BEAVRS
British and Eire Association of Vitreoretinal Surgeons

Macular Hole

What is the macula?

The back of the eye has a light-sensitive lining called the retina, like the film in a camera. Light is focused through the eye onto the retina, allowing us to see. The centre part of the retina is called the macula - it is here that light must be focused for us to see fine detail, to be able to read and to see in colour.

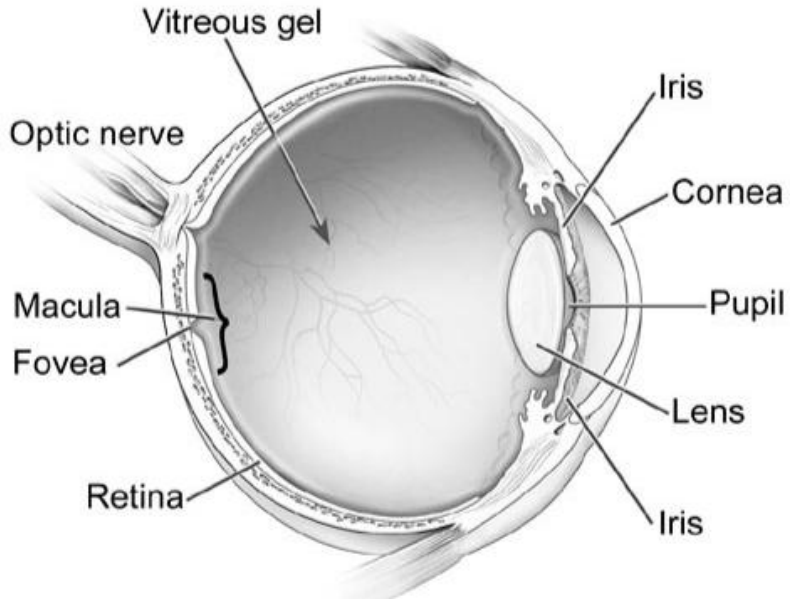

*Image courtesy of the National Eye Institute http://www.nei.nih.gov

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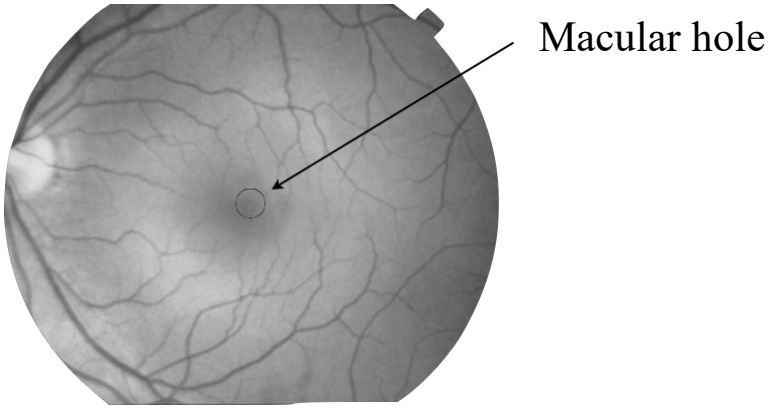
What is a macular hole?

A macular hole is a small, circular gap which opens at the centre of the retina. This causes blurred vision and often distorted vision where straight lines or letters look wavy or bowed. There may also be a patch of missing vision at the centre.



Is a macular hole the same as age-related macular degeneration?

No, macular holes and macular degeneration are different conditions although they affect the same area of the eye. They can sometimes both be present in the same eye.

Cross-section of a healthy macula

Cross-section of a macula with a macular hole

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Why does it happen?

We do not know why macular holes develop. They most often occur in people aged 60-80 and is twice as common in women as men. We are increasingly aware that it is mainly slightly long-sighted people who are affected. Other causes of macular holes include severe trauma to the eye, being very short sighted (myopic), those who have had a retinal detachment or because of longstanding swelling of the central retina (cystoid macular oedema).

What would happen if I did not have my macular hole treated?

