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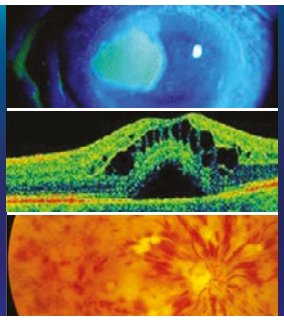
23rd ANNUAL OPTOMETRY CONFERENCE



Conference roundup

Another splendid day of CPD at Sydney's ICC saw delegates treated to presentations from special guest speaker Professor Robyn Guymer and many of Vision Eye Institute's New South Wales doctors. The outlines from each presentation are provided below.

Prof Robyn Guymer

Subthreshold nanosecond laser intervention to slow progression in intermediate age-related macular degeneration

- The **L**aser intervention in **E**arly stages of **A**ge-related macular **D**egeneration (**LEAD**) study is novel because:
  - It is the first RCT of a nanosecond laser to slow the progression of intermediate AMD to late AMD
  - It used multi-modal imaging to determine the presence of earlier stages of drusen-associated atrophy (as part of an atrophic endpoint in AMD)
- LEAD was a multi-centred, double-masked, randomised, sham-controlled, exploratory clinical trial
- 292 participants with bilateral large drusen (> 125 µm) and BCVA ≥ 20/40 were enrolled and randomly assigned (1:1) to receive laser or sham laser treatment every six months for a period of 36 months
- The **Ellex 2RT laser** used in the study is an Australian-made, nanosecond laser specifically designed for use in AMD
- **Primary efficacy outcome** was the number of study eyes progressing to a late AMD endpoint (either neovascular AMD or atrophic AMD)
- Atrophic endpoints were defined as traditional geographic atrophy (GA) based on colour fundus photography, FAF-defined atrophy, OCT-defined atrophy or nascent GA
- Neovascular endpoints were based on fluorescein and indocyanine green angiography

A/Prof Colin Chan

Herpes simplex keratitis: going viral

- HSV is the most common cause of infective blindness in the world and one of the most common reasons for repeat visits to the ophthalmologist
- **Conundrums:** steroid use for HSV stromal keratitis, mixed epithelial defect and keratitis (inflammatory) disease, HSV and laser eye surgery/ cataract surgery
- Don't taper steroids too quickly or as soon as response seen
  - Treat all new episodes of HSV keratitis with at least 3 months of topical steroids
- As a general rule, infection is more important than inflammation
- **Risk factors** for recurrent HSV include history of stromal keratitis, increased number of previous episodes and stress.
- **Educate the patient:** Neurotrophia-delayed symptom recognition, avoiding risk factors and prompt attention from an ophthalmologist
- **Oral antivirals are the gold standard** to reduce recurrence levels but remember annual liver and kidney function tests
  - Other prophylactic options trialled are topical antiviral, L-lysine and topical steroids
- When considering HSV in laser or cataract surgery, need to assess risk on a case-by-case basis and take appropriate preventative measures

Dr Mark Jacobs

Glaucoma – it's not all about the cup

- Large optic disc cups may make us suspicious about possible glaucoma; however, **minimal optic disc cupping may also be associated with glaucoma** (especially in small optic discs)
- Any cupping in a small optic disc can sometimes be abnormal
- **Serial OCT RNFL measurements** detect conversion from a glaucoma suspect to confirmed glaucoma if a new defect develops or there is deepening or expansion of an existing defect
- **Disc changes in glaucoma:** increasing excavation, neuroretinal rim loss (ISNT rule), focal notching, nasalisation of blood vessels as the neuroretinal rim thins, baring of the lamina cribrosa, splinter haemorrhages, increasing beta-zone peripapillary atrophy
- **Other factors to consider** during glaucoma assessment include IOP, vertical C/D ratio relative to disc size, central corneal thickness, presence of myopia, some medical conditions, family history and age
- **First-line medical treatment** is usually a prostaglandin analogue

