

Top Products of the Year

An experienced surgeon shares his picks from 2008.

BY ROBERT H. OSHER, MD

The year 2008 will be remembered for its global financial recession, but the economic downturn had little impact on the technological advances enjoyed by cataract surgeons. This article reviews some of the innovative highlights.

MICROSCOPES

Carl Zeiss Meditec, Inc. (Dublin, CA), introduced Callisto Eye, the newest enhancement of the company's OPMI Lumera line of microscopes, which have featured an unparalleled red reflex. The new data management and documentation system combines OR processes and surgical planning, and it provides surgeons with access to data on individual patients in the OR. Callisto Eye can track consumables using a barcode scanner, and it has video documentation capabilities. In the future, the system will be like having a satellite office in the microscope!

BLADES

BD Medical-Ophthalmic Systems (Franklin Lakes, NJ) expanded its line of ophthalmic safety knives ranging from 1.4 to 3.2 mm. In my experience, the easy-to-use and highly effective safety shield has created a high level of peace of mind for both surgeons and surgical technicians. This is the first year that I have used a 2.2-mm safety blade to enter the anterior chamber in every one of my cases. By flaring the internal opening, I find that the incision allows improved maneuverability of the handpiece and an astigmatically neutral, watertight closure.

OPHTHALMIC VISCOSURGICAL DEVICES

Advanced Medical Optics, Inc. (Santa Ana, CA), introduced the newest member of the Healon family, Healon D, a pure short-chain hyaluronic acid product with dispersive properties. The company also introduced the dual-pack systems that combine different ophthalmic viscosurgical devices. This packaging enables surgeons to take advantage

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of the spectrum of behavioral characteristics available within the Healon family.

PHACO TECHNOLOGY

In response to the success of microcoaxial phacoemulsification with torsional ultrasound (Intrepid Micro-Coaxial System; Alcon Laboratories, Inc., Fort Worth, TX), the two other major US manufacturers of phaco machines introduced new technology. From Advanced Medical Optics, Inc., the Whitestar Signature System with Fusion Fluidics offers transversal ultrasound (Ellips Transversal Ultrasound) in which the needle can move side to side rather than in a straight back-and-forth motion. The Stellaris Vision Enhancement System (Bausch & Lomb, Rochester, NY) offers a microcoaxial approach with longitudinal ultrasound through a 1.8-mm incision. In addition, Oertli Instrumente AG (Bern, Switzerland) introduced a 1.6-mm coaxial procedure, and Richard Packard, MD, in the United Kingdom has developed a 0.7-mm phaco tip for microcoaxial phacoemulsification. Having published the initial series of microcoaxial phaco procedures, I have found it exciting to see the emergence of these new technologies with improved fluidics and incisions small enough to avoid induced surgical astigmatism. Today’s cataract removal system must permit the refractive cataract surgeon to achieve astigmatic neutrality.

Surgeons who prefer a straight tip but would like to experience the benefits of torsional ultrasound can do so by using the new OZil 12 tip released by Alcon Laboratories,

Inc., at the 2008 ASCRS annual meeting. Independently co-designed by Takayuki Akahoshi, MD, and myself, the modified bent tip with an angulation of 12° was introduced in two configurations with a Kelman-type bend or a reverse Kelman bend.

PRELOADED INJECTORS

Long overdue, preloaded injectors are now available in Europe from Hoya Vision Care Europe (Uithoorn, The Netherlands), Carl Zeiss Meditec AG (Jena, Germany), STAAR Surgical Company (Monrovia, CA), Ophthalmic Innovations International, Inc. (Ontario, CA), and PhysIOL (Liège, Belgium). Alcon Laboratories, Inc., plans to introduce the AcrySert C in the United States soon. Finally, US surgeons will be able to avoid iatrogenic damage to the lens and the potential for the IOL's contamination.

IOLs

Cracking the 2-mm barrier in the United States, the Akreos hydrophilic acrylic IOL (Bausch & Lomb) gained FDA approval in 2008. Advanced Medical Optics, Inc., introduced its Tecnis 1-piece IOL with the new DK7786 injector designed by Duckworth & Kent Ltd. (Hertfordshire, England). Santen, Inc. (Napa, CA), began clinical studies of a lens that reportedly has no glistenings.

In the field of presbyopia-correcting lenses, the AcrySof IQ Restor IOL +3.0 D (Alcon Laboratories, Inc.) completed clinical trials and recently gained FDA approval. Launched during the ESCRS annual meeting, the lens allows surgeons to tailor their IOL selection based upon the patient's preference for reading or vision at intermediate distance. Moreover, the lens may allow a better approach to mixing presbyopia-correcting IOLs. Bausch & Lomb's Crystalens HD also received FDA approval. This accommodating IOL offers patients a significant improvement in near acuity. Early indications are that this lens is going to be very popular in the United States.

The AcrySof Toric IOL (Alcon Laboratories, Inc.) rapidly continues to gain acceptance and probably represents the most explosive segment of the IOL market. No ophthalmologist would consider prescribing glasses without giving the patient the benefit of cylindrical correction, and I feel the same should be true when surgeons choose an IOL. I offer the AcrySof Toric IOL to any patient with 1.00 D or more of regular corneal astigmatism. Although I am considered the father of cataract surgery combined with astigmatic keratotomy for preexisting astigmatism, I am the first to admit that all incisional astigmatic procedures are an inexact art. Toric lenses are a precise science. Moreover, these IOLs rein-

roduce the "wow" factor, because patients see better than ever before!

