

**Welcome to Bausch and Lomb's monthly research update.**

With our background in clinical ophthalmic research, mainly of the anterior eye, Bausch and Lomb have asked us to produce an independent report of some of the interesting findings coming out of the research journals each month. As a busy practitioner, this should allow you to keep more up-to-date with cutting edge clinical research and allow you to locate the articles when you want to know more about a topic highlighted.



Professor James Wolffsohn is Head of Optometry at Aston University. James' research and teaching interests mainly revolve around intraocular lenses, contact lenses, low vision and the measurement of accommodation. He has published over 100 peer reviewed academic papers, written books on Low Vision and Imaging and has given numerous international presentations. James is also a past President of the British Contact Lens Association.



Amy Sheppard is a research fellow, working with the Anterior Eye group at Aston University. Qualifying as an optometrist in 2004, Amy spent three years in full-time practice in the UK before joining Aston University's Ophthalmic Research Group in 2007 to undertake a PhD on *in vivo* analysis of phakic accommodation.

**Issue 6**

The following key clinical peer reviewed journals will be reviewed:

JOURNAL	VOLUME
American Journal of Ophthalmology	150(2)
Archives of Ophthalmology	128(7)
British Journal of Ophthalmology	94(7)
Clinical and Experimental Optometry	93(4)
Contact Lens and Anterior Eye	33(4)
Cornea	29(8)
Investigative Ophthalmology and Visual Science	51(8)
Journal of Optometry	3(2)
Journal of Refractive Surgery	26(7)
Ophthalmic and Physiological Optics	30(4)
Ophthalmology	117(8)
Optometry and Vision Science	87(7)



### Corneal limbal marking in the laser treatment of myopic astigmatism

This retrospective study has analysed whether pre-operative marking of the limbal cornea improves treatment of myopic astigmatism by LASIK or LASEK. No significant difference was identified in either angle of error or refractive outcome between the marked and unmarked groups.

*[Journal of Refractive Surgery \(2010\) 26: 505-511](#)*

### Faster recovery and reduced sensation of pain in patients undergoing lamellar epithelial debridement compared to conventional epithelial LASIK

This study compared conventional LASIK, in which the epithelial flap was repositioned, with lamellar epithelial debridement (LED), where the epithelial sheet is removed. Patients in the LED group experienced reduced post-operative pain, faster corneal healing and visual recovery, compared to those undergoing conventional LASIK. Six month follow-up showed no significant difference between the groups in corneal haze development or UCVA.

*[Cornea \(2010\) 29: 853-857](#)*

### Blepharitis treatment with azithromycin ophthalmic solution 1%

A 4-week course of treatment of moderate to severe blepharitis with azithromycin ophthalmic solution 1%, without lid hygiene measures caused reduced lid margin redness, meibomian gland plugging and ocular discharge, which persisted for 4 weeks after completion of treatment. An improvement in subject-reported symptoms also occurred, although 12 of 26 subjects experienced minor adverse reactions.

*[Cornea \(2010\) 29: 871-877](#)*

### Treatment of persistent corneal epithelial defects with plasma rich in growth factors

17 of 20 cases of persistent epithelial defects were successfully treated using plasma rich in growth factors, applied topically in the form of eye drops. The drops were effective at treating a broad range of PEDs, including iatrogenic, neurogenic, associated with burning or severe dry eye. Mean duration of treatment was 10.9 weeks

*[Cornea \(2010\) 29: 843-848](#)*



### Pterygium removal with preoperative subpterygeal injection versus intraoperative Mitomycin C

Subconjunctival injection of mitomycin C (MMC) 1 month before bare scleral excision is simple and safe, and at least as effective as conjunctival rotational flap with intraoperative MMC use for removal of pterygia. 82 eyes with primary pterygium were examined in this prospective randomised trial.

[American Journal of Ophthalmology \(2010\) 150: 193-198](#)

### Treatment of meibomian gland dysfunction with a novel thermodynamic device

Korb and Blackie describe use of a novel instrument that directly applies heat to both inner eyelids whilst simultaneously applying a pulsating pressure to the outer eyelids, in a female patient with severe symptoms that have not been relieved by conventional treatments. 3 month follow-up demonstrated restored function of numerous meibomian glands, reduced symptoms and a doubling of fluorescein tear break-up time.

[Cornea \(2010\) 29: 930-933](#)

### Location and position of contact lens cases for air-drying

This study has identified significantly higher levels of bacterial colonisation in contact lens cases dried face-up compared to face down, particularly in humid environments such as the toilet (!) and bathroom. Thirty-three percent of the 97 contact lens cases used in the study were contaminated by multiple species.