If untreated, there is a small chance, about 1 in 10, that some macular holes can close spontaneously, with improvement in vision. In the majority of patients, the central vision will gradually get worse to a level where the patient is unable to read even the largest print on an eye test chart. The condition does not affect the peripheral vision, and so patients will not go completely blind from this condition.

Can I develop a macular hole in my other eye?

Careful examination can assess the risk of developing a macular hole in the other eye. Your surgeon will tell you your risk, but this may be from extremely unlikely to a 1 in 10 chance. It is very important to monitor for any changes in vision of the fellow eye, and report these to your eye specialist/family doctor/optician urgently.

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What is the treatment & how successful is it?

A macular hole can often be repaired by an operation called a Vitrectomy, peel and gas. Extra steps may be done during this surgery depending on the type of macular hole that is present. There are also some types of macular holes for which surgery is not usually performed and which may close without surgery.

If the hole has been present for less than a year, the operation will be successful in closing the hole in about 90% of cases. Of these, more than 70% will be able to see two or three lines more down a standard vision chart, compared to before the operation. Even if this degree of improvement does not occur, the vision is at least stabilized, and many patients find that they have less distortion. In a minority of patients, who often have very large macular holes, the hole does not close despite surgery and the central vision can continue to deteriorate; however, a second operation can still be successful in closing the hole. It is important to understand that return to completely normal vision is not possible and that vision improvement depends on factors other than purely closure of the hole, particularly the condition of the light-sensing retinal cells (photoreceptors).

Does it matter how long I have had the macular hole if I am interested in having the surgery done?

There is evidence that relatively early treatment (within months) gives a better outcome in terms of improvement in vision. Patients who have reasonable vision before surgery have a better chance of having visual improvement than those who do not. Studies have

shown, however, that vision improvement may be possible in some patients with long-standing macular holes.

What does the operation involve?

Macular hole surgery is a form of keyhole surgery performed under a microscope, using 3 small incisions (1-2 mm in size) in the white of the eye for insertion of very fine instruments. Firstly, the vitreous jelly is removed (vitrectomy), and then a very delicate layer (the inner limiting membrane) is sometimes carefully peeled off the surface of the retina around the hole to release the traction forces that keep the hole open. In complex cases, the inner limiting membrane may be used to fill the macular hole and improve closure. The eye is then filled with a temporary gas bubble, which presses against the hole to help it seal. The bubble of gas blocks the vision whilst it is present, but slowly disappears over a period of about 2-12 weeks.

How long does the operation take and do I need to have a general anaesthetic?

Macular hole surgery usually takes 45-90 minutes and can be done with the patient awake (local anaesthetic), or asleep (general anaesthetic), often as a day case procedure. Most patients opt for a local anaesthetic, which involves a numbing injection around the eye so that no pain is felt during the operation; this is sometimes supplemented with medication to reduce anxiety (sedation).

Do I have to posture face down after the operation?

The aim of face down posturing is to keep the gas bubble in contact with the hole as much as possible to encourage it to close. Whether

you are required to posture, and for how long, will depend on the size of the macular hole, and also the preferences of your surgeon. There is evidence that posturing improves the success rate for larger holes, but it may not be needed for smaller holes.

If you are asked to do some face down posturing, your head should be positioned so that the tip of your nose points straight down to the ground. This could be done sitting at a table or lying flat on your stomach on a bed or sofa. You should try to remain in this position for usually 50 minutes in each hour for the duration advised (usually 2-10 days after the operation). A short break of 10-15 minutes can be taken every hour to allow eating, trips to the bathroom etc. Your surgical team will advise on aids that can make face down posturing easier to manage e.g., a horseshoe-shaped pillow or frame. Please remember that if you are not able to posture then there is still a good chance that the hole will close successfully.

If face down posturing is not prescribed, you may be simply advised not to lie on your back for a period of two weeks after the surgery, with some surgeons recommending sleeping in a chair or at 45º in bed, supported by pillows for the same period.

