

## Pt Info Brochure

### Macular Hole

**Q: What is retina?**

**A:** The retina is a thin delicate tissue that lines the inside of the back of the eye. It is nerve tissue that senses light that shines into the eye, converts the light into an electrical signal and sends this signal through the optic nerve to the brain, which then processes the information resulting in sight.

**Q: What is macula?**

**A:** The macula is the very central area of the retina that gives us sharp central vision and reading vision, as well as most of our colour vision. The fovea, the central area of the macula, is the thinnest and most fragile section of the retina.

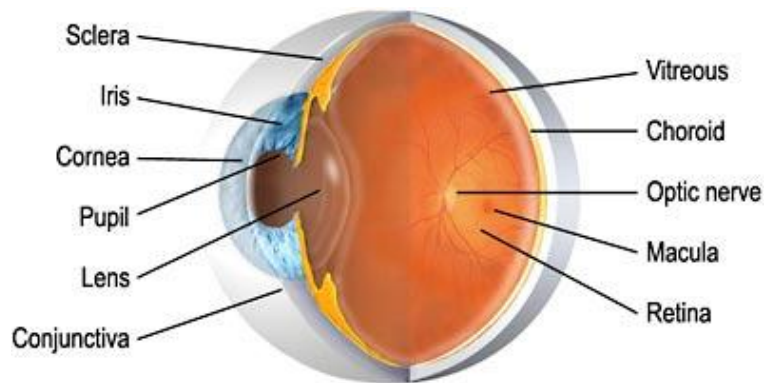


Fig 1. Retina and Macula

**Q: What is a Macular Hole?**

**A:** A macular hole is a defect in the macular area, which is the central area of the retina. It is in the foveal area that a macular hole can develop. If a macular hole does develop, this small tear or hole then expands with time, letting fluid pass under the retina, causing enlargement of the blur. This process eventually becomes stable, but seldom improves without treatment. A macular hole does not lead to total loss of vision, but usually does lead to legal blindness in the affected eye if untreated.



Fig 2a. Macular Hole Colour Fundus Photo



Fig 2b. Macular Hole Black and White Photograph

**Q: What causes a macular hole?**

**A:** The most common cause of a macular hole is an anatomical change occurring spontaneously between the clear vitreous gel of the eye, and the macula, creating a small tear or hole in this delicate area of the retina (which expands over time).

These are naturally occurring changes, not caused by the individual and anything they have done (or neglected to do). For a small percentage of people, these natural changes become pathological, resulting in mechanical stresses in the macula that may cause a hole to form. Generally called an idiopathic macular hole, this kind of hole is most common in individuals over 50 years of age.

On the odd occasion, an eye subjected to severe blunt trauma can develop a macular hole. A very small percentage of people with retinal detachment are also affected by a macular hole, as are some conditions that cause severe edema (swelling) of the retina. These types of macular holes occur mostly in people under 50 years of age, are not widespread, and can be differentiated without difficulty from the more common idiopathic macular hole.

**Q: How is a Macular Hole treated?**

**A:** Surgery is the only treatment available, with a success rate of 90-95%. Vitrectomy is a procedure where the majority of the vitreous gel is removed from the eye. A large gas bubble is placed in the eye, flattening the edge of the macular hole. This bubble goes away by itself after several weeks. For 90-95% of patients, this process will lead to the macular hole disappearing. 85% will experience vision improvement, if the hole does disappear.

As with any surgery, it does not work for every patient, with the most likely aspects that predict success being the size of the hole, duration of symptoms, and original vision quality. Depending on vision prior to surgery, 60-85% will achieve driver's license level of vision after surgery. Your Eye Doctor will discuss your personal situation and prognosis with you. In general terms the earlier the macular hole is detected and treated, the better the odds of success.

**Q: How does a macular hole affect vision?**

**A:** A macular hole affects the central element of vision, resulting in a loss of sharp, directly-in-front vision, and reading vision, in the affected eye. In the early stages, when the hole is small, vision is usually only slightly blurred or distorted. Vision progressively gets worse over a number of weeks or months, as the hole enlarges. Generally, the hole enlarges to the stage where the affected eye can only see the larger letters of a visual acuity chart. A macular hole does not bring about complete blindness as it affects only the very centre of vision, therefore not resulting in any loss of the peripheral (side) vision.

