

By Sean Henahan

# Cataract surgery - past is prologue

Ten years ago, Howard Fine MD delivered the Rayner Lecture at the annual conference of the United Kingdom and Ireland Society of Cataract and Refractive Surgery. As *EuroTimes* reported at that time, Dr Fine discussed changes in surgical technique and equipment that had made cataract surgery safer and more predictable.

At that time phacoemulsification had been adopted by most surgeons, and a new acrylic lens, the foldable Acrysof (Alcon) was getting good reviews. Surgeons were also abandoning the 'can-opener' technique in favour of the continuous curvilinear capsulorhexis. New lens designs were improving visual outcomes and reducing problems with decentration. Researchers were also beginning to understand the connection between lens design and posterior capsule opacification.

Ten years later, Dr Fine is still optimistic about the field of cataract surgery.

"The most important developments in cataract surgery have been power modulations, improved viscoelastics, and obviously, improvements in IOL technology. I cannot think of anything that was done in 1996 that is now out of fashion. However, we can say that in 1996 everybody was dreaming about and anticipating some viable option for addressing presbyopia with intraocular lenses, and of course, now that is quite mainstream. In addition, temporal clear corneal incisions have now become the dominant incision for phacoemulsification world-wide," he told *EuroTimes*.

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**Howard Fine MD**

Dr Fine was an early advocate of multifocal lenses, and was among the first to implant the Array (AMO) multifocal intraocular lens in the United States. He reported even at that time that 93% of his patients implanted with multifocal IOLs had distance vision of 20/40 or better, with 50% seeing 20/20 or better. Most, 90.9%, had near visual acuities of J3 or better.



Howard Fine



David Leaming



Mats Lundström

However, reduced contrast sensitivity and glare were a problem with some recipients of the Array, a pioneering lens that was only recently discontinued by AMO in favour of a new multifocal design.

"I was an early advocate of multifocal and accommodating IOLs and I still am. The Array had less than ideal optics. The ReZoom (AMO) is a dramatic improvement over the Array, with a greater percentage of patients achieving spectacle independence and a smaller number of patients being troubled by halos around lights."

Dr Fine noted that one of the advantages of multifocal intraocular lenses is the fact that one doesn't have to put any accommodative effort into their use. The multiple foci are present on the retina as a result of the optics. The disadvantage is that there are always out-of-focus images, which will give some haloing, and there is some decrease in contrast sensitivity as a result of the division of light.

Accommodative lenses were still on the drawing board in 1996, but are now commercially available (Crystalens, Eyeonics). Dr Fine was also among the first to implant that type of lens. He has reported good results with the lens but admits there is room for improvement.

"Accommodative IOLs are really much more exciting because they will more adequately simulate the pre-presbyopic experience of individuals. What is necessary for them to be fully accepted and useful is adequate amplitude of accommodation that will relieve accommodative fatigue. The other advantage is that there is no division of light, so all of the light is coming from the object of regard."

Dr Fine predicted that the next ten years would see accommodative IOLs that will not only have an adequate amplitude of accommodation, but will also be sequentially light adjustable so that patients will be able to have every bit of their refractive errors addressed, updated and adjusted for changes that occur with growth and aging.

He also predicted a paradigm shift from high-volume, efficient, low-cost care to high-quality, personalised care, because patients

will pay for these procedures and lenses directly. That will be good for patients as well as ophthalmologists, he commented.

## Surveying the past

David Leaming MD began tracking cataract and refractive surgery practice patterns in the US and Europe in 1984. A look at his data, much of which is available online at [leamingsurveys.com](http://leamingsurveys.com), shows some dramatic shifts since 1996. For example, while some surgeons were still performing extracapsular surgery in 1996, that number has dropped to zero today. Phaco-emulsification shows the opposite trend during the same decade, and has now become the standard of practice.

Dr Leaming's surveys also show a steady transition in other aspects of surgical technique during the last decade. For example, while many surgeons favoured the 12 o'clock incision in 1996, the temporal incision has since become the first choice for most surgeons. Moreover, most surgeons now express a preference for the clear corneal incision, unlike in 1996 when it was the choice of only 12% of those surveyed.

A look back at Dr Leaming's first survey, reported in 1985 provides an amazing contrast with the present. At that time 87% of the US respondents preferred planned extracapsular cataract extraction, with only 13% performing phacoemulsification. Most, 91%, expressed the view that PMMA was the perfect optic material, with four percent preferring silicone. In 1984, 41% of those surveyed thought the lens should be placed in the capsular bag.

In 1996, surgeons were excited at the prospect of 3.0 mm incisions. Now, with some surgeons using 1.1 mm incisions, bimanual microincision cataract surgery (MICS) continues to be perhaps the greatest area of debate in the field. In spite of the enthusiasm of advocates like Dr Fine, ASCRS/ESCRS surveys indicate that this approach is used by a minority of surgeons.

"Bimanual microincision cataract surgery is truly a great advantage. I think the misperception at this time is that it will only

be useful when we develop intraocular lenses that will be capable of being implanted through those 1.1mm incisions. This is a little bit analogous to what we experienced in the early 1980's when people thought that phacoemulsification was ahead of its time because we did not have an IOL that would go through a 3.0 mm incision. However, many of us persisted because we felt that it was a better way to remove a cataract. I believe that is also true for bimanual MICS," asserts Dr Fine.

He notes that bimanual MICS offers the advantage of separating the irrigation from the infusion, with all of the fluid coming in one side of the eye and leaving through the other side of the eye. This eliminates competing currents around the phaco tip as in coaxial phaco.

"These fluidic dynamics are especially advantageous in challenging and complicated cases. I think this technique will become increasingly more widely accepted as people understand the fluidic advantages, recognise that the learning curve is very short, and also come to some familiarity and knowledge of the enormously diverse array of new microincision instruments that have been developed that are useful for all procedures through the microincisions."

## ECOS turns ten

In 1996, *EuroTimes* also reported on the debut of a new ESCRS-sponsored initiative, the European Cataract Outcomes Study group. ECOS has been providing a steady stream of data on practice patterns and outcomes in Europe since that time. The programme has expanded to include 72 centres in 22 European countries, and is open to all European cataract surgeons. The database includes more than 23,000 procedures.

"Having a system for quality control, presenting the results, and continuously striving for quality improvement in cataract surgery should be the responsibility of every cataract surgeon. The resources needed for this should be part of the calculated costs of cataract surgery," commented Mats Lundström MD, director of the programme, in an editorial in the *Journal of Cataract and Refractive Surgery*.

According to Dr Lundström, the principle objectives of ECOS are to reflect the outcomes of routine cataract surgery in Europe while creating a European basis for quality assurance of cataract surgery at individual departments in different countries. The hope is that ECOS will stimulate the use of good technology and improve knowledge concerning the appropriate indications and optimal time for surgery by evaluating benefits that patients experience from surgery.

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