

# TEInsight

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MICA (P) 152/06/2007


**THE EYE INSTITUTE**  
 NATIONAL HEALTHCARE GROUP

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# Age Related Macular Degeneration

## An Update

Age related macular degeneration (AMD) is the commonest cause of blindness in many developed countries. In Singapore, it ranks among the top 4 causes of blindness.

It typically affects those above 50 years of age, and has a propensity for bilateral involvement. Apart from age, other risk factors for AMD include race (Western populations are reportedly at higher risk), positive family history, smoking, hypertension, hyperlipidemia and excessive exposure to sunlight.

It is divided into two forms: Dry and Wet (exudative) AMD

### Dry AMD

Dry AMD presents with insidious, progressive decrease in central vision. Fundus features include "hard" drusen and retinal pigment epithelial (RPE) atrophy without leakage of fluid or blood.

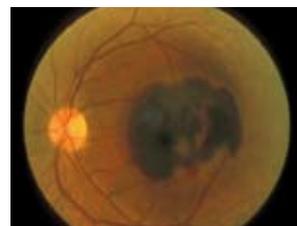
Most patients maintain fairly good vision unless extensive RPE atrophy (geographic atrophy) sets in, or if it converts to wet AMD. The presence of large, "soft", confluent drusen, and smoking are the main risk factors for conversion.

### Wet (exudative) AMD

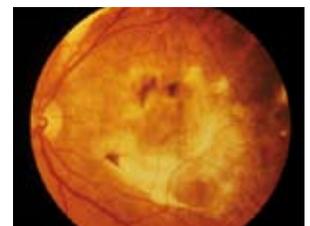
In wet or exudative AMD, abnormal choroidal vessels (choroidal neovascularisation, CNV) is



Dry AMD with drusen



Wet AMD with hemorrhage and exudation



End-stage Wet AMD with disciform scarring

give rise to hemorrhages at the sub-retinal or intra-retinal planes and detachments. Macular oedema also occurs due to leakage from the CNV. This area of change eventually evolves into a disciform scar.

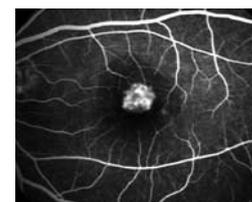
Wet AMD presents with more severe decrease in central vision and/or metamorphopsia (distorted vision). The symptoms typically wax and wane over days and weeks, with a general downward trend. Visual loss occurs much faster than in dry AMD. End-stage wet AMD ultimately results in severe and permanent central visual loss.

There is tremendous overlap in the presentation of another condition - Polypoidal Choroidal Vasculopathy (PCV) and wet AMD. Some consider them as parts of the spectrum of AMD while others consider them as separate entities. Both result in central visual loss from bleeding and fluid leakage into the macula. However, unlike wet AMD, PCV is

more common in Asian populations and patients also tend to be younger. Submacular hemorrhages are usually larger in PCV, but the clinical course of PCV tends to be one of episodic bleeds rather than chronic leakage typical of wet AMD.

### Fundus angiography for AMD

Fundus angiography using intravenous fluorescein and/or indocyanine green (ICG) dyes is commonly done to characterise and delineate AMD lesions for purposes of further management.



"Classic CNV" showing hyperfluorescence on fluorescein angiography

For example, the angiographic subtypes of "classic CNV" respond better to Verteporfin Photodynamic Therapy (PDT) than retinal angiomatous proliferation (RAP).

Continued next page

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## Editor's Message

Welcome to the long-overdue 4th issue of TEInsight. My apologies to one and all, but we hope it has been worth the wait.

I would first like to welcome Ms Tan Mui Leng on board the editorial team. She has given this publication (and its editor) the proverbial shot in the arm/kick in the behind, for which I thank her.

Our cover story addresses Age-Related Macular Degeneration, a disease that is now the leading cause of blindness in the elderly in developed countries, yet continues to lurk on the fringes of public knowledge. We have allowed ourselves to express guarded optimism in the past few years, as new modalities of AMD treatment offer new hope for previously untreatable lesions.

One of the more frequent requests we receive in the Eye Clinic nowadays from our increasingly web-savvy cataract patients is "Can I have a multifocal lens implant?" We expect that same query to be raised within the confines of GP and optometry clinics very soon, so on page 7 we supply some ready answers on this advancement, which has sparked enthusiasm and frustration in equal measure.

Finally, we have created a pullout poster on diabetic eye disease which I hope is vivid, pithy and frightening enough to earn some square footage on that notice board in your waiting room.

Above all, my greatest wish is that you continue to find TEInsight a good read, and continue to tell us how we should make it even better.

