Macular hole

DESCRIPTION

A macular hole is a localised, full-thickness retinal defect involving the macula. Approximately 10 to 20 per cent of cases eventually become bilateral. An idiopathic macular hole is most commonly attributed to vitreous or epiretinal traction on the macula; however, some recognised triggers include trauma, surgery, high myopia and cystoid macular oedema.

A lamellar macular hole is a sharply circumscribed, partial-thickness defect at the macula. Possible causes include cystoid macular oedema, solar maculopathy and aborted macular holes.

SYMPTOMS

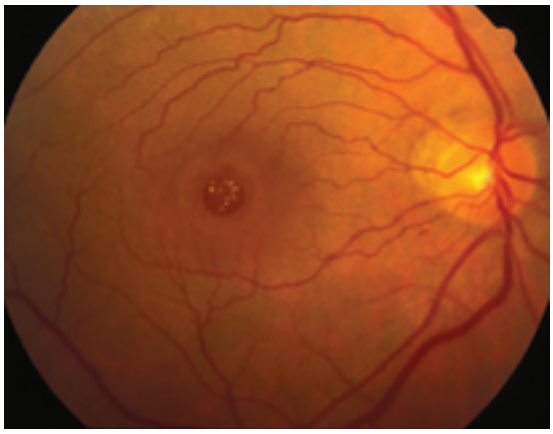
Blurred vision; metamorphopsia; occasionally central scotoma.

SIGNS

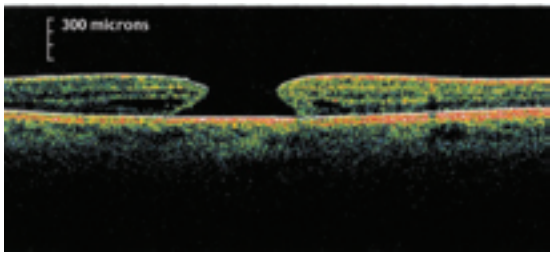
Moderate to severe loss of acuity (often 6/60 or worse) is expected with a large macular hole:

- **Stage 1A:** The first signs of foveal detachment ('impending macular hole',) are loss of the foveal depression and the appearance of a yellow spot at the fovea, thought to be xanthophyll pigment. The yellow spot becomes a ring (**Stage 1B**) as the photoreceptors separate. This stage often corresponds with the onset of visual symptoms
- **Stage 2:** denotes the appearance of a small (<400µm) diameter, red, punched-out area inside the yellow ring, as the contracting vitreous cortex separates from the retinal surface (full-thickness macular hole)
- **Stage 3:** As the hole enlarges (>400µm), the vitreous separates from the edge of the hole, allowing infiltration of subretinal fluid (visible as a grey halo around the hole). Yellow deposits are usually visible within its base. An '*operculum*' (Latin for 'lid') of condensed vitreous cortex is often visible over the hole.
- **Stage 4:** Describes complete posterior vitreous detachment (PVD) from the macula and optic disc. Signs include dark, floating vitreous opacities over the optic disc, with vitreous and peripheral haemorrhages.

When a narrow slit lamp beam is directed across a large, full-thickness macular hole, the patient perceives a break in the line (Watzke-Allen sign). If a laser focusing-beam is directed within the hole, it is invisible to the patient, due to the absence of retinal tissue.



Advanced macular hole with yellow deposits overlying its base



Macular hole shown with optical coherence tomography. A full-thickness plug of retina is missing at the macula

PREVALENCE

Uncommon (approximately 1:300). Most patients are aged between 60 and 80 years old, with a strong female predominance (3:1).

SIGNIFICANCE

Can severely impair central vision; may become bilateral.

DIFFERENTIAL DIAGNOSIS

A positive Watzke-Allen sign is not expected with: epiretinal membrane with 'pseudohole', vitreomacular traction syndrome, solar maculopathy, lamellar macular hole, or cystoid macular oedema.

SEE ALSO

Posterior vitreous detachment, Commotio retinae.

MANAGEMENT

Additional investigations

Optical coherence tomography (OCT) indicates the size and thickness of the hole, areas of vitreous traction and cystoid macular oedema. With fluorescein angiography, the retinal pigment epithelium changes and atrophy at the macula causes early choroidal hyperfluorescence.

Advice

The other eye should also be examined for signs of a macular hole, and for evidence of PVD. The OCT may help in this regard. If the macula appears normal and there is a PVD, then a macular hole is unlikely to develop. A lamellar macular hole does not usually progress to a full-thickness macular hole.

Surgery

Surgery can improve the visual prognosis for selected patients with full-thickness macular holes, particularly within a year of onset. The aim of vitrectomy and fluid-gas exchange surgery is to relieve vitreous traction. The patient must lie facedown for at least a week post-operatively; so the gas bubble presses on the macula, keeping it flat. Although surgery is usually successful anatomically, the visual outcome is less certain, and complications may occur, for example, cataract, retinal breaks, retinal detachment, raised intraocular pressure and infection.

REVIEW

Patients with grade 1 macular holes, or with a previous macular hole in one eye, are reviewed yearly. The patient is educated regarding the symptoms of PVD and retinal detachment, and may be supplied with an Amsler grid for periodic self-review.

The full series of these articles will be available in the book *Posterior Eye Disease and Glaucoma A-Z* by Bruce AS, O'Day J, McKay D and Swann P. £39.99. For further information click on the Bookstore at **opticianonline.net**

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