Both Rayner Intraocular Lenses Ltd. (Hove, East Sussex, United Kingdom) and Carl Zeiss Meditec AG have released highly effective multifocal toric lenses in Europe. The Acri.Lisa toric lens (not available in the United States; Carl Zeiss Meditec AG) is especially interesting, because it can be delivered through a 1.6-mm incision, which provides an astigmatically neutral procedure.

INSTRUMENTS

As incisions grow smaller, it becomes more difficult to obtain a microscissors and a microforceps that are capable of reaching different meridians in both a horizontal and a vertical plane. Getting "oarlocked" can be frustrating, especially in cases of iris reconstruction or complex IOL maneuvering. Crestpoint Management Ltd. (St. Louis, MO; formerly Duckworth & Kent USA Ltd.) in association with Geuder AG (Heidelberg, Germany) introduced a unique set of microscissors and microforceps that I designed (I do not receive royalties for these instruments). They feature multiple angled configurations to allow access to different meridians inside the eye. For example, surgeons desiring to create a right angle cut can select scissors that cut 90° to the incisional axis in either a horizontal or a vertical plane through a 2-mm incision.

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DEVICES

Soft prosthetic iris devices with color options have allowed one of my partners, Michael Snyder, MD, to help a number of children with aniridia. Maintaining a small incision while achieving a functional, cosmetic iris is now possible.

The new Malyugin ring (MicroSurgical Technology, Redmond, WA) is very helpful for managing the epidemic of intraoperative floppy iris syndrome (IFIS) secondary to the use of tamsulosin. Although I have used Healon5 (Advanced Medical Optics, Inc.) and Shugarcaine¹ successfully in cases of IFIS, MicroSurgical Technology has enlarged the ring to 7.0 mm, which I have found to work beautifully when the pupil has either constricted or failed to dilate due to IFIS.

Another intriguing device is the iStent (not available in

the United States; Glaukos Corp., Laguna Hills, CA), which is designed for patients with surgical cataract who also have glaucoma. This trabecular bypass microstent is reportedly easily implanted into Schlemm's canal via the same small temporal incision used for phacoemulsification.

DIAGNOSTICS

The winner in this category is the ORange intraoperative wavefront aberrometer (not available in the United States; WaveTec Vision, Aliso Viejo, CA). This technology enables real-time analysis of sphere, cylinder, axis, and higher-order aberrations based on wavefront technology. If this technology proves accurate, it may become routine to confirm the correct IOL power in a cataract patient who has had previous refractive surgery or to orient a toric lens with precision at the conclusion of surgery.

Iris "fingerprinting" is currently my preferred technique for accurately aligning a toric lens in the OR. For the past 3 years, I have been working to develop simple but accurate technology that will eliminate the insensitive and time-consuming marking procedures that frustrate the refractive cataract surgeon. I plan to present several solutions when I deliver the Charles D. Kelman Innovator's Lecture at the annual ASCRS meeting in San Francisco in April 2009.

Haag-Streit AG (Köniz, Switzerland) introduced Lenstar LS 900 (not available in the United States), a remarkable noncontact device that takes only seconds to gather critical ocular information. These measurements include central corneal thickness, keratometry, pupillometry, white-to-white, lens thickness, anterior chamber depth, axial length, and the eccentricity of the optical axis.

BUGS AND DRUGS

Surgeons continue to focus on lid margin disease as a potential source of endophthalmitis. The NutriDox Convenience Kit (Advanced Vision Research, Woburn, MA) was created to facilitate the preoperative care of patients with meibomian gland disease. The kit contains doxycycline and a novel portable warm compress system (iHeat).

There seems to be increasing support for using azithromycin 1% ophthalmic solution (AzaSite; Inspire Pharmaceuticals, Inc., Durham, NC) for the treatment of blepharitis.

A new fluoroquinolone, besifloxacin, is undergoing clinical trials by Bausch & Lomb (Rochester, NY).

Two peer-reviewed articles suggest the efficacy of alternate drug delivery systems that will gain popularity in the future. Lane et al published the results of their prospective, randomized, open-label study evaluating the safety of intracameral moxifloxacin for endophthalmitis prophylax-

is.² Smith et al evaluated the antimicrobial activity of acrylic IOLs soaked in fourth-generation fluoroquinolones. Their in vitro study demonstrated that commercial-grade IOLs can act as a drug depot in producing antimicrobial activity.³

Triesence (Alcon Laboratories, Inc.) is a preservative-free formulation of triamcinolone acetonide that has proven to be a useful tool for visualizing vitreous. When Scott Burk, MD, PhD, one of my partners, published this important concept,⁴ we were concerned about the potential toxicity of the preserving agent, which required several time-consuming steps to remove. In contrast, Triesence can be drawn up from the bottle, diluted, and injected in a matter of moments.

Sirion Therapeutics' (Tampa, FL) Durezol is the first new topical ophthalmic corticosteroid introduced in the past 3 decades. In June, the company received FDA approval to market difluprednate 0.05% in a benzalkonium chloride-free emulsion. Several large studies in Japan and the United States concluded that this steroid preparation is an extremely potent anti-inflammatory agent that demonstrates efficacy in even the most severe cases of uveitis.

EDUCATION

With 3D-Eye Home, Eyemaginations, Inc. (Towson, MD), introduced a series of educational topics that patients may review in the comfort of their own home. Advances in the development of the surgical simulator also make this expensive technology attractive to residency programs.

The *Video Journal of Cataract and Refractive Surgery* will be celebrating its 25th year by launching a Web site, while the first 100 issues are being made available for viewing on Eyetube.net, a site developed by Bryn Mawr Communications LLC, the publisher of *CRSToday*. ■

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