Precision in ICL Sizing: Harnessing UBM and AI for Superior Outcomes

By: Dr. Blake Williamson, Dr. Roger Zaldivar, Dr. Taj Nasser, Dr. Brett Mueller

Image taken from the Lumibird Medical ICL Sizing Symposium

Introduction: A New Era in Refractive Surgery

At the 2025 American Society of Cataract and Refractive Surgery (ASCRS) annual meeting, Lumibird Medical® convened a symposium to explore the transformative potential of ultrasound biomicroscopy (UBM) and artificial intelligence (AI) in implantable collamer lens (ICL) sizing. Gabe Lewis, Marketing Director at Lumibird Medical, opened the session, introducing a distinguished panel:

- Dr. Blake Williamson, a Baton Rouge-based ICL expert moderating the discussion;
- Dr. Roger Zaldivar, the visionary behind the ICL Guru AI platform from Mendoza, Argentina;
- Dr. Brett Mueller of Mueller Vision in Fort Worth, Texas;
- Dr. Taj Nasser of Mueller Vision and Tylock George Eye Care in the Dallas-Fort Worth area.

Together, they shared insights on how the ABSolu® UBM, STS automation, and ICL Guru AI are revolutionizing refractive surgery by enhancing precision and patient safety.

From Skepticism to Advocacy: The Case for UBM

Dr. Blake Williamson: I'll be honest—I was skeptical about UBM. With about 500 ICL cases under my belt, my approach was simple: I use Pentacam for White-To-White (WTW) measurements, input them into STAAR's software, and select one size smaller. I feel it has worked for me. High vaults mean high problems, low vaults, low problems. But a conversation with Roger changed my perspective. He asked, "If it was your eye, would you prefer a 500-micron vault or a 50-micron vault? Have you considered lens rise, or what happens when a 22-year-old patient is 42?" That hit home. If we want ICLs to be accessible—not just for cowboys like me—surgeons need tools that inspire confidence through precision.

> *"Truly measuring, rather than approximating, is critical, especially for younger patients with decades ahead."*
>
> - Dr. Blake Williamson

Dr. Roger Zaldivar: In my clinic, we perform around 1,000 ICLs annually. The more you do, the more outliers you encounter. ICLs are forgiving, with unique collamer material, but we saw 10–15% of cases where sizing felt suboptimal. These weren't always complications, but they kept us up at night, wondering about angles in 25-year-old patients who'll have these lenses for 20 or 30 years. UBM became a necessity, delivering anatomically accurate sizing that addressed these edge cases and improved outcomes.

