Macular Hole

A macular hole is a small break in the macula, the part of your eye responsible for detailed, central vision. (Note that a macular hole is very different to macular degeneration, although the symptoms can be similar).

**How the eye works**

Light passes through the cornea at the front of your eye, and is focused by the lens onto your retina. The retina is a delicate tissue that lines the inside of your eye. The retina converts the light into electrical signals that travel along the optic nerve to your brain. The brain interprets these signals to “see” the world around you.

Light from the object you are looking at directly is focused onto a tiny area of the retina called the macula at the back of the eye. The macula is about 4mm across and is responsible for detailed central vision and most colour vision. It provides the vision you need to read, recognise faces, drive a car, see colours clearly, and any other activity that requires detailed, fine vision. The rest of the retina gives you side vision (peripheral vision).

**About macular holes**

No one knows exactly why a macular hole develops in some people and not in others. The jelly (vitreous) that fills up the space inside our eyeball changes as we get older. It becomes more watery and can move away from the back of the eye towards the centre. When this happens, the space left behind fills with fluid produced by the eye. The changes to the vitreous usually cause no problems to vision although there may be an increase in floaters or flashes in your vision. Floaters usually appear as a small darkish fleck (like a strand of cotton, or a little spider web) that moves a little around your field of vision. Any significant increase in new floaters or flashes should be examined by an eye care professional (ophthalmologist or optometrist).

In some people the vitreous jelly is firmly attached to the retina at the macula. As the vitreous shrinks, it can pull on the macula, causing a small tear. This is the start of a macular hole. Fluid can then seep into the hole, causing sight to become blurred and distorted. Over time, the hole can get bigger, causing more vision problems. If your optometrist finds or suspects you have a macular hole, you should ask for a referral to an ophthalmologist, ideally a retinal surgeon, as soon as possible.

Macular holes usually only affect one eye, though there is a 15 to 20 per cent chance that the other eye will also get a hole at some stage.
Symptoms of a macular hole

People with a macular hole will probably have changes in the central part of their vision. These changes can range from straight lines looking wavy in the early stages to a small blank patch in the centre of vision in the late stages. People may first notice that they have trouble reading small print or that there is distortion when they look at a printed page.

There are a number of different stages to a macular hole. These stages are usually classed by the size of the hole and the layers of the eye which are affected. This is important to know because in the very early stages it is possible that a macular hole may heal without any treatment. This means that sometimes an ophthalmologist will simply want to regularly monitor a very small hole before deciding to offer treatment.

However in most cases, a macular hole will get bigger and distort vision so that treatment will be needed. Treatment attempts to stop the hole developing to a stage where most central vision can be lost.

Prevention of a macular hole

There is nothing that can be done to prevent a macular hole. Diet or exercise are not thought to contribute to the problem. There is no evidence that taking any kind of medicine or vitamins can help fix a macular hole. In most cases the best treatment is surgery. Having an eye test at least every two years is the best way to help ensure that any eye issues are detected early.

Treatment of a macular hole

Most macular holes require surgery.

The eye surgeon will normally want to operate on a macular hole within six months of it being found. The longer a hole is left, the larger it will normally become and the harder it is to successfully close the hole. In most cases, surgery will stop the vision problems getting worse. Most people will notice some improvement in vision, and more than 50% of cases will gain sufficient vision to allow driving and reading. It is rare, however for “perfect” vision to be restored.

There are two main stages to the treatment:

• Surgery to remove the vitreous and insert gas into the eye
• A recovery period when the gas pushes the retina back into place and the hole closes.

Surgery for macular hole

Macular hole surgery, called a vitrectomy, is generally performed under local anaesthetic. The eye surgeon will remove most of the vitreous jelly in your eye, leaving a space into which a gas is inserted. The surgeon will also normally peel away a fine membrane across the back of the eye.
A gas is inserted into the eye which helps the edges of the macular hole to close together. After a period (usually 2-6 weeks), the gas is gradually absorbed by the body and is replaced with the natural fluid made by the eye.

**Recovery from surgery**

Over 90% of holes will close after surgery. While the gas is in place it is normal for the vision to be poor. When this gas has been absorbed and fluid has taken its place, sight should improve. In many people, it may take several months for some improvement to occur. However in others, the operation’s main effect is to stop the sight becoming any worse. Patients who have not had previous cataract surgery may start to notice gradual blurring of vision after several months due to the beginning of cataract formation. The symptoms are **not** the same as those of the macular hole.

