

## Implementing advanced cataract technologies

by Richard L. Lindstrom, MD



Richard L. Lindstrom, MD

### Recommendations to help cataract surgeons launch these technologies in their practices

**D**espite advances in femtosecond laser technology, overall only 4.8% (5.8% U.S.; 3.6% non-U.S.) of ASCRS members' patients are receiving femtosecond laser-assisted cataract surgery (LACS), as reported in the 2014 ASCRS Clinical Survey (Figure 1).

This survey, focusing on the most compelling and controversial issues ASCRS members face, accumulated data points from 137 questions on key clinical opinions and practice patterns from more than 1,500 unique respondents. The survey included 11 specialty sections.

### Survey responses

When respondents were asked in which clinical areas LACS may

**“Although large, high-volume cataract practices may be able to provide LACS on their own, a shared access model may provide options for many surgeons.”**

**—Richard L. Lindstrom, MD**

provide a significant clinical benefit compared with conventional cataract surgery, 42.2% believe it does not provide improvements in the capsulorhexis, 47.9% believe it does not improve lens

fragmentation, and 40.7% do not believe it improves arcuate incisions (Figure 2).

*continued on page 2*

### Accreditation Statement

This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education through the joint providership of the American Society of Cataract & Refractive Surgery (ASCRS) and *EyeWorld*. ASCRS is accredited by the ACCME to provide continuing medical education for physicians.

### Educational Objectives

Ophthalmologists who participate in this activity will:

- Analyze the quantity and quality of the available literature and studies demonstrating the key safety and efficacy improvements of LACS over conventional cataract surgery;
- Describe different reimbursement and practice flow models in a variety of practice settings that permit the viable integration of LACS into a refractive cataract practice; and
- Assess the impact of improving the management of residual corneal error, pre-cleaved lenticular material and the ocular surface in LACS and premium IOL patients.

### Designation Statement

The American Society of Cataract & Refractive Surgery designates this enduring materials educational activity for a maximum of 1.0 *AMA PRA Category 1 Credits*.™ Physicians should claim only credit commensurate with the extent of their participation in the activity.

### Claiming Credit

To claim credit, participants must visit [bit.ly/1No2lzh](http://bit.ly/1No2lzh) to review content and download the post-activity

test and credit claim. All participants must pass the post-activity test with a score of 75% or higher to earn credit. Alternatively, the post-test form included in this supplement may be faxed to the number indicated for credit to be awarded, and a certificate will be mailed within 2 weeks. When viewing online or downloading the material, standard Internet access is required. Adobe Acrobat Reader is needed to view the materials. CME credit is valid through April 30, 2016. CME credit will not be awarded after that date.

### Notice of Off-Label Use Presentations

This activity may include presentations on drugs or devices or uses of drugs or devices that may not have been approved by the Food and Drug Administration (FDA) or have been approved by the FDA for specific uses only.

### ADA/Special Accommodations

ASCRS and *EyeWorld* fully comply with the legal requirements of the Americans with Disabilities Act (ADA) and the rules and regulations thereof. Any participant in this educational program who requires special accommodations or services should contact Laura Johnson at [ljohnson@ascrs.org](mailto:ljohnson@ascrs.org) or 703-591-2220.

### Financial Interest Disclosures

**David M. Dillman, MD**, has received a retainer, ad hoc fees or other consulting income from Alcon Laboratories Inc. and Sightpath Medical.

**Eric D. Donnenfeld, MD**, has received a retainer, ad hoc fees or other consulting income from: Abbott Medical Optics Inc., AcuFocus Inc., Alcon Laboratories Inc., Allergan, AqueSys Inc., Bausch + Lomb, CRST, Elenza, Glaukos Corporation, Icon

Biosciences, Kala Pharmaceuticals, Katena, Mati Pharmaceuticals, Merck & Co. Inc., Mimetogen Pharmaceuticals USA Inc., NovaBay, OcuHub, Odyssey Medical Inc., Omeros Corporation, Pfizer Inc., PRN, RPS, Shire Pharmaceuticals, Strathspey Crown, TearLab, and TCL.

**Richard L. Lindstrom, MD**, has received a retainer, ad hoc fees or other consulting income from, received royalties from, and has an investment interest in: AcuFocus Inc., Bausch + Lomb, and Quest. He has received a retainer, ad hoc fees or other consulting income from, is a member of the speakers bureaus of, and has an investment interest in: Abbott Medical Optics Inc., BioSintx, Calhoun Vision Inc., Clarity Ophthalmics, Clear Sight, CoDa Therapeutics, EBV Partners, Encore, Evision Photography, Eyemaginations Inc., Glaukos Corporation, High Performance Optics, Improve Your Vision, LENSAR Inc., LenSx, Lifeguard Health, Minnesota Eye Consultants, NuLens, Ocular Optics, Ocular Therapeutix Inc., Omega Eye Health, Pixel Optics, Refractec, Schroder Life Science, Sightpath Medical, Surgijet/Visijet, TearLab, TLC, Tracey Technologies, Transcend Medical Inc., TrueVision, Vision Solutions Technology, and 3D Vision Systems. He has received a retainer, ad hoc fees or other consulting income from: Advanced Refractive Technologies, Alcon Laboratories Inc., Foresight Venture Fund #3, ForSight Labs, Hoya, ISTA, Lumineyes Inc., OSN, Omeros Corporation, Seros Medical LLC, Strathspey Crown, Versant, and Viradex. Dr. Lindstrom has investment interests in: Confluence Acquisition Partners, Curveright LLC, CXL Ophthalmics LLC, Evision Medical Laser, FzioMed, Healthcare Transaction Services, Heaven Fund, Nisco, One Focus Ventures, OnPoint, Rainwater Healthcare, Sarbox NP, SARcode Corp., Solbeam, TriPrima, and WaveTec Vision.

