Early Detection Saves Sight

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image

Centre for Eye Health

NEWSLETTER FOR OPTOMETRISTS

This month the Centre for Eye Health (CFEH) strengthened its ties with neighbouring Prince of Wales Hospital, presenting a suite of general and advanced equipment to the eye clinic valued at $300,000.

The resources include sophisticated non-invasive diagnostic instruments, as well as lasers for treatment of conditions such as diabetic retinopathy, glaucoma and macular degeneration.

As part of the partnership agreement with Guide Dogs NSW/ACT and CFEH, the South Eastern Sydney Local Health District (SESLHD) has appointed consultant ophthalmologists to provide specialist ophthalmic consultation and advice to CFEH as required.

Since commencing operations in 2009, our team at CFEH has provided almost 10,000 of your patients with advanced ocular assessment. When the CFEH optometrist identifies an anomaly, the case is always reviewed by an SESLHD ophthalmologist who will confirm if referral to a specialist is required.

This quality control process at CFEH helps to ensure that ophthalmologists are available for the most urgent cases and that your patients are not unnecessarily out-of-pocket.

I am proud to be associated with such bold and innovative organisations as Guide Dogs NSW/ACT and UNSW and pleased that the network has now extended to include the Prince of Wales Eye Clinic.

I truly believe that by working together we can do more to help ordinary Australians who are currently at the mercy of an overstretched public health system.

Prof. Michael Kalloniatis
Centre Director

clinic update

- SCOPE CPD sessions will be held on Tuesday 17th April (introductory) and 15th May (intermediate) at CFEH from 6.30pm - 9.00pm. Addressing "When macular disease is not ARM", each session offers 6 CPD points. To register contact scope@cfeh.com.au.
- Optometrists are reminded to include a copy of the patient's current visual field test results at the time of referral when requesting a glaucoma test suite (Option 2). This information will assist CFEH to avoid unnecessary test duplication, enabling the assessment of more people sooner and a reduction in the time that patients need to spend being tested at the Centre.
- In 2010 the NHMRC released guidelines for the screening, prognosis, diagnosis, management and prevention of glaucoma. To help optometrists fully comply, CFEH has developed a new series of clinical guidelines. Download the first at cfeh.com.au or email marketing@cfeh.com.au to request a copy by post.

"I COULDN'T AFFORD THIS SERVICE PRIVATELY AND THERE WAS A 12 MONTH PUBLIC WAIT! THANK GOD FOR YOUR WONDERFUL SERVICE"

MARLENE, CFEH PATIENT

case profile:
Pterygium

Amanda, a 51-year-old female, was referred to CFEH by her optometrist for further assessment of a pterygium that was approaching the pupil margin in her right eye (Figure 1).

Amanda reported being happy with the vision in her right eye, and explained that she was not concerned by the cosmetic appearance. She also did not report any specific visual symptoms.

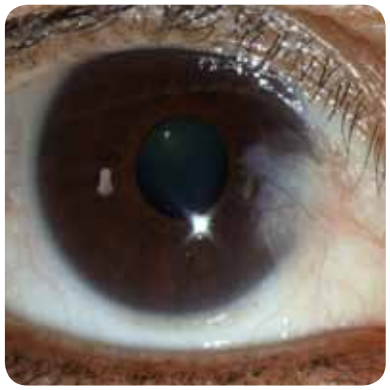


FIGURE 1: Pterygium in Amanda's right eye.

Issues to consider:

- What advanced ocular testing can aid in pterygium assessment?
- What pterygium characteristics warrant consideration for surgical removal?

continued overleaf

case profile cont...

Pterygium

Amanda has good corrected visual acuity in her right eye of 6/6-2 with a mild hyperopic refractive correction.

Unconcerned by the cosmetic appearance of the pterygium, she reported no symptoms of ocular discomfort. The pterygium was observed close to the pupillary margin under photopic illumination.

