

# Successful treatment of macular holes associated with peripheral retinal vascular tumours

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## Abstract

**Background** Macular holes have been described in association with benign vascular tumours of the retina. However, their successful treatment has not been reported.

**Patients and methods** Three patients with macular holes associated with retinal vascular tumours had vitrectomy, peeling of the internal limiting membrane, and intraocular gas tamponade.

**Results** In all three cases, the macular holes were successfully closed, and the visual acuity improved.

**Conclusion** Macular holes associated with benign retinal vascular tumours respond to conventional macular hole surgical techniques.

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**Keywords:** macular hole; retinal tumour; retinal glioma; vitrectomy

## Case reports

### Case 1

A 38-year-old woman, who had an isolated retinal angioma in the right eye, presented with a 2-week history of visual loss. The angioma had been treated 8 years previously for macular exudates which regressed. The exudates recurred and she received two additional laser treatments in the 2 months before her presentation. On examination, her visual acuity had declined from 6/9 to 6/36. There was an angioma approximately two disc diameters above the superotemporal arcade and exudates encroaching on the macula (Figure 1a). She had a full-thickness stage III macular hole (Figure 1b) and epiretinal membrane (Figure 1d). The patient underwent right vitrectomy, internal

limiting membrane (ILM) peel, injection of 12% C<sub>3</sub>F<sub>8</sub> gas, and cryotherapy and laser to the angioma. She had a plaque adherent to the surface of the angioma that bled slightly when it was avulsed during induction of a posterior vitreous detachment (Figure 1c). Six months later, her right visual acuity was stable at 6/24 and the macular hole was closed (Figure 1e). The exudates had partially regressed.

### Case 2

A 57-year-old woman presented with a 3-month history of poor vision in the left eye. On examination her visual acuity was 6/60. There was a stage IV full-thickness macular hole, and a vasoproliferative tumour in the inferior peripheral retina, surrounded by exudates and shallow sub-retinal fluid. She had a pars plana vitrectomy, with ILM peel and injection of 12% C<sub>3</sub>F<sub>8</sub>, and the vasoproliferative tumour was treated with cryotherapy and laser. Six months after surgery, her vision improved to 6/24, the macular hole was closed, and the mass had shrunk with regression of the exudates and subretinal fluid.

### Case 3

A 47-year-old man with noninsulin-dependent diabetes mellitus presented with poor vision in his left eye following uncomplicated cataract surgery. On examination, the left visual acuity was 6/18. There was a vasoproliferative tumour in the inferotemporal retina, and a stage II full-thickness macular hole. There was no evidence of diabetic retinopathy. He had a pars plana vitrectomy with ILM peel and injection of C<sub>3</sub>F<sub>8</sub> gas. Six weeks after surgery, the macular hole was closed and the vision improved to 6/6 with a pinhole.

## Comment

Isolated peripheral retinal angiomas and vasoproliferative tumours of the retina (VPTR)

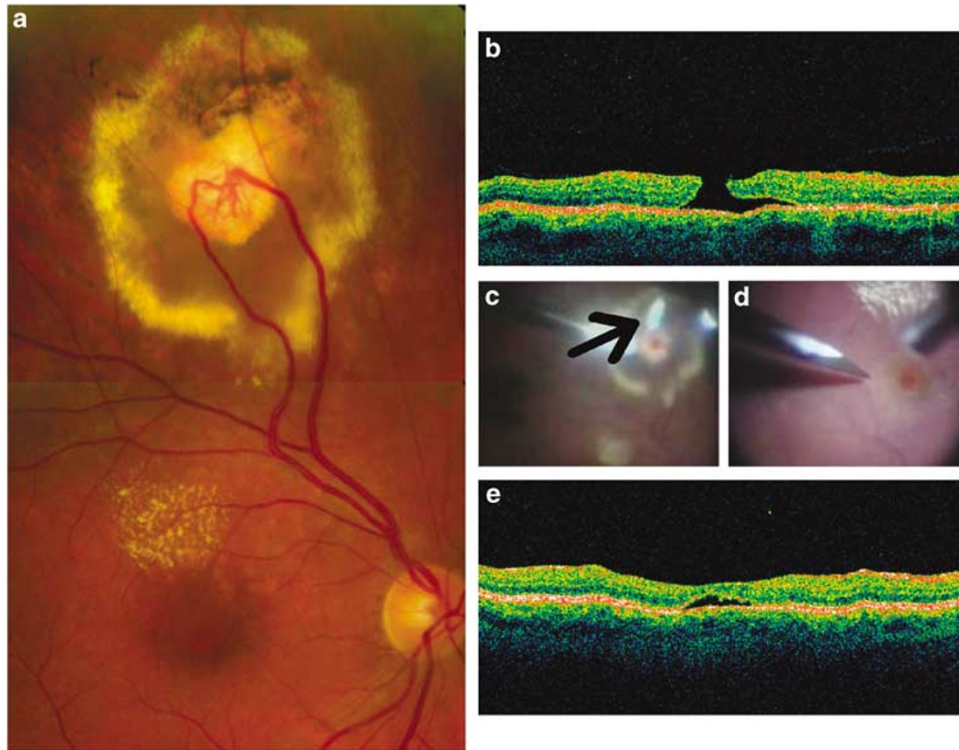
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**Figure 1** (a) Colour fundus photograph of right eye with isolated retinal angioma, surface neovascularization, drainage and feeder vessels, and surrounding lipid exudates. (b) Optical coherence tomogram of right macula showing full-thickness hole. (c) Intraoperative video still showing avulsed plaque (arrow) and bleeding on surface of angioma. (d) Intraoperative video still showing epiretinal membrane and macular hole stained with trypan blue. (e) Optical coherence tomogram showing closed macular hole, with residual subfoveal fluid, after vitrectomy and gas.

are benign glial lesions, which have in common telangiectasia and leakage of lipid and protein exudate.<sup>1-3</sup> They are to be distinguished from haemangiomas associated with von Hippel-Lindau disease, which none of our patients had. Epiretinal membrane formation, macular pucker, cystoid macular oedema, and macular hole<sup>4</sup> may all occur with these lesions, as can tractional macular detachment.<sup>5</sup> The association between benign peripheral vascular lesions and these findings suggests that pathological changes occur specific to the macula.<sup>6</sup> Laser treatment for peripheral retinal lesions can itself, over a period of time, be associated with retinal gliosis affecting the macula.<sup>7</sup>

It has been suggested that peripheral retinal telangiectasis with chronic exudate could cause vitreomacular traction resulting in the formation of a full-thickness macular hole.<sup>8</sup> The mechanism remains unclear, but the authors suggest constitutional changes within the vitreous and the posterior hyaloid face.

This is the first case series report of the successful treatment of macular hole associated with benign peripheral vascular retinal lesions.

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