Dr David Ng

Uveitis – what you need to know

- Uveitis is a relatively common presentation to eye care professionals
- Uveitis may be an indicator of life-threatening or sight-threatening disease and even its treatment can have sight-threatening consequences
- Uveitis is classified according to the anatomical involvement
- Anterior uveitis is the most common presentation and needs to be differentiated from other common causes of red eye (e.g. bacterial conjunctivitis, viral conjunctivitis, allergic conjunctivitis, keratitis).
  - A simple differentiating factor is the presence or absence of discharge
  - Anterior uveitis also typically involves ciliary injection (where the hyperaemia is particularly prominent around the limbus and absent in the palpebral conjunctiva)
  - Anterior uveitis treatment is intensive topical steroid eye drops, often in conjunction with topical atropine
- Uveitis that involves more posterior anatomical structures generally indicates a more serious underlying cause (e.g. toxoplasmosis, tuberculosis, syphilis, sarcoidosis, multiple sclerosis)
- Treat the underlying cause as well as the uveitis
- Early referral to an ophthalmologist is advised in all cases of uveitis

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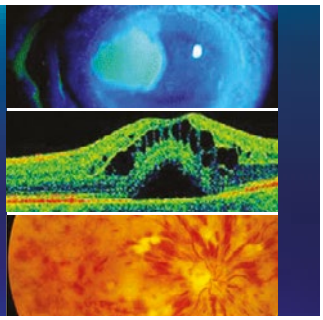

Dr Patrick Versace

SMILE® – the now and the next

- 5 billion myopes by 2050; 1.5 million SMILE procedures to date
- SMILE is a minimally invasive, no-flap, closed-system, keyhole surgery that leaves the corneal surface 'untouched' (corneal strength and corneal nerves better preserved)
- Higher-order aberrations (HOAs) and spherical aberrations better suited to SMILE than LASIK
  - HOAs after LASIK compound aberrations due to cataract
- **SMILE vs LASIK**
  - **Pros –** less impact on corneal sensation, stronger cornea, eliminate excimer laser variables, keyhole surgery, no flap dislocation, future lenticule implant
  - **Cons –** slower visual recovery, difficult technique-learning curve, centration more difficult, no hyperopic treatment, can't re-treat with SMILE (ASLA enhancements)
  - Compared to LASIK patients, SMILE patients had better corneal sensation, better TBUT and OSDI, less corneal inflammatory markers and improved corneal strength for treatments over 6D
  - **SMILE is better than LASIK –** equal refractive outcomes, higher patient acceptance, less inflammation, less dry eye, less HOAs, better corneal strength, more controlled surgery
- **ICL vs LASIK**
  - Compared to LASIK, ICL offers better contrast sensitivity, better safety profile, decreased spherical and chromatic aberration, and better patient satisfaction
  - For mid myopia (-4), ICL offers better optical quality while SMILE offers better refractive predictability
  - For high myopia (-6 to -9), SMILE offers better UCVA while ICL offers better OSI, modulation transfer function and optical quality
- **Future SMILE treatments:** Hyperopia, presbyopia, lenticule extraction and lenticule implant

A/Prof Tim Roberts

MIGS – paradigm shift in glaucoma management

- Treatment algorithms for glaucoma are shifting dramatically with, and increasing number of ophthalmologists taking advantage of, MIGS to reduce IOP
- Traditionally, glaucoma has been treated with topical therapy, ALT/SLT and filtering surgery for more severe cases
- Negative impact of long-term drop therapy: inconvenience to patient, cost, non-compliance, drop toxicity, symptoms and side effects, loss of effectiveness and unrealistic treatment option in developing nations
- Filtration surgery is effective but is major surgery and can have complications
- MIGS are effective, have a good-safety profile and are an earlier surgical intervention than filtration surgery
  - Minimally invasive ab-interno (from the inside) surgery
  - Subconjunctival (Xen), Schlemms canal (iStent, Hydrus), suprachoroidal (iStent Supra)
- For mild-to-moderate glaucoma + cataract: iStent/Hydrus replaces 1–2 medications and can reduce the medical burden on the patient, modest IOP reductions are seen with cataract surgery alone
- For moderate glaucoma or high IOP with a reasonable disc and younger patient: a Xen implant
- For advanced or progressive disease needing a low IOP: trabeculectomy and tube surgery as a standalone procedure
- Balance improved management and IOP lowering with surgical risk
  - Risk of surgery should not outweigh risk of glaucoma for the patient

