

Patrick Condon delivers Ridley Medal lecture

**Roibeard O'hEineachain
in Lisbon**

PATRICK CONDON FRCS, Ireland, presented this year's Ridley Medal Lecture, "Exploding Refractive Myths" at the XXIII Congress of the ESCRS.

In his lecture he addressed the question of whether the next few decades will see increasing numbers of cases of post-LASIK keratectasia. He also discussed the complication's incidence and risk factors and suggested strategies for preventing it.

"There have been 17 million LASIK procedures done globally with eight million in the US alone and we don't have enough longterm studies to know whether we'll have a sudden explosion of ectasia in 10 or 20 years time. This is the unanswerable question," Dr Condon said.

Citing the published literature on post-LASIK ectasia, he suggested that an epidemic of the condition is unlikely to occur in the longterm.

He also reviewed the results of studies involving high frequency ultrasound and other emerging technologies, which indicate that, in the majority of cases, the complication occurs in patients who had undergone ablations that were deeper than the surgeon realised.

Orbscan findings

Dr Condon noted that studies conducted with the Orbscan over the past few years had revealed a steepening effect of the posterior surface of the cornea in LASIK-treated eyes. Many initially feared that this finding might represent an early sign of a progressive keratectasia.

However, it now appears that LASIK's posterior steepening effect results from an initial remodelling of the corneal tissue brought about by corneal biomechanics and is unlikely to lead to progressive disease.

"Cynthia Roberts in her editorial in the Journal of Refractive Surgery in 2000 suggested that these changes going on were really artefacts. Her group showed that there are biomechanical changes and a remodelling of the internal surface of the cornea after LASIK."

He provided further support for that view by examining the actual incidence of post-LASIK



Marie-Jose Tassignon, president of the ESCRS with Ridley Medal lecturer, Patrick Condon.

ectasia in a number of case series of LASIK-treated patients, including his own series 137 eyes followed for up to eight years

"The interesting thing is when you have a look at various studies that have been done in relation to reporting of this complication after LASIK, the reported incidence of keratectasia is not really that high."

Risk reduction

Dr Condon also discussed precautionary techniques for

avoiding the complication. In particular, he emphasised the importance of pre- and intraoperative pachymetry.

Predicting the residual stromal bed thickness on the basis of the manufacturer calibrations of microkeratomers and lasers can be extremely unreliable, he said.

"If you don't do intraoperative pachymetry you might have a thicker flap and a deeper ablation than you thought and you will end up with less stromal surface. We have different K readings which will yield different flap thicknesses with the same microkeratome. Unless you measure, you don't really know what you're getting."

Optimal residual stromal bed thickness

Dr Condon also called into question the current FDA guideline of leaving a residual stromal bed thickness of 250 microns. He instead suggested that the amount of residual stroma should be proportional to the original thickness of the cornea.

"The basics are still valid but there are a number of other factors in relation to the cornea such as elasticity, viscoelasticity and a whole lot of other things that we're not actually measuring."

He noted that the 250 micron rule was based on Dr Barraquer's recommendations with regard to ALK procedures. However, as that

guideline was not in existence when he and his associates first began performing LASIK in 1994, they adopted the Ruiz/Casebeer recommendations for hyperopic ALK.

"The rule is that we left 30% of the cornea intact beneath the ablation area and we also didn't operate on corneas less than 500 microns thick. This rule seems to have served us rather well."

He pointed out that in the series of 137 Irish LASIK patients - the largest in the world - there has only been one case of ectasia, and that occurred in a patient who did not undergo preoperative pachymetry. He noted that what made the low incidence of ectasia all the more remarkable was that the average myopia of the early patients was -14.0 D."

"If you can avoid ectasia in these high myopes than you are unlikely to see it in the kind of patients who undergo LASIK today."

Looking to the future, Dr Condon highlighted a number of new and emerging technologies which may improve the safety of LASIK procedures. Examples include Reichert's Ocular response analyser - a tonometry instrument used in glaucoma patients which also provides a measure of the cornea's elasticity - and Haag Streit's online coherence interferometer which continuously measures the thickness of cornea during the laser surgery.