**Kerry D. Solomon, MD**, has received a retainer, ad hoc fees or other consulting income from, is a member of the speakers bureaus of, and has an investment interest in: AqueSys Inc., Glaukos Corporation, and WaveTec Vision. He has an investment interest in Mati Pharmaceuticals and Versant Ventures. Dr. Solomon has received research funding from WaveTec Vision. He has received a retainer, ad hoc fees or other consulting income, travel expense reimbursement, and research funding from Alcon Laboratories, Inc.

**William B. Trattler, MD**, has received a retainer, ad hoc fees or other consulting income from: Abbott Medical Optics Inc., Alcon Laboratories Inc., Allergan, Bausch + Lomb, CXL Ophthalmics LLC, Imprimis Pharmaceuticals, and Omeros Corporation. He is a member of the speakers bureaus of: Abbott Medical Optics Inc., Allergan, Bausch + Lomb, and Oculus. Dr. Trattler has received research funding from Alcon Laboratories Inc. and Refocus Group Inc. He has received travel expense reimbursement from Alcon Laboratories Inc.

**Robert J. Weinstein, MD**, has received a retainer, ad hoc fees or other consulting income and travel expense reimbursement from: Bausch + Lomb and LENSAR Inc. He has received a retainer, ad hoc fees or other consulting income from Alcon Laboratories Inc. and STAAR Surgical. Dr. Weinstein has an investment interest in Drs Allergy Formula and TrueVision.

**Staff members:** Laura Johnson and Erin Schallhorn have no ophthalmic-related financial interests.

*Supported by unrestricted educational grants from Alcon Laboratories, Bausch + Lomb, LENSAR, and Sightpath Medical*

## Step by step: Clinical and practical implementation of laser-assisted cataract surgery

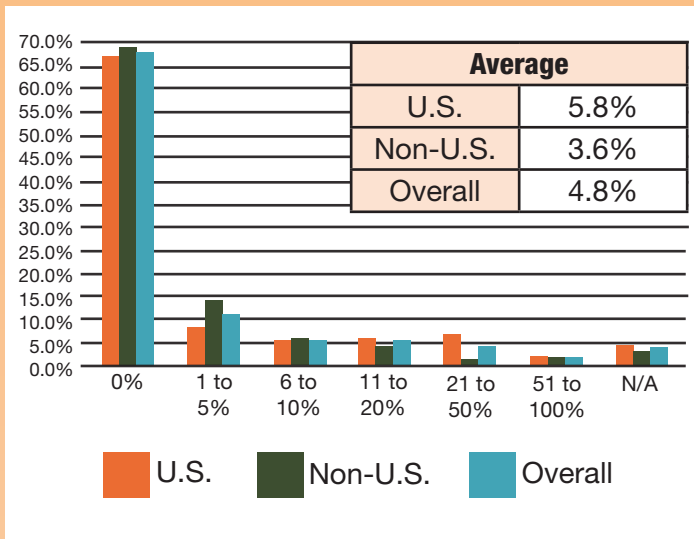


Figure 1. When members were asked, “What percentage of your cataract patients receive femtosecond laser cataract surgery (currently)?” they reported that only 4.8% are receiving LACS.

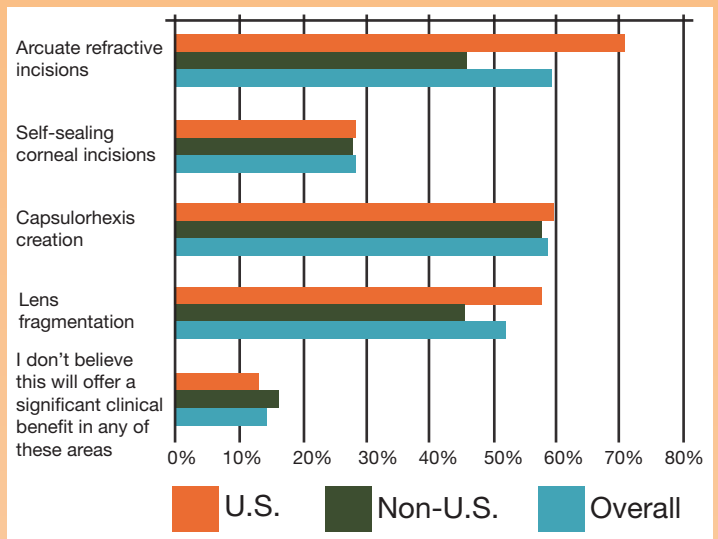


Figure 2. Responses to the question: “In which of the following clinical areas do you believe laser cataract surgery may provide a significant clinical benefit versus conventional cataract surgery (select all that apply)?”