Am I able to travel after macular hole surgery?

You must not fly or travel to high altitude on land whilst the gas bubble is still in the eye (up to 12 weeks). If ignored, the bubble will expand at altitude, causing very high pressure resulting in severe pain and permanent loss of vision. In addition, if you need a general anaesthetic whilst gas is in your eye, then it is vital that you tell the anaesthetist this fact so they can avoid certain anaesthetic agents which can cause similar expansion of the bubble. None of these

exclusions apply once the gas has fully absorbed. You will notice the bubble shrinking and will be aware when it has completely gone.

How much time will I need off work?

Most people will need two weeks off work. Your vision is reduced while the gas bubble is in the eye, and this also affects depth perception. However, it depends on the type of work you do and the speed of recovery. This should be discussed with your surgeon.

What are the potential complications of macular hole surgery?

As with any procedure there may be risks involved and you should discuss these fully with the consultant involved prior to your operation, however it is unlikely that you will suffer harmful effects from a macular hole operation. In a small minority, the vision may end up worse than before the surgery, and there is even a tiny chance of total loss of sight. Six specific complications of macular hole surgery, which you must be aware of, are outlined below:

1. Failure of the macular hole to close: this occurs in 1-2 out of 10 patients. In most circumstances, it is possible to repeat the surgery. Repeat surgery may involve extra measures (such as filling the macular hole) to improve the chance of hole closure. If the hole fails to close, then the vision may be a little worse than prior to the surgery.

2. Cataract: this means that the natural lens in eye has gone cloudy. If you have not already had a cataract operation, there is a 4/5 chance you will get a cataract after the surgery, usually within a year or two but it can happen very rapidly. You may be offered combined

surgery with cataract extraction at the same time as the macular hole repair.

3. Retinal detachment: the retina detaches from the back of the eye in 1-2% of patients undergoing macular hole surgery. The vast majority of retinal detachments are repairable, but further surgery is required, and this can be a potentially blinding complication.

4. Bleeding: this occurs very rarely, but severe bleeding within the eye can result in blindness.

5. Infection: this is also very rare and would be expected to occur in about 1 in 1000 patients, but if it occurs needs further treatments and can lead to blindness.

6. Raised eye pressure: an increase in pressure within the eye is quite common in the days after macular hole surgery, usually due to the expanding gas bubble. In most cases it is short-lived and controlled with extra eye drops and/or tablets to reduce the pressure, preventing any harm coming to the eye. If the high pressure is extreme or becomes prolonged, there may be some damage to the optic nerve as a consequence. In the majority, this damage does not adversely affect the vision, but some patients require long term treatment to keep the eye pressure controlled.

Will I have to take any drops or medication after the operation?

Three types of drops are usually prescribed after surgery: an antibiotic, a steroid and a pupil-dilating agent. Patients are seen again in the clinic about two weeks after the surgery. If all is well, then the drops are reduced over the following 2-4 weeks. If the eye pressure is raised following surgery, additional drops and/or tablets may be prescribed to treat this.

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When will I need to be seen again after the surgery?

Post-operative review is usually within one to two weeks after surgery and, provided all is well, 1 to 3 months later.

Will I have to get my glasses changed?

Most people will need to change their spectacle prescription at some point after surgery. This would normally be at about 3 months following the operation, after the gas bubble has gone. As each case is different, please check with your surgeon before visiting an optician.

Where can I find more information?

The RNIB have further information on macular holes, especially some practical advice: Helpline 0303 123 9999; internet www.rnib.org.uk; email helpline@rnib.org.uk

The Macular Disease Society: Helpline 0845 241 2041; internet www.maculardisease.org; email**:** info@maculardisease.org

Scientific Evidence

The advice in this booklet is based on a variety of sources, including latest research published in peer-reviewed scientific journals. It has also been scrutinized by a panel of experts from the Britain & Eire Association of Vitreoretinal Surgeons (“BEAVRS”). If you require further information about this, please ask your surgeon.

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For Questions

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