**Dr Wong Hon Tym**

### TEInsight Editorial Team

Dr Wong Hon Tym (Chief Editor)

Ms Tan Mui Leng (Secretariat)

Dr Christopher Khng

A/Prof Goh Lee Gan (Advisor)

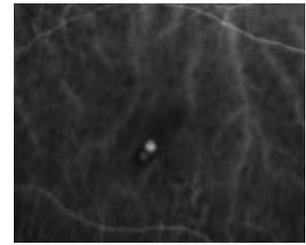
We would appreciate your frank feedback on any part of this newsletter, be it on the format or content. Please email your comments to [tei@nhg.com.sg](mailto:tei@nhg.com.sg) or mail to Ms Tan Mui Leng, The Eye Institute @ Tan Tock Seng Hospital, 11 Jalan Tan Tock Seng, Singapore 308433. Please indicate if you would like to receive our 4 monthly-newsletter, please send an email with your name to [tei@nhg.com.sg](mailto:tei@nhg.com.sg) with the subject heading 'TEInsight Subscribe'.

Continued from page 1

Age Related Macular Degeneration

ICG dye is particularly useful in angiography of choroidal vasculature, so choroidal vascular anomalies such as PCV show up well on ICG angiography.

More recently, confocal scanning laser dynamic angiography has been able to provide more dynamic information on the retinal and choroidal perfusion structure.



Polypoidal choroidal vasculopathy as seen in ICG angiography

### Current Treatment Options for AMD: Dry AMD

As dry AMD seldom results in severe visual loss and is usually very slowly progressive, no active treatment is indicated in most patients.

However, the Age Related Eye Disease (ARED) Study showed that in specific categories of patients with dry AMD, specific dosages of vitamins A, C, E and zinc supplements reduced the risk of progression to advanced AMD.

The study also cautioned against the use of high dose vitamin A in smokers as it was shown to be associated with an increased risk of lung cancer in this group.

### Wet AMD Laser

Direct laser photocoagulation and Verteporfin Photo-Dynamic therapy (PDT) are commonly used in the treatment of wet AMD. The choice of treatment depends heavily on the location of the CNV.

- For extrafoveal CNV (200um or more from the foveal centre), direct laser photocoagulation is effective and remains the mainstay of treatment.
- For juxtafoveal or subfoveal CNV, direct laser ablation would result in an immediate central field defect which many patients cannot accept. Therefore, for suitable CNV sub-types, PDT is preferred over direct laser therapy. Similarly, PDT can also be done for PCV lesions close to the foveal centre.

Unfortunately, Verteporfin PDT costs about US\$2000 per treatment. Most patients require several treatments, making cost a significant consideration when offering PDT as a treatment option.

### Anti-vascular endothelial growth factor (anti-VEGF) treatment

Extra and intra-ocular injections of anti-VEGF injections are fast becoming the main stay of treatment of juxtafoveal and subfoveal CNV and RAP.

- Among the anti-VEGF treatments, both Pegatanib (Macugen) and Ranibizumab (Lucentis) have been proven to be beneficial in large randomized trials. These are administered intra-vitreally. The main hurdle remains the significant cost. Both currently cost about US\$1000- US\$1500 per dose and both require 4-6 weekly injections.
- Anecortave acetate (Retaane) is another angiostatic agent. It is injected into the extraocular space behind the macula. As it is not administered intra-vitreally, patients who are not prepared to accept the risk of endophthalmitis as a rare complication of intra-vitreous injections may prefer this option. However, benefits of anecortave acetate have not been as dramatic. It has however, been shown to be as effective as PDT.
- Off-label use of Bevacizumab (Avastin) deserves a special mention. Avastin has already been approved for the treatment of colorectal carcinoma. However, treatment of wet AMD with intra-vitreous Avastin has shown promising results and it remains to be seen if the efficacy can be proven in randomized controlled trials.

### Self-monitoring and rehabilitative management

Patients diagnosed with both dry and wet AMD should be taught Amsler grid self-monitoring in order to pick up early symptoms. This is especially important in patients who have already lost vision in one eye from wet-AMD. A copy of Amsler chart can be downloaded from the TEI website [www.tei.nhg.com.sg](http://www.tei.nhg.com.sg).

For those who have lost central vision in both eyes from exudative AMD, low-vision aids can help improve the quality of life.

### Eye screening

While it has not been conclusively shown that systematic fundus screening for AMD in a population can reduce visual loss, recent recommendations are for those above 55 years of age to undergo eye screening for AMD. This is especially so in the presence of risk factors.

