Live Surgery Highlights LENSAR's Precision and Efficiency

LENSAR Laser System with Streamline and IntelliAxis-C saves time and maximizes outcomes.

Mitchell Jackson, MD, and James C. Loden, MD, discuss how they have embraced femtosecond laser cataract surgery in their practices and are maximizing patient outcomes by using all of the unique features of the LENSAR Laser System with Streamline, IntelliAxis-C, and Iris Registration (IR) software. Dr. Loden performs a toric IOL case with IntelliAxis-C alignment, followed by a monofocal lens case using arcuate incisions (AIs) and IR, while Dr. Jackson narrates and invites questions and observations from the audience.

Case 1: Toric IOL With ATR Astigmatism

Mitchell Jackson, MD: Dr. Loden, I have been using LENSAR for about 5 years and find that it is really fast, and it saves us a lot of time. We can get femtosecond laser cataract cases done in about 1.5 to 2.5 minutes on average. It is an easy dock, and very comfortable for patients as well. I am excited to share your cases with the audience.

James C. Loden, MD: The patient is receiving a Toric Symfony lens (Johnson & Johnson Vision) and, according to the Pentacam (Oculus), the patient has 1.20 D of against-the-rule (ATR) astigmatism. A great feature of the Pentacam, which most of us already have, is that it is wirelessly integrated with the LENSAR laser; it automatically loads the astigmatism treatment to the laser. In this case, instead of putting AIs in, we use IntelliAxis-C, which is preprogrammed with my surgically induced astigmatism. The axis automatically loads so I do not have to premark the cornea, which saves me a lot of time in through put. On a typical day, I do between 35 and 45 surgeries. Saving 30 seconds per case makes a big difference; saving 1 minute per case equals four extra cases that I can add on to the schedule.

Dr. Jackson: The 3D–CSI camera rotates to capture two different angles at up to eight different positions around the optical axis for a total of 16 images. Then, Augmented Reality uses the biometric data and optical ray-tracing technology to create a precise 3-D model of the patient's eye. The lens density is automatically analyzed and assigned to a category from 1 to 5, which will determine your preferred fragmentation pattern for the type of cataract that presents. The IR function will occur just before treatment as the software matches up the data points—from the preoperative topography images to the live LENSAR iris images—accounting for cyclorotation and ensuring that your AIs or IntelliAxis-C marks are placed on the steep axis.

Dr. Loden: We are ready to treat.

Dr. Jackson: After forming the capsulotomy, the system fragments the lens; then the laser creates visible steep axis landmarks known as IntelliAxis-C for effective toric lens placement. It happens quickly—just as he finishes the fragmentation, a mark will go up verifying the location of the steep axis for the ATR astigmatism. It is measuring the cornea depth live, indicating 90% depth. Dr. Loden will mark it with an ink pen so you can see it clearly on the screen; however, you typically do not have to do that when you are looking through the scope.

Dr. Loden: We were under suction for just 2 minutes and 11 seconds. With this system, I do not have to mark the cornea preoperatively; I do not have to use any intraoperative devices to align my toric lenses; I simply look at the intrastromal IntelliAxis-C marks. I cannot stress enough how much time this saves us. It provides such easy through put for us in our high-volume cataract practice.

Dr. Jackson: One of the things I love about the LENSAR is that I have a preset nomogram so I just press a button to use that nomogram. Dr. Loden, what are your thoughts on that?

Dr. Loden: One of the great things about the LENSAR company and its support is that they helped us optimize our nomograms. We submitted data, and they looked at the effectiveness of our ATR limbal relaxing incisions and corneal relaxing incisions versus our with-the-rule (WTR) incisions; they looked at our astigmatic outcomes (both WTR and ATR) and made adjustments. With their help, we dramatically improved our outcomes. Now, I do not have to calculate the nomogram, the patient data is wirelessly transmitted from my Pentacam or Cassini (i-Optics) to the laser, and then the laser does it all for me. It is a big time saver. I just check to make sure that the Pentacam matches up properly and as long as it matches, we are good to go.

Dr. Loden: I make the paracentesis port, and I mark the IntelliAxis-C marks with gentian violet to make it easier to fixate on the intrastromal arcs. We inject lidocaine with epinephrine in the anterior chamber through the paracentesis port. I will then inject Healon Endocoat OVD (Johnson & Johnson Vision), trying not to disturb the capsulotomy. Next, I place my clear cornea incision using a cross-fixation technique, and then grasp the capsulotomy with forceps being careful to inspect the presence of capsular tags. Our patient has a +2 nuclear sclerotic (NS) cataract with +2 posterior subcapsular cataract, and he has 20/50 BCVA. Now, I am going to do a gentle hydrodissection making sure I am fully under the capsule before beginning. I do not like to get aggressive with hydrodissection; I do just enough to get the lens gently rotating. It is still a little tight, but we are going ahead with phaco because cases like this break up easily and come right on out. We are going to a peristaltic 475 vacuum, and with the 20-gauge phaco needle I am able to easily pick up the segments of the nucleus. I am using almost no phaco power—a total phaco time of 10—so we are really protecting the endothelium.

