

# ARDS 2022 NAMED LECTURES: TWO GREATS, TWO FRIENDS

Timothy G. Murray, MD, MBA, and H. Culver Boldt, MD, share their passions for oncology and surgical training.

BY REBECCA HEPP, EDITOR-IN-CHIEF

*The 2022 Aspen Retinal Detachment Society (ARDS) meeting in Snowmass, Colorado—the 50th anniversary meeting—boasted named lectures that highlighted many significant changes in the field of retina. I was honored to present the Founders Award to H. Culver Boldt, MD, my close friend, who shared three decades of surgical training. I was also honored, and humbled, to be named the 2022 Taylor Smith & Victor Curtin Lecturer, and I chose to discuss my passion, advances in ocular oncology. I hope our peek into the past, present, and future sparks inspiration as you seek better ways to care for patients.*

*Registration is already open for ARDS 2023 set for March 4-8. Head to <https://aspenretina.com> for more information—and start digging out your ski gear.*

– Timothy G. Murray, MD, MBA

## FOUNDERS LECTURE

Dr. Boldt took to the stage to discuss surgical training and “what’s changed, what hasn’t, and maybe what we could do better” (Video 1). He first warned that there are many approaches to training, and some are better than others, but most are simply different. “Different trainees will learn better in certain environments, and different surgeons are probably better at training with different approaches,” he explained.

### What Hasn’t Changed?

Surgeons still focus on the basics: anatomy, physiology, pathology, and pharmacology, as well as surgical indications, instrumentation, and techniques. Core vitrectomy remains a bread-and-butter procedure, according to Dr. Boldt, and while the basic techniques haven’t changed much, the technology sure has. Back in 1990, Dr. Boldt was using the STORZ MVS vitrectomy system, “which raced along at 800 cuts per minute with 20-gauge cutters.” The view was limited, 20° to 25°, and some ORs didn’t use trocars, he said.

### What Has Changed?

Scleral buckles are a good example of the shift in surgical training, Dr. Boldt said. They were common in the past, and “sometimes we got creative and even invented our own buckles,” he admitted. “Detailed drawings were expected, you were expected to find all the breaks preoperatively, and draining subretinal fluid was an art—these are being lost.” Today, it’s challenging for a fellow to get enough experience with scleral buckles and draining subretinal fluid, he said.

In 1990, “we lasered everything,” and he recounted lasering at least 300 choroidal neovascular membranes as a first-year fellow. “Now, people don’t do as much of that. They just haven’t had as much experience in some of these things because of anti-VEGF [therapy].”

In addition to the changing treatment landscape, Dr. Boldt touched on the training tools that were available decades ago. “We didn’t have simulation that was worth a hill of beans, so you gained experience on patients,” he said—without any real established guidelines for training.

Training on the latest vitrectomy systems is much safer, he said, and instruments are significantly smaller and more precise, leading to safer and faster surgeries and faster recovery times. When Dr. Boldt was training, the rate of iatrogenic breaks was approximately 4% in the first month of a fellow’s time in the OR, he noted. Today’s advances have changed fellowship training considerably, he said. “It has allowed us to have our fellows participate in surgeries that are more complex at an earlier time in their training.”

As for visualization, widefield imaging is obviously the most significant game-changer, he said. “I don’t think the junior people in the room could imagine fixing a giant retinal tear when you have a 20° lens as your maximum view.” Surgeons relied on contact lenses to help them see the periphery and train fellows on peripheral pathology—still, those were tricky to use, Dr. Boldt recalled.

Other significant advances in visualization include intraoperative OCT, 3D heads-up displays, and vitreous staining, according to Dr. Boldt. These tools have been wonderful for

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Video 1. Three Decades of Surgical Training

surgical training, and, for 3D visualization in particular, “it gives me more comfort in allowing my fellows to go further during surgery,” he said.

Other important training tools available now include surgical simulators and model eyes that can help trainees become familiar with the instruments and simple techniques—all within a far less stressful environment. But one of the most important tools to help trainees is the proliferation of high-quality surgical training videos. “Fellows can watch these and can actually see surgeries and feel like they can almost do them afterward,” Dr. Boldt said.

Another important change was the establishment of the Association of University Professors of Ophthalmology’s Fellowship Compliance Committee (AUPO FCC), which outlined training guidelines with the help of the Retina Society, Macular Society, and the American Society of Retina Specialists. “There was no standardization in fellowships,” according to Dr. Boldt. “Now, these are the surgical criteria that people can use. Programs are monitored on a yearly basis to make sure they’re keeping up.” The program is still voluntary with 60% of programs following the AUPO FCC guidelines, Dr. Boldt said.

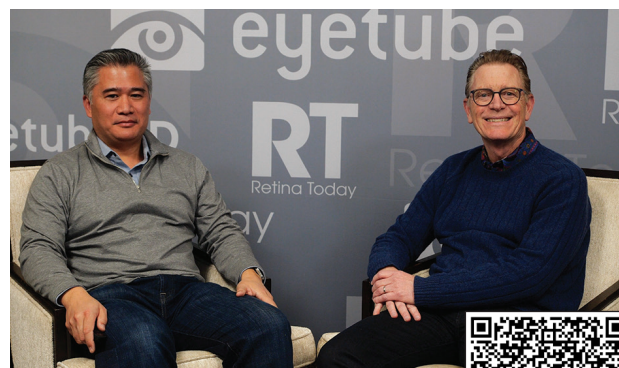
### Lasting Change

“We have had a ton of changes in our surgical indications and techniques over the last 30 years,” Dr. Boldt concluded. “Many of things that have remained the same in teaching, the basics, are still as critical as ever. Still, the skillset to become a good vitreoretinal surgeon is quite different now than it was 30 years ago. Fellowships have become a little more standardized, but we still need more work.”