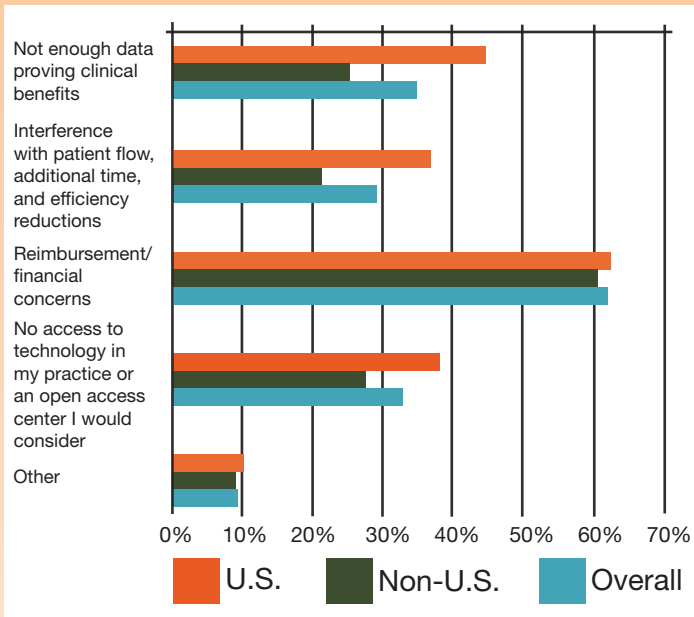


Figure 3. Respondents answer the question: “If you are not performing femtosecond laser-assisted cataract surgery, what are the barriers to your adoption of the technology (select all that apply)?”

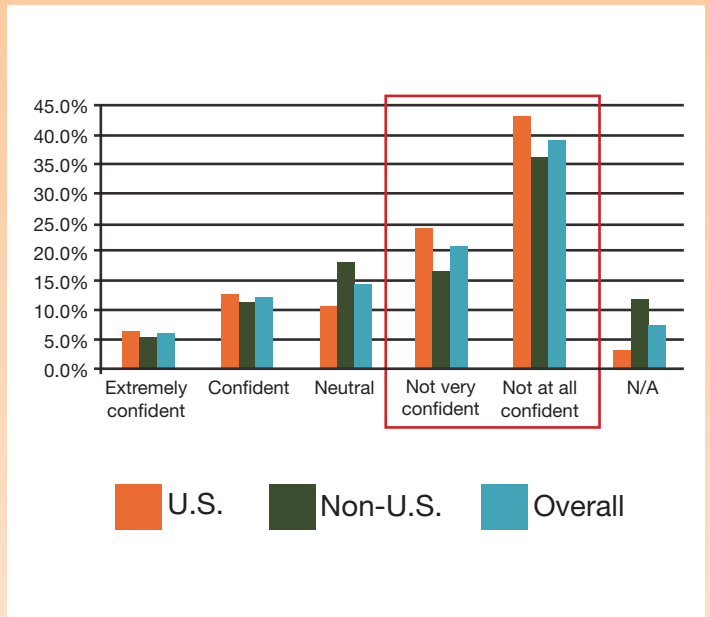


Figure 4. Respondents were asked how confident they are that there is currently an adequate reimbursement solution (private pay and/or insurance) to support laser-assisted cataract surgery (today).

In my experience, I have found that I can make much better corneal relaxing incisions with a femtosecond laser than with a diamond knife even though I performed diamond knife incisions for almost 30 years.

When respondents were asked about the barriers to adoption of the technology, the number one obstacle was reimbursement/financial concerns (61.7%) (Figure 3). More than 32% reported a lack of access to

the technology, and 35% believe data showing clinical benefits are lacking.

Although large, high-volume cataract practices may be able to provide LACS on their own, a shared access model may provide options for many surgeons.

Almost 60% of respondents are not confident that there is currently an adequate reimbursement solution (private pay and/or insurance) to support LACS today (Figure 4). In addition, almost

45% do not believe there is an adequate reimbursement solution to pay for LACS technology even 5 years from now.

### Experienced panel

Based on educational gaps identified in this survey, ASCRS has developed programs to meet members’ educational requirements. In this supplement, our panel of LACS experts will share clinical and practical recommendations for implementing this technology

and achieving optimal surgical outcomes.

*Dr. Lindstrom is founder of and attending surgeon, Minnesota Eye Consultants, adjunct clinical professor emeritus, Department of Ophthalmology, University of Minnesota, associate director, Minnesota Lions Eye Bank, and visiting professor, University of California, Irvine, Gavin Herbert Eye Institute. He can be contacted at [rlindstrom@mneye.com](mailto:rlindstrom@mneye.com).*

# Making femtosecond laser-assisted cataract surgery work in your practice



Eric Donnenfeld, MD



Kerry Solomon, MD

**F**emtosecond laser technology has advanced significantly during the last several years. Surgeons who are exploring laser-assisted cataract surgery (LACS) need to weigh its potential benefits and consider the best strategies to incorporate it into their practices.

## Determining advantages

The femtosecond laser increases precision in some aspects of cataract surgery, said **Kerry Solomon, MD**, director, Carolina Eye Research Institute, and adjunct clinical professor of ophthalmology, Storm Eye Institute, Medical University of South Carolina, Charleston, who presented with **Eric Donnenfeld, MD**, Ophthalmic Consultants of Long Island and Connecticut, and clinical professor of ophthalmology, New York University, during the 2015 ASCRS•ASOA Symposium & Congress.

