

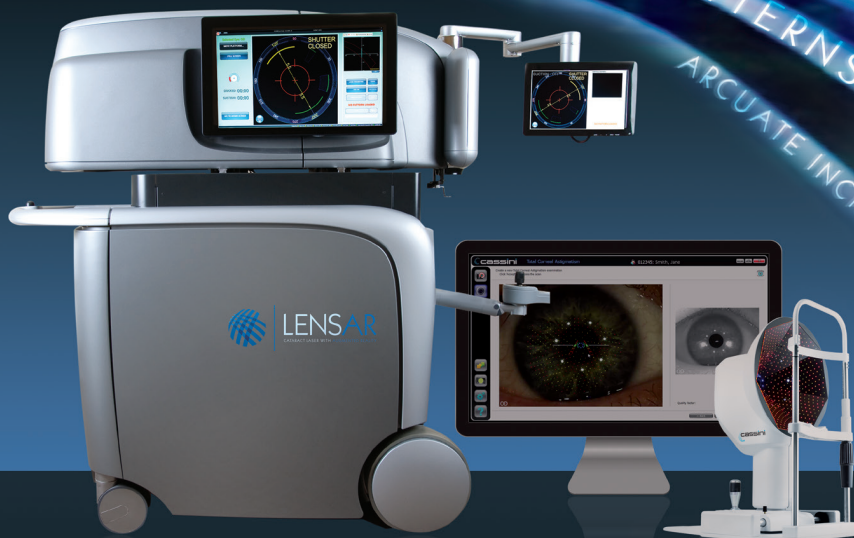
Supplement to

# CRST

Cataract & Refractive Surgery Today

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Lensar

WIRELESS INTEGRATION WITH CASSINI™  
CATARACT DENSITY IMAGING  
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## Tips to Build a Successful Laser-Assisted Cataract Surgery Model in Any Practice

Practice integration of the LENSAR Laser and impact of FDA-cleared LENSAR with Streamline, featuring five new performance applications to automate key procedural steps.

## Moderator



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## Participants



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*Distinguished surgeons gathered at the ACES/SEE Caribbean Eye meeting in February to discuss their experience with adopting the LENSAR laser and Cassini Corneal Analyzer into their practices. Online videos on practice integration are available at [eyetube.net/series/lensar-laser-system/ASIDE](http://eyetube.net/series/lensar-laser-system/ASIDE)*

**Dr. Packer:** Could each of you begin by telling us what initially made you consider femtosecond laser technology for your practice?

**Dr. Jackson:** It was the advanced technology. The LENSAR laser (LENSAR) gave me a competitive advantage.

**Dr. Visco:** Femtosecond cataract surgery was going to be the new phase of cataract surgery, just as phacoemulsification was the new phase of extracapsular cataract surgery.

**Dr. Wiley:** I view it as the large potential application to improve care across my patient base. With some modalities, such as a toric or multifocal IOL, only a certain percentage of patients meets the treatment criteria; we are limited by pathology. The femtosecond laser, however, could be applied to any patient who presents to the practice.

**Dr. Weinstock:** When I learned that the laser was going to create the capsulotomy, lens fragmentation, wounds, and arcuate incisions, I compared what I could do with my hands to what the laser could do, and I registered immediately that a laser would be much more precise. Therefore, I concluded that the outcomes could be better than with manual procedures.

**Dr. Stephenson:** I think that most of my colleagues believe in and want new technology that can improve their surgical experience and improve outcomes. Your business model and the kind of facility in which you perform surgery may have some limits on new technology adoption, but now there are mobile units, hospitals, and some ASCs that are purchasing lasers and charging a click fee, so more doctors have access to femtosecond lasers.

**Dr. Packer:** Why do you believe that a femtosecond laser is superior to a manual procedure?

**Dr. Jackson:** I feel that a femtosecond laser reduces my risk and gives me greater flexibility to handle the more difficult cases.