By A/Prof Lim Tock Han and Dr Nikolle Tan , [TEI@TTSH](mailto:TEI@TTSH) ◀

# Diabetic Retinopathy: A Re-look

**D**iabetic retinopathy is one of the major causes of blindness in Singapore. In a 1998 National Health Survey, about 9% of adult Singaporeans 30-69 years were found to have diabetes mellitus (DM). In a Singapore study of 13,296 patients who presented for diabetic retinal photography, 22% had diabetic retinopathy, with 11% severe enough to be deemed sight threatening.

Blindness is 25 times more common among diabetic patients compared to non-diabetics. For patients with DM for more than 15 years, 10% will develop severe visual handicap and 2% will go blind.

As diabetic retinopathy usually has a long silent phase, photo-screening is important to detect early changes. With timely detection and treatment, 90% of blindness can be prevented. Based on the Early Treatment of Diabetic Retinopathy Trial, early laser treatment at the appropriate stages of diabetic retinopathy halves the risk of visual loss.

The Clinical Practice Guidelines of Diabetes Mellitus published by the Ministry of Health, Singapore state that:

- Life long evaluation for retinopathy by fundal screening of diabetic patients is a valuable and necessary strategy.
- Physicians who are involved in providing diabetic care to their patients have a pivotal role in ensuring that patients are screened either by ophthalmoscopy (through dilated pupils) or fundal photography.

- Diabetic patients of age 30 years or older should be screened at diagnosis and then at least yearly
- Diabetic patients of age 10-29 years should be screened 3-5 years after diagnosis and then at least yearly.
- Diabetic patients of age less than 10 years need not be screened till he/she reached 10 years of age.
- Diabetic patients who become pregnant should be screened during the first trimester.
- All diabetic patients who are found to have retinopathy by their physician need to be referred to an ophthalmologist for evaluation.

Screening of diabetic retinopathy using diabetic retinal photography (DRP) cameras is widely available in Singapore:

- Every restructured tertiary hospital, including the member departments of The Eye Institute (TEI) at Alexandra Hospital, National University Hospital and Tan Tock Seng Hospital.
- Every polyclinic including those under the National Healthcare Group Polyclinics (NHGP)
- Diabetic Society of Singapore (DSS)
- Selected centres of the National Kidney Foundation (NKF)

In addition, TEI offers a mobile diabetic retinopathy photography (MDRP) service for participating general practitioners. The MDRP brings the DRP camera to the participating GP-clinics, making it convenient for diabetic patients to have their eye screened during their regular consultation for diabetes.

By **A/Prof Lim Tock Han** and **Dr Nikolle Tan**, TEI@TTSH

## SPOTLIGHT ON

### TEI's Vitreo-Retina Team

TEI's VR Team is proudly distinguished by a cache of local and South-East Asian firsts: the use of scanning laser ophthalmoscopy to dynamically image lesions in age-related macular degeneration; sutureless 23G vitrectomy; the use of intra-vitreous steroids in the treatment of refractory macular edema; and the use of low-cost intravitreal Ganciclovir therapy for infectious retinitis in AIDS patients.



**A/Prof Lim Tock Han**

A/Prof Lim is the Director, TEI and Senior Consultant in TEI@ TTSH. He is fellowship trained in Ocular Inflammation from Jules Stein Eye Institute, USA and Vitreo-Retina from the Mayo Graduate School of Medicine, USA. He pioneered the novel, low-cost intra-vitreous therapy regime for CMV Retinitis in Singaporean AIDS patients, as well as introduced High-Speed Indocyanine Green Angiography in Singapore, which has revolutionized the treatment of Age-Related Macular Degeneration.



**A/Prof Au Eong Kah Guan**

Adjunct A/Prof Au Eong is the Deputy Director (Research) TEI, and the Head of Ophthalmology and Visual Sciences, Alexandra Hospital. He holds concurrent appointments in the Yong Loo Lin School of Medicine at the National University of Singapore and the Singapore Eye Research Institute. His fellowship was in the Manchester Royal Eye Hospital, England, and the Wilmer Eye Institute, Johns Hopkins Hospital, USA. He was instrumental in the development of revolutionary surgical techniques including sutureless 25G vitrectomy and was the first surgeon to perform macular translocation surgery for macular degeneration in Southeast Asia.



**A/Prof Caroline Chee**

A/Prof Chee, the Vitreo-Retinal Consultant in TEI @ NUH, is immensely experienced in medical retina pathology. She is a pioneering Vitreo-Retinal surgeon in Singapore and is fellowship trained with Professor Alan Bird in Moorfields, London in diseases of medical and surgical retina.