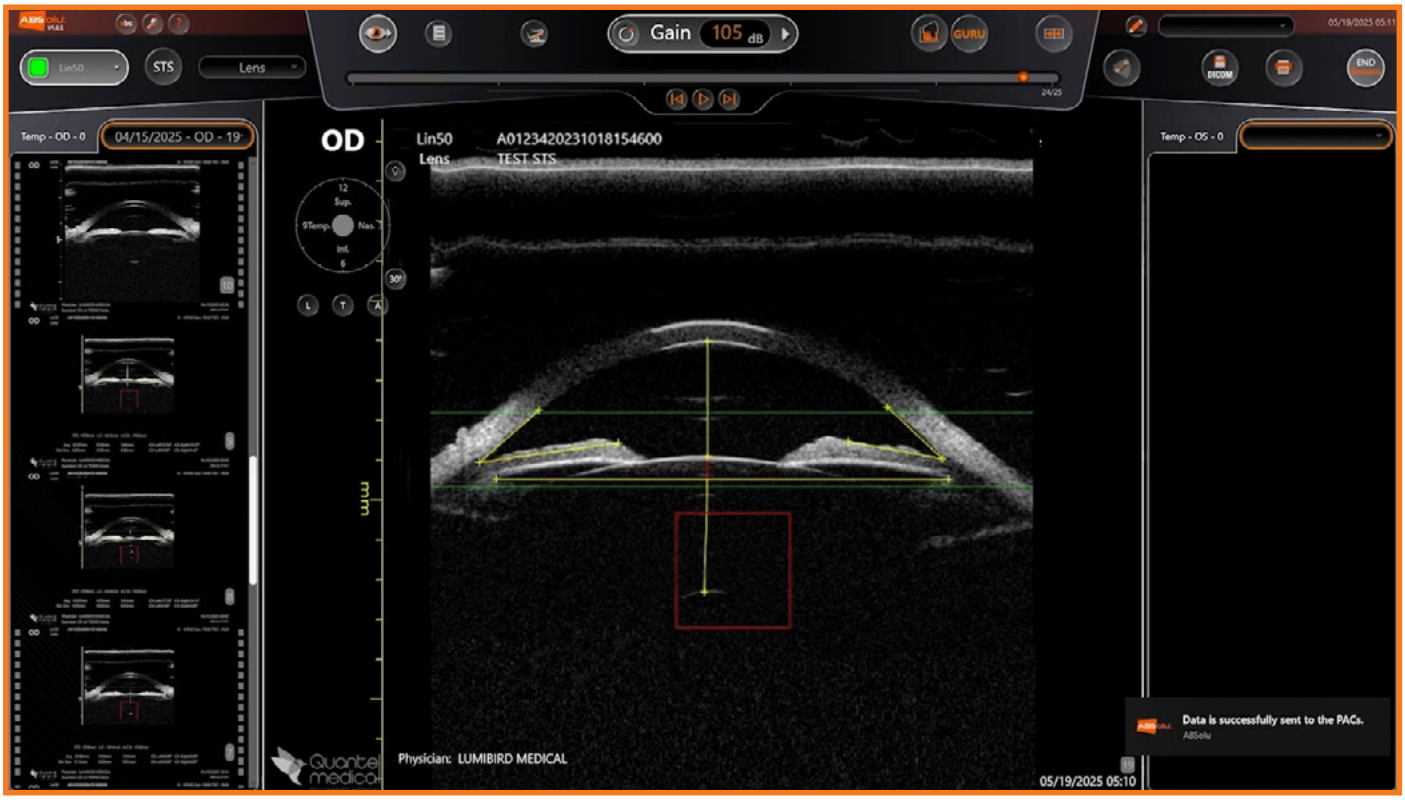


Image taken from the ABSolu® displaying the calipers of the STS software.

> *"As refractive surgeons, we face intense scrutiny. Our patients, who see perfectly with glasses or contacts, expect exceptional outcomes."*
>
> - Dr. Taj Nasser

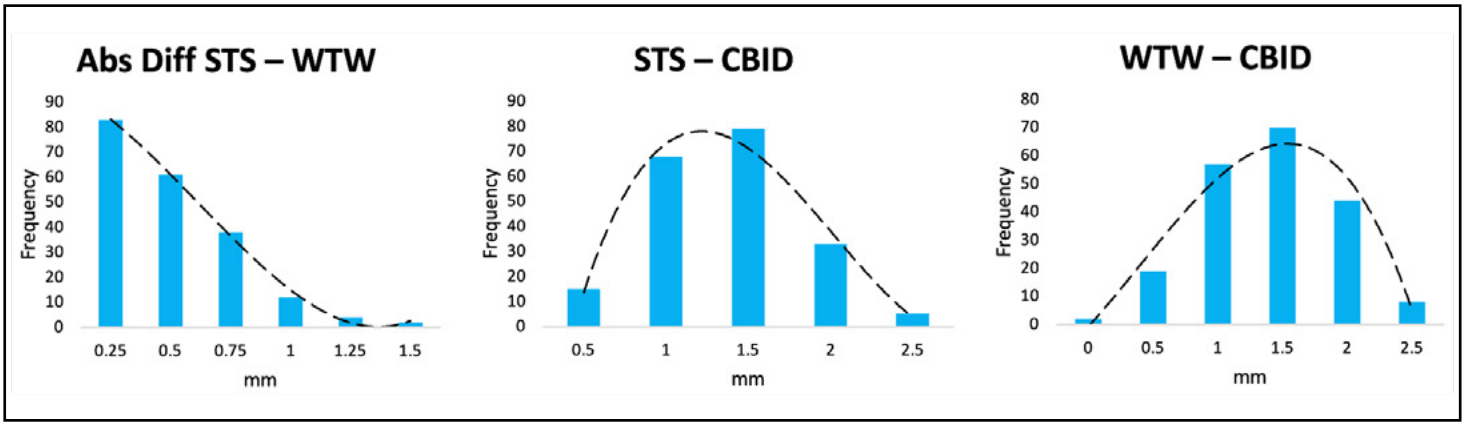
Dr. Brett Mueller: My UBM experience began in 2019 with the less-forgiving Visian platform. During my fellowship and two years with Dr. Greg Parkhurst, who developed a Sulcus-To-Sulcus (STS) nomogram, I learned the nuances of ultrasound measurements. At Parkhurst NuVision, we performed over 500 ICLs annually. While most patients do well without UBM, outliers—those with pupillary block or cataracts—haunt you. UBM eliminates those risks, though it's challenging to measure Sulcus-To-Sulcus or lens rise accurately. Dr. Parkhurst was like an "AI mentor," guiding me on caliper placement and image interpretation.