**Dr. Wiley:** By fragmenting the nucleus, a femtosecond laser can reduce the phaco energy we use in the eye, which is beneficial. Also, certain patients may require

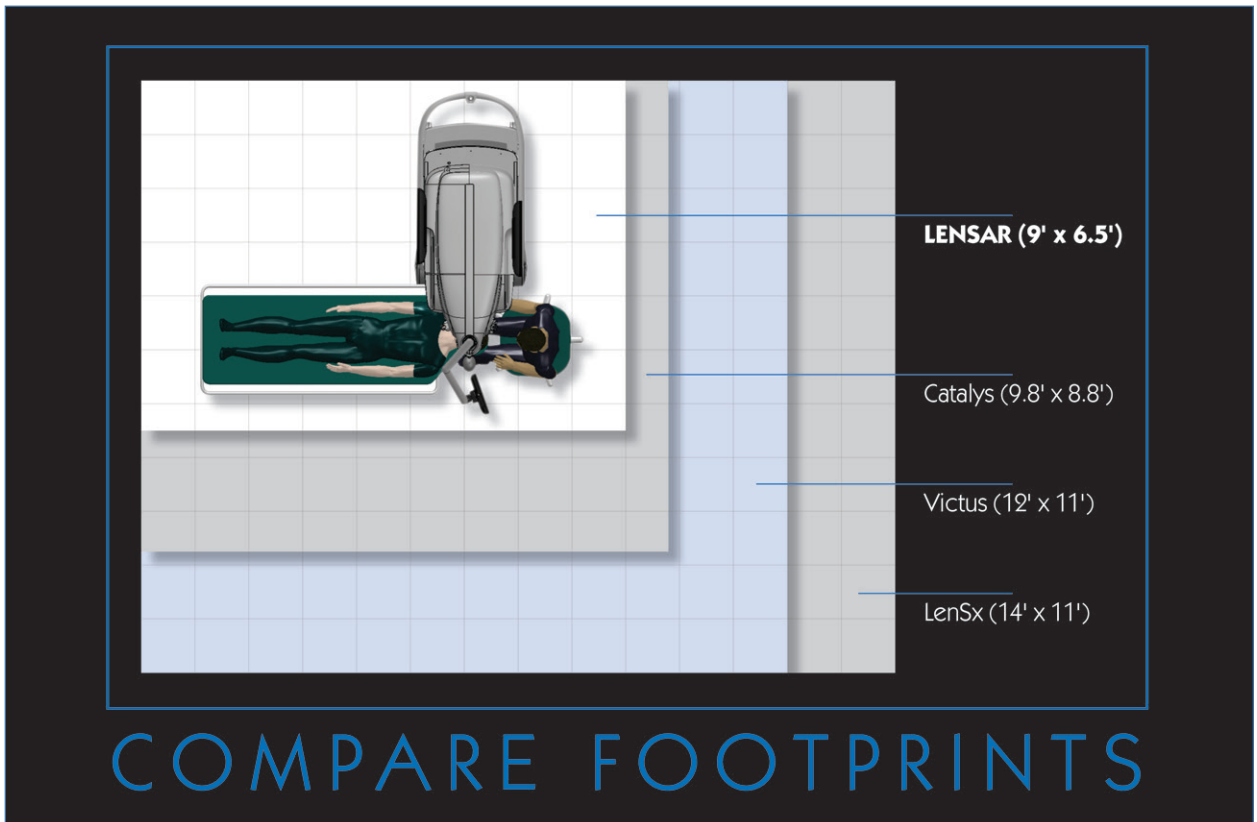


Figure 1. LENSAR offers the smallest laser footprint (6' X 9.5'), with wheels that enable optimal transportability compared to other LACS systems.

femtosecond technology, even if they cannot afford it. For example, if a patient presents with a 4+ nuclear sclerotic cataract and a borderline healthy cornea with endothelial disease, it is irresponsible to perform traditional cataract surgery. In those cases, I use the laser, no matter what the patient can pay.

