GENERAL INFORMATION

RETINAL CONDITIONS

vision eye institute

WHAT ARE RETINAL CONDITIONS?

Retinal conditions affect the light-sensitive tissue at the back of eye known as the retina. They include diseases that affect the part of the retina responsible for central vision (the macula) and the gel that sits in front of the retina (the vitreous).

The retina acts like the film of a camera, sending information about shapes, colours, patterns and movement via the optic nerve to the brain, where the information is processed into the final image that we see.

DAMAGE TO THE RETINA CAUSES VISUAL DISTURBANCES OR LOSS OF VISION.

The main conditions that affect the retina are:

Macular degeneration: A group of degenerative diseases of the macula that cause loss of central and fine-detail vision. Treatment to stop or slow the progression of the wet form includes eye injections and photodynamic therapy. Currently, there is no approved treatment for the dry form, but extensive research is underway to develop new therapies.

Diabetic retinopathy: An eye disease caused by the persistently high blood sugar levels that occur with diabetes. Depending on the stage of disease, treatment includes eye injections, retinal laser treatment and vitrectomy surgery (keyhole surgery to remove the vitreous). The most advanced stage of the disease is an ocular emergency that can cause total vision loss.

Retinal vein occlusion: Vision loss that occurs when the veins in the retina are blocked and the build-up of pressure causes smaller downstream blood vessels to leak. The blockage can occur in a smaller branch retinal vein with vision loss restricted to part of the visual field (branch vein retinal occlusion) or a central vein with the entire visual field affected (central vein retinal occlusion).

Retinal detachment: A serious condition in which the retina lining the back of the eye separates from the wall of the eye. If untreated, it can lead to permanent blindness. Surgery is usually needed to reattach the retina.

Retinal tear: A tear in the retinal tissue that is not usually as serious as a retinal detachment but can develop into a retinal detachment if untreated. Retinal laser treatment is effective for retinal tears.

Macular hole: A small hole in the macula caused by the age-related shrinkage of the vitreous, which pulls on the macula. The first sign is usually blurring or distortion of central vision. A vitrectomy surgery is usually needed to improve vision.

Retinitis pigmentosa: A group of genetic diseases that damage the retinal rod and/or cone cells (photoreceptors which are responsible for detecting light), causing vision loss. Although most forms of the condition are not treatable, gene therapy has recently been shown to benefit some patients with specific disease mutations.

Epiretinal membrane (macular pucker): A thin sheet of scar-like tissue that grows on the surface of the macula and interferes with central vision. Your doctor will monitor progression using an OCT scan. Vitrectomy surgery may be recommended to prevent vision loss.

Eye floaters: Specks or smudges that float around your field of vision, caused by degeneration of the clear, jelly-like fluid that fills your eye (the vitreous). Most floaters are harmless, but they may also be a sign of more serious retinal conditions. New floaters should always be checked by an eye specialist. Laser treatment or vitrectomy surgery can be performed for severe floaters if they are affecting your quality of life.

What are the symptoms of a retinal condition?

Symptoms vary depending on the exact condition, for example:

- Sudden loss of vision (retinal vein occlusion, diabetic retinopathy)
- Flashing lights (retinal tear, retinal detachment)
- Shadow-like objects in your field of view (retinal detachment, diabetic retinopathy, eye floaters)
- Blurring or distortion of central vision (epiretinal membrane, macular degeneration)
- Tunnel vision or poor night vision (retinitis pigmentosa).

HOW ARE RETINAL CONDITIONS DIAGNOSED?

RETINAL EXAMINATION

The examination usually begins with an ophthalmoscope to look inside the eye and directly visualise the retina at the back of the eye. This requires your pupils to be dilated using eye drops.

After dilating your pupils, your ophthalmologist may use a special condensing lens and a bright light, usually mounted on their forehead, to evaluate the retina, the optic nerve and tiny blood vessels. A retinal tear or retinal detachment can often be detected during this type of examination.

Your pupils remain dilated for approximately 4 to 6 hours and your vision will be blurry, so you may not be able to drive home – you may need to make other travel arrangements.

Other tests may be necessary to assess the severity of your condition, diagnose other retinal conditions and guide treatment.

DIGITAL RETINAL PHOTOGRAPHY

High-resolution photographs are taken of your retina, macula, optic nerve and blood vessels. The photographs help your ophthalmologist detect changes in these areas.

FLUORESCEIN ANGIOGRAPHY

A fluorescein angiogram uses a fluorescent dye to show any blockages or leaks in the tiny blood vessels supplying the retina. The dye is usually injected into a vein in your arm and flows through the blood system to the vessels at the back of the eye. Your ophthalmologist can detect any blockages or leaks and will use a special camera to take photographs. Your vision will be blurred for up to 12 hours after this test.

OPTICAL COHERENCE TOMOGRAPHY (OCT)

OCT is a non-invasive test that captures detailed images of the retina. This scan allows your doctor to identify areas of retinal thinning, thickening or swelling caused by fluid build-up and leaking blood vessels. The OCT scans your eyes without making direct contact. The procedure takes less than 10 minutes.

AMSLER GRID

This is a simple test you can do at home to alert you to any vision changes that may indicate the presence of macular degeneration or epiretinal membrane. The Amsler Grid contains a series of horizontal and vertical lines with a dot in the middle (see page 11). If the lines appear wavy or lines are missing, have your eyes checked immediately.