**Dr Zaw Minn Din**

Dr Zaw is Consultant to the VR service in TEI @ TTSH & NUH. He has extensive experience and training in the United Kingdom where his area of interest extends to the medical and surgical management of vascular diseases of the retina. He is active in local and international community ophthalmology with the introduction of an island-wide web-based diabetic retinopathy screening programme which is linked to the NHGP diabetic screening service.



**Dr Nikolle Tan**

Dr Nikolle Tan is fellowship-trained in surgical and medical retina at the Royal Victorian Eye and Ear Hospital in Melbourne, Australia, and the Ophthalmology Department of Harvard University, USA. She is trained in the use of standard and sutureless microsurgery for a wide range of surgical retinal diseases. She is also experienced in the use of lasers as well as newer therapeutic options like anti-angiogenesis drugs for the treatment of medical retina disorders.



**Dr Stephen Teoh**

Dr Stephen Teoh completed his HMDP Fellowship at the Bristol Eye Hospital, UK, under the mentorship of Professor Andrew Dick in 2006. He undertook training in surgical vitreoretina, uveitis, ocular immunology and inflammation. This was followed by a clinical observership in HIV-related ocular inflammation at the Wilmer Eye Institute, Johns Hopkins Hospital, USA, under the supervision of Dr James P Dunn and Professor Douglas Jabs. Dr Teoh runs his dedicated sub-specialty clinics at TEI@TTSH, as well as the Communicable Disease Centre (CDC).

Visiting Consultants:

**Dr Billy Tan**  
@ TTSH

**Dr Ang Beng Chong**  
TEI @ NUH

**Dr Yap Eng Yiat**  
TEI @ TTSH

**Dr Ronald Yeoh**  
TEI @ NUH

**Dr Lee Jong Jian**  
TEI @ TTSH

# DIABETIC EYE DISEASE Can I prevent it?

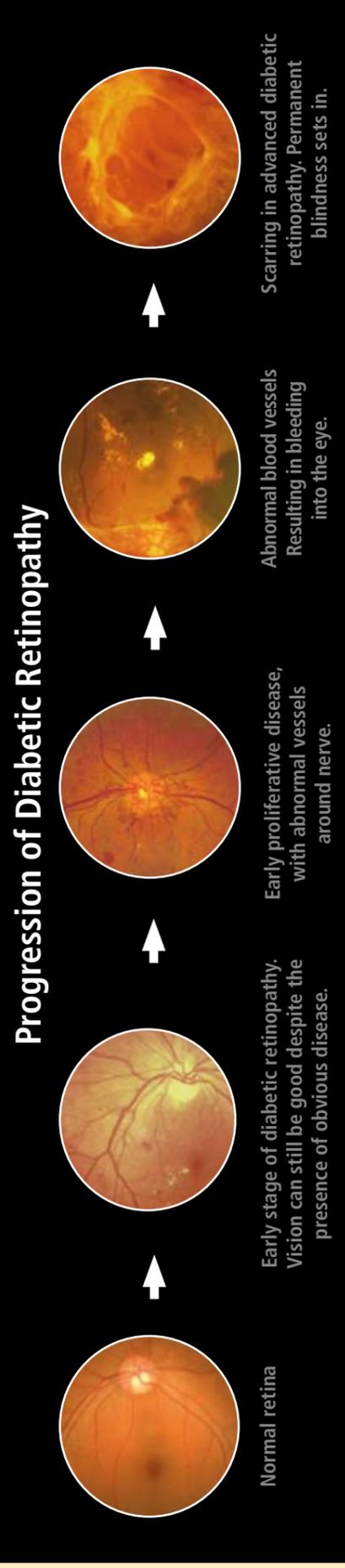
## Our Retina

The eye is an optical system that focuses light onto a light-sensitive nerve layer known as the retina. In that sense, the retina is equivalent to film in a camera, and if this "film" is damaged by disease, then the image will be poor, no matter how well constructed the rest of the system is.



Diabetic eye disease, which mainly affects the retina, is one of the major causes of blindness in many countries.

**Blindness is 25 times more common among diabetic patients than in non-diabetics.**



## How Does Diabetes Affect The Eye?

The retina is richly supplied by blood vessels, which provide it with oxygen and nutrients. Diabetes affects the blood vessels throughout our bodies, including those of the retina. Damage to retinal blood vessels by diabetes is termed **diabetic retinopathy** and usually occurs over many years. In the early stages, vision can still remain good.

Diabetic retinopathy results in leakage of fluid, fats and proteins from blood vessels into the retina. Leakage into the area of central retina can result in poor central vision, and this is called **diabetic maculopathy**.

Diabetic retinopathy also results in reduced blood flow to the retina. This causes the retina to respond by "sprouting" abnormal blood vessels, which leak and bleed easily. This is termed **proliferative diabetic retinopathy**. Bleeding can cause sudden and severe loss of vision. Eventually, scars that remain after these bleeding episodes damage the retina, causing irreversible visual loss.