**Dr. Weinstock:** I knew immediately that the femtosecond laser was going to reduce my risk of damaging the capsule during nuclear manipulation and chopping, as well as minimize the time I spend on dismantling a grade 4 NS cataract. Like Dr. Wiley, if a patient has a dense cataract and cannot afford the femtosecond laser, I will eat the cost, because I know that I am going to have a clear cornea on postoperative day 1, less thermal and ultrasonic damage to the cornea, and less overall risk to the eye.

**Dr. Packer:** I first used the LENSAR laser in a charity clinic in Lima, Peru, before it was approved in the United States. These patients' cataracts were extremely dense. After I performed one procedure manually without the laser, I realized how much damage to the cornea was avoided by using the laser. The reduction in ultrasound energy was significant. The laser made these difficult cases routine.

"The reduction in ultrasound energy [with the LENSAR laser] was significant. The laser made these difficult cases routine."

—Mark Packer, MD

## TECHNOLOGY ADOPTION

**Dr. Packer:** Were you all early adopters of femtosecond laser technology? Are the challenges different for early-versus mid-stage adopters? What advice can you share with colleagues who are considering adopting this technology?

**Dr. Weinstock:** When I converse with colleagues, it appears that most people have an appetite for new technology and are confident working with new devices in the LASIK or cataract arena. Now that the early adopters have vetted the technology, the surgeons who have been skeptical are starting to consider the femtosecond laser for cataract surgery.

**Dr. Jackson:** Access to technology is a large issue, because most surgeons who are interested have already

purchased a laser for their surgery center. Those who have multiple surgery centers may find it cost prohibitive to purchase more than one device. Currently, between 6% and 22% of surgeons are using laser cataract surgery in the United States, depending on the region.

**Dr. Visco:** Some hospital systems are purchasing the laser and charging a click fee for surgeons to use it, and there are femtosecond lasers now available as mobile units. I think those models will also facilitate broader access to femtosecond lasers.

**Dr. Wiley:** It is a great time to enter the market, because the business models have been determined, and surgeons understand what they are getting. Now that there are several femtosecond lasers on the market, buyers can evaluate which one will best suit them. They can be confident that it will fit into a good business model.

**Dr. Packer:** Why was the LENSAR laser right for your business model (Figure 1)?

**Dr. Stephenson:** I work in a multispecialty ambulatory surgery center, and the LENSAR laser fits perfectly within its small footprint. Having a bed that is not attached allows me the ability to swing the patient under the microscope, pull up the ORA System (Alcon), and perform the phaco portion without significant disruption.

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**"Since we incorporated the LENSAR laser, my practice has an 82% conversion rate to femtosecond laser technology, and 61% to advanced-technology IOLs."**

*—Mitchell Jackson, MD*

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**Dr. Jackson:** For me, it was an issue of surgical flow. I am a single-OR surgeon, and I wanted to continue to be efficient in my practice. There was a learning curve, but once my team and I worked through it, we were just as efficient as we were before, but with better technology. With the LENSAR laser, I can keep patients on the same bed for the femtosecond portion of the procedure, and then slide them under the microscope and prep them for the remainder of the procedure. Because my surgical flow has been unaltered, I am able to operate on the same number of patients in a day—three, sometimes four surgeries per hour.

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**"In choosing the LENSAR laser, my partners and I took into account its imaging capability, delivery, presbyopia potential, and surgical flow (we also preferred the unattached bed)."**

*—William Wiley, MD*

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**Dr. Visco:** I wanted the flexibility of a detached patient bed, and I was very attracted to the LENSAR's Scheimpflug imaging system, which was familiar to me because of my years of using the Pentacam (Oculus). I was also impressed with the LENSAR's fluid interface system and the laser's depth of penetration into the nucleus, which creates very effective fragmentation.

I have two ORs, and I put the LENSAR in the largest one. I laser two patients and then perform both of those surgeries, and then I do one standard cataract surgery followed by another two laser cases. In this way, my staff and I can treat 3 to 3.5 cases per hour.

**Dr. Packer:** How long did it take you to get where you are today?

**Dr. Jackson:** Prior to operating with the laser, we rehearsed our OR routine as if the laser were there. We could not afford to have a long learning curve in the OR, so it took 1 day for us to learn the flow of the laser.

