DEJ
DiabeticEye Journal

Extract from DiabeticEyeJournal:
For full issue please visit:
www.diabeticeyejournal.org **or**
http://diabeticeye.screening.nhs.uk/diabeticeyejournal

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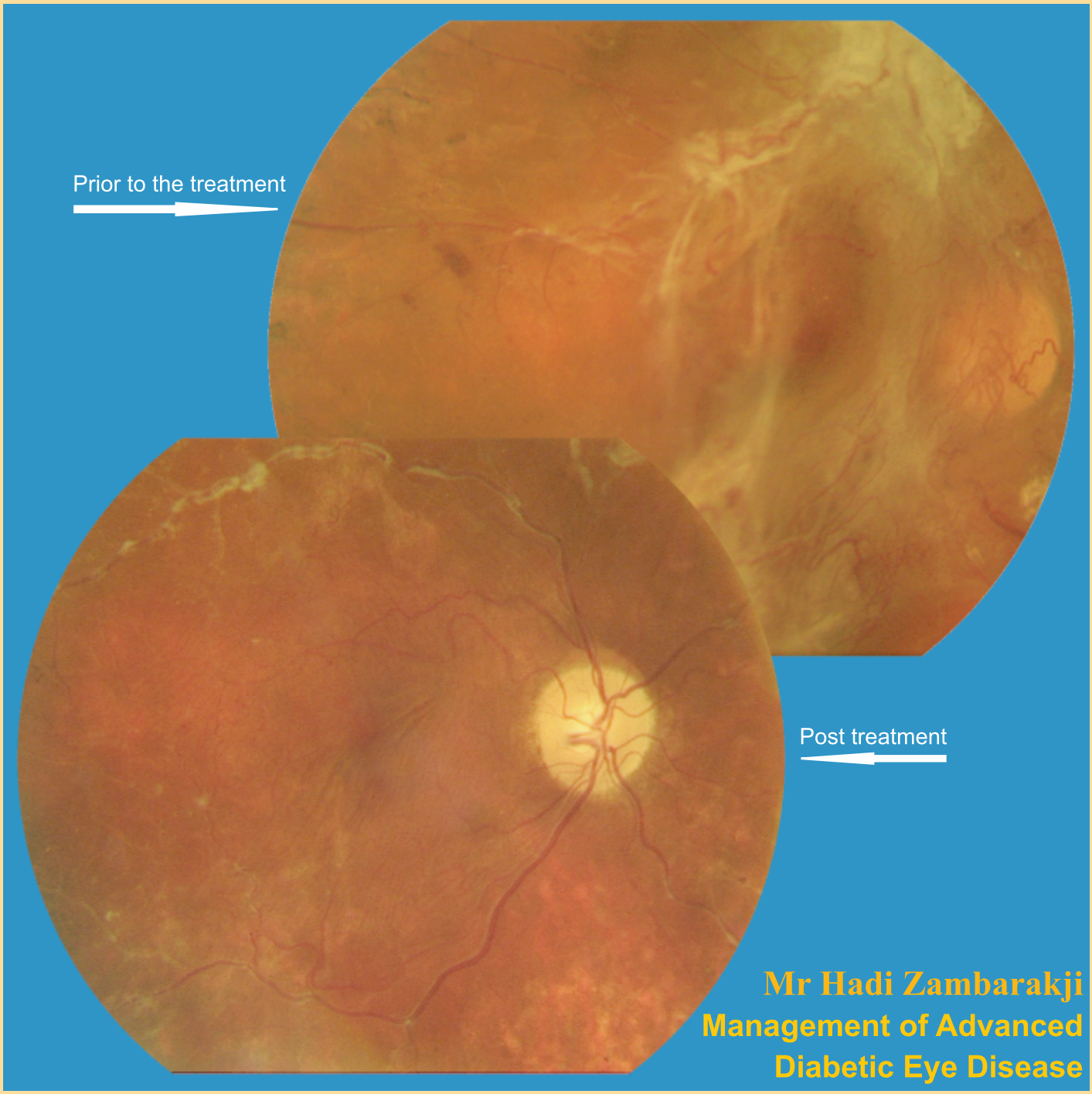
Diabetes UK Focusing on Children and Footcare Campaign in 2014



Mr Hadi Zambarakji
Management of Advanced Diabetic Eye Disease

Spotlight on DESP: NMUH Diabetic Eye Screening for North Central London

Medical Paper: Use of Furosemide for Diabetic Macular Oedema in Pregnancy

Other lesions: Ms Bola Odufuva on Glaucoma

DiabeticEyeJournal

EDITORIAL

After our very successful launch of DEJ last September at British Association of Retinal Screening (bars) Conference we are now into its second issue. We were very encouraged by your positive feedback, which indicated that the Journal is moving in the right direction.

