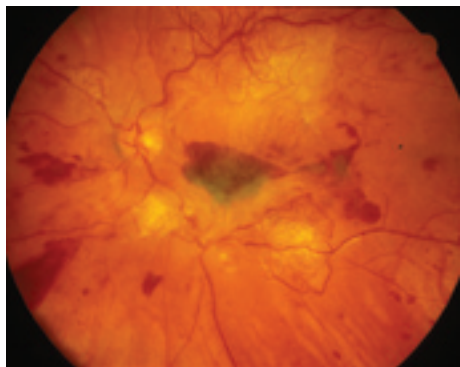
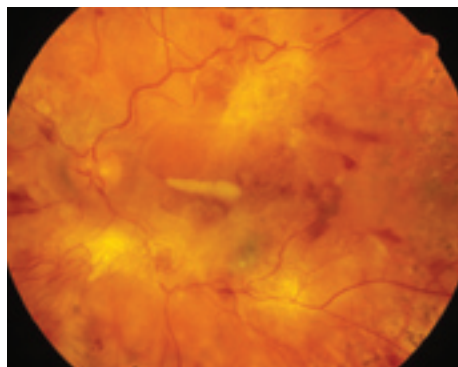




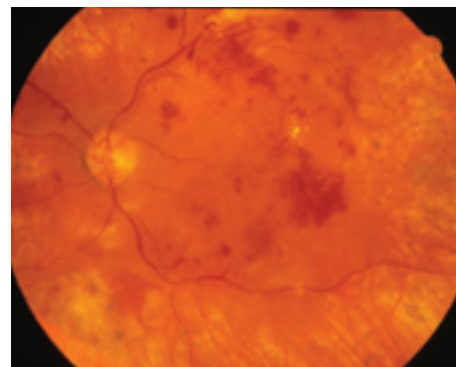
# Diabetes – Proliferative retinopathy management



**Figure 1** Advanced proliferative diabetic retinopathy (PDR) with neovascularisation and preretinal haemorrhage



**Figure 2** The same eye as in Figure 1, two months later, following pan-retinal laser photocoagulation treatment



**Figure 3** The same eye as in Figure 1 and 2, a further three months later, following surgical vitrectomy

## DESCRIPTION, SYMPTOMS, SIGNS, PREVALENCE AND SIGNIFICANCE

See: Diabetes – Proliferative retinopathy assessment

## SEE ALSO

Diabetes – Introduction to retinopathy, Diabetes – nonproliferative retinopathy, Retinal detachment, Glaucoma – Classification.

## MANAGEMENT

### Imaging investigations

Intravenous fluorescein angiography demonstrates leakage from new vessels, capillary nonperfusion and macular ischaemia.

### Laser surgery

Pan-retinal laser photocoagulation reduces the incidence of severe visual loss in proliferative diabetic retinopathy by up to 95 per cent when certain 'high risk characteristics' are present:

- NVD larger than one-third of the optic disc area
- NVD with vitreous or preretinal haemorrhage
- NVE larger than one-half of the optic disc area with vitreous or preretinal haemorrhage
- NVI.

By mechanisms that are imperfectly understood, laser treatment induces involution of new vessels (including NVI) and reduces the incidence

of vitreous haemorrhage. A common treatment schedule is the delivery of approximately 2,500 burns over two to four sessions, from the posterior fundus to the peripheral retina, sparing the optic disc and macula. Complications include macular oedema, reduced visual fields and impaired colour vision and dark adaptation. Any pre-existing macular oedema should be treated prior to pan-retinal laser photocoagulation. When hazy ocular media preclude laser therapy, peripheral retinal cryotherapy and transscleral diode laser photocoagulation are alternative treatments.

### Surgery

Some of the indications for vitrectomy include:

- Persistent vitreous or preretinal haemorrhage precluding pan-retinal photocoagulation
- Tractional retinal detachment, or combined tractional and rhegmatogenous detachment
- Progressive fibrovascular proliferation
- Persistent neovascularisation despite laser treatment.

The vitreous gel is removed, fibrovascular tissue is excised, and any retinal breaks are sealed. Pan-retinal photocoagulation is then applied. Overall, visual improvement is achieved in 70 per cent of patients, while vision is reduced in 10 per cent. Subsequent deterioration in vision may be due to neovascular

glaucoma, recurrent haemorrhage or retinal detachment, or cataract, which may require further surgery.

## Review

Patients without high-risk characteristics are reviewed at three-month intervals. Patients are reviewed one month after laser treatment. Depending on progress, additional treatment or vitreous surgery may be required. Findings with involution of PDR include pale 'ghost' vessels, absorption of retinal haemorrhages and optic disc pallor. Although vision is usually stable thereafter, review at six-month intervals is recommended to detect recurrences. ●

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](http://opticianonline.net)

- **Adrian Bruce** is a Chief Optometrist at the Victorian College of Optometry and a Senior Fellow, Department of Optometry and Vision Sciences, The University of Melbourne
- **Justin O'Day** is an Associate Professor in the Department of Ophthalmology, The University of Melbourne and Head Of Neuro-Ophthalmology Clinic, Royal Victorian Eye and Ear Hospital
- **Daniel McKay** is a Medical Officer at the Royal Victorian Eye & Ear Hospital
- **Peter Swann** is Associate Professor in the School of Optometry, Queensland University of Technology