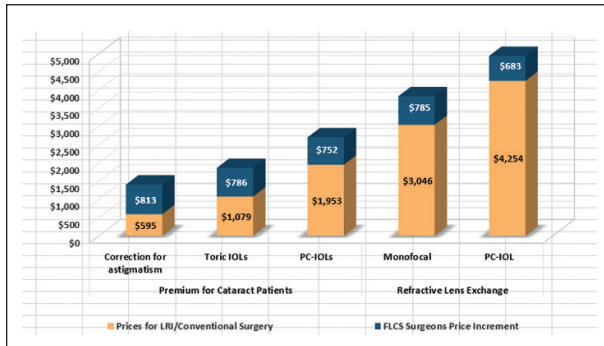
**Dr. Packer:** Dr. Wiley, why did you choose the LENSAR laser?

**Dr. Wiley:** I was a strong believer that a liquid interface and Augmented Reality imaging system would be preferable to not only identify the structures in the eye but also to treat them. I thought that the laser's ability to soften the cataract was one of its main advantages. The OCT-based femtosecond systems can identify where the structures are, but do not give detailed information about the density of the cataract.

Furthermore, femtosecond lasers for cataract surgery are in their infancy, and we have to evaluate which is the best platform on which to build future applications. In choosing the LENSAR laser, my partners and I took into account its imaging capability, delivery, and surgical flow (we also preferred the unattached bed).

**Dr. Packer:** Dr. Weinstock, you have used all the systems. You are bringing the LENSAR in as a third laser, and that creates interesting dynamics within the practice.





**Figure 2.** Data from Market Scope's Q4-2014 report show that surgeons who perform femtosecond laser cataract surgery (FLCS) charge between \$683 and \$813 more than those performing traditional cataract surgery. According to respondents to a Market Scope survey, the average surgeon who uses FLCS when implanting a PC-IOL charges \$752 more than other surgeons. Those who use FLCS to perform refractive lens exchange charge an average of \$683 more. Charges for using FLCS technology in toric IOL implantations in cataract patients were \$786 higher than charges for conventional toric IOL procedures. However, the charges for FLCS procedures have varied quarter to quarter, as surgeons adopt the technology.<sup>1</sup>

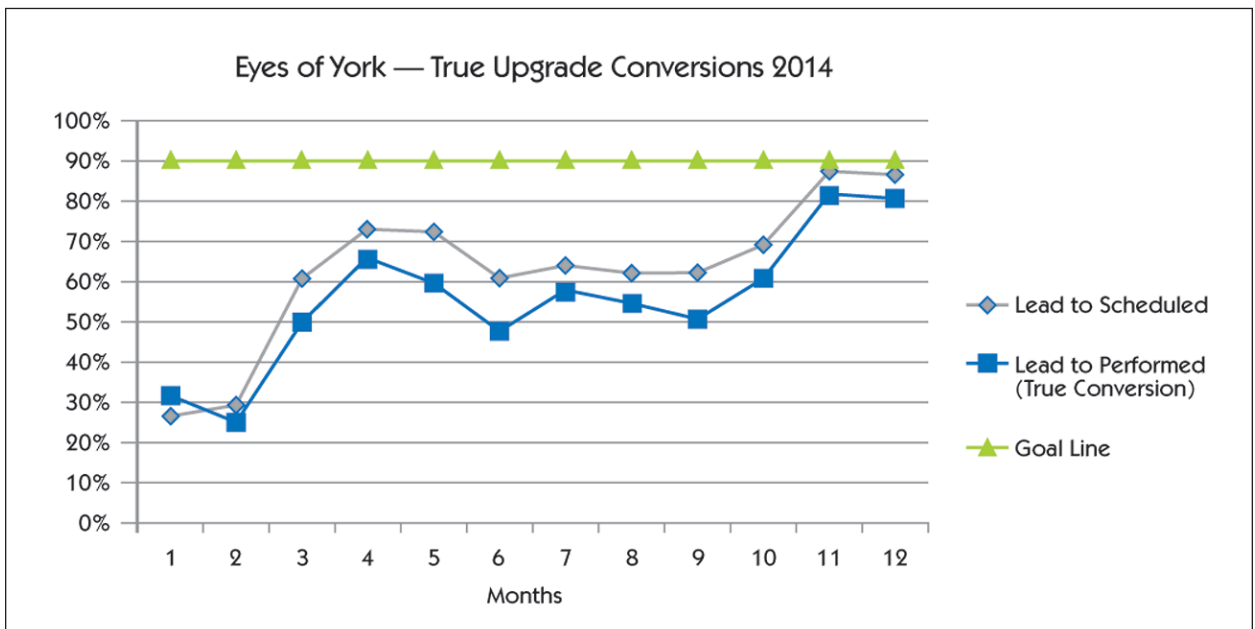
**Dr. Weinstock:** All of these devices are designed to do the same things, but there are areas in which they each outshine the other, whether it is due to the design, engineering, software platform, or imaging system. When I had the opportunity to work with the LENSAR device, a couple of things spoke to me. First, the engineering team has the ability to improve the software and make advancements

