

# Ophthalmology Times

## 2-mm incision barrier is broken in Greece

By LYNDA CHARTERS

Reviewed by A. John Kanellopoulos, MD

ATHENS, GREECE—Cataract extraction with a smaller-than-2-mm incision was performed here recently.

A. John Kanellopoulos, MD, broke the 2-mm barrier using the Dodick photolysis Nd:YAG laser, a technique that is proving to be an alternative to ultrasound phacoemulsification. He has worked with it extensively over the past several years (see story at right).

Dr. Kanellopoulos is an attending staff surgeon, the Cornea Service, Manhattan



Dr. Kanellopoulos

Eye, Ear and Throat Hospital, New York, and director of external diseases, Cornea and Refractive Surgery at the Orasis Hellenic Eye Center, Athens.

“Over the last several decades, there has been remarkable evolution in the instrumentation, the incision, and the IOL materials and designs involved in cataract extraction,” Dr. Kanellopoulos said in an interview with *Ophthalmology Times*.

**Laser cataract removal was done through two clear cornea paracenteses of about 1.6 mm in width.**

“The cataract surgery incision has been decreasing in size, a process that is limited by the diameter of the cataract fragmentation instruments and the ability to minimize the incision width required for intraocular implantation,” he continued.

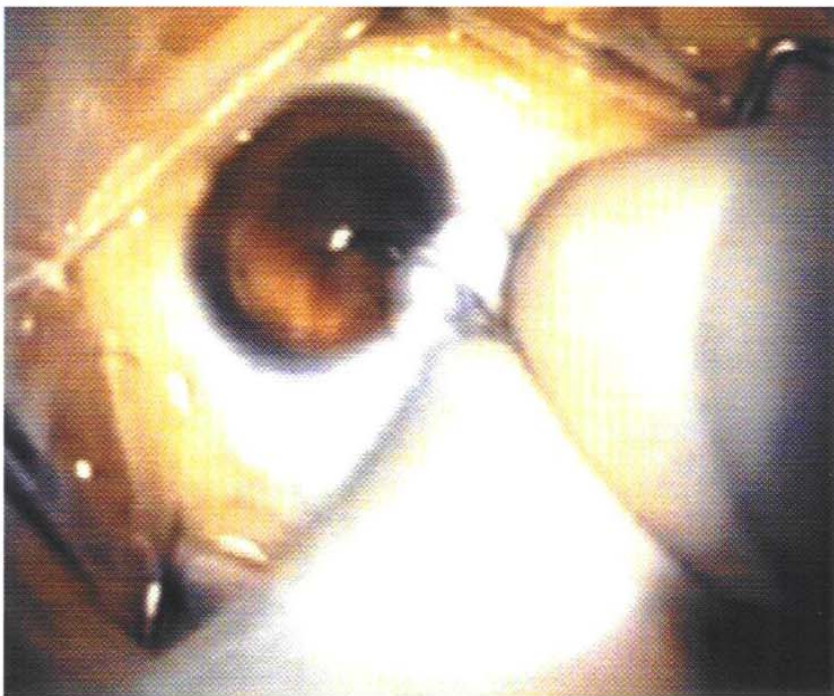
The primary advancements that enabled the use of the 1.6-mm incision were the development of an appropriate IOL material and a folding technique that even allow IOL implantation with the use of the mini-incision.

A new folding technique developed by Christine Kreiner, PhD, president, Acritec, Berlin, allows an approved acrylic IOL manufactured by Acritec (model H44-IC-1) to be implanted through an incision smaller than 2 mm, according to Dr. Kanellopoulos.

“This one-piece acrylic lens that has a 6-mm diameter optic and is 12.5 mm in total length was prefolded by 27% dehydration. This folded lens (19.0 D in power and an A constant of 119.0) has a width of about 1.2 to 1.3 mm. Laser cataract removal was performed through two clear cornea paracenteses of approximately 1.6 mm in width,” he said.

The cataract extraction was performed with the patient under topical anesthesia, and a 4.5-mm curvilinear continuous capsulorhexis, hydrodissection, laser nucleus

Figure 1



Manual implantation of a prefolded dehydrated IOL following laser cataract removal. The incision is 1.6 to 1.8 mm. (Photograph courtesy of A. John Kanellopoulos, MD)

removal, and irrigation-aspiration of the residual cortical material were done.

The prefolded, dehydrated lens was then implanted in the capsular bag through the original incision.

The entire procedure was performed in less than 10 minutes of operating room time.

"Over the next 25 to 30 minutes, the implanted lens was fully unfolded within the capsular bag and was well centered. One month postoperatively, the patient's visual acuity was 20/20 uncorrected," he said.