Speeding up the case has so many benefits; something as simple as irrigating a lot will cause corneal edema. I remove the cortex in more of a radial pattern when I use a femtosecond laser, and when I am stripping in this radial pattern, I get way up under the edge of the capsular rim as I get the subincisional cortex out. I like using a silicone tip with these toric lenses, because the only way to correct the astigmatism if we tear the capsule, is to leave the patient with compound myopic astigmatism, and then come back and do LASIK. We are going to very gently vacuum this posterior capsule and make sure that it is nice and clean in the visual axis to avoid the possibility of posterior capsular opacification. I put Healon, a cohesive viscoelastic, in and then I slip in a Symfony lens. Next, I make sure all of our viscoelastic is out before I move on to the final toric positioning. If you leave any viscoelastic in, the lens will have a tendency to rotate, and then we would have to bring the patient back. Dr. Jackson, do you notice the bubbles on the cornea? Bubbles entrapped in the dispersive viscoelastic tell me that my endothelium is protected during the case. I will leave the lens a little short of the intended axis when I take the irrigation-aspiration tip out so I can do the final dial with balanced salt solution. Then I hydrate the stroma. I will make sure everything is nice and tight and check our final positioning with our IntelliAxis-C marks. The lens is implanted perfectly centered, and the eye is well pressurized.

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—James C. Loden, MD

Case 2: Monofocal Lens With WTR Astigmatism

Dr. Jackson: Dr. Loden, how has astigmatism management changed in your practice in terms of increasing revenue and converting more patients to this technology now that you have the LENSAR?

Dr. Loden: Absolutely. I think everyone can appreciate how fast this laser works, how accurate it is, and how easy it is to place AIs. It has been a fantastic boon for our practice. As many of you know, I was previously using the IntraLase (Johnson & Johnson Vision) and with that I was just making clear corneal incisions. When I switched over to the LENSAR platform, the capabilities expanded. Since switching to LENSAR, our conversion rate went up from about 23% to greater than 50% depending on the week, with 47% to 53% converting to a premium laser procedure. That is a big difference in the revenue stream for the entire practice. It has been a great laser for us to implement for so many reasons

Q&A Session

Dr. Jackson: When we perform femtosecond laser surgery, in most cases, we do not have to perform epinuclear removal. Most of us would prefer to avoid that step because if you accidentally nick the capsule it creates a problem. So, by performing femtosecond surgery with LENSAR, not only do we eliminate the entire epinuclear removal step, save time, and maintain a friendlier interface with the endothelium, but we also avoid a potential complication. All of these factors enhance our ability to convert more and more cases to premium laser LENSAR surgery.

Dr. Parkhurst, will you share with us your experience of incorporating LENSAR in your practice?

Gregory D. Parkhurst, MD: I absolutely believe patients are better off having their cataracts fixed using the LENSAR compared to having it done the basic manual way. In fact, when I was planning to do my father's cataract surgery a couple years ago, I ended up having him wait until we had the LENSAR before I did his case. I really wanted to have that extra level of confidence going in. Now, when I tell my patients that, for several reasons, I held off doing my father's cataract surgery until I could use the LENSAR, it definitely gives them the confidence they need to make the right decision for themselves regarding their cataract operation.

Dr. Jackson: About half of you in the audience has either Pentacam HR or AXL (Oculus), OPD-Scan III (Marco), Cassini (i-Optics), or Aladdin technology (Topcon). If you already have one of those five, you will be able to integrate it with LENSAR immediately without spending any extra money.

Dr. Christian, what motivated you to jump on board?

Will Christian, MD: Actually, I believe our surgery center was the second one in the country to get LENSAR. I have been using LENSAR for about 6 years. It has completely revolutionized the way I speak to patients and the entire conversion process in my practice. There was a time when the conversion process was entirely focused on lens choice, and the glasses/no glasses conversation was an exceptionally difficult one to have. Now, when I speak to patients, IOL choice has become quite secondary. My cataract surgical consultation is now a completely different conversation than that of the past. It is now completely focused on my approach to surgery and about what I am able to bring to the table—and how that approach defines modern-day cataract surgery. I use LENSAR in about 98% of my cases and, to date, I have never had a single complication. I definitely acknowledge that if I did not have LENSAR, I would be a very different cataract surgeon from not only a conversion standpoint but from a safety and outcomes standpoint as well.

Dr. Jackson: Dr. Trattler, what is your upper limit of astigmatism correction?