They reported that the automated technology performs capsulotomies more precisely, pre-softens and pre-segments the lens and reduces ultrasound energy, creates arcuate incisions to correct astigmatism (with an option for intrastromal incisions), and creates cataract incisions with a 3D architecture for greater sealability and reproducibility.

The femtosecond laser is particularly important in creating arcuate incisions. "If we're going to become refractive cataract surgeons and meet the needs of our patients to produce excellent, uncorrected visual acuity, we have to be able to perform astigmatic incisions," Dr. Donnenfeld said.

In addition, a number of studies have shown less endothelial cell loss with femtosecond laser procedures, Dr. Solomon said.<sup>1</sup>

"One of the real benefits of the laser is using high-definition optical coherence tomography," Dr. Solomon said. "You can precisely measure real time the thickness and depth. You can image the cornea. Then you can very precisely determine the depth and the actual length of the arcuate incisions, and those provide for better, more accurate outcomes."

"In addition, we're all accustomed to doing limbal relaxing incisions, while intrastromal incisions, I believe, will become the mainstream," Dr. Donnenfeld said. He explained that intrastromal incisions reduce pain and the risk of infection and offer better astigmatic predictability; however, they cannot be performed manually.

## Incorporating LACS

Seven of 10 cataract patients have astigmatism that can be treated with toric intraocular lenses, arcuate incisions, limbal relaxing incisions, or other techniques, but it is treated in only 15% of cases, Dr. Solomon said. "Eighty-five percent of your patients are interested in being less dependent on glasses," he said. "These are

- **Success pearls for your practice**
  5. Be committed
  4. Educate staff and partners
  3. Provide education materials
  2. Don't oversell—educate your patient
  1. Consider refractive packages
- **Success pearls in your ASC**
  5. Understand the financials
  4. Educate ASC staff
  3. Develop a flow
  2. Have a traffic cop
  1. Be efficient with the procedure

Figure 1. Pearls for integrating LACS into a practice or ASC

Source: Eric Donnenfeld, MD, and Kerry Solomon, MD

conversations you need to have, and femtosecond lasers are a way to make that happen."

They offered pearls for integrating LACS into a practice or ambulatory surgery center (ASC) (Figure 1).

If integrating the technology, surgeons must believe LACS is good for patients and demonstrate their commitment to their staff and partners. "If they sense that from you, they're more likely to adopt it and pass that along to the patients," Dr. Solomon said.

The practice should provide educational materials to patients. However, physicians should avoid overselling the procedure. "I never pressure patients to feel like they are having something suboptimal if they are going with phacoemulsification alone," Dr. Donnenfeld said.

Surgeons may offer refractive packages including non-covered services that are not part of the routine practice, Dr. Solomon said. Furthermore, clinicians should prepare to manage enhancements themselves or refer patients to a partner or colleague for enhancements, Dr. Solomon said.

In their ASC, surgeons need to understand the financial impact of performing LACS and develop a business plan to be financially successful.

In addition, clinicians need to educate their ASC staff. They should develop a flow and have a traffic coordinator. Staff should develop a rhythm and modify procedures accordingly.

## Conclusion

Advances in femtosecond laser technology offer numerous benefits for surgeons interested in integrating laser-assisted cataract surgery into their practices. Surgeons who are exploring this technology need to understand the benefits and take steps to ensure a successful launch.

## Reference

1. Abell RG, Kerr NM, Howie AR, Mustaffa Kamal MA, Allen PL, Vote BJ. Effect of femtosecond laser-assisted cataract surgery on the corneal endothelium. *J Cataract Surg.* 2014;40:1777-1783.

Dr. Solomon can be contacted at [kerrysolomon@me.com](mailto:kerrysolomon@me.com), and Dr. Donnenfeld can be contacted at [ericdonnenfeld@gmail.com](mailto:ericdonnenfeld@gmail.com).

## Mobile laser-assisted cataract surgery

by David M. Dillman, MD



David M. Dillman, MD

### Tapping into the benefits of shared-access models

**W**hen entering the arena of laser-assisted cataract surgery (LACS), shared access through a mobile laser program may give clinicians an innovative pathway to offer this technology to their patients.

### Weighing options

When I began investigating this option approximately 3 years ago, I visited 3 facilities and watched 5 surgeons perform approximately 100 LACS procedures. Even more importantly, I talked with them about why they adopted this technology and its advantages for patients (Figure 1). I quickly became a believer.

To adopt femtosecond laser technology, surgeons must believe it is a better technology for their patients compared with the techniques they used previously—not a moneymaker.

I recommend LACS to everyone, but I especially ask patients with complex cases to have this procedure. However, many patients cannot afford it, so I discount my fee by approximately two-thirds in those cases. Some patients cannot afford even the discounted fee, so I perform the procedure at no charge. Although

I lose money in those cases because I still need to pay per-use fees for the laser, I consider this practice worthwhile.

When I initially adopted this technology, I could not afford it, so I explored other avenues. In my area outside Chicago there were no femtosecond lasers, so I could not perform LACS procedures in a nearby facility.