### TAYLOR SMITH & VICTOR CURTIN LECTURE

“Sometimes, when things happen over time, we lose track of where we were, where we are, and where we’re going,” Dr. Murray said to kick off his named lecture, which focused on advances in ocular oncology (Video 2).

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Video 2. Advances in Ocular Oncology

### Melanoma Pearls

In the 1980s, the standard treatment for melanoma was enucleation; then, charged-particle radiotherapy or brachytherapy was the go-to option until clinicians began noticing radiation-related complications. That led to a shift toward radiation-sparing techniques. Still, all of these are viable treatment options, according to Dr. Murray. “There is no procedure that we do not do,” he emphasized.

The tumor control rate is an all-important statistic in oncology, Dr. Murray explained. That rate is 100% with enucleation, which is what drove the historical focus on the approach. But brachytherapy and charged-particle radiotherapy have phenomenal tumor control rates for the primary intraocular tumor, approaching 100%, he added.

A new approach to the management of small melanoma—a nanoparticle that is activated by photodynamic therapy—is showing a control rate in the 60% range. But Dr. Murray and many others strongly believe in the “fix it the first time” mantra, which has moved the field away from radiation-sparing techniques and back toward approaches with a control rate nearing 95%.

Dr. Murray shared a study of 2,374 patients who underwent treatment for uveal melanoma and retinoblastoma, with treatment trends broken down into decades: 1991 to 2001, 2002 to 2011, and 2012 to 2017. The data showed that enucleation rates dropped from 30% in the 90s to less than 5% between 2012 and 2017—an incredible shift.

Dr. Murray then combatted the age-old complaint that the field hasn’t changed the mortality rate for ocular melanoma over the last 3 decades. First, patients are presenting for treatment earlier than ever before, he said. The mean apical height of tumors in that first decade was 5.9 mm compared with 4.7 mm in the last decade. Second, melanoma-specific mortality fell from 12.1% overall in this cohort to 9.5% in the last decade. Third, secondary enucleation fell from 6% in the earliest decades of the study to less than 1% by the last decade. His

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fourth and final point was about change in visual acuity, and he noted that the mean VA in the retained globes was 20/100 in the first decade and 20/62 by the last decade.

But Dr. Murray is most excited about the management of very small tumors. In 2011, class 1A tumors came with a 2% mortality rate at 5 years and class 2 tumors had a 72% mortality rate associated with metastasis—stark numbers that didn't seem to play out in Dr. Murray's clinic. So, he looked at 100 patients with ocular melanoma with a mean entering VA of 20/80 and a mean tumor size of 1.9 mm. He and his team biopsied the tumors and managed the patients based on cytogenetic testing and the tumor classification.

At 79 months of follow-up, tumor height decreases to a mean of 1.4 mm, and VA improved from 20/80 at baseline to 20/40 by 6 months and 20/30 at 18 months. At the final endpoint, 92% of patients had a VA of 20/50 or better. "And what was the molecular classification in this small tumor series?" Dr. Murray queried the audience. "Twelve of these patients have a class 2 tumor." In total, cytogenetic testing showed that 12% of the patients had a class 2 tumor, 11% had a class 1B tumor, and 76% had a class 1A tumor.

The take-home message from Dr. Murray was simple: "Uveal melanoma treatment has undergone significant shifts, enhancing our ability to improve survival, enhance globe retention, and give patients eyes that are truly functional."

### **The Retinoblastoma Story**

The standard care for retinoblastoma in the 1980s was also enucleation, which shifted to external beam radiotherapy (EBRT) in the 1990s. "EBRT did a phenomenal job of curing retinoblastoma, but our kids were dying from secondary malignancies, 10, 20, and even 30 years later," Dr. Murray said. Those concerns led to an abrupt shift to chemotherapy. However, aggressive systemic chemotherapy left kids sick and weak throughout the course of treatment. In comes intraarterial ophthalmic artery treatment, the real game-changer for these patients, according to Dr. Murray.

He shared select patient stories, beginning with a patient who presented with a complex retinal detachment and a vascular tumor. Today, that eye is 20/50, thanks to EBRT, he said.

In 2009, Dr. Murray used intraarterial chemotherapy for the first time to treat a child with retinoblastoma who now has a VA of 20/20 in that eye, he said—an eye that likely would have been enucleated at another institution.

"So, here's our treatment trend: enucleation has really come off the table, radiotherapy was replaced by chemotherapy, and we shifted to intraarterial chemotherapy," Dr. Murray summarized. Enucleation rates for primary retinoblastoma are almost gone, and secondary enucleation rates are down to below 5%.

"It's been an incredible 3 decades with major changes in our ability to take care of children with retinoblastoma and adults with melanoma," Dr. Murray concluded. ■