Our main columns will include:
Diabetic Eye Disease
Other Lesions
Diabetes UK
Update from NDESP
and **Spotlight on DESP**, which will introduce one Screening Programme from around the country in every issue of DEJ. This would be the platform for you to share your experience, projects, findings and ideas. So come and get involved, and email us your proposals to ***info@diabeticeyejournal.org***

DEJ is in its infancy, and part of its evolution was to establish recognised publishers, which we can proudly confirm is the British Association of Retinal Screening. We will be distributing DEJ to all DES Programmes and major HES and you can also follow us on our website ***www.diabeticeyejournal.org***. The Journal will be coming out every six months - March and September - and we will be promoting it at a major Eye and Diabetes related conferences. We are delighted to present this second issue and look forward to your feedback and comments.

IN THIS ISSUE

COMING UP IN NEXT ISSUE/ OCTOBER 2014

Mr Paul Sullivan and Mr Kadhim Mustafa from Moorfields Eye Hospital -

'When do we operate for diabetic retinopathy?'

Mr John Brazier - Cataract operation and DR complications

Mr Kevin Shotliff - Oral glucose lowering agents in diabetes mellitus

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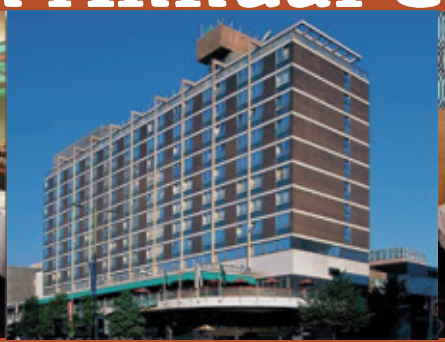
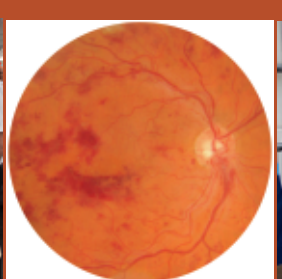
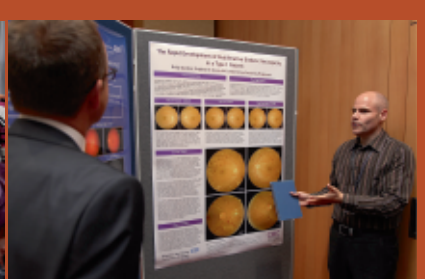
BARS 14th Annual Conference


BARS Council are pleased to announce the 14th Annual BARS Conference, which will be held on 25th and 26th of September 2014 in the centre of Birmingham at Holiday Inn hotel.

For the provisional programme, registration and accommodation details see the resources section on the BARS website: ***www.eyescreening.org.uk***



DiabeticEyeJournal is published and produced by BARS with support of North Central London Diabetic Eye Screening Programme from NMUH NHS Trust.

Courses

Two day Seminar: The Royal College of Ophthalmologists

13 CPD points, relevance: Ophthalmology specialties
Topic: Skills in Retinal Imaging, Diagnosis & Therapy
19th Jun 2014, London

To register: *events@rcophth.ac.uk*

CPD course in Diabetic Eye Disease

City University London
Two day course running 28th - 29th April 2014

http://www.city.ac.uk/courses/cpd/diabetic-eye-disease#course-detail=0

Training Courses at Retinopathy Screening Centre, Heartlands Hospital, Birmingham