William B. Trattler, MD: I love the IntelliAxis-C, because it saves a ton of time, and it is accurate, too. I think that has resulted in a significant improvement in efficiency during my surgery day. We have both a Cassini and a Pentacam at our center, so we have two different devices that can integrate with LENSAR and obtain Iris Registration preoperatively. I used to mark the eye manually, so having IntelliAxis-C means our orientation marks are always on target and, of course, this makes toric and toric multifocal lenses work really well. I would say that I am 98% toric IOL versus arcuate incisions thanks to my success with IntelliAxis-C. When I do use femto astigmatic keratotomy, I typically will use them for 1.00 D or less of astigmatism.

Dr. Jackson: Having the IntelliAxis-C definitely improves outcomes by avoiding cyclorotation errors that lead to lost effect of toric correction. Denise Visco, MD, presented an excellent paper at ASCRS that showed nearly 95% of her toric IOL patients achieved + 0.05 D or better absolute residual cylinder at 3 months using IntelliAxis-C technology.[1] We have experienced so many benefits by incorporating LENSAR into our practice. All of our conversions have risen in response to this technology—both laser and premium IOL conversions are up. LENSAR technology has really come a long way with adjusting for cyclorotation and astigmatism correction on the lower ends. As Dr. Loden said, in cases that may not be a candidate for a multifocal or accommodating lens, you can still use a monofocal lens and bring in extra revenue for the practice while benefitting the patient in the process.

1. Visco, DM. Astigmatism management using steep axis corneal landmarks created with femtosecond laser: multicenter prospective clinical study. Paper presented at: ASCRS; May 2016; New Orleans.

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> *—James C. Loden, MD*

including the excellent customer support. We are using LENSAR in 100% of our premium cases, and our word-of-mouth referrals have increased dramatically since adopting the LENSAR platform. Patients like the automation and speed of the procedure, and we love the precision of the procedure, which we make sure to explain to our patients. I really enjoy performing this surgery; how fast it moves and how much easier the procedure is when using LENSAR.

Our next case is a perfect example of that. The patient has nonproliferate diabetic retinopathy and 1.00 D of WTR astigmatism. We use a monofocal lens and do AIs to correct her astigmatism. For patients such as this, we have the Cataract Plus Program, which affords the precision and other benefits of laser cataract surgery and astigmatism reduction to patients who have diabetic retinopathy, macular degeneration, and epiretinal membranes.

Dr. Jackson, I am ready to proceed with the laser treatment.

Dr. Jackson: We have our 3-D image, the lens has been graded, and the IR is happening. The IR adjusts for cyclorotation, and then we follow-up with anterior capsulotomy and fragmentation of the lens. Dr. Loden has completed fragmentation. The two incisions were made based on the cyclorotation adjustment, and the laser procedure is complete.

Dr. Jackson: The beauty of LENSAR is that five popular preoperative diagnostic devices can transmit data directly to the laser—OPD-Scan III (Marco), Cassini, Pentacam HR and AXL or Topcon Aladdin models—so that gives access to many of us. Switching to LENSAR was probably an easy decision for you, Dr. Loden, because you already had a Pentacam and Cassini, so you did not have to make any extra purchases to be able to use this technology.

Dr. Loden: That is right. There was no extra $50,000 device needed to implement this. That was really refreshing. Also, all of LENSAR's recent software updates were added on to our laser so we did not have to pay extra for any updates. ■

James C. Loden, MD
- president, Loden Vision Centers, Nashville, Tennessee
- (615) 859-3937; lodenmd@lodenvision.com
- financial disclosure: consultant to LENSAR

Mitchell Jackson, MD
- founder and CEO, Jacksoneye, Lake Villa, Illinois
- mjlaserdoc@msn.com; Twitter @djmjspin
- financial disclosure: consultant to LENSAR

Gregory D. Parkhurst, MD
- founder and physician CEO, Parkhurst-Nuvision, San Antonio, Texas
- gparkhurst@parkhurstnuvision.com; Twitter @PNuVision and @gregparkhurstmd
- financial disclosure: consultant to LENSAR

William B. Trattler, MD
- director of cornea, Center for Excellence in Eye Care, Miami, Florida
- volunteer faculty at the Herbert Wertheim College of Medicine at Florida International University, Larkin Hospital Ophthalmology Residency Program, and the University of Miami's Bascom Palmer Eye Institute
- board member, International Keratoconus Academy of Eye Care Professionals
- (305) 598-2020; wtrattler@gmail.com
- financial disclosure: consultant to LENSAR

Will Christian, MD
- medical director, The Vanguard Eye Institute, Santa Monica, California
- willchristianmd@gmail.com
- financial disclosure: consultant to LENSAR

To see videos of the live surgery, go to eyetube.net/series/lensar-laser-system/DSYOG