Corneal topography (Pentacam HR and Medmont E300), wavefront aberrometry (Irx3) and anterior OCT (Optovue RTvue) tests were performed to further characterise ocular, visual and physical aspects of the pterygium, and to consider whether surgical intervention should be considered.

Slit-lamp photography of the head of the pterygium (Figure 2) showed a scalloped border of the leading edge of the pterygium and small spots of pterygium tissue anterior to the leading edge known as Fuch's Islets[1].

Corneal topography under dim illumination (Pentacam HR and Medmont E300) revealed flattening of the right eye anterior corneal surface in the nasal cornea up to the pupil margin (Figure 3) and extending to within the nasal pupil margin (Figure 4).

Wavefront aberrometry under dim illumination with the Irx3 showed elevated higher order aberrations for the right eye, indicating that the optical quality of the eye, and its image forming properties, have become compromised. Figure 5A is the aberrometry map of Amanda's right eye, whilst Figure 5B illustrates the aberrometry map of an eye with normal vision and similar pupil size.

The root mean square (RMS) wavefront error in Amanda's right eye (1.52 µm in Figure 5A) was elevated compared with an eye with normal vision (0.16 µm in Figure 5B). RMS is an average of wavefront error, derived from individual wavefront errors of individual higher order aberrations. An elevated RMS value reflects excessive higher order aberrations. Normal RMS values depend on pupil diameter, and are in the order of 0.2 µm for a 5mm pupil.[2]

FIGURE 2: Magnified image of right eye showing scalloped leading edge of the pterygium.

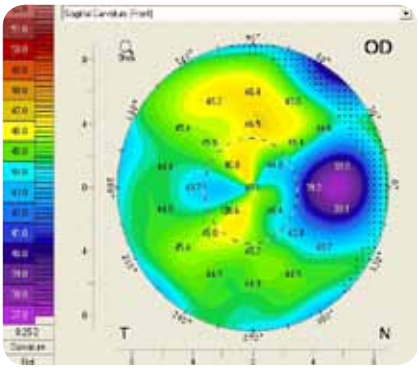


FIGURE 3: Pentacam HR axial power map of right eye.

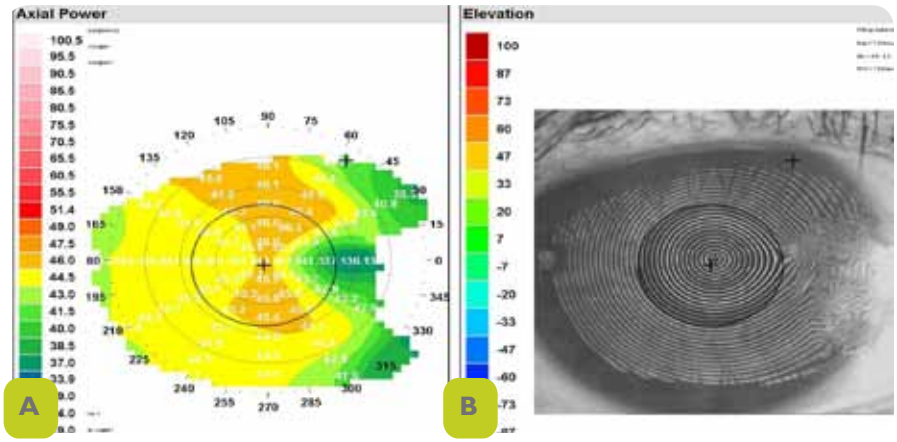


FIGURE 4: Medmont E300 sagittal curvature map of the right eye (A). Note the gross irregularity of the reflectance rings on nasal cornea (B).