It is uncommon to have a macular hole in both eyes, so even in the rare cases where the hole doesn’t close, most people have good vision in their other eye.

**Posturing**

Until recently, most people having macular hole surgery were required to spend a significant period after the operation with their head facing downwards. This is known as “posturing”. However it is becoming increasingly common for posturing to be unnecessary. There may be some situations where it is still needed. The surgeon will explain whether or not posturing is required and if so, for how long.

If the surgeon decides that you need to posture, you will need to plan some things before the operation and you will probably need some help afterwards. Staying face down for several days can be difficult and may be made more difficult if you have other problems such as arthritis. It is important to discuss with the surgeon any other medical problems that may affect your ability to posture. In some cases it may be possible to get short term help from social services.

**Tips for posturing**

Usually **50 minutes out of every hour** need to be spent face down, although your surgeon may recommend otherwise. Time off from posturing is usually allowed for things such as eating, using the bathroom and applying post-surgery eye drops.

It is not necessary to lie completely flat and many people posture whilst sitting in a chair. Trying out different posturing positions can help avoid stiffness and boredom. For example:

- sitting at a table and leaning forwards onto the table
- sitting in an armchair leaning onto a small stool
- when lying in bed propping pillows on either side of you can stop you rolling onto your back
Preparing for posturing
Preparation before you go into hospital is important as you will be expected to start your posturing as soon as you return home. Before you go into hospital consider things such as:

- doing housework and ensuring the home is clear of trip hazards
- shopping and food preparation (eg prepare frozen meals)
- arrange delivery of meals or other social services
- talk to your surgeon about renting a posture table or head rest with a cut out for your face. You can also contact the Foundation for information on where these can be obtained. It may take a week or so for these to be delivered, so be sure to leave enough time.
- make sure your posturing furniture or aids are in the right place
- if you live alone, arrange for someone to stay with you

Consider your needs while you are posturing, for example:

- keep the things you may need frequently close by, eg, tissues, drinks, books, phone
- to help with drinking, consider the use of a straw
- for entertainment, watching TV may not be possible so have a radio or music close by. If you use a laptop computer or a tablet such as an iPad, you should still be able to use these while face down.

Complications of macular hole surgery
There are two main complications associated with the operation.

**Cataracts**
A cataract is a clouding of the lens inside the eye. If you haven't previously had a cataract removed from the eye that now has the macular hole, it is almost certain that a cataract will form in the months or years after macular hole surgery. The cataract can usually be removed in the normal way once it starts to affect vision. Many people eventually develop cataracts even if they don't have a macular hole. Macular hole surgery may just make a cataract form somewhat earlier. If you already have a cataract forming, many surgeons will perform macular hole surgery and cataract surgery at the same time.

**Retinal detachment**
When the eye surgeon removes the vitreous jelly or peels the membrane from the retina, there is a small chance that the retina may detach from the back of the eye. If this happens then usually steps will be taken to reattach the retina as soon as possible, sometimes during the surgery.

You should talk to your surgeon about these and other possible complications.
Managing vision loss

Macular hole surgery normally helps maintain good vision. Rarely, a second operation may be needed to help close the hole. If this is unsuccessful, central vision will generally be lost (as happens with an untreated macular hole), but peripheral (side) vision remains normal. If sight in the other eye is still good, most people adjust quite quickly and can maintain most normal activities.

If vision in both eyes is poor, extra help may be needed. When managing vision loss, a key priority is maintaining quality of life and independence. Contacting a low vision organisation can be helpful as they can work with you to assess your individual needs and determine which aids and technologies can help. There are many excellent solutions to help you live well with low vision.

Contact Macular Disease Foundation Australia to discuss your low vision needs and to receive free information on low vision.
Macular Disease Foundation Australia Resources

Macular Disease Foundation Australia has developed a comprehensive range of publications on macular degeneration, diabetic eye disease and other macular diseases. Information and advice on living well with vision loss is also available. Call the Foundation for a free information kit or to register to receive newsletters and invitations to attend education sessions and events.

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