Better Together

Crossing the Line Between Segments

by Brooke Herron

While most conditions affecting the eye could be categorized as anterior or posterior issues, there are times when the two segments intersect: A disease in the anterior can travel and cause issues in the posterior, or as is often the case, a complication during surgery can affect the other segment.

The anterior and posterior segments can also intersect via the surgeons themselves – whether it's because the doctor has a keen interest in both segments, or because their patients require care in both areas. Whatever the cause of this "crossover," these instances have resulted in versatile surgeons who have the knowledge and expertise to treat a variety of anterior and posterior conditions.

Crossover Conditions and Complications

Dr. Gemmy Cheung, MBBS(Lond), FRCOphth(UK), Deputy Head and Senior Consultant of medical retina for Singapore National Eye Center (SNEC) and PIE Magazine advisory board member, notes two examples of when a condition or treatment is focused on one segment, but then causes complications in the other.

"If someone has inflammation in the front of the eye, it can lead to complications in the back," she said. For example, diseases like anterior uveitis can lead to macular edema. "Uveitis can go from the front to the back – that's the main issue."

"Cataract surgery can also lead to posterior problems," noted Dr. Cheung. "If the lens is tilted or not positioned properly in the capsular bag, it can cause chronic

inflammation. It doesn't have to rupture from the capsule – it can be more subtle."

When this occurs, ophthalmologists who specialize the anterior segment could consult with a posterior specialist, or if they have the tools and skills, they can provide treatment themselves (and vice versa). Dr. Cheung says that this crossover depends on the severity of the condition. "Most doctors have a basic, general training that encompasses both segments – so, they would have an inkling of what the possible diagnosis could be," she explained.

"For example, if an anterior surgeon sees that a patient's visual acuity is not as good as expected, they would begin to think that something else is wrong," said Dr. Cheung. "Today, non-invasive OCT is easily done and many anterior surgeons are comfortable ordering a OCT scan of the posterior – but many would prefer to work with a posterior surgeon for surgery, especially if it's invasive."

According to Dr. Cheung, there are certain posterior treatments (like anti-VEGF injections) that can be safely given by anterior doctors, as long as they do the following: ensure the diagnosis is correct; provide adequate counseling and expectations of treatment; and if response behavior is abnormal, consider consulting with a posterior doctor.

The same principles apply to doctors in developing countries. "The injection procedure is not complicated, as long as the facility is adequate and clean – if it's not clean, I would stop there," said Dr. Cheung. "I think we understand that there are challenges in rural areas, and that they provide the best care to their ability, and to what the local system can support. Often anterior doctors in these areas can go for short, but intensive, courses in the posterior segment."

Crossover Surgeons

Sometimes the two paths cross because of the surgeon's passion and interest in particular area. Dr. Anil Arora, MBBS (Syd), M.Med (Ophthal.), FRANZCO, FRACS, Ophthalmic Surgeon for Central Coast Eye Specialists and Medical Director of the Laser Vision Clinic Central Coast in Sydney, NSW, Australia, began his career as a general ophthalmologist, but after three years of gaining experience, he decided to pursue a subspecialty training in vitreoretinal surgery. "I had always been fascinated with the retina and with many of the procedures that vitreoretinal surgeons performed," he said.

After finishing his training, he joined a practice that served a large population. There, he was able to use his newly acquired retinal skill set and knowledge, but also continued to see patients with other eye conditions and concerns.

"There was a large patient base of elderly people who not only had retinal pathologies such as age-related macular degeneration, but who also had visually significant cataracts that required treatment," said Dr. Arora. "The demand for ophthalmic surgical care was high and I began carrying out reasonable volumes of cataract surgery."

At this point, Dr. Arora became interested in trying to achieve spectacle independence for patients undergoing cataract surgery. This lead to a keen interest in multifocal intraocular lenses, which he cautiously begin implanting in selected patients. He notes that results were generally very favorable, so his multifocal intraocular lens practice grew. At the same time, Dr. Arora continued to carry out vitreoretinal surgical procedures such as vitrectomies and scleral buckling surgery, as well as intravitreal anti-VEGF injections.

It soon became clear to Dr. Arora that if he was going to use these lenses frequently, eventually he was going to run into a refractive complication – resulting in an unhappy patient. As a solution, he enrolled and finished a post-graduate course in refractive surgery at the University of Sydney. In 2010, Dr. Arora, along with some colleagues, established the Laser Vision Clinic Central Coast (Sydney, NSW, Australia) to provide laser vision correction surgery, as well as treat complications from cataract surgery. He was also an early adopter of small incision lenticule extraction (SMILE) – he performed his first SMILE procedure in 2014, and was the second center in Australia to offer the treatment.