**Q: Are macular holes and macular degeneration the same?**

**A:** No – macular degeneration and macular holes are entirely different conditions, but both do affect the retina.

**Q: What is macular hole surgery like?**

**A:** Surgery to treat a macular hole is called a vitrectomy. This is usually a day-stay (outpatient) procedure performed at our centre, using local anaesthesia, and taking approximately one to two hours.

An operating microscope is used to see the retina and other structures inside the eye, and tiny incisions (under a millimeter in length) are made in the sclera (the white of the eye). Special instruments are then inserted through the incisions into the vitreous cavity to work within the eye.

Vitreous gel is removed from the eye, and replaced with a clear saline solution – such fluid comprises 99% of the natural vitreous fluid. The surgeon then typically peels a very thin membrane from the surface of the macula surrounding the macular hole.

Lastly, a gas bubble that completely fills the vitreous cavity is inserted to replace the saline solution. This synthetic gas is absorbed over time and replaced with the eye’s natural fluid called aqueous. A laser and freezing treatment is usually also used to secure the peripheral retina in place. Stitches are not normally required.

Our Centre offers state-of-the-art facilities for day stay eye surgery. You’ll enjoy quicker recovery and less disruption to your everyday activities.



Fig 3. Vitrectomy surgery



Gas Bubble - Face Down

Fig 4 Post op positioning

**Q: What is the post-operative care like after macular hole surgery?**

**A:** A patch must be worn over the eye until the morning after surgery, and eye drops that facilitate healing are then used several times each day for 4 weeks. If possible, we ask people to position face down for five days immediately following the operation, but don’t worry if you can’t. The face down position permits the gas bubble to press firmly against the macular hole, which may increase the chance of the hole closing well, although the success rate is already 90 to 95% without doing this.

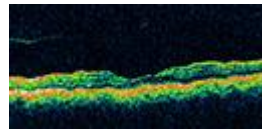
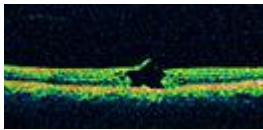


Fig 5a Macular Hole OCT before surgery    Fig 5b Macular Hole OCT after surgery

**Q: After surgery, what improvements can I expect to my vision?**

**A:** The extent of visual improvement will vary, depending on the macular hole successfully closing, the age and anatomic characteristics of the macular hole, and any other ocular abnormalities that might affect vision.

Most patients recover vision of 6/6 or 6/9 after successful macular hole surgery; however, some have more limited progress in vision improvement, and a small number of individuals may not improve much at all, even with successful surgery. Your Doctor will discuss in more depth about what you can expect and the possible outcomes with you, prior to surgery.

**Q: When can I expect to see results?**

**A:** It can take between 3 months and 1 year for vision in the affected eye to improve to its utmost potential. Patients who have had a macular hole for less than a year or two are much more likely to have an improvement in vision after this surgery. Those who have a macular hole for longer are less likely to notice an improvement.

**Q: What are the possible complications of macular hole surgery?**

**A:** As with any surgical procedure, there are risks of complications and macular hole surgery is no exception. Although the risks are very low, the three main potential complications of macular hole surgery are:

1. Retinal detachment: Although retinal detachment can occur suddenly in an eye that has never had surgery of any type. After surgery however, an eye is at greater risk of developing retinal detachment. A retinal detachment can happen a short time after surgery, but occasionally develops months or years later, and if not repaired, can lead to blindness. Fortunately, nearly all retinal detachments can be repaired with surgery, and the frequency of retinal detachment after macular hole surgery is between 1 and 2 out of every 100 cases.
2. Post-operative infection (endophthalmitis): This infection can develop inside the eye after any ocular surgery, causing damage that could lead to blindness in the affected eye. Fortunately, most infections can be successfully treated if recognized at an early stage, and having endophthalmitis is actually quite rare, occurring in only 1 out of every 1000 cases.
3. Cataract: Cataracts (haziness in the lens of the eye) generally develop as a natural consequence of aging. However, an existing cataract can develop or progress to a point

of considerable visual blurring after surgery, enough to justify cataract surgery in most eyes within a year of having a vitrectomy. This is not the case if the patient has already had cataract surgery before having a vitrectomy surgery.