A/Prof Michael Lawless

Into the future – coming soon to a surgeon near you

- **Presbyopic lenses pre-op workup:** Optimise tear film, corneal aberrometry, swept source OCT for axial length, realistic conversation with patient (cannot guarantee no halos or ghosting)
- **Possible future options:** Light-adjustable lens, FluidVision accommodating IOL, Elenza Autofocal IOL, refractive index shaping, growing your own lens, drops to prevent presbyopia
- **Robots and surgery:** First ophthalmic-assisted surgery was a pterygium removal in 2015, capable of assisting with anterior and posterior eye surgery, share instrument control with the surgeon
  - Intelligent forceps can indicate force applied with acoustic signal to the surgeon
  - OCT coupled with the operating microscope for enhanced visualisation and identification of hand tremor so it can be counteracted
- **Advantages:** Filter hand tremor and allow greater manoeuvrability without direct visualisation, greater precision, telemedicine, protection against hazardous exposure
- **Disadvantages:** Initial cost, maintenance, service, learning curve, patient trust of new technology

Dr Simon Chen

Detective Simon Chen in ... The mysterious case of the painful words

- **History:** Transient reading difficulty (text very blurred) after reading for approx. 15 mins; only at work (not at home or after work); happened for last ten years and gradually getting worse (big factor in decision to retire); recent headaches; seeking fourth opinion
- **Examination:** Glasses ok, no dry eye, no binocular vision problems
- **Investigations:** OCT, CT brain, disc and RNFL normal; VF normal
- **Differential diagnoses:** lens moving, miotic pupils closing down on small central cataracts, pigment dispersion, VMT, medication toxicity, myasthenia gravis
- A second OCT series (pre- and post-reading) showed increased vitreomacular traction (VMT) after 30 mins of reading
  - Accommodation when reading exacerbates VMT

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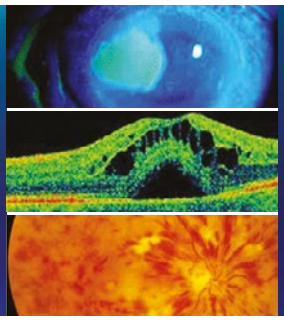

- VMT was not demonstrated with first imaging because the tropicamide drops prevented accommodation

- **Diagnosis:** VMT (prolonged reading pulled on the macula, distorting vision)
- **Treatment:** Vitrectomy resulted in symptom relief
- **Conclusion:** Be aware of the potential for dynamic vitreomacular traction to cause transient problems with reading

Prof Gerard Sutton

Challenging cases for the anterior segment surgeon: why my hair is turning grey

- Cataract surgery is effective in improving vision, reducing falls in the elderly, reducing depression and allowing patients to maintain their independence. Delaying cataract surgery for 6/12 without good reason is inappropriate.
- **Complex cataract surgery** requires a more sophisticated approach to surgery (e.g. prior traumatic cricket ball injury)
  - Consider lens dislocation, retinal detachment and glaucoma (angle recession)
  - Other issues: small pupils, PXF, uveitis, miotics, trauma, post-surgical diabetes, IFIS, history of prostate problems, anticoagulants
  - Can use pre-op dilating drops, manual separation, manual stretching, sphincter cutting, pupil-expansion device
  - IFIS: floppy iris, reasonable dilation, contracts during surgery, can be caused by Flomax, Flomaxtra, Tamsulosin Sandoz SR
  - Use capsular tension ring in patients with CXF, trauma, high myopia and toric lens in a large eye, sometimes need to sclerally fixate the tension ring
  - Use the scaffold technique for IOL exchange