I had partnered with a mobile company, Sightpath Medical, in 1998, so we developed the first mobile LACS program. This company uses the LenSx platform. There are now 2 additional companies that offer mobile LACS programs: ForTec Medical, which uses the Catalys platform, and Precision Eye Services, which uses the LENSAR platform.

We performed the first mobile laser cases in 2013 in Hoopeston, Ill., with 2 surgeons sharing access to 1 laser. I performed 12 cases the first day. Two years later there are 174 sites in 36 states, with 311 active surgeons and 27 lasers in the field (Figure 2). This program has been used for nearly 23,000 cases.

### Committing to mobile

Although shared access through a mobile LACS program reduces expenses associated with purchasing the femtosecond laser, the practice must commit to a specific amount of time, as well as a certain number of cases per quarter and per operating room day (Figure 3). For example, surgeons cannot ask the company to deliver the laser for 1 case on a specific day.

In addition, clinicians must purchase disposable docking devices and pay laser user fees for each case. In some instances, surgeons may be required to pay a penalty if they do not meet the quotas specified in their contracts.

### Conclusion

Although shared access through a mobile LACS program requires a commitment, it is less than that

### Investigating LACS

- Summer 2012
- Visited 3 facilities, 5 surgeons
- Observed 100 LACS cases
- Talked with surgeons about advantages of technology

Figure 1. Dr. Dillman began investigating LACS by following this process.

### Mobile LACS growth

#### March 4, 2013

- 1 site: Hoopeston, Ill. (pop: 5,262)
- 2 surgeons
- 1 laser
- 12 cases

#### March 25, 2015

- 174 sites in 36 states
- 311 surgeons
- 27 lasers
- 22,863 cases

Figure 2. In 2 years, the mobile LACS program has grown.

### Potential contract commitments

- Certain amount of time
- Certain number of cases per quarter
- Certain number of cases per OR day
- Pay for disposable docking device per case
- Pay “user” fee per case
- Pay penalty if do not meet quota

Figure 3. Although mobile LACS necessitates a smaller commitment, contracts may require surgeons to commit to time and case quotas and pay for other expenses.

required when purchasing a femtosecond laser. The mobile laser program made it possible for us to implement this technology and offer the benefits of this device to our patients.

*Dr. Dillman is in private practice at Dillman Eye Care Associates, Danville, Ill. He can be contacted at Dadomer@aol.com.*

## Deep impact

by Robert J. Weinstock, MD



Robert J. Weinstock, MD

### **Femtosecond laser-assisted cataract surgery offers increased precision and advantages in lens fragmentation**

**F**emtosecond lasers are transforming cataract surgery, enabling surgeons to create laser arcuate incisions to correct astigmatism and perform laser fragmentation of the lens to reduce ultrasonic energy.

#### **Arcuate incisions**

After using the femtosecond laser to create arcuate incisions, we quickly see how precise those incisions are compared with manual incisions. Most surgeons who perform refractive cataract surgery agree that we can correct up to 1.5 D of regular corneal astigmatism consistently with this laser.

Eighty percent to 85% tends to be a commonly used corneal thickness depth, and an 8.5- to 9-mm optical zone is an ideal location when positioning these incisions.

Many nomograms are available, including those of Skip Nichamin, MD, and Eric Donnenfeld, MD. (LRcalculator.com provides additional information on manual limbal relaxing incisions.) Surgeons can start with nomograms based on manual

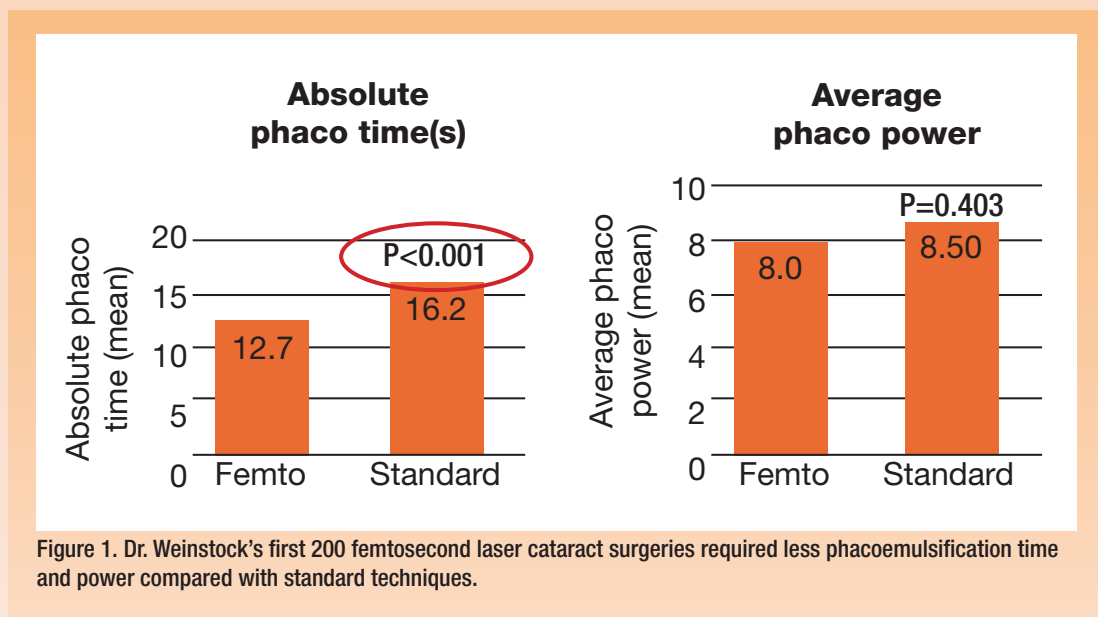


Figure 1. Dr. Weinstock's first 200 femtosecond laser cataract surgeries required less phacoemulsification time and power compared with standard techniques.

diamond blade incisions and then customize them based on their own results.