Dr. Taj Nasser: At Parkhurst, we used ARC Scan, Sonomed, and ABSolu® by Lumibird Medical®. ABSolu® stood out for its intuitive interface and patient-friendly experience. Other systems' probes caused anxiety with odd movements and noises, but ABSolu®'s automated STS module streamlined imaging.

Dr. Blake Williamson: In our practice, our technician, Courtney, achieved an 80% success rate in her first weeks. The learning curve is real—smaller eyes or anxious patients can be tricky—but efficiency improves quickly.

Dr. Zaldivar: Think of LASIK microkeratomes—great, but with 1% complications, we switched to femtosecond lasers. UBM is a similar leap for ICLs.

> *"Nothing is more expensive than a complication in an elective procedure. I'd do anything to avoid even a 1% complication rate."*
>
> - Dr. Roger Zaldivar



(Figure 1) - The three graphs above were provided by Dr. Taj Nasser as part of a study presented at ASCRS 2025.

The Limitations of Traditional Measurements

Dr. Zaldivar: White-to-white measurements don't correlate with internal ocular anatomy. Most ICLs sit in the ciliary body, not the sulcus, so why measure something irrelevant? It's like sizing ICLs based on your nose or ears. ICLs can sit forward, backward, or asymmetrically, adding complexity that external measurements can't address.

Dr. Nasser: In a study of over 200 eyes, 50% would have been oversized using white-to-white nomograms, with 8% showing vaults 300 microns above or below predictions.[1] (Figure 1)

Dr. Mueller: You hear two camps: some swear by white-to-white, saying it works fine, while data shows no correlation with Sulcus-To-Sulcus. The Evo ICL's forgiveness explains this—two sizes, like 12.6mm or 13.2mm, might work in most eyes. But just because you can get away with it doesn't mean you should.

Dr. Williamson: I've been getting away with things, but Roger shook me out of it. We need to prioritize precision over convenience.

Long-Term Considerations: Why Vault Matters

Dr. Williamson: Why do low vaults matter 10, 15, or 20 years later?

Dr. Zaldivar: Evo ICLs are more stable than older versions. Our 15-year data, with mathematical projections, shows less than 100 microns of vault loss in 20 years, compared to 300 microns previously. But for younger patients, long-term effectiveness and rotational stability are critical. Low vaults increase rotation risk in Torics. We had a zero-vault case—a -18 patient ended with three diopters of myopia because the lens touched, losing its corrective interface. Shifting from a forgiving to a controlled paradigm is a game-changer.

Dr. Nasser: Iris cysts, present in over 10% of eyes, act like a fake ciliary body, causing asymmetric positioning or angle issues. UBM helps identify these. "Literature shows 80–90% of ICL footplates sit in the ciliary body, not the sulcus." - Dr. Taj Nasser
UBM visualizes beyond the peripheral iris, aiding post-operative troubleshooting for tilt or rotation.