DR Grader Course: 7 to 11 April 2014
Clinical Lead Programme: 7 to 8 May 2014
Advanced DR Grader Course: 22 to 24 September
DR Grader Course: 29 September to 3 October

http://www.retinalscreening.co.uk

Diabetes UK – Diabetes Awareness Training

Various dates and in-house training available.
One-day course to provide participants with the knowledge and confidence when working with people with diabetes, accredited by the Royal College of Nursing (RCN)
Phone: 020 7424 1000

Contact enquiry: *commissioning@diabetes.org.uk*

Conferences

Ethnicity and diabetes

Monday 14 April 2014
Venue: Royal Society Of Medicine, 1 Wimpole Street, LONDON, W1G 0AE

To register: *http://www.rsm.ac.uk/diar/diary.php*

National diabetic eye screening conference 2014

Programme: Integration - where do I fit in?
Wednesday 30 April 2014
Venue: Royal Society Of Medicine, 1 Wimpole Street, LONDON, W1G 0AE

To register: *http://www.rsm.ac.uk/diar/diary.php*

The 24th EASDec 2014 conference

Eye Complications Study Group (EASDec)
15th - 17th May 2014, Padova, Italy

To register: *http://easdec.org/pages/*

The 50th EASD Annual Meeting

Topics: Understanding of Diabetes Mellitus
Relevance: Diabetes related specialties
15 - 19 September 2014, Vienna, Austria

To register: *abstracts@easd.org*

14th Annual BARS Conference

Birmingham Holiday Inn
25th and 26th September 2014

To register: *http://www.eyescreening.org.uk*

Management of Advanced Diabetic Eye Disease

by **Mr Hadi Zambarakji**

FRCOphth D.M. Consultant Vitreoretinal Surgeon

Barts Health, Whipps Cross University Hospital

Diabetic retinopathy remains the commonest preventable cause of blindness in the working age population in the industrialised world. A review of UK blind and partial-sighted registration between April 1999 and March 2000 showed that diabetic retinopathy accounted for 5.9% and 7.4% respectively of sight impairment registration.[1] In this article, I will discuss the management of complications of proliferative diabetic retinopathy (PDR).

Improved control of blood glucose, blood pressure and cholesterol reduce the risk of development and progression of diabetic retinopathy, and for those who develop PDR, panretinal laser photocoagulation (PRP) remains the first line therapy. Despite this, at least 4.5% of eyes will still develop complications, which require surgical intervention.[2]

The principal indications for surgery are non-clearing vitreous haemorrhage and retinal detachment (either tractional (TRD), rhegmatogenous (RRD) or combined tractional/rhegmatogenous (CTRD)).[3] Less common indications for surgery include recurrent vitreous haemorrhage, TRD threatening the macula, uncontrolled new vessels, rubeosis and vitreous haemorrhage, premacular haemorrhage, vitreomacular traction (VMT) in the presence of a taut thickened posterior hyaloid (TTPH), ghost cell glaucoma, neovascular glaucoma and proliferation of the anterior hyaloid.

Removal of the vitreous appears to have a stabilising influence in PDR. It is likely that several factors contribute to this effect. Firstly, attached vitreous gel acts as a scaffold for fibrovascular proliferation and removing it hinders reproliferation and reduces the tractional forces, which traumatise the fragile new vessels causing haemorrhage. Secondly, the relief of traction on retinal blood vessels may improve their perfusion and reduce leakage. Thirdly, removing the vitreous may increase oxygen supply to the inner retina and prevent accumulation of vasoactive cytokines by allowing unrestricted circulation of fluid in the vitreous cavity.

Diabetic Vitreous Haemorrhage

It is over 20 years since the Diabetic Retinopathy Vitrectomy Study (DRVS) showed a clear benefit to early pars plana vitrectomy (PPV) in patients with type I diabetes and those with uncontrolled neovascularisation. Since the DRVS, there has been a trend toward lower thresholds for vitrectomy in diabetic vitreous haemorrhage. This has been prompted by improvements in the safety of surgery, cost-effectiveness, and a growing body of evidence to suggest a benefit to visual outcome for type I and type II diabetes.

In our experience, patients seen in the vitreoretinal unit were often managed with intensive PRP laser by their medical retina specialist. We would therefore have a low threshold to offering vitrectomy surgery at the time of first presentation in the presence of non-clearing vitreous haemorrhage.