At the slit lamp the arcs and arc length are perfect, and optical coherence tomography shows how clean they are, with a consistent depth compared with manual incisions. Arcuate incisions created with the femtosecond laser open easily with a Sinsky hook or small cannula either intraoperatively or at the slit lamp postop.

Two femtosecond laser manufacturers have released software and additional hardware for axis registration to avoid cyclotorsion errors. This feature, along with automated surgical planning software, allows surgeons using the Verion Image-Guided System and LENSAR Streamline to be even more precise in their cataract procedures.

#### **Lens fragmentation**

I have found that the femtosecond laser reduces phacoemulsification time and power (Figure 1). It softens dense cataracts and pre-chops and pre-cracks the nucleus, so the surgeon can dismantle the nucleus more effectively.

**“After using the femtosecond laser to create arcuate incisions, we quickly see how precise those incisions are compared with manual incisions.”**

**—Robert J. Weinstock, MD**

The femtosecond laser reduces the need for ultrasonic energy and facilitates nuclear disassembly. Endothelial cell damage is reduced because there is less heat and thermal damage compared with traditional (not femto) ultrasound-only cases.<sup>1</sup> Ultimately, I have noticed that there is less risk of posterior capsular tears due to excessive nuclear manipulation and time in the eye.

Surgeons should research femtosecond lasers for themselves. I have used 3 different laser platforms. All have shown a

statistically significant reduction in effective phacoemulsification time by using fragmentation to remove the cataract. Surgeons can choose from an array of fragmentation patterns (Figure 2). For dense cataracts, I prefer a grid pattern, where I can chop the cataract, pretreating and softening it. We use much less ultrasound, and the case is quicker and easier.

#### **Clinical pearls**

When incorporating this technology into a practice, surgeons

*continued on page 7*

## Beyond the laser

by William B. Trattler, MD



William B. Trattler, MD

### Surgeons need to consider the ocular surface, residual refractive error, and other factors to deliver optimal results with laser-assisted cataract surgery

**P**atients receiving femtosecond laser-assisted cataract surgery (LACS) have high expectations regarding their visual recovery. To provide the outcomes patients desire, surgeons need to perform a careful preoperative examination and take steps to minimize corneal swelling, avoid cystoid macular edema, and prevent ocular surface disease after surgery.

#### Case report

A 68-year-old cataract patient had a best corrected visual acuity of 20/50 before surgery. The optical coherence tomography (OCT) scan of the macula appeared healthy, and the cornea was crystal clear, with no guttata. She had a 2+ NS cataract. While she appeared to be a good candidate for cataract surgery, performing preoperative topography was important in this case to properly set expectations for the anticipated visual result. This is because the corneal topography revealed early