Leakage of fluid, lipid and proteins from blood vessels into the area of central vision.

## How Can Diabetic Eye Disease Be Treated?

Severe retinopathy must be treated with intensive laser therapy to prevent further deterioration of vision.

In the most severe cases, major **eye surgery** will be required to remove the blood and/or to restore the retinal architecture. In such cases, vision may be salvaged, although full recovery is uncommon.

## How Can I Prevent Diabetic Eye Disease?

Eye disease is far more common in diabetics with poorly controlled blood sugar levels. Thus the **first step** to prevent diabetic retinopathy is to tightly control your blood

sugar level. This should be discussed with your family doctor, or diabetes specialist. The **next step** is to ensure that you have your eyes checked at least once a year, as early disease can be detected by photographing the retina with a special "Fundus" camera. With timely detection and treatment, blindness can be prevented in most cases.

**So if you have diabetes, do consult your doctor about getting your eyes regularly photographed for diabetic retinopathy.**

## Where Can I Get My Retina Photographed?

Your family doctor is the best person to arrange this for you. Retinal photography is offered at various polyclinics, private clinics and hospitals. The Eye Institute also runs a Mobile Diabetic Retinal Photography service, which delivers the Fundus Photography camera right into your family doctor's clinic for added convenience. Our expert ophthalmic technicians will take the photographs, which will then be sent back to the The Eye Institute's eye specialists for analysis.

Images from TEI and the American Academy of Ophthalmology.

# Surgical Management Dilemma

## – Purse-string Iris Suture for Errant Lens Implant

An intraocular lens sutured to the sclera is often used in dire situations where there is an absence of capsule support. While this is a useful technique, problems occasionally arise from lens swiveling that is commonly present with this method of fixation. This sometimes leads to optic capture (Fig. 1). This event is usually marked by complaints of sudden visual blurring and glare. The cause is often a flaccid iris, and reverse pupil block resulting from the iris aperture sealing against the anterior lens surface. A previous vitrectomy compounds the problem, from increased iris tissue mobility and compliance secondary to reduced vitreous support.

Often, this problem is addressed by taking the patient to surgery to release the optic and constrict the pupil, perhaps with long-term miotic usage to prevent a recurrence. A far better approach would be to correct the predisposing anatomical factors leading to the problem.

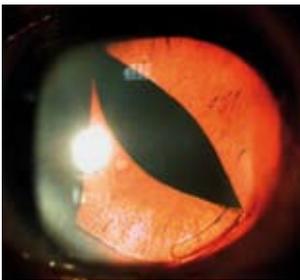


Fig. 1



Fig. 2



Fig. 3



Fig. 4

The initial management should be an attempt at the slitlamp to release the optic capture by applying focal intermittent pressure with a cotton tip on the anaesthetized conjunctiva over the lens haptic scleral fixation points. If this were successful, then long-term pupil constriction with pilocarpine eyedrops, and a laser iridotomy to prevent reverse pupil block could prevent a recurrence.

If surgery is required, then a permanent solution must be sought. After using a lens manipulator to release the optic (Fig. 2) and pupil constriction, a cerclage suture encircling the pupil will effectively prevent a recurrence by limiting pupil size to less than the lens diameter. A continuous 10/0 prolene suture weaving in and out of iris tissue around the pupil, placed with multiple small bites (Fig. 3) using a fine curved needle (e.g. Ethicon CTC-6L) is technically challenging, even for an experienced surgeon. After roughly each quadrant of travel within iris tissue, the needle tip has to be retrieved from the eye inside a docking 27G cannula passed through a paracentesis (Fig. 4). The needle is then reversed, with care taken not to engage corneal stromal fibres as the needle is reintroduced into the eye using the same incision (Fig. 5), and the process repeated



Fig. 5

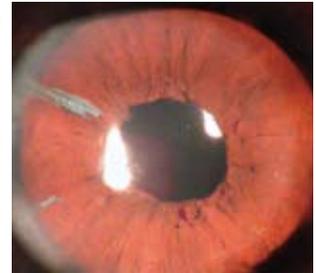


Fig. 6

for the remaining quadrants until the pupil is encircled. Finally the 2 suture ends are brought together and the knot tied externally and slipped into the eye using a Siepser sliding knot technique. The final pupil size may be adjusted by mechanically dilating the pupil to beyond the required size, then tightening the knot until the desired final size has been achieved (Fig. 6).

This final size (roughly 3.5 mm) is a compromise between acceptable optical quality for the patient, and adequacy of fundus examination. With this approach, there is no further possibility of optic capture as long as the suture remains intact.