Important considerations include retinopathy status and visual acuity in the fellow eye as well as patient preference. Visual outcomes however, may be limited by macular oedema and/or macular ischaemia (in the absence of vitreomacular traction or TRD involving the macula).

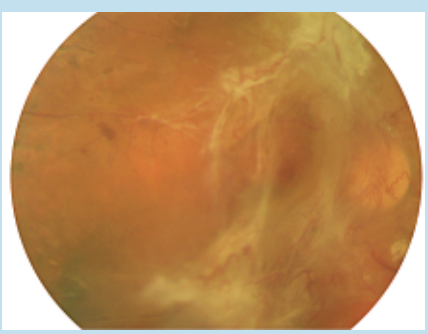
Retinal Detachement

Retinal detachement **(figure 1)** remains the commonest indication for vitrectomy in PDR accounting for almost half the surgical cases compared with 43% for non-clearing vitreous haemorrhage.[3] The timing of surgery is strongly influenced by the aetiology of the detachment and the proximity to the macula.

TRD arises from progressive fibrovascular proliferation and contraction. The detached retina typically has a concave appearance with limited mobility and the condition is characterised by slow progression. Urgent surgery is rarely required except in the context of visual loss associated with rapid progression of traction and macular involvement.

Extra-macular TRD can usually be managed conservatively, though there is a trend towards earlier surgery as the detachment approaches the macula due to the poor prognosis once the macula is affected.

In contrast to the indolent course of most TRD, the fibrosis and contraction may be sufficient to cause a localised break in the retina resulting in CTRD. In this situation the detachment may progress rapidly and is typified by a convex appearance and greater mobility of the retina. Urgent surgery is required in this situation. CTRD can be challenging, as removal of all membranes may prove difficult in the presence of mobile retina.



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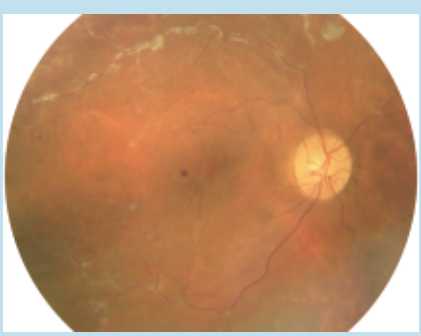


1(b)

Figure 1

Traction retinal detachment with extensive fibrovascular proliferation **(a)** in the right eye of a 28-year-old insulin dependent diabetic patient. Visual acuity at the time of presentation was 6/60.

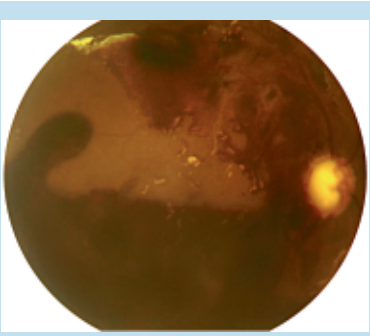
Retinal photograph one year after vitrectomy and membrane delamination shows a fully attached retina, and along the blood vessels signs of the previously delaminated membranes **(b)**. The visual acuity improved to 6/18.

Pre-Macular Haemorrhage

The presence of extensive pre-macular haemorrhage **(figure 2)** is a further indication for early vitrectomy, with studies suggesting that blood trapped against the retina may cause toxic damage, exert traction on photoreceptors and form a physical barrier to diffusion of nutrients and metabolites. Furthermore, the presence of pre-retinal haemorrhage suggests an attached hyaloid face, which may promote vascular proliferation, recurrent haemorrhage and macular oedema.

Figure 2

Dense acute pre macular haemorrhage **(a)** in the right eye of a 51-year-old diabetic patient with co-existent advanced glaucoma. Visual acuity at presentation was CF. The patient underwent vitrectomy with separation of the posterior hyaloid with a good outcome. Visual acuity improved to a level of 6/12 post-operatively **(b)**.



