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.
Micro-incisional / sutureless vitrectomy surgery for macular hole

Macular holes can be repaired by a micro-incisional surgical procedure called *vitrectomy 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.