By Dr Christopher Khng, TEI @ TTSH

### SPOTLIGHT ON

## TEI's Cataract, Implant & Anterior Segment Team



Dr Fam Han Bor

Dr. Fam completed a 15 month fellowship in Cornea & Refractive Surgery at the University of British Columbia, Vancouver, Canada. He is currently Head of Cataract & Implant Services TEI @ TTSH, Singapore. Also a senior consultant in Refractive Surgery at TEI, Dr. Fam is actively involved in the teaching of refractive and cataract surgery in the region, with a particular interest in corneal topography, visual optics and wavefront sciences.



Visting Consultant:

Dr Christopher Khng

A specialist in cataract surgery and anterior segment reconstruction, Dr. Christopher Khng has designed surgical instruments for major manufacturers in the USA. He is also a reviewer for several international eye journals and a chapter author in books on cataract and iris surgery. His Fellowship training was in advanced lens and iris surgery in the United States, and he currently practices at The Eye Institute @ TTSH as a visiting consultant, while running his own private practice.

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# The Promise Of Youthful Vision

## Multifocal Intra-Ocular Lens Implants

**M**ultifocal intraocular lenses are special lens implants that combine clear distance and near vision. These special lenses are implanted during cataract surgery in place of conventional single focus (or monofocal) lens implants used currently in the majority of patients.

### Advantages

Traditional monofocal intraocular lenses offer good vision at one particular distance, with objects at other distances becoming increasingly out of focus. When a regular lens is chosen for good distance vision, near vision invariably suffers, with the patient needing to wear near glasses for comfortable reading close up, for example newspaper reading. Multifocal lens implants eliminate this problem by offering the possibility of clear vision at a variety of distances, hence the term "multifocal". This translates into greater convenience for patients, who find that they no longer need spectacles for majority of their daily activities. Requiring special manufacturing processes, multifocal implants are more costly than standard lenses.

### Side Effects

In the past, enthusiasm for these multifocal lenses was tempered by their limitations including night-time halos and streaks around lights and glare. Lens

performance was also limited by the patient's pupil size, with decreased near performance as the pupil became smaller, such as in bright conditions.

The new generation of multifocal lens implants are of the diffractive type, with much improved near-vision performance and also very much less dependence on pupil size. Night-time visual phenomena are also significantly minimised. For the majority of patients, symptoms are mild, acceptable and usually resolving quickly.

### Success Rate

Recent data in the United States Food and Drug Administration (FDA) study for one of the new diffractive multifocal lens implants revealed that 80% of individuals implanted in both eyes with these lenses did not require spectacles for any of their daily activities.

### Patients Selection is Crucial

Not all patients may be suitable for multifocal implants, however. Individuals who do plenty of night-time driving, such as taxi drivers, should probably not have these lenses, because of the potential for light-streaks and starbursts from the headlights of oncoming vehicles. Individuals, who may be troubled by even the slightest amount of halos are further

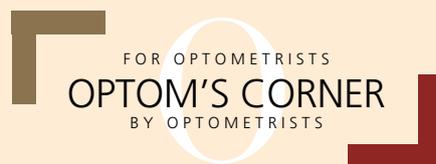
contraindications. Pre-existence of high degrees of astigmatism may also dissuade the surgeon from implanting a multifocal lens. A successful outcome hinges critically on good patient selection.

Surgery for multifocal implant lenses is essentially similar to regular cataract surgery. However, these lenses work best in pairs, thus surgery for the second eye has to be concluded within a few weeks of the first. Surgery usually takes less than 20 minutes, under topical anesthesia with little, if any discomfort. Once both surgeries have been done, the patient should then enjoy newfound independence from spectacles, which can be quite liberating. Glancing up from a magazine to look at someone approaching should no longer require a change of eyeglasses, or the need for special bifocal spectacles, with a natural transition from near to distance vision.

With the advent of multifocal lens implants, cataract surgery is no longer simply a means to remove a cloudy lens; it has evolved into a refractive procedure, with the very real possibility of restoring "youthful" vision for many of our patients.

By Drs Christopher Khng & Fam Han Bor, TEI@ TTSH

## How To Recognise And Refract Patients Implanted With Multifocal Lenses



Multifocal intraocular lenses (IOL) have increased in popularity over the past few years. (See article above). It will be awkward if the optometrist attempted to prescribe such patients with near glasses when none was required. Here are some ways to pick out these patients from the crowd:

### LENS IDENTIFICATION CARD



- Ask your patient to show you their lens identification card. This card, given after cataract surgery, is a record of the model of the lens implanted, the name of the surgeon, and the date of surgery.
- Look carefully at the lens model name and the diagram of the lens. A multifocal lens design will have concentric rings shown on the lens. The commonly implanted multifocal IOL models are the Array (SA40, SA44), Rezoom (NXG1), and Tecnis Multifocal (ZM900), all from Advanced Medical Optics (AMO), and the ReStor (SA60D3, SN60D3) from Alcon.