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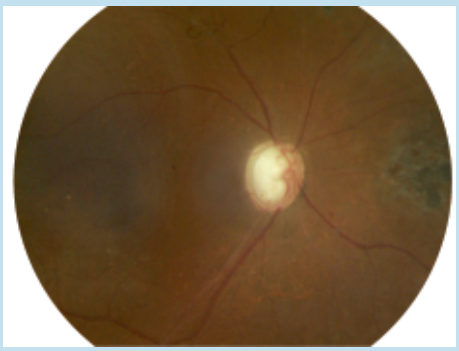

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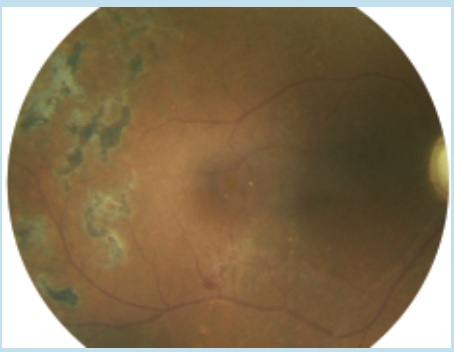

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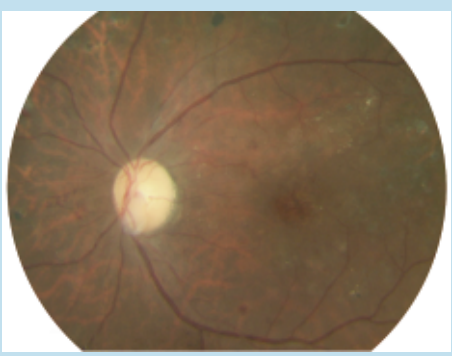
Vitreomacular traction (VMT) and taut thickened posterior hyaloid (TTPH)

The benefits of focal or modified grid laser photocoagulation for clinically significant diabetic macular oedema (DMO) were established by a number of studies. In recent years, the benefits of inhibitors of vascular endothelial growth factor (VEGF) over laser were clearly demonstrated.

When considering the role for vitrectomy in the treatment of diffuse DMO refractory to laser therapy, the attachment of the posterior hyaloid is a critical observation. It is generally agreed that the presence of traction is an indication for vitrectomy, with efficacy demonstrated in both vitreomacular traction (VMT), and in the presence of a taut thickened posterior hyaloid (TTPH) **(figure 3)**.[4] However, the role for vitrectomy in the absence of demonstrable traction remains unclear.

3(a)



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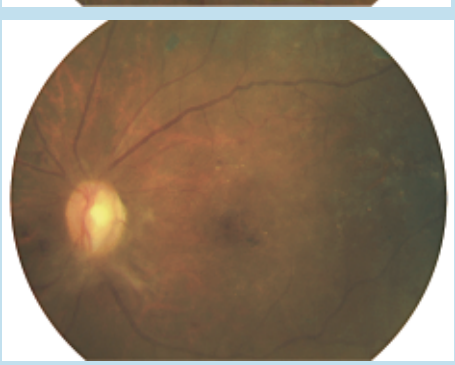

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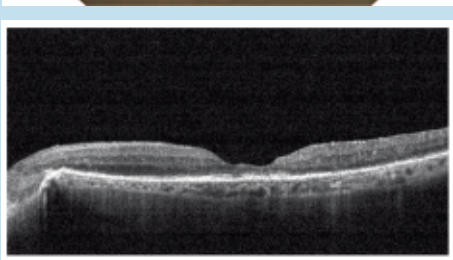

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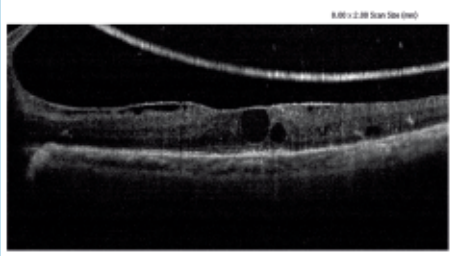

Figure 3

A taut and thickened posterior hyaloid with epiretinal membrane **(a)** and some macular cystoid changes noted on the pre op OCT scan **(c2)** in an eye with treated proliferative diabetic retinopathy. Retinal photograph following vitrectomy and separation of the posterior hyaloid with membrane peeling is shown **(b)**. The post-operative OCT **(c1)** shows an improved macular profile. Visual improvement was maintained through 3 years of follow up, but was limited to one Snellen line, and could be explained by the long standing macular traction and thinned out outer retina.