### Important development

Dr. Kanellopoulos underscored the importance of this development in cataract extraction.

"The use of this technique or other prefolded techniques and new IOL materials will complement minute cataract removal by laser. Although cataract surgery performed with phacoemulsification is one of the safest and most effective procedures in medicine, there has been increasing interest in utilizing smaller incisions with the potential goal of performing true endocapsular cataract removal," he said.

"Retaining the entire capsular bag would open the field for possible injectable materials that could act as an IOL by filling the capsular bag and possibly retaining accommodation. Some of these entities have been shown to be possible recently in laboratory animal studies. Pha-

coemulsification probes are limited to a certain diameter because of the necessary cooling sleeve that accompanies the ultrasound needle," Dr. Kanellopoulos continued.

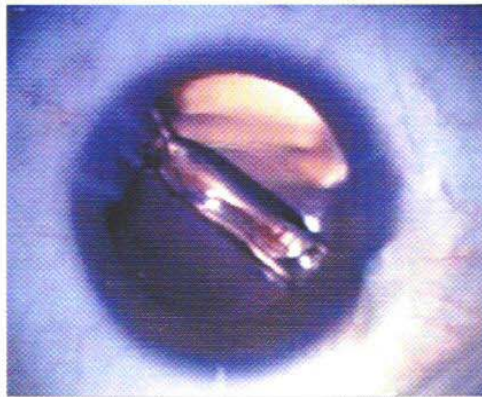
"Of all the 'laser phacos,' the Dodick photolysis unit has achieved a 1.2-mm external diameter laser probe for cataract surgery with relative success. This has widened the horizon for future true endocapsular cataract surgery in the next millennium," he said.

Dr. Kanellopoulos has performed 80

cataract extractions using this procedure and is submitting data on the first 1,000 cases worldwide, which represent the experience from 25 sites in Germany, Austria, France, Spain, Greece, Saudi Arabia, Mexico, and Canada. The primary focus of this investigation was the safety, efficacy, and intraoperative time efficiency of this method of laser cataract removal.

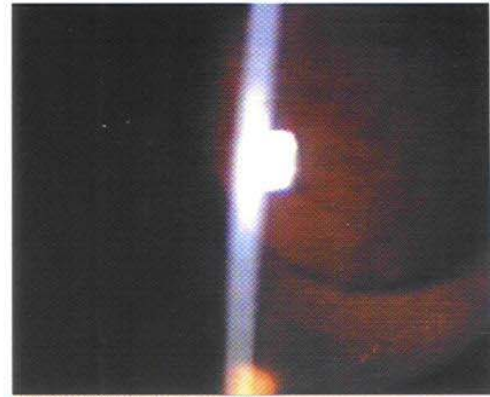
Dr. Kanellopoulos has no proprietary interest in Dodick photolysis technology or the implanted IOL design and company. ♦

Figure 2



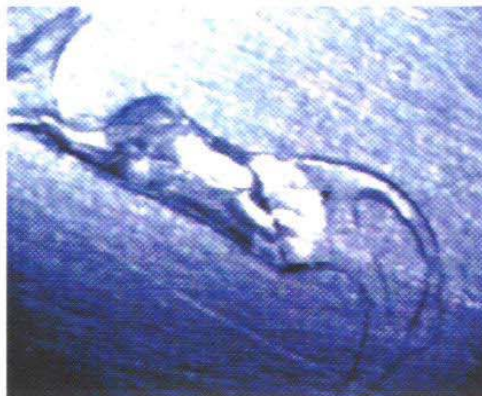
The folded IOL is in the capsular bag after implantation and centration.

Figure 3



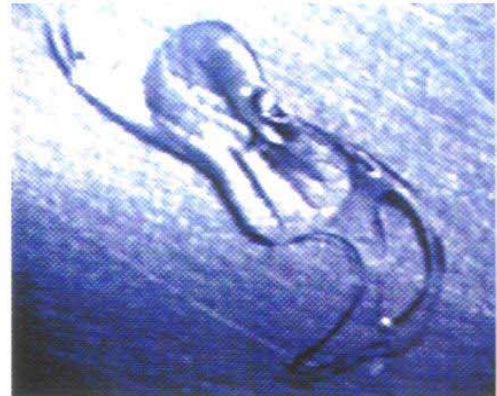
Thirty minutes after surgery, the IOL is fully unfolded and well centered within the capsular bag.

Figure 4



The same model IOL with the same dehydrating pre-folding technique unfolds in BSS.

Figure 5



A later stage in the unfolding process seen in Figure 4. (Photographs courtesy of A. John Kanellopoulos, MD)