If the patient cannot produce this card, and is unsure whether a multifocal lens was implanted, we then have to proceed further:

### HISTORY TAKING

- Were they told that they would have "special" lens implants to allow them to see both far and near without the need for glasses?
- Did their surgeon inform them about the possibility of experiencing some short terms halos, glare and light streaks from car lights and streetlamps?
- Are they able to do reading or perform computer work comfortably after the surgery?

### UNAIDED NEAR VISUAL ACUITY

- A good unaided reading acuity (approximately N10 or better) in an emmetropic post cataract operation patient indicates that the patient may have multifocal IOL implants.

### EXAMINATION OF THE RED REFLEX

- When examined with the direct ophthalmoscope, the red reflex may show concentric rings if the examination is done in a darkened room to allow the pupils to dilate, and a medium ophthalmoscope light intensity is used. It may be easier to identify the rings by moving closer to the patient and dial in a +2.

### SLIT LAMP EXAMINATION

- If you do a careful slit lamp examination, you may spot the concentric rings on the IOL, even in an undilated pupil. Dim the lights in the room and set the slit lamp intensity on low, so that the pupil may enlarge sufficiently.

Having identified these patients, they may be refracted just like any other patient. However, there are a few extra steps to perform after the distance subjective refraction:



Spotting the concentric rings on the IOL

- Check the near visual acuity with the distance correction before putting in the near addition. These patients usually have good near visual acuity (N10 or better) with the distance correction.
- On near subjective refraction, patients will usually reject the near addition given. Some patients with the older refractive multifocal IOL design might need a small near addition of about +1.00D.

In the near future, with the improvement of lens technology, we can expect more patients to be implanted with multifocal IOLs, and an increase in the numbers of these patients in our practice.

By Ms Angie Koh and Dr Christopher Khng, TEI @ TTSH

Image of TECNIS Multifocal IOL from Advanced Medical Optics, Inc.

## WHAT'S ON



### 5th National Updates for Optometrists and Opticians @ TTSH

The annual meeting held on 2-3 Nov last year was a collaborative effort between the Singapore Polytechnic Optometric Centre and TEI to provide the latest updates to optometry eye care providers in Singapore and the region. Highlighted this year were paediatric eye care and glaucoma.

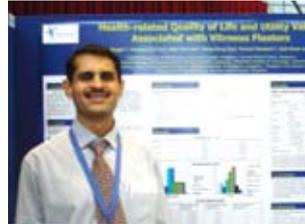
**Above:** Dr Lim Boon Ang, Chairman of the 5th NUOO, delivering her opening address for the event, with Ms Anna Yeo, Co-Chairman, next to her.



### 7th National Eye Care Day - "Towards a Better and Clearer Tomorrow" @ TTSH

In conjunction with 7th National Eye Care Day held on 2 December 2006, a series of activities including Free Eye Screening, Free Public talks on Cataract, Glaucoma, Common Retinal Disorders, and Refractive Surgery were conducted at TTSH. Also featured were displays of Art & Crafts, Touch Art, Head & Shoulders Massage by Singapore Association of the Visually Handicapped.

**Above:** Visually-handicapped busker, Steven Yeoh, with Organising Chairman, Dr Vernon Yong, TEI consultant, in the background.



### 3rd Asia-ARVO Meeting on Research in Vision and Ophthalmology

Dr Ajeet Wagle, TEI registrar, presenting his poster: Health-related Quality of Life and Utility Values Associated with Vitreous Floaters at Asia-ARVO Meeting, 2-5 March 2007.



### Myanmar Missionary Trip

TEI organised a missionary trip to Myanmar on 19-27 Oct '06 to perform charity ophthalmic consultation services in the Sitagu Ayudana Hospital, a Missionary hospital providing subsidized and in many instances, free health care to patients from all over Myanmar. The team consisted of Drs Nikolle Tan, Yip Chee Chew, Zaw Minn-Din, E-Shawn Goh, Augustinus Laude and Eugenie Poh as well as nursing staff Sisters Goh Lee Lee, Seng Guat Neo, senior nurse manager Wee Cheng Hoon and senior staff nurse Alicia Cheng.