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"I enjoy being an ophthalmic surgeon who is able to carry out a full range of eye procedures from the front to the back of the eye," said Dr. Arora. "I have one or two operating lists a week which typically consist of a mixture of cataract surgery and vitrectomy surgery, and I have fortnightly laser vision correction lists where I carry out standard LASIK and SMILE."

In another example of crossing over, Dr. Arora said: "I have a family of patients in which there are three generations involved: an elderly lady, her middle-aged son and his 23-year-old daughter." His elderly patient had a dropped nucleus after cataract surgery (that had been performed elsewhere) and Dr. Arora carried out vitrectomy surgery to remove this. He performed cataract surgery on the middle-aged son, using a toric multifocal intraocular lens and that patient is now completely spectacle independent. Dr. Arora also

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carried out LASIK on the 23-year-old daughter to eliminate her myopic astigmatism.

"Despite moving across to cataract and refractive surgery I still enjoy my retinal surgery. I also have a large medical retina practice and carry out procedures such as fluorescein angiography and intravitreal anti-VEGF injections," added Dr. Arora.

For other surgeons, like Dr. Somsran Watanachote, who is Director of the eye center at Bangkok Hospital, her crossover from posterior to anterior was inspired by her colleagues. Dr. Somsran began her career in the posterior segment at the Children's Hospital in Bangkok, where she treated conditions like retinopathy of prematurity (ROP), squint and complications from cataracts. From there, she spent three years at Tohoku University in Japan, performing procedures like pars plana vitrectomy (PPV), scleral buckling, extracapsular cataract extraction (ECCE) and treating idiopathic orbital inflammatory disease (IOI). She then returned to Bangkok and became the head of the vitreoretina unit at Rajavithi Hospital. During this time, two of her colleagues began to step away from doing posterior segment surgeries, and instead, devoted their practices to cataract and refractive procedures. Dr. Somsran was encouraged by her colleagues and soon crossed into the anterior segment.

"I looked around, and many of my colleagues had begun shifting their practice to the anterior segment," said Dr. Somsran. "I followed them and began to do refractive surgeries, too."

Today, Dr. Somsran still works in both segments. "I still do intravitreal injections (IVT), laser, pan retinal photocoagulation (PRP) and medical retina," she said. "And I still do examinations with posterior specialists, helping to ensure my patients are being treated by the right specialist for the best outcome."

Cross training for better patient outcomes

As with any field, the more you know, the better. And because there are conditions and complications that can affect both segments, being confident and skilled in both areas can lead to innovation in treatment and better patient outcomes.

Dr. Arora reveals a time when his training in different ophthalmologic subspecialties came in handy: He used a posterior segment instrument in an anterior segment procedure. "I was managing a case of epithelial ingrowth in the pocket of a patient who had undergone SMILE laser vision correction. I used the instruments that I would normally use in a vitreoretinal procedure to peel an epiretinal membrane: a 25-gauge diamond-dusted membrane scraper and 25-gauge end-grasping ILM forceps."

During the procedure, he approached the epithelial cell nest in the SMILE pocket in the same way that he would approach an epiretinal membrane. Dr. Arora used the diamond-dusted scraper to loosen the epithelial ingrowth and then used the ILM forceps to grasp it and remove it from the SMILE pocket. "It worked extremely well and was minimally invasive," he added.

In addition to being able to use multipurpose instruments, cross training makes surgeons more versatile. Dr. Arora notes his dual skill set helps when he encounters complications like a dropped nucleus, or a dislocated intraocular lens. "Another example is in the management of an anterior capsulotomy that starts to run out towards the periphery. A good means of salvaging this is to use 23- or 25-gauge vitreoretinal scissors that can be passed through a limbal paracentesis incision to redirect the capsulotomy centrally," he added.

And while there are many advantages to practicing in both segments, the transition to another subspecialty involves planning and hard work. Dr. Arora says: "It is never too late to change or crossover – however, it does become very difficult when trying to manage an already established practice." The takeaway from this: You must be (or must learn to be) very good at managing your time and prioritizing.

Dr. Somsran adds that it's important to not forget your roots: "When you are able to perform these difficult surgeries, it's a gift and skill you have conquered. As long as you are working, try to balance your given skill and keep practicing – it is worth it to be able to work in both the anterior and posterior."

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