



David F Chang

Randall J Olson

# Clear corneal incisions implicated in post-cataract endophthalmitis

Devon Schuyler  
in Las Vegas

POST-CATARACT endophthalmitis is on the rise, and clear corneal incisions (CCIs) are implicated, according to speakers at the annual AAO meeting. That doesn't mean that the technique should be abandoned, however.

"I believe that post-cataract endophthalmitis is on the increase in the US, and perhaps elsewhere," said Peter J McDonnell MD, director of the Wilmer Eye Institute, Johns Hopkins University. He attributed the increase to CCIs, and cited three studies to support this belief.

First, a 2005 review article by Taban and colleagues in the *Archives of Ophthalmology* that compared the years 1963-2003 with the years 2000-2003 revealed a nearly 2.5-fold increase in the incidence of endophthalmitis. About half of US cataract surgeons switched from limbal or scleral to CCIs in 2000, according to an ASCRS survey.

Second, a 2005 review of the 1994-2001 Medicare database by West and colleagues found a significant increase in cases from the years 1994-1997 to the years 1998-2001. Finally, the ESCRS Endophthalmitis Study of nearly 16,000 cataract patients revealed that those with CCIs were nearly six times more likely to get endophthalmitis than those with scleral tunnel incisions.

Dr McDonnell explained that the mechanical stability of the CCI is dynamic, and varies as a function of intraoperative pressure during the postoperative period.

"As the intraoperative pressure comes down over the postoperative period,

before any substantial wound healing can occur, there may be gaping along the internal and even external aspect of the incision. This gaping may allow bacteria or other matter to enter the anterior chamber of the eye," said Dr McDonnell.

He looked at how mechanical pressure affects CCIs in a 2004 study in the *American Journal of Ophthalmology*. In the study, India ink was applied to the corneal surface of seven fresh human donor globes that had undergone clear corneal surgery. Applying pressure to the surface of the eye allowed the ink to gain access to the anterior chamber in four of the eyes. A 2005 study by Herretes and colleagues in the *American Journal of Ophthalmology* found that blood-tinged tear fluid entered the eye in all eight patients studied, and a 2003 case report by Aralikatti and colleagues in the *Journal of Cataract and Refractive Surgery* revealed that ointment also can enter the anterior chamber.

Because of this ability of surface fluid and ointment to traverse CCIs and reach the anterior in some eyes, perhaps aided by transient low intraocular pressure, Dr McDonnell proposed that "new strategies" be used in the early postoperative period.

### Don't throw the baby out ...

Randall J Olson MD, also speaking at the AAO annual meeting, agreed that endophthalmitis was on the rise. Like Dr McDonnell, he put the blame squarely on the rise of CCIs.

However, he pointed out that not everyone performing clear corneal surgery has experienced an increase in endophthalmitis. For example, he said that

he has never had a case in the 10 years he's been performing clear corneal surgery, and that many others have reported similar findings – including Monica and colleagues.

"Not everyone is experiencing the problem, so it's important not to throw the baby out with the bathwater. Clear corneal surgery has been a problem without question, dramatically increasing endophthalmitis, but it doesn't have to be so."

Dr Olson pointed out that CCIs could be "extremely unforgiving". They can lead to a Descemet's tear, anterior edge tear, or stretching of the wound edge, all of which will interfere with healing. Stromal hydration can seal the wound, but this can lead to a false sense of security because the seal lasts for just 10 to 15 minutes.

Dr Olson advised surgeons to learn to recognise marginal wounds by checking the seals at both high and low pressure, which can be time-consuming.

"I often spend more time checking the wound after the operation than I do removing the nucleus," he said.

Whenever there's any doubt as to the integrity of the wound, a suture should be put in, he advised.

Surgeons should also be sure to use an appropriate antibiotic – possibly a fourth-generation fluoroquinolone such as moxifloxacin or gatifloxacin – and start it the day of surgery. "Don't wait a day... this has been associated with a 13.7-fold increase in infections," he said. (*Wallin. et al, JCRS 2005;31:735.*) The eye should also be covered with a collagen shield.

### Not all CCIs are created equal

David F Chang MD, who chaired the session, told *EuroTimes* that Dr McDonnell had documented a discouraging trend of increased rates of post-cataract endophthalmitis, and that both Drs McDonnell and Olson had appropriately highlighted CCIs as an important risk factor.

However, he pointed out that the "clear cornea" category includes incisions of varying dimensions, location, and architecture, both sutured and sutureless.

"It would be unfair to vilify all CCIs based upon this retrospective association," he said.

He also pointed out that emerging bacterial antibiotic resistance might be an additional factor in post-cataract endophthalmitis.

Dr Chang recommended that surgeons place a suture if they are not confident that a CCI is watertight, and pointed out that improving the structural integrity of the clear corneal incision may become easier to do in the future.

"Looking ahead, newer keratomes are being developed and we can now use optical coherence tomography to microscopically evaluate the structural integrity of a CCI. In addition, tissue bio-adhesives may allow us to seal larger CCIs without inducing any astigmatism," he said.

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## ORBIS celebrates Silver Jubilee

ORBIS celebrated its 25th anniversary with a reception at the House of Commons on April 16. The event was hosted by Lawrence Robertson MP, the secretary of the British-Ethiopia All-Party Parliamentary Group. Guest of Honour and Keynote Speaker, His Excellency Mr Berhanu Kebede, the Ambassador of Ethiopia (pictured right), thanked ORBIS for all the work that it has carried out in Ethiopia in the past 11 years, helping people with various eye diseases. Mr Wondu Alemayehu, ORBIS Ethiopia country director (pictured left), was also at the event. He said ORBIS's work in the past decade has "revolutionised eye care in Ethiopia".

