

# ASIA-PACIFIC EyeWorld

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*Ophthalmologists seeking to reverse the inevitable effects of aging on vision now have several options to offer their patients.*

*Are any of these options*

## **Cures for the Curse?**

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The first Asia Cornea Society annual meeting and the 18th Singapore National Eye Centre anniversary international meeting

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Asia-Pacific Association of Cataract and Refractive Surgeons (APACRS)



# Letters from the Editors

Dear Friends



Among the topics covered in this issue of EyeWorld Asia-Pacific is the importance of wound construction in the prevention of endophthalmitis.

Clear corneal incisions have become increasingly popular over the last decade. They are well suited to surgery with topical anesthesia and are relatively quick to perform, avoiding the need for conjunctival dissection and diathermy. Recent studies, however, have suggested that the incidence of endophthalmitis is increased with clear corneal incisions compared to scleral incisions. The data suggests that changing the incision from a scleral to a corneal location may be associated with a five times greater incidence of endophthalmitis. This is a similar magnitude to the reduction in endophthalmitis that can be achieved by using intracameral antibiotics as reported in the landmark ESCRS study.

Because the overall incidences of endophthalmitis is low and surgeons favor a corneal incision due to the practical advantages we have tended to ignore the data and a corneal incision is still favored by the majority of surgeons. How then can we address the issue of increasing endophthalmitis associated with clear corneal incisions?

The authors who have contributed to this topic have all emphasized the importance of incision architecture. A square incision has been shown to be significantly more secure than one in which the length is shorter than the overall width of the incision. This is very difficult to achieve with an incision in the range of 2.75 mm as an incision length of this magnitude encroaches a significant way into the cornea and can compromise visibility during the procedure due to striae and even hinder access during maneuvers such as the capsulorhexis.

Ensuring that the edges and roof of the incision are hydrated helps maintain good apposition between the posterior and anterior planes, maintaining a seal in the first 12 hours. We know that the pressure may drop significantly during the first few hours after a phacoemulsification, which may compromise incision integrity.

Equally important is to avoid stretching and damaging the incision during all phases of the procedure, particularly during insertion of the intraocular lens implant. It is also very important to avoid thermal injury which can result in gaping and increase the likelihood of leakage as the wound hydration resolves after surgery.

Perhaps most important to improve incision integrity is reducing incision size. I have personally measured the amount of force required to create wound leakage at the end of surgery, comparing scleral to corneal incisions of the same size. The scleral incisions prove to be much more resistant to wound leakage with an almost tenfold increase in the force required to create leakage by pressure on the posterior lip of the incision. Reducing the incision size to 2 mm significantly improves the security of clear corneal incisions. The resistance to wound leakage of a 2-mm clear corneal incision is intermediate between a scleral incision and a larger 2.75-mm clear corneal incision. One of the benefits of a microincision in the range of 2 mm is that it is far easier to create a square incision without compromising visibility or access during surgery. Once again, incision size is not the sole criteria for wound integrity. Experience with bimanual phacoemulsification demonstrated that small incisions which have been deformed and stretched by rigid instruments may be more difficult to seal than larger corneal incisions.

Although the overall instance of endophthalmitis is rare for an individual patient and surgeon, the complication can be devastating. I do hope therefore that the advice by surgeons contained in this issue with respect to incision construction, architecture and the preservation of incision integrity will be helpful in addressing the concern which has been raised regarding the increased incidence of endophthalmitis associated with clear corneal incisions.

Warmest regards

Associate Prof. Graham Barrett, MD

President, APACRS

Chief Medical Editor, EyeWorld Asia-Pacific

Dear Friends



The cover feature for this issue is Presbyopia—cures for the curse? With the aging of the “baby-boomer” generation, the number of presbyopes in the world is growing rapidly. Therefore, surgical treatments for presbyopia in patients over 40 years of age are receiving increasing attention. Many options exist today such as conductive keratoplasty, laser in-situ keratomileusis (LASIK), laser thermal keratoplasty, intracorneal implants, procedures that expand or relax the sclera, multifocal intraocular lenses and accommodative intraocular lenses. Despite these grand accomplishments, refractive and cataract surgery has not completely answered the presbyopia dilemma.

Presbyopia-correcting multifocal IOLs are effective in restoring near vision after lens removal, but the final outcome depends on several factors such as astigmatism control, careful patient selection, perfect biometry and IOL power calculation. Also, a certain percentage of patients report unwanted mesopic symptoms and are subsequently dissatisfied with their operative endpoint. An alternative to multifocal lenses are those that are able to change position or shape in response to the accommodative reflex. These are the accommodating IOLs. All these lenses to some degree work on the optic-shift principle. The development of accommodative IOLs is occurring at present and may offer a good solution in the future.

Conductive keratoplasty is a noninvasive, in-office procedure for the correction of presbyopia. It serves as an alternative to laser-based refractive surgery with essentially no intraoperative or postoperative complications. Since US Food and Drug Administration approval in 2002, monovision conductive keratoplasty has been shown to be successful for the management of presbyopia. It is a no-laser, no-cutting procedure that delivers radio-frequency energy to corneal stroma in a circular fashion to steepen the cornea. Multiple studies have shown that conductive keratoplasty offers efficacy, predictability, stability and safety equal to currently used refractive procedures. However, the biggest disadvantage is the high rate of regression and the need for retreatment.

In recent years, the development of new technology in refractive surgery has been rapid: flying spot lasers, wavefront measurements, customized ablations and the femtosecond laser are some examples. Combining technologies such as corneal laser surgery with cataract and presbyopia-correcting IOLs for fine-tuning residual ametropia may be a logical approach for increasing patient satisfaction.

In practice, it should be noted that the refractive mindset of this group of patients calls for a commitment to increased precision and quality in preoperative planning and measurements, intraoperative surgery and postoperative refractive assessment. The bar of success is set very high—even higher than traditional cataract surgery and laser vision correction. However, as with all refractive procedures, realistic expectations should be established prior to surgical intervention.

I conclude with the elegant quote:

Whatever be the diversity of things; it is wisdom to analyze and perceive the basic truth of the matter.

With warm regards

Dr S Natarajan

Regional Managing Editor

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Asia-Pacific Association of Cataract and Refractive Surgeons

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