## Upcoming Events

Date/ time	Venue	Title	Contact Details
<b>For Public</b> 7 July 2007	TTSH Theatre Level 1 \$5	Public Forum on Cataract - Dr Voon Li Wern & Dr Ho Su Ling, TEI @TTSH	Ms Lim Sing Yong : 6357 2678 sing_yong_LIM@ttsh.com.sg
15 July 2007 8am - 12pm	Aljunied CC	Eye Screening (In collaboration with Lion's Club Sembawang)	
<b>For GPs</b> 28 Jul 2007 1.30pm - 3.30pm	Orchid Country Club \$10	GP Tutorial on Retinal Updates Dr Nikolle Tan & Dr Stephen Teoh, TEI @ TTSH	Ms Lim Sing Yong : 6357 2678 sing_yong_LIM@ttsh.com.sg
<b>For Ophthalmologists &amp; Trainees</b> 3 & 4 Aug 2007	STAR Lab, National University Hospital	3rd NUH Oculoplastic Dissection Course & Symposium on Current Concepts & Expanding Horizons in Oculo-Facial Surgery Visiting Expert: Dr Jane Olver	Ms Valerie Ng : 6772 5318 Valerie_Ng@nuh.com.sg
<b>For Optometrists and Opticians</b> 21 & 22 Jun 2007	Alexandra Hospital	6th National Congress of Optometry & Opticianry	Ms Alice How: 6379 3741, 6379 3540(fax). Alice_How@alexhosp.com.sg

## TEI 2nd Research Day



A/Prof Lim Tock Han with two of our prize-winners: Drs Colin Tan and Yong Shao Onn.

### Prize Winners

#### THE EYE INSTITUTE-BAUSCH & LOMB RESEARCH PRIZE

Prevalence and Risk Factors for Refractive Errors in Singaporean Adults - The Singapore Longitudinal Ageing Study (SLAS)  
CSH Tan, YH Chan, TY Wong, G Gazzard, M Niti, TP Ng, SM Saw

#### THE EYE INSTITUTE-ALLERGAN RESEARCH PRIZE

Comparison of Humphrey Visual Field and Multi-Focal Visual Evoked Potential in Patients with Acute Angle Closure Glaucoma  
K Chia, LY Chen, P Chew, BA Lim

#### THE EYE INSTITUTE-HOYA RESEARCH PRIZE

Assessment of Peripheral Anterior Chamber Depth Using the Modified Van Herick Method: Is Inter-Observer Variability Significant?  
ACY Tham, CSH Tan, VKY Yong, CFChin, SP Chan

#### THE EYE INSTITUTE-NOVARTIS RESEARCH PRIZE

Health Related Quality of Life and Utility Values Associated with Vitreous Floaters  
AM Wagle, VSN Tan, W Lim, KG Au Eong

#### BEST ORIGINAL PAPER

Functional Visual Loss in Adults and Children: Patient Characteristics, Management, and Outcomes  
Lim SA, Siatkowski RM, Farris BK

#### OUTSTANDING ORIGINAL PAPER

Visual Experiences During Vitreous Surgery Under Regional Anesthesia: A Multicenter Study  
Tan CS, Mahmood U, O'Brien PD, Beatty S, Kwok AK, Lee VY, Au Eong KG

## QUIZ

### YOU MAKE THE DIAGNOSIS!

A 40 year-old female with short stature as well as short stubby fingers presents with the clinical features shown. There is no history of ocular trauma. The photographs are of her right eye, but the left is similar.

- 1 What are the signs?
- 2 What is the diagnosis?
- 3 What are the systemic associations?
- 4 What symptoms and problems might the patient experience?

Quiz master: Christopher Khng

- 1) An extremely shallow anterior chamber, with a spherical crystalline lens and small lens diameter, as seen by the pupil. There is lens subluxation anteriorly secondary to marked loss of zonules. There is a nasal peripheral iridotomy.
- 2) Microspherophakia
- 3) a. Weill-Marchesani syndrome  
b. Marfan's syndrome  
c. Hyperislaemia  
d. Congenital rhabdomyoma
- 4) a. Fluctuating vision  
b. Myopic refractive error (usually high), resulting from the sphericity and high power of the lens  
c. Secondary angle closure glaucoma

## TEST YOUR EYEQ



## ANSWERS

### Alexandra Hospital - Ophthalmology and Visual Sciences

GP Hotline: 9369 3912  
OVS Line: 6379 3500  
OVS Fax: 6379 6292

### National University Hospital - Eye Clinic

GP Hotline: 6772 2000  
Clinic Line: 6772 5408  
Clinic Fax: 6772 5508

### Tan Tock Seng Hospital - Eye Centre

GP Hotline: 6357 8383  
Centre Line: 6357 8000  
Centre Fax: 6357 8675



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