoma.

If you have pigment dispersion syndrome, you should see your ophthalmologist regularly. He or she can make sure it isn't causing damage and progressing to pigmentary glaucoma.

Get more information about eye health from EyeSmart—provided by the American Academy of Ophthalmology—at **aao.org/eyesmart**.

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