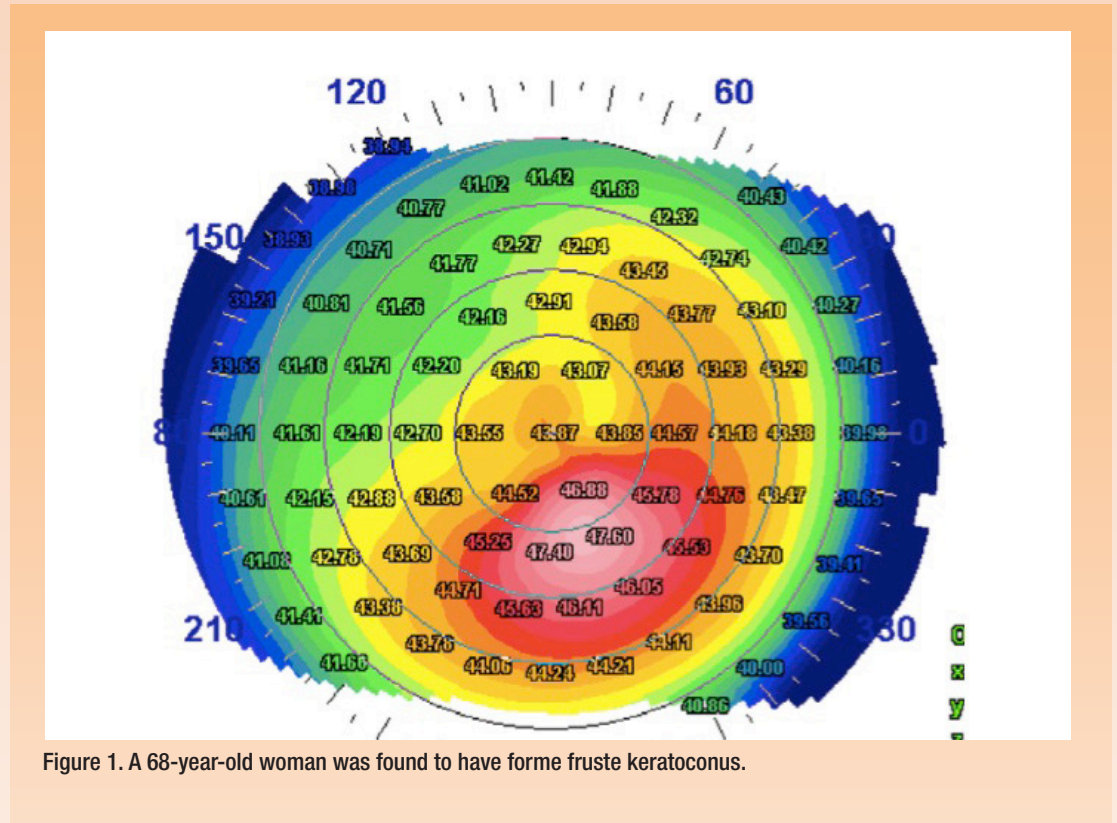


Figure 1. A 68-year-old woman was found to have forme fruste keratoconus.

keratoconus, which will reduce her quality of vision postoperatively (Figure 1).

#### Preoperative assessment

I recommend corneal topography for all cataract surgery candidates to determine whether they have a corneal condition that could affect postoperative vision.

Many experts estimate a keratoconus incidence of approximately 1 in 2,000 in the United States.<sup>1</sup> I believe it is much more common in our cataract surgery population.

When we studied 400 consecutive eyes scheduled for cataract surgery, approximately 30% had abnormal preoperative topography. Excluding eyes that had previous RK or LASIK, approximately 25% still had abnormal topography. Three percent had keratoconus. Abnormal corneal topography in the

**“I recommend corneal topography for all cataract surgery candidates to determine whether they have a corneal condition that could affect postoperative vision.”**

**—William B. Trattler, MD**

presence of a normal-appearing slit lamp exam appears common in patients scheduled for cataract surgery, so it is useful to identify any corneal shape changes before surgery.

We also need to detect and treat dry eye and blepharitis preoperatively, which can lead to incorrect intraocular lens (IOL) power calculations and affect

*continued on page 7*

continued from page 5

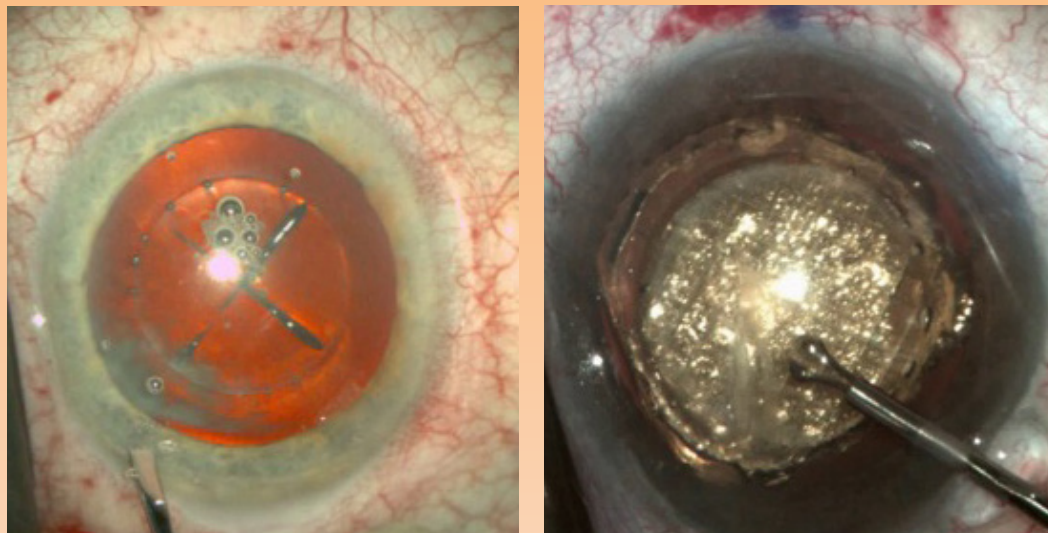


Figure 2. Lens fragmentation patterns. Left: A basic 2-cut cross pattern used for soft cataracts. Right: More elaborate cube pattern used for denser cataracts.

should educate their staff and patients about laser cataract surgery. If we do not speak confidently about it, they will not believe in it. We have to feel comfortable telling patients that we consider it better for their eyes. The only way to gain this confidence is to use it yourself and track your complication rates and outcomes.

To obtain optimal results, surgeons should develop a surgical plan before surgery. We should

not enter data on the fly. There is always the risk of transcription error, so surgeons and staff must be vigilant in their protocols and processes with surgical planning.

For the procedure, patients should be lightly sedated; 1–2 mg of IV Versed is usually enough. If they are oversedated, they will fall asleep or wake during the procedure, causing a suction break.

Because the laser can induce slight miosis, I place a drop of

10% phenylephrine in the eye after the laser procedure to dilate the pupil slightly as long as this is not a cardiac risk for the patient.

Cortical cleanup is slightly different with femtosecond laser cataract surgery. Although it may appear that there is no cortex after the nucleus is removed, due to the presence of a perfectly clear red reflex, there may actually be a full untouched, undissected layer of cortex that is still present.

continued from page 6

our ability to correct astigmatism because we will have inaccurate measures of the magnitude and axis of astigmatism.