[Optometry and Vision Science \(2010\) 87: 465-468](#)

### Intraocular lens power calculation in paediatric eyes

The accuracy of the SRK II, SRK/T, Holladay and Hoffer Q formulae were determined in paediatric patients by calculation of the prediction error associated with their use. Greater prediction error (PE) occurred in children younger than 2 years, short axial lengths (<22 mm) and steep corneas (> 43.5 D average K). All formulae gave similar and low PEs for most eyes/ When PE was > 0.50 D, all formulae except the Hoffer Q gave an underestimation of IOL power. The Hoffer Q was predictable for the greatest number of eyes.

[Ophthalmology \(2010\) 117: 1493-1499](#)



### Risk factors for infantile cataracts

Risk factors for infantile cataracts of unknown aetiology were examined in this investigation. Very low birth weight (< 1500 g) was associated with both unilateral and bilateral cataracts whereas low birth weight (1500- 2499 g) was linked only with bilateral cataract. The study revealed further possible risk factors for infantile cataract development including maternal substance abuse, urinary tract infection and aspirin use during pregnancy, which warrant further investigation.

[\*Ophthalmology \(2010\) 117: 1500-1505\*](#)

### Posterior capsule opacification (PCO) and intraocular straylight and visual acuity

Whilst straylight and VA improve following YAG capsulotomy for PCO, straylight values (measured with the C-Quant) following treatment vary widely between patients. Factors linked with increased straylight include older age, longer axial length, hydrophobic IOLs and small capsulotomies, and should be considered prior to treatment.

[\*American Journal of Ophthalmology \(2010\) 150: 248-253\*](#)

### Decision trees for indication of cataract surgery based on changes in visual acuity

The authors describe use of simple decision tree based on changes in VA to assist in identifying suitable patients for cataract extraction and also to evaluate clinical practice or for quality control.

[\*Ophthalmology \(2010\) 117: 1471-1478\*](#)

### IOLs versus contact lens correction of unilateral aphakia in infancy

114 infants aged 1-6 months undergoing surgery for unilateral congenital cataract were either implanted with an IOL or were corrected for aphakia using contact lenses. At 12 months of age, no significant difference in grating visual acuity was identified between the treatment groups, although further surgical intervention was more frequently required in the IOL patients. Care is advised when implanting IOLs in patients under 6 months of age due the absence of short-term improvement in acuity compared to contact lenses.

[\*Archives of Ophthalmology \(2010\) 128: 810-818\*](#)



### Economic value of toric IOLs

Despite the higher initial cost of implantation of toric compared to conventional IOLs in patients with pre-existing astigmatism, the extra cost is offset throughout the lifetime of the patient by reducing the need to purchase spectacles and contact lenses. This information is of value to patients considering surgical options.

[Archives of Ophthalmology \(2010\) 128: 834-840](#)

### Long-term changes in posterior chamber phakic intraocular collamer lens (ICL) vaulting in myopes

Central and midperipheral vaulting of phakic ICLs in moderate to high myopia was examined over a 10 year period. Central vaulting consistently reduces over time and insufficient vaulting was associated with anterior subcapsular cataract formation. Minimum central vaulting of 230  $\mu\text{m}$  was found to be necessary to ensure total vaulting and the authors advise the use of the greatest possible central anterior vaulting in myopic patients implanted with ICLs.

[Ophthalmology \(2010\) 117: 1506-1511](#)

### The effect of UV light exposure on cataract formation across different regions of the lens

Analysis of 107 lenticular images reveals that subjects with higher cumulative lifetime ocular exposure to UVB light demonstrate higher rates of cortical opacification in the inferior regions of the crystalline lens.

[Investigative Ophthalmology and Visual Science \(2010\) 51: 3919-3923](#)



### MOST INTRIGUING JOURNAL ARTICLE TITLE

*"Nanomedicine in Ophthalmology: The New Frontier."*

*Zarbin, MA et al. American Journal of Ophthalmology (2010) 150: 144-162*

### MOST FASCINATING FINDING

Elderly bifocal and multifocal wearers are generally considered to be at greater risk of falls, particularly when negotiating stairs. This study is the first to assess the safety of step and stair descent in long-term multifocal wearers. Even patients who had worn multifocals for many years were able to more safely descend stairs and land in a controlled manner when using single vision distance spectacles, compared to their existing bifocals/ varifocals.

*"Use of Single-Vision Distance Spectacles Improves Landing Control during Step Descent in Well-Adapted Multifocal Lens-Wearers"*

*Timmis, MA et al. Investigative Ophthalmology and Visual Science (2010) 51: 3903-3908*

#### *Next report*

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