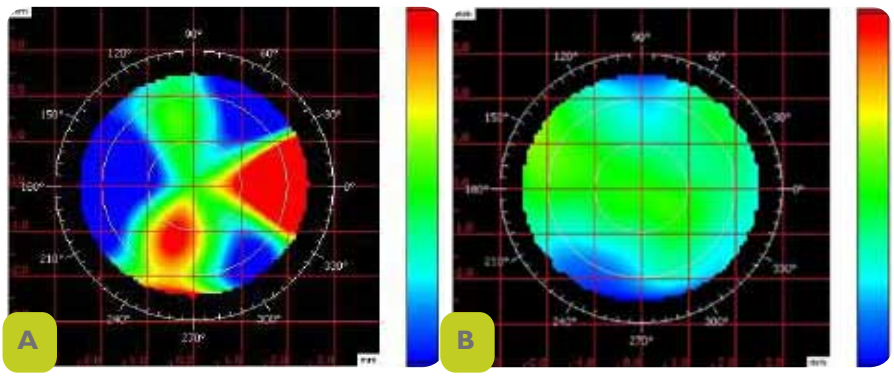
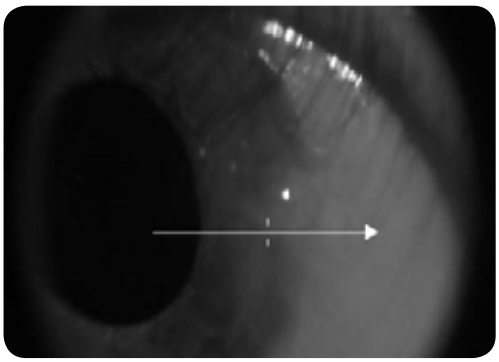


FIGURE 5: Wavefront aberration map for Amanda's right eye (A) and a normal eye at similar pupil size and same scale (B). Note the increased aberrations for Amanda's eye compared with normal.



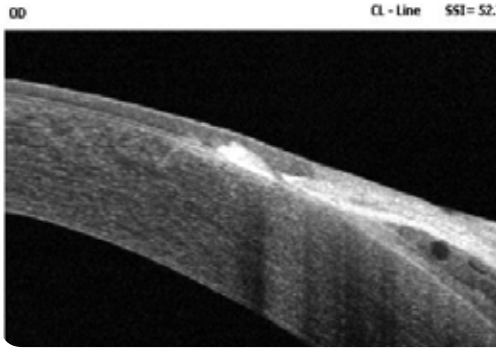


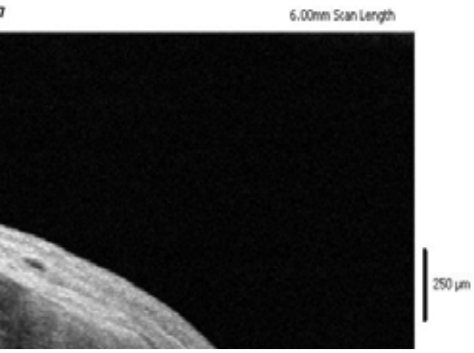
FIGURE 6: Optovue anterior OCT image showing the leading edg

Anterior OCT (Optovue RTvue) was performed to obtain depth-related information about the pterygium (Figure 6). Cross-sections through the head of a pterygium can help determine the relationship between the pterygium and corneal tissue[3], particularly whether the pterygium penetrates the corneal tissue into the stroma.If it does, the surgical outcome may be compromised[4] as the likelihood of residual corneal scarring is high and surgery should be considered earlier.

If the pterygium is at the level of Bowman's layer then a good visual outcome might be expected.[4] In Amanda's case, the leading edge did not penetrate into the stroma, suggesting that pterygium removal may produce a good cosmetic and ocular result.

Overall, cosmesis and ocular discomfort were not an issue for Amanda, and the eye in question had good visual acuity. However, the pteryigum was close to the pupil margin in photopic conditions and under dim illumination the Medmont E300 suggested the pterygium was having some detrimental impact on visual function with topography revealing corneal flattening to within the margin of the pupil.