### Postoperative strategies

After cataract surgery, patients may have residual astigmatism or be under- or overcorrected. We can prescribe contact lenses or glasses, perform laser vision correction, implant a piggyback IOL, perform an IOL exchange, or perform arcuate incisions to correct these cases. I base my choice on the patient's corneal topography and residual refractive error.

We prepare patients for the potential need for a second procedure to fine-tune their vision if they have factors that may increase the chance of being

off-target, such as patients who had previous refractive surgery, various corneal diseases, or very long or short axial lengths or those in whom it is difficult to determine the exact astigmatism magnitude or axis.

If a patient's postoperative vision is off-target, I perform a comprehensive examination, including topography and an OCT of the macula because there could be a new onset of mild macular swelling. We need to identify and treat that early, as well as dry eye and meibomian gland dysfunction (MGD) that may be present.

One major controversy is whether we should perform a YAG before PRK or LASIK enhancements. If we perform a YAG, it might impact our ability to

perform an IOL exchange in the future. However, in most cases I feel confident that optimizing the refractive error will result in a satisfied patient, so I tend to perform a YAG before PRK or LASIK. That is because there can be a shift in the refractive error following YAG. If we perform LASIK or PRK first and perform a YAG 6 months later, the patient's vision may be off-target.

After treating dry eye and MGD and performing a YAG, I repeat corneal topography and refraction before performing the laser vision correction enhancement.

With multifocal IOLs, we usually aim for plano. With an accommodative IOL, our goal may be slight myopia.

A 360-degree whitish ring at the edge of the capsulotomy is the tipoff that there is still cortex there. Bimanual irrigation and aspiration can help remove the sticky cortex because the surgeon can switch hands for the subincisional space.

### Conclusion

Femtosecond lasers offer clinical benefits for cataract surgery, including the creation of arcuate incisions and fragmentation of the lens. Surgeons should educate their staff and patients about what laser cataract surgery can offer. This technology continues to mature and will likely continue to prove its worth in delivering better refractive outcomes for patients undergoing cataract surgery.

### Reference

1. Abell RG, Kerr NM, Howie AR, Mustaffa Kamal MA, Allen PL, Vote BJ. Effect of femtosecond laser-assisted cataract surgery on the corneal endothelium. *J Cataract Refract Surg.* 2014; 40:1777–1783.

*Dr. Weinstock is in private practice at the Eye Institute of West Florida, Largo. He can be contacted at rjweinstock@yahoo.com.*

### Conclusion

To optimize success with LACS, a thorough preoperative assessment is essential. If patients have postoperative residual refractive error, we need to optimize the ocular surface and consider performing YAG before laser vision correction. When weighing enhancement options, surgeons should consider the patient's residual refractive error, refractive surgery history, and corneal topography.

### Reference

1. Rabinowitz M. Keratoconus. *Surv Ophthalmol.* 1998;42:297–319.

*Dr. Trattler practices with the Center for Excellence in Eye Care, Miami. He can be contacted at wtrattler@gmail.com.*

## Step by step: Clinical and practical implementation of laser-assisted cataract surgery

To take this test online and claim credit, go to [bit.ly/1No2lzh](http://bit.ly/1No2lzh) or complete the test below and fax, mail, or email it in.

**CME questions (circle the correct answer)**

1. According to Dr. Weinstock, most refractive cataract surgeons believe surgeons can correct up to \_\_\_\_ of regular corneal astigmatism consistently with the femtosecond laser.
  - a. 0.5 D
  - b. 1.0 D
  - c. 1.5 D
  - d. 2.0 D
  
2. According to Dr. Donnenfeld, intrastromal incisions \_\_\_\_\_.
  - a. Are associated with more pain
  - b. Increase the risk of infection
  - c. Can be performed manually
  - d. Offer better astigmatic predictability
  
3. According to Dr. Solomon, 7 of 10 cataract patients have astigmatism that can be treated with toric intraocular lenses, arcuate incisions, limbal relaxing incisions, or other techniques, but it is treated in \_\_\_\_ of cases.
  - a. 5%
  - b. 15%
  - c. 20%
  - d. 33%
  
4. Dr. Trattler prepares patients for the potential need for a postoperative procedure to fine-tune their vision if they have factors that may increase the chance of being off target, such as \_\_\_\_\_.
  - a. Previous refractive surgery
  - b. Various corneal diseases
  - c. Very long or short axial lengths
  - d. All of the above
  
5. So he could afford to provide laser-assisted cataract surgery to his patients, Dr. Dillman explained that he:
  - a. Purchased a femtosecond laser, taking advantage of financing options
  - b. Performed LACS at a nearby facility
  - c. Partnered with a company to develop a mobile LACS program
  - d. All of the above

To claim credit, please fax the test and fully completed form by April 30, 2016 to 703-547-8842, email to [GPearson@ascrs.org](mailto:GPearson@ascrs.org), or mail to: EyeWorld, 4000 Legato Road, Suite 700, Fairfax, VA 22033, Attn: October 2015 CME Supplement

ASCRS Member ID (optional): \_\_\_\_\_

First/Last Name/Degree: \_\_\_\_\_

Practice: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip, Country: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Please print email address legibly, as CME certificate will be emailed to the address provided.