in the technology rapidly. This is important, because the space is evolving and all these devices are going to need to continue to show dynamic improvements in software, laser imaging, parameters, and features.

Second, certain femtosecond lasers for cataract surgery were rough on the eye. I am a proponent of intraoperative aberrometry, so when I was compressing the cornea with first-generation femtosecond lasers, I was losing faith in my readings on the intraoperative aberrometry. I realized there is a benefit to being gentle on the eye, and one of the great features of the LENSAR laser is that it is gentle on the cornea. I knew it would be easier to obtain more accurate intraoperative aberrometry readings by not compressing the cornea and using a liquid interface.

**Dr. Packer:** The conversation about efficiency is not just about performing a certain number of cases in a day; it is also about the economics of implementing a femtosecond laser platform. The majority of surgeons who object to adopting a femtosecond laser do so because of economics, yet we see reports showing that practices that have adopted a femtosecond laser are able to charge more for cataract-related procedures.<sup>1</sup> Only single-surgeon lasers appear to have trouble making a profit. What impact has the femtosecond laser had on your overall business model? If someone is on the fence because of the cost, are there ways to get involved with this technology (Figure 2)?

**Dr. Jackson:** Prior to incorporating the LENSAR laser, my practice had a 40% conversion rate to premium IOLs. Now, we have an 82% conversion rate to femtosecond



**Figure 3.** In Dr. Visco's practice, approximately 70% of all cataract patients are treated with the femtosecond laser, and about one-third of those patients opt for a premium IOL.



Figure 4. The Streamline upgrade to the LENSAR laser permits wireless integration with the Cassini Corneal Shape Analyzer as well as automated iris registration based on iris features, automated imaging of cataract density, customized fragmentation patterns, and a planning function for arcuate incisions built into the laser.

laser technology, and 61% to advanced-technology IOLs with the laser. The laser helps me provide an overall premium surgical experience for my patients.

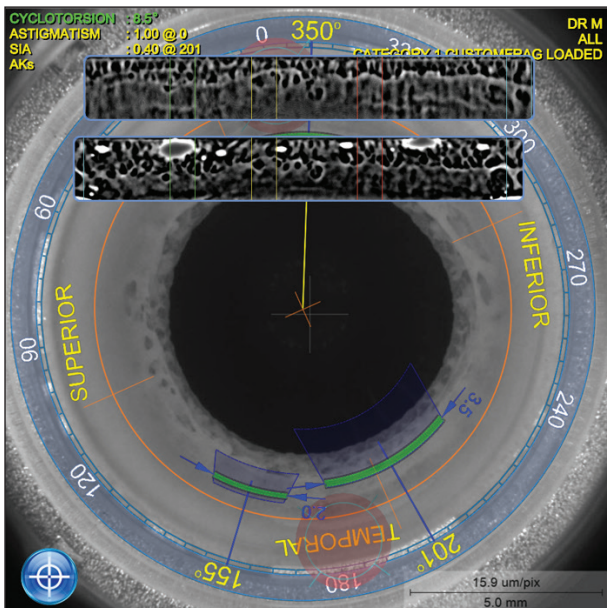
**Dr. Weinstock:** The most successful surgical practices no longer focus on the volume of cataract surgeries as the primary economic metric. In our practice, the laser procedure is as efficient or more so than our manual cataract procedures. We have moved beyond worrying about that, and now focus on the premium nature of the treatment and the opportunity to achieve better outcomes by combining femtosecond cataract surgery and premium IOL technology.