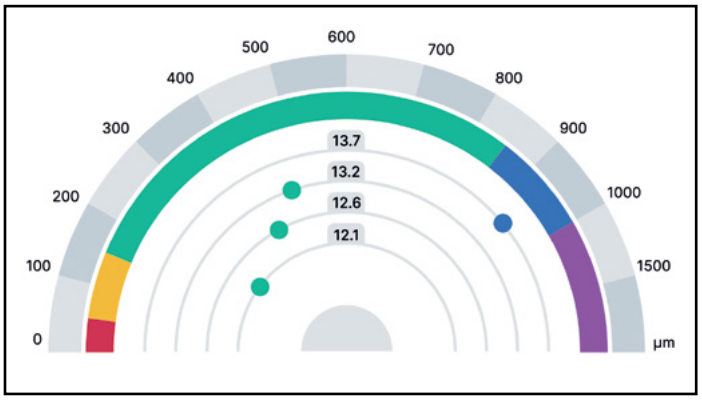
Dr. Mueller: ABSolu®'s image quality—clearly showing the iris pigment epithelial layer, sulcus, and ciliary body—rivals ARC Scan.

Dr. Zaldivar: Before UBM, 11% of our patients had asymmetric positioning due to compression or cysts. Since adopting UBM for all patients, this is rare.

ICL Guru: A Revolutionary AI Tool

Dr. Zaldivar: ICL Guru is like a GPS for surgeons. It requires standardized, high-quality UBM images—STS ensures this. Garbage in, garbage out. We select the best images, estimate lens deformation, and predict lens placement likelihood. Guru, meaning "mentor" in Sanskrit, guides new users with color-coded predictions: red for vaults under 50 microns, yellow for 50–150, green for ideal vaults (150–850 microns) with angles over 15–20 degrees, and blue or magenta for complex cases. For example, one patient might have four green sizes—simple. Another might have one, signaling a complex eye, so you prepare differently. In a 2.3mm anterior chamber depth case for an elite hockey player, Guru predicted 230 microns—spot-on.

- Red: Predicted vault <50 microns.
- Yellow: Vault between 50–150 microns
- Green: Ideal vault (150–850 microns) or residual angle >20°.
- Blue: Vault between 850–1000 microns or residual angle 15–20°
- Magenta: Vault >1000 microns or residual angle <15°



Dr. Zaldivar: Peripheral cataracts in older ICLs arise because myopic lenses are thicker at the edges. A minus-16 lens might have 300 microns centrally but zero peripherally, causing contact. Guru evaluates peripheral vault, reducing outliers. Our prospective study across four centers, including Asian eyes, shows consistent results, avoiding extreme outliers.[3]

Dr. Nasser: Asian eyes, with smaller anterior chambers, benefit from Guru's deep learning, which assesses the eye's overall shape beyond predetermined variables. This elevates precision across diverse anatomies.

Dr. Williamson: I'm increasingly using ICLs for older patients or lower myopic prescriptions. Five years ago, a 51-year-old with minus-4 would get a clear lens exchange. Now, if they're okay with readers, I lean toward ICL for superior vision without contrast issues. With Evo, they might not need cataract surgery until 70. But peripheral vault is critical, especially in older patients who'll develop cataracts sooner.

Dr. Mueller: ICL Guru enables off-label use, like 2.4mm anterior chamber depths. Colleagues like Dr. Matt Hirabayashi safely implanted 12.6mm ICLs in such cases, expanding candidacy.

Dr. Zaldivar: Standardized images are non-negotiable. I get 10–12 UBM images daily via WhatsApp, with friends asking, "What size?" Without standardized, centered images showing cornea alignment and ciliary processes, I can't help. STS is essential.

Images provided by Dr. Roger Zaldivar

"I chose ABSolu® for its intuitiveness. I started doing them in my clinic, and I do UBM myself. Our trainer, Beth Parish, COT [Lumibird Medical], showed me how. When aligned, it dings, capturing 10 measurements in seconds, delivering fast, reproducible data."

- Dr. Brett Mueller

Seamless Integration and Practical Adoption

Dr. Zaldivar: We're collaborating with Lumibird Medical to integrate ICL Guru within the ABSolu®.