Dr Athena Roufas

Itchy and scratchy! Managing eye allergies and blepharitis

- **Seasonal allergic conjunctivitis:** Common, self-limiting, small tarsal papillae, conjunctival injection, chemosis and lid oedema
- **Perennial allergic conjunctivitis:** Symptoms persist throughout the year, signs similar to seasonal but milder, remove inciting agents, treat with PO antihistamines, Olopatadine, cool compress and PF lubricants, mild steroid
- **Atopic conjunctivitis:** More serious form of allergy (average onset 38 yo), have concomitant atopic dermatitis or eczema
  - Thickened, dry eyelids; red, oedematous conjunctiva with mid-sized tarsal papillae; mucoid discharge
  - Chronic disease causes conjunctival scarring, symblepharon, peripheral vascularisation, corneal punctate erosions/erosion/ulceration, anterior/posterior subcapsular cataract
  - Treatment as above and/or stronger topical steroids (Maxidex), topical cylcosporine; oral steroids/oral cyclosporine, subtarsal steroid injection
- **Vernal conjunctivitis:** Patients under 14yo (predominantly male), usually resolves spontaneously by puberty, has a seasonal peak
  - Red and thickened lids, large papillae, Tantra's dots, mild/severe corneal erosions, corneal ulcer, cataract and glaucoma from chronic steroid use
  - Treatment with mast cell stabilisers/antihistamines, topical corticosteroids, immunomodulating agents
- **Giant papillary conjunctivitis:** Chronic, associated with foreign bodies (contact lenses, prosthesis), remove cause, improve cleaning of devices, mast cell inhibitors, more frequent contact lens replacement
- **Contact hypersensitivity:** Exposure to allergen, can affect the conjunctiva/lid skin/cornea, withdraw allergen for signs and symptoms to resolve
- **Blepharitis:** Meibomian gland dysfunction is most common cause of dry eye, beware demodex
  - Educate patient – lid hygiene and warm compress, dietary modifications, ocular lubricants (PF), tea-tree oil therapy for demodex, topical antibiotic to lid margin, FML, oral macrolide or tetracycline, IPL

Dr Tess Huynh

Trauma and ocular emergencies: when to refer?

- **Transient visual loss:** Giant cell arteritis and arteritic anterior ischemic optic neuropathy, non-arteritic anterior ischemic optic neuropathy
  - Differentiate glaucoma from CNS lesion or other optic neuropathies – glaucoma usually asymptomatic, doesn't usually cause decreased VA or colour vision, neuroretinal rim is key, VF mismatch
- **Visual loss > 24hours:** Painless and sudden RAO or RVO, ION, vitreous haem, retinal detachment, CNS disease (uncommon)
- **Gradual vision loss:** Cataract, refractive error, POAG, ARMD, DR, uncommon causes include corneal disease, CNS tumour
- **Painful vision loss:** AACG, optic neuritis, uveitis, hydrops
- **CRAO:** Treatment aims to dislodge embolus and increase perfusion
- **Double vision:** If binocular, refer immediately; monocular causes may be common (refractive error, corneal opacity, cataract) or uncommon (dislocated IOL, extra pupil, macular disease, retinal detachment)
- **Floaters/spots:** Migraine (transient); If permanent/long-standing, consider PVD, posterior uveitis, vitreous haem, vitreous debris, retinal detachment (uncommon), corneal opacity (uncommon)
- **Flashes:** Retinal break or detachment, PVD, migraine, rapid eye movement, uncommon causes are CNS occipital lobe disorders, retinitis or entopic phenomena
- **Photophobia (normal eye examination):** Consider migraine, meningitis, retrobulbar ON, subarachnoid haem, trigeminal neuralgia
- **Ocular pain:** If mild/moderate, consider dry eye, blepharitis, conjunctivitis, episcleritis, pterygium/pinguecula, FB; if moderate/severe, consider corneal abrasion/erosion/infiltrate/ulcer, anterior uveitis, scleritis, AACG
- **Orbital pain:** Sinusitis, dry eyes, orbital pseudotumour, optic neuritis, diabetic cranial nerve palsy.