**Dr. Packer:** How is the communication with your patients different for those who have now decided to select a premium IOL, when they would not have chosen to go that route before?

**Dr. Jackson:** Messaging starts with me, the surgeon. I tell my patients that they have the choice between

basic or advanced technology. I keep my verbiage simple, because patients may not understand medical jargon. I always ask them their main goal for undergoing cataract surgery. Based on their response, I give them educational materials to review at home. With the advanced-technology option, I explain that they are not only receiving state-of-the-art vision correction, but also faster visual recovery.

**Dr. Visco:** Before the introduction of the femtosecond laser, I had a fairly generic practice. Premium IOL implantations composed about 20% of my monthly procedures. Adopting a femtosecond laser for cataract surgery required my practice to re-evaluate our processes to leave time for educating patients about their options. It took us about 9 months from adopting the LENSAR laser to convert 30% to 40% of our premium IOL patients to having femtosecond laser surgery. At our current rate, about 70% of all cataract patients are femtosecond cataract surgery patients, and approximately one-third of those patients opt for a premium



**Figure 5.** The LENSAR's iris registration detected an 8.5° clockwise rotation that the laser automatically compensated for during the incision planning phase of the procedure.

IOL (Figure 3). The rest have femtosecond surgery with monofocal IOLs and astigmatic incisions.

**Dr. Weinstock:** Newer trends are to disassociate the assumption that premium IOLs are automatically included with laser cataract surgery. We use the laser as a way to reduce patients' dependency on spectacles after cataract surgery. It is a tool that allows us to achieve better refractive outcomes. For most of us, this is due to the arcuate incisions, but realistically, it is also because of faster recovery and the "wow" factor of the clear cornea. We position it in our practice as refractive cataract surgery versus standard cataract surgery. Patients who want refractive cataract surgery have different goals than those who want standard cataract surgery. No matter which IOL is implanted, the laser is the cornerstone for delivering a reduced spectacle-dependent outcome.

**Dr. Wiley:** I recently transitioned my mindset to downplay technology and upsell outcomes. I ask the patient to tell me what they want to achieve, and I tell them that I am going to do what is best for them. Instead of having a detailed discussion about the lasers or IOLs, I say, "Mr. Jones, if you want to wear glasses, you are going to undergo basic cataract surgery. If you have a refractive goal, we will use all the tools that we have to achieve that goal."

I tell my patients the procedure is like adding LASIK to cataract surgery. They all understand that LASIK lessens their need for glasses, and they understand the price point associated with LASIK as well.

"We need to produce a seamless, markerless, automated, graded cataract image by just hitting one button. We want ease of use."

—Mitch Jackson, MD

**Dr. Stephenson:** Before the advent of femtosecond lasers, I had about a 30% to 35% premium conversion rate. Since adopting LENSAR, my conversion rate has increased to about 73%. I focus on outcomes.

**Dr. Packer:** What has been your experience with the Cassini Corneal Analyzer (i-Optics) (Figure 4)? What were the features that inspired you to choose that device, and how do you integrate that into your practice with the laser?

**Dr. Weinstock:** The Cassini Corneal Analyzer is an impressive device for determining the cornea's true axis and the amount of anterior corneal astigmatism because of its proprietary LED technology and the amount of data points that it has on the cornea. Also, there is an integration that has been developed by LENSAR called Streamline that allows for the wireless export of an undilated pupil image into the LENSAR laser and registration of the preoperative pupil against the dilated pupil. This feature eliminates the problem of manually marking the cornea to compensate for cyclotorsion.

