

Macular hole

A macular hole is a full thickness defect in the central retina (macula). Since the macula is responsible for reading vision, patients who develop a macular hole complain of distorted vision and loss of central vision in the affected eye. The incidence of macular hole is 3.3 cases per 1,000 in the population. The risk for developing a macular hole in the fellow eye is 10% - 15%. Small macular holes occasionally resolve spontaneously but the majority will persist. Once a macular hole develops, vision usually stabilizes at 20/200 if left unrepaired. Changing eyeglasses will not correct the blur and distortion caused by the macular hole.



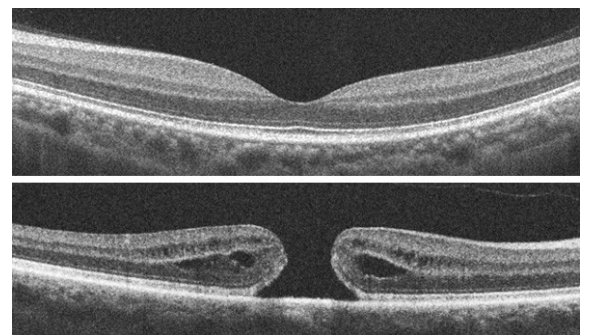
▲ Photograph of a macular hole.

Why does a macular hole develop?

The *vitreous* is the gel that fills the eye. The majority of macular holes are caused by a spontaneous separation of the vitreous overlying the center of the retina (macula). The vitreous has a strong natural adhesion to the macula. Due to age-related changes in the vitreous gel, contraction of the vitreous overlying the macula may pull open a defect in the macula creating a macular hole. Less common causes of a macular hole include blunt trauma to the eye, contraction of a pre-existing epiretinal membrane (macular pucker), or extreme near-sightedness (high myopia).

Evaluation of a macular hole

Macular holes are frequently identified by an eye care professional using a slit lamp biomicroscope. Fluorescein angiography (a dye test to evaluate blood flow) is often performed to evaluate a macular hole and rule out other conditions. Optical coherent tomography (OCT) is a type of imaging test used to produce high resolution cross sectional images of the macula in order to confirm the diagnosis, exclude other conditions, and monitor the macular hole before and after surgical repair.



▲ OCT images of a normal retina (top) and a retina with a macular hole (bottom).

BayAreaRetinaAssociates



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Surgery for macular hole

Macular holes can be repaired by a surgical procedure called *vitreotomy with membrane peeling and fluid-gas exchange*. This operation is performed in a hospital or surgery center on an outpatient basis.

During surgery, the retinal surgeon removes the vitreous gel and then releases all forms of traction by separating the back of the vitreous from the retina and peeling any membranes surrounding the macular hole. The eye is filled with a bubble of sterile air mixed with a long acting gas. After surgery, the patient must stay in a face down position so that the gas bubble is positioned over the macular hole at the back of the eye.

Patients may sit upright for meals and in order to shower and use the bathroom but should otherwise remain and sleep in the face down position for a period of time determined by the surgeon, usually several days to a couple of weeks.

Eighty to ninety percent of macular holes can be successfully repaired with this technique. The majority of patients will enjoy relief of distortion and an improvement of two or more lines of visual acuity. There are currently no medications that will repair a macular hole.

With a gas bubble in the eye, one should never travel to a higher elevation or fly in an airplane until the gas bubble has disappeared. Otherwise, the gas bubble may expand in the eye causing acute glaucoma and permanent blindness.

Rare complications of surgery include bleeding, the development of a retinal tear or detachment, and infection. These complications occur in one out of several thousand patients.

More commonly, a cataract may develop following macular hole surgery if cataract surgery was not previously performed.

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Bay Area Retina Associates is a group practice of retinal surgeons. All members of the group are board certified by the American Academy of Ophthalmology and have completed fellowship training in vitreoretinal surgery. BARA surgeons have expertise in the treatment of retinal detachment, diabetic retinopathy, age-related macular degeneration, macular hole, epiretinal membrane, and retinal vascular disease. BARA physicians see patients in seven offices and perform surgery at several hospitals and surgery centers around the East Bay.