Dr. Nasser: If you're on the fence, UBM adds unmatched safety and confidence. Whether you're new to ICLs or seasoned, it's a no-brainer for elevating your practice.

Dr. Mueller: Before this talk, Blake, Taj, and I discussed problem patients—those 1% that haunt us, lingering in our thoughts on vacation. UBM and ICL Guru eliminate these outliers, ensuring every patient gets the best outcome, especially in elective procedures. The worst is dreaming about a patient's vault!

Addressing Audience Concerns

Audience Member: I have UBM but rarely use it—it's cumbersome, and my technician gets 8 out of 10 patients. For a procedure competing with LASIK, ultrasound feels intrusive. How do you reach 9.9 out of 10?

Dr. Zaldivar: It's a learning curve. Technicians start slow but can scan in under a minute with practice.

Dr. Nasser: With three UBM machines, we never failed to get a scan. The learning curve is quick.

Dr. Mueller: Taj scanned my eye, finding iris cysts. It's comfortable, and I've only failed once in 80–90 measurements (99% success). ABSolu® is user-friendly.

Audience Member: FDA labeling requires a 3.0mm anterior chamber depth. I turn away high myopes with shallow chambers for medico-legal reasons. Does ICL Guru increase confidence?

Dr. Zaldivar: We routinely do 2.5–2.7mm depths—daily practice. We've abandoned White-To-White except in rare, extremely tight eyes.

Audience Member: What's the lowest predicted post-operative angle you're comfortable with?

Dr. Zaldivar: We avoid magenta—under 15 degrees—due to angle closure risks. Above 15 degrees is ideal.

Dr. Nasser: For post-operative tilt or rotation, UBM assesses footplate placement and peripheral vault, especially in unique anatomies.

Dr. Mueller: I had a patient where a 13.2mm ICL rotated, then a 13.7mm was too small. UBM clarified the issue.

Conclusion: Elevating the Standard of Care

The Lumibird Medical symposium at ASCRS 2025 illuminated a path toward greater precision in ICL sizing. By combining the ABSolu® UBM's high-quality imaging, STS automation, and ICL Guru's AI-driven predictions, surgeons can transcend the limitations of traditional methods, minimize outliers, and enhance patient safety. As Dr. Williamson concluded, "Thank you to the panel and Lumibird Medical. I hope everyone learned something to take their practice to the next level."

Disclaimer: This supplement is a transcription-based summary of a symposium recorded in April 2025 and is intended for educational purposes only. This supplement reflects only the opinons of the speakers of this symposium. This content was created with AI assistance and reviewed by our editorial team to ensure accuracy and value for our readers. Always consult with patients and consider individual factors when applying diagnostic and treatment strategies. For more information on the ABSolu®, contact Lumibird Medical®.

Lumibird Medical, is only ICL GURU compatible, and the goal is only to send images to REVAI platform for ICL calculation. The images sent to REVAI platform have to be checked and validated by the user before sending. Lumibird Medical, cannot decide of the correct images sent to REVAI platform for ICL calculation. Lumibird Medical, cannot be held responsible in case of ICL miscalculation.

Watch the full symposium video on YouTube:

https://youtu.be/lsEsOLYhX_4

Sources:

1. Graphs provided by Dr. Taj Nasser from a study he presented at ASCRS 2025

2. ALfonso-Fernández Vega (2021) vs Schmidinger - Skorpik (2010) and Alfonso (2012)

3. Unpublished multicenter data from Instituto Zaldivar, Medipolis Eye Clinic, Asian Eye and Wellington Eye Clinic ready for publication

4. Zaldivar R, Zaldivar R, Adamek P, Quintero G, Cerviño A. Descriptive Analysis of Footplate Position After Myopic Implantable Collamer Lens Implantation Using a Very High-Frequency Ultrasound Robotic Scanner. Clin Ophthalmol. 2022 Dec 5;16:3993-4001

5. Unpublished multicenter data from Instituto Zaldivar, Medipolis Eye Clinic, Asian Eye and Wellington Eye Clinic ready for publication