Although the pterygium did not extend into the corneal stroma, Amanda should nonetheless consider removal in the near future. CFEH tests revealed that the visual effects of the pterygium extended beyond the pupil margin and it is likely that visual acuity may be reduced in the future if it advances further.



ge of the pterygium to be at or above Bowman's Layer.

spotlight on
Pterygium

Pterygia are ocular surface disorders believed to develop secondary to chronic ultraviolet (UV) light exposure.[5] They are thought to originate from limbal stem cells altered by the UV light.[1]

Pterygia manifest as a triangular or wing-shaped overgrowth of epithelium onto the cornea, with accompanying vascular tissue, usually at the nasal interpalpebral location. The nasal location may be favoured for pterygium location due to the focusing of temporally-located light at the nasal limbus.[6]

The current view is that pterygia originate from 'a proliferative disorder resembling a wound healing response'.[1]

Pro-inflammatory cytokines, growth factors and growth factor receptors have been found in greater abundance in pterygium tissue[5] including Interleukin 1 (IL-1), Interleukin 6 (IL-6) and Interleukin 8 (IL-8).

Vascular Endothelial Growth Factor (VEGF), which plays a prominent role in proliferative vascular disorders of the eye such as exudative age-related macular degeneration, proliferative diabetic retinopathy and corneal (neo) vascularisation, has also been found at higher levels in pterygia[5].

Extracellular matrix remodelling is also believed to play an important role in pterygium progression with local invasion into corneal tissue achieved through activation of matrix metalloproteinases[5].

All the above factors have been shown to be up-regulated by UV-B light, pointing to excessive UV exposure of limbal stem cells as a causative mechanism.[1]

In terms of symptoms, pterygia can be hardly noticeable in terms of ocular comfort or cosmesis, and there can be no discernible effect on vision if the pterygium is only marginally across the corneal surface.

The potential for pterygia to progress across the corneal surface and threaten the visual axis, as well as to cause with-the-rule corneal astigmatism, necessitates close monitoring to ensure timely surgical removal and prevent irreversible vision loss.[7]

Pterygia can affect the quality of vision through

- direct obscuration of the visual axis;
- induced corneal distortion; or
- induced astigmatism (with-the-rule).

In these respects corneal topography and wavefront aberrometry are valuable tools.

Hirst[7] recommends vision loss, or likely imminent vision loss, as the primary indications for surgical removal of the pterygium, with growth, ocular comfort and cosmesis lesser factors.

Depth of corneal penetration, as assessed by OCT, should also be considered.[4]

Pterygium surgery requires consideration of a number of factors, each of which must be carefully discussed with the patient to ensure an informed decision.[8]

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Centre for Eye Health is an initiative of
Guide Dogs NSW/ACT and The University of New South Wales

spotlight (continued)

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This edition prepared by
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To access previous editions of the IMAGE newsletter, or to download additional resources for optometrists, please visit www.cfeh.com.au

did you know?

A Referrer Hotline is now available for registered optometrists.

REFERRER HOTLINE: 8115 0777

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Guide Dogs NSW/ACT

Many of your patients may already need our help.

It's never too early for Guide Dogs NSW/ACT to help someone adapt to life with low vision - especially when all of the training and equipment is provided completely free of charge.

Best known for its amazing Guide Dogs, the organisation offers many other services which include:

- Low Vision Services: tailored one-on-one training in the home to maximise remaining vision. There is also a low vision clinic at Chatswood, delivered in partnership with UNSW School of Optometry.
- Children's Services: we visit schools and pre-schools to educate staff on the needs of children with impaired vision and review the environment to identify any hazards or barriers to learning and inclusion.
- Programs for people with neurological vision impairment.
- Provision of electronic mobility aids and optical aids, and free training in their use.
- Orientation and Mobility (O&M) training to help people independently move safely around their own community.

Guide Dogs instructors travel to all parts of NSW/ACT.

It's easy to refer someone.
With your patient's permission, simply call (02) 9412 9300 or fill in an online referral form at guidedogs.com.au.