Pharmacological Adjuvants in Vitrectomy Surgery

The use of anti-VEGF adjuvant drugs (bevacizumab and ranibizumab) in diabetic vitrectomy is primarily targeted at reducing the risk of intraoperative and postoperative haemorrhage in the setting of active retinal neovascularisation or in the presence of very vascular fibrous fronds with TRD. Bevacizumab given 2-7 days pre-operatively by intravitreal injection, has also been shown to reduce operating time, creates a cleavage plane for dissection of membranes with anecdotal reports that fibrovascular membranes become less adherent. The role of top-up intravitreal bevacizumab at the end of surgery remains unclear.

There is however, a potential risk of causing progression of TRD following intravitreal bevacizumab, therefore surgery should not be delayed once an anti-VEGF has been given in this context.

Diabetic Vitrectomy, Lens Status and Phacoemulsification

Many patients who undergo PPV will either have pre-existing lens opacity or develop lens opacity after surgery. However, Holekamp et.al. have suggested that relative retinal ischaemia and lower oxygen tension in the anterior vitreous in diabetic retinopathy may reduce rates of cataract progression.[5]

Combining vitrectomy with phacoemulsification and lens implantation offers several potential benefits. Intra-operatively, the removal of an opacified lens can improve visualisation of the posterior segment and allow more complete vitrectomy without the risk of lens touch. Postoperatively the improved view can aid assessment of the posterior segment and make laser easier. For the patient, removal of lens opacity can improve postoperative acuity and avoid the need for cataract surgery at a later date. However, combined surgery may have disadvantages including; longer operating time, corneal oedema impairing the surgical view, increased levels of anterior segment inflammation and the risk of posterior synechiae.

Choice of Vitrectomy Gauge

Small gauge vitrectomy has become increasingly popular in recent years and it is clear that the quality of the new generation instruments has improved dramatically such as almost every vitrectomy procedure can now be performed using small gauge instruments. Advocates of 25G and 23G systems point to reduced surgical time, improved fluidics, reduced patient discomfort and more rapid visual recovery. However, incidence of sclerotomy-related complications such as hypotony, and an increased rate of endopthalmitis may be disadvantages compared with standard 20G surgery.

For diabetic vitreous haemorrhage, I would usually perform 23G PPV but I prefer the use of standard 20G instrumentation for complex TRD or CTRD and for cases requiring lensectomy or if peripheral dissection of membranes may be necessary. Whilst the 25G and 23G systems may offer a particular advantage in the removal of membranes, where the design of the ocutome cutting port is such that it sits 50% closer to the tip of the probe than in the 20G system, the need for curved scissors for performing dissection of membranes in some cases may limit the use of small gauge instruments.

Patient follow-up

Patients with advanced PDR often have bilateral disease and tend to be of a working age group. They usually have poor diabetic control and multiple complications of diabetes, thus often will be seeing several hospital specialists (diabetologist, podiatrist, nutritionist etc…). It is therefore quite important that they are not discharged if they miss a clinic appointment. When patients are lost to follow up, they may only represent when the vision is affected and the retinopathy has got worse. Regular follow-ups are therefore quite important.

Conclusions

Despite advances in surgical technique, instrumentation and adjuvant pharmacotherapy, it is important to remember that the principal determinant of postoperative visual acuity is retinal function. As proliferative diabetic retinopathy is associated with retinal ischaemia, visual outcome may be limited despite apparent anatomical success after surgery. Improvements in the safety and outcome of vitrectomy have reduced the thresholds for surgery, and are reflected in a trend towards earlier surgical intervention in diabetic retinopathy.

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Hadi will be running a **Special Interest Symposium** (SIS) on ***myopic macular disease*** at **EVER** (European association for Vision and Eye Research) on Saturday **4th of October.**

If you'd like to find out more about this topic:
The meeting dates are from **1st to 4th October 2014** and symposium is provisionally scheduled for Saturday the 4th.

This year's **EVER** congress is in the beautiful city of Nice in the South of France.

Abstract submission deadline is 26th of May.
To register and find out more visit:

http://www.ever.be/news.php