

Macular Hole

A Condition That Was Once Untreatable — Now Highly Correctable

Macular hole has been known to eye doctors for over a century, yet for most of that time there was nothing that could be done about it. That changed dramatically in the 1990s with the development of modern vitreous surgery. Today, the hole can be successfully closed in 85–90% of patients, with meaningful vision improvement in the majority.

What Is a Macular Hole?

The macula is the small central zone of the retina responsible for your sharpest, most detailed vision — the vision you rely on for reading, recognising faces, and seeing fine detail.

As we age, the vitreous jelly that fills the back of the eye gradually pulls away from the retinal surface. In some people, this pulling exerts an inward tug — called tangential traction — specifically on the macula. Over time, this traction creates a small tear that progresses into a full-thickness hole through the entire depth of the macular tissue.

Once a full-thickness hole forms, it does not heal on its own in the vast majority of cases.

What Will You Notice?

The first symptom is usually a subtle distortion — straight lines appear wavy, or there is a slight blurring at the centre of vision. As the hole develops, central vision becomes progressively less clear and less sharp.

One important reason macular holes are often diagnosed late: because the other eye compensates so effectively, many patients simply do not notice that one eye has deteriorated. By the time it is picked up, the hole may have been present for months.

This matters because the duration of the hole affects how much vision can be recovered after surgery.

If you notice any distortion or central blurring — even if mild — please have it checked promptly.

How Is It Diagnosed?

Slit-lamp biomicroscopy allows your doctor to directly visualise the hole in the macula during a clinical examination.

OCT (Optical Coherence Tomography) confirms the diagnosis with precision, showing the exact size, shape, and depth of the hole — and whether it is partial or full thickness. This information is essential for planning surgery and predicting the likely outcome.

Treatment

Can It Resolve Without Surgery?

Very small, early-stage holes occasionally close on their own and are worth monitoring for a short period. However, the great majority of full-thickness macular holes require surgical treatment.

Vitrectomy With ILM Peel

The operation for macular hole is a vitrectomy — the surgical removal of the vitreous jelly from inside the eye. The key steps are:

1. Removing the vitreous

The vitreous jelly — and in particular the posterior hyaloid membrane, the layer of vitreous in closest contact with the retina — is carefully peeled away from the optic disc and macula. A fine powder called triamcinolone is used to make this otherwise invisible membrane visible during surgery.

2. Peeling the ILM

The internal limiting membrane (ILM) — the innermost layer of the retina — is then stained with a blue dye and gently peeled away. Removing this membrane releases any residual traction on the macula and creates the optimal conditions for the hole to close.

3. The ILM flap technique

In some patients, rather than removing the ILM entirely, the surgeon folds it over the hole and tucks it in — creating a biological scaffold that actively promotes the repair process. This technique is particularly useful for larger or more stubborn holes.

4. Gas tamponade and face-down positioning

The vitreous cavity is filled with a gas bubble — first air, then a small volume of SF₆ gas. The patient must then lie face-down (prone) for 3–5 days, approximately 12–14 hours per day. The gas bubble floats upward against the hole, holding it closed while healing occurs.

Hole closure typically happens within 24–48 hours. It is confirmed by OCT examination around day 5, when the gas bubble has partially cleared. With modern swept-source OCT technology, this can now be performed with reasonable accuracy even while gas remains in the eye.

Some surgeons combine this procedure with cataract surgery at the same sitting, which can be a practical choice depending on the individual patient's circumstances.

When the Hole Does Not Close — Options for Refractory Cases

In a minority of patients, the hole fails to close after the primary surgery. Several options are available:

C3F₈ gas injection

A longer-acting gas (C₃F₈) can be injected as an outpatient procedure. With a gas fill of 80–90%, this achieves hole closure in approximately 60–70% of refractory cases.

Amniotic membrane graft

A small piece of amniotic tissue is placed over the hole to provide a biological surface that encourages healing.

Autologous retinal graft

In the most challenging cases, a small patch of the patient's own peripheral retina can be transplanted to cover the hole — an advanced technique with encouraging results in experienced hands.

Possible Complications

- **Cataract formation** — the most common sequel of vitrectomy, typically developing over the months following surgery. It is treatable with routine cataract surgery when visually significant.
- **Retinal detachment** — an uncommon but serious complication that may require further surgery.

What to Expect

The outlook for macular hole is genuinely encouraging. Most patients achieve hole closure, and the majority experience meaningful improvement in both clarity and distortion after surgery. The degree of vision recovery depends on how long the hole was present before treatment — another reason why early diagnosis makes a real difference.

If you have noticed any distortion or blurring in your central vision, do not assume the other eye will compensate indefinitely. Please contact our clinic for an assessment.