HOW ARE RETINAL CONDITIONS TREATED?

Retinal conditions can be treated with laser treatment, surgery or eye injections.

Retinal laser treatment

The two most common diseases treated with laser are retinal tears (to seal the retinal layers together) and diabetic retinopathy (to stop leakage from small blood vessels that cause swelling or to stop new blood vessels from growing). Laser treatment aims to lower the risk of further vision loss.

Vitrectomy

Vitrectomy is keyhole surgery to remove the vitreous gel (the clear, jelly-like fluid inside your eye). Once the vitreous is removed, it is replaced with sterile saline or a temporary bubble of gas. Alternatively, silicone oil may be used if the retina has been detached for a long time or if retinal scarring is present. Laser or cryotherapy (freezing) treatment is used to seal the retinal tears.

Vitrectomy is performed in a day surgery and typically takes around 20 to 45 minutes. The procedure may be needed to treat epiretinal membrane, vitreous haemorrhage, retinal detachment, macular hole, diabetic retinopathy or eye floaters.

Eye (intravitreal) injections

Eye injections are administered in the clinic or day surgery. The eye is numbed with a local anaesthetic to stop any pain. Ongoing treatment is often necessary for many retinal disorders.

- **Anti-VEGF injections** block the protein that causes abnormal blood vessel growth that occurs in many retinal conditions. They are used in the treatment of macular degeneration, retinal vein occlusion and diabetic retinopathy as well as many other conditions.
- **Steroid injections** work by reducing inflammation caused by many retinal conditions, particularly those causing macular oedema (including diabetic retinopathy, central retinal vein occlusion and postoperative macular oedema).

Other retinal treatments

- **Pneumatic retinopexy**: A gas bubble is injected into the eye and stops fluid from passing through the hole or tear in the retina, allowing it to reattach. Laser or freezing treatment is performed between 1 to 3 days after the gas injection to seal the retinal tear.
- **Cryo–buckle surgery**: A band of solid silicone rubber is stitched to the white surface of the eye (sclera) to 'buckle' it inwards against a small internal layer of tissue (retinal pigment epithelium), pushing the detached retina against the wall of eye. Freezing treatment (cryo) is used to create a seal between the retina and the wall of the eye and closes up the tear or hole.
- **Photodynamic therapy**: A treatment for wet age-related macular degeneration, where a light-sensitive drug is injected into the bloodstream and activated by shining a laser light into the eye. The activated drug creates blood clots that block the abnormal blood vessels.

FAQs

Can I check my retina or macula for signs of damage myself?

No. Your retina lines the inside of the back of your eye and must be examined by an optometrist or ophthalmologist using special equipment. Eye drops are used to dilate the pupil to allow proper examination. However, you may be able to use an Amsler Grid to identify signs of change to your central vision. Any concerns should be investigated immediately.

Why do I need surgery for a detached retina?

If surgery to reattach your retina is not performed, there is a high chance you will lose your vision. The eye may also become painful later.

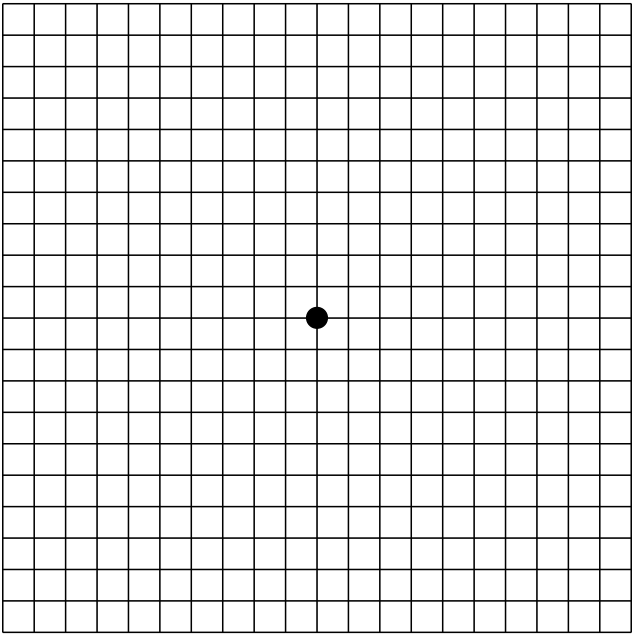
What are eye floaters and are they harmful?

Floaters are particles within the eye that float around like specks or smudges in your field of vision. They occur when the vitreous – the clear, jelly-like fluid that fills your eye – degenerates with age. Floaters can be harmless, but they may also be a sign of more serious retinal conditions, including retinal detachment and diabetic retinopathy, so make sure you have your eyes checked.

A 10-SECOND TEST THAT COULD SAVE YOUR EYESIGHT

This Amsler Grid is used for the early detection of macular degeneration.

1. If you normally wear glasses to read, put them on.
2. Look at the grid, holding the page at your normal reading distance.
3. Cover one eye and look at the dot in the centre.
4. Without moving your eye off the dot, see whether any of the lines in the grid are wavy, missing or blurred. If this happens, please see your usual eyecare provider immediately.
5. Repeat with the other eye.



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OUR RETINAL CLINICS

For more information or to find a Vision Eye Institute clinic that treats retinal conditions, visit:
visioneyeinstitute.com.au/services/retinal-conditions/

This information is general in nature. All medical and surgical procedures have potential benefits and risks. Consult your ophthalmologist for specific medical advice.

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