**Dr. Jackson:** I purchased the Cassini system in anticipation of having registration capability with the LENSAR laser. I started using it for total corneal astigmatism so that I can counter the posterior astigmatism effect for better refractive outcomes. My team and I also use intra-operative aberrometry, so we can fine-tune if we need to, but having planned appropriate astigmatism management from the beginning reduces my enhancements postoperatively. The ability to link the LENSAR laser to a markerless guidance system to avoid cyclorotation errors is what mainstream ophthalmology is waiting for. We need to produce a seamless, markerless, automated, graded-image cataract by just hitting one button. We want ease of use.

**Dr. Packer:** The missing pieces in preoperative analysis of astigmatic correction have historically been (1) that the measurements neglected the contribution of the posterior cornea, and (2) that the effect of surgically induced astigmatism (SIA) was estimated as an average

number. The Cassini integration with the LENSAR Laser helps address the first point, because it can analyze total corneal power. Another feature of Streamline is that there is now an Arcuate Incision Planner on the laser itself that will allow us to address SIA more efficiently (Figure 5).

**Dr. Jackson:** Surgeons must know their surgically induced astigmatism (SIA) for the right and left eyes. They also need to calculate the vector analysis based on their own SIA value. Foregoing these steps will produce an error in their postoperative refractive outcomes and then increase their risk for performing additional enhancement procedures.

**Dr. Stephenson:** I purchased my Cassini with the knowledge of the total corneal power software coming out and with this being integrated with the LENSAR LASER with Streamline to provide iris registration for cyclotorsion compensation. Because the Cassini measures total corneal power (anterior and posterior), it gives me much better preoperative information than anything else on the market. I have a good idea of the magnitude and axis of astigmatism, so my surgical plan is tighter. I then use ORA with VeriEye to refine the final toric alignment or titrate my arcuate incisions. The iris registration and wireless integration features of Streamline are certainly an exciting new addition to my surgical practice. Also, I no longer have to mark the cornea before I perform surgery, which saves time. Intraoperative aberrometry and the Cassini have both helped decrease my enhancement rates.

**Dr. Visco:** My surgically induced astigmatism with my manual incision is approximately 0.25 D. I get about 0.10 to 0.15 D of surgically induced astigmatism, when making the clear corneal incision with the LENSAR laser. Initially, when I wanted to make an arcuate incision at the 180° axis, I would try to incorporate the clear corneal incision on the axis. It essentially had no effect, and the patient was undercorrected. Now, I make dual arcuate incisions and a clear corneal incision off-axis when I need to have correction at 180°.

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“The ability to link the LENSAR laser to a markerless guidance system to avoid cyclotorsion errors is what mainstream ophthalmology is waiting for.”

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—Dr. Jackson

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**Dr. Packer:** What has been your experience working with the small, independent company that is LENSAR?

**Dr. Visco:** LENSAR’s practice development program has been a tremendous asset for my two-physician practice in a small Pennsylvania town. We were not a big refractive cataract surgical practice, and LENSAR was outstanding in enabling us to be successful with this technology. They were interested and engaged in making sure that we understood how the technology worked, that we had support on a clinical and a professional level, that we were able to educate our patients and staff, and that our surgeons were comfortable with the technology.

**Dr. Jackson:** Of all the marketing strategies, word of mouth is still the most effective, and laser technology generates much more word of mouth referrals than other technologies. I am getting significantly better results than I was 6 months ago, and I expect to see even more improvements in another 6 months. LENSAR works with me and my team to perform studies at a smaller scale so that we can get faster, more accurate data to advance the technology faster.

**Dr. Stephenson:** I love working with small, independent companies like LENSAR. The company listens to the doctors and their needs, and follow-through has been great. They are interested in educating everyone in our office so that this technology is understood. ■

1. Harmon D. Cataract Surgeon Survey Report: Q4-2014. St. Louis, MO: Market Scope, LLC.

