Surgical Tips for Your Fellowship

WITH P. KUMAR RAO, MD; AND ADAM MARTIDIS, MD

Vitreoretinal surgery can be a challenge for any retina fellow, regardless of surgical experience acquired during residency. Different instruments, a new optical system, and fluidics specific to a vitrectomy system can conjure feelings of returning to square one in ocular surgery. Many of the skills and decision-making capabilities developed during residency, however, are helpful and in fact, vital stepping stones in learning how to perform vitreoretinal surgery. We interviewed two excellent teachers of vitreoretinal surgery, P. Kumar Rao, MD, and Adam Martidis, MD, on their tips for making the most of your surgical experiences during fellowship. Here, they provide their insights from both sides of the experience: teaching and learning.

-Omesh P. Gupta, MD, MBA; and Anita G. Prasad, MD

1. WHAT ARE THE MOST COMMON ROOKIE MISTAKES YOU SEE IN RETINA FELLOWS BEGINNING SURGERY?

Kumar Rao, MD: Often "fellow" cases are complex tractional retinal detachments related to diabetes or trauma, which can be extremely time-consuming. The trainee may underestimate the time these cases take and choose the wrong type of anesthesia. Although often general anesthesia would be preferable for these cases, it is contraindicated for many of our patients with diabetic complications. For these patients, significant consideration must be given to the length of the case and the temperament of the patient. If the surgery takes longer than the patient can tolerate under local anesthesia with sedation, the problem is twofold. First and most obvious, the conditions for surgery are poor if a patient experiences discomfort during a procedure. Second, a trainee will not have the opportunity to perform at his highest level if the patient is in distress.

Adam Martidis, MD: The most common rookie mistake I have encountered is impatience. Early in training, most fellows feel a certain urgency to acquire every vitreoretinal surgery skill within their first handful of cases. There is this perception at the beginning of formal surgical training that they will be finishing fellowship (often within 1 year) lacking the requisite skills necessary to perform at a professional level. Thus, there exists a reluctance to turn cases over to supervising staff when an intraoperative hurdle is reached; sometimes this leads to poor decision making. By the time a fellow has dozens of cases under his belt, confidence increases exponentially, allowing the fellow to either work his own way out of a jam or seek the assistance of the supervising physician with less hesitation.

2. WHICH SKILLS FROM ANTERIOR SEGMENT SURGERY READILY TRANSFER TO VITREORETINAL SURGERY?

Dr. Rao: Sterile technique, manipulating and working under the microscope, the concept of foot pedal controls, wound construction, suturing and tying knots, are all skills that are transferrable from anterior to posterior segment surgery.

Dr. Martidis: Technically most, if not all, anterior segment surgical skills transfer to vitreoretinal surgery. Although sutureless vitrectomy is becoming more standard (as is sutureless cataract surgery), suturing skills remain invaluable to the vitreoretinal surgeon. Further, it is evident that retina fellows who were more proficient in cataract surgery during their residency are quicker to adapt to techniques unique to retinal surgery. It is critical to work well under the microscope, take advantage of appropriate illumination and visualization, understand intraocular relationships and depths of focus, and develop excellent manual dexterity. Most important, however, is the building of confidence and decision-making skills inherent to all intraocular surgeries (and all other surgery, for that matter).

3. WHICH SKILLS CAN FELLOWS PRACTICE IN THE WET LAB IN ORDER TO HELP PREPARE FOR THE OPERATING ROOM?

Dr. Rao: Microscope control and foot-pedal control go a long way in preparing future fellows for their experience in the OR. If the fellow can confidently move and focus the microscope, they can then easily accept instruction from the attending who is supervising. If the fellow cannot move the microscope and operate the foot pedals with confidence and at the direction of the attending, the attending physician will not feel comfortable allowing the fellow to continue operating and will likely take over the case out of concern for patient safety. In a similar vein, closing wounds confidently demonstrates a level of surgical finesse that will inspire a level of confidence in the fellow's skills from the attending, which will most likely mean that the fellow will have more involvement in the case.

Dr. Martidis: The wet lab is a great environment to gain comfort and confidence in working under the microscope. Here, in a quiet and low-pressure setting, one can develop hand-eye coordination under magnification, enhance dexterity, and eliminate artifacts such as tremor. The specific skill is unimportant, in my opinion, as it is very difficult to mimic true vitreoretinal surgery with an eye bank or animal eye. In that regard, just suturing sclera and manipulating instruments is appropriate.

4. WHAT SKILLS DO YOU THINK ARE BEING GAINED AND/OR LOST FROM PERFORMING PREDOMINANTLY SMALL-GAUGE SURGERY?

Dr. Rao: Wound closure is the most obvious skill that will be lost from practicing predominantly small-gauge surgery. We have already seen a loss of skill sets in our trainee anterior-segment surgeons, as the shift to sutureless procedures is further advanced in anterior segment surgery. In my opinion, small-gauge vitrectors are great tools for removing the scar formation in diabetic tractional detachments. The 25-gauge vitrector is easier to insert between the retina and overlying scar tissue and can be used to transect tractional bands. If one relies completely on transactional techniques, we may lose facility with delamination of these membranes.

Dr. Martidis: Obviously, the development of suturing skills is hindered by small-gauge surgery. Otherwise, the techniques are fairly similar (especially with the 23-gauge platform). One can argue that 25-gauge surgery is technically more demanding given the added obstacles of instrument flexion, slightly decreased instrument armamentarium, potentially decreased peripheral access/view, and potentially decreased illumination (which is alleviated with xenon light sources).

5. WHAT IS THE MOST DIFFICULT PART OF TEACHING VITREORETINAL SURGERY?

Dr. Rao: In my opinion, knowing when to intervene is the most difficult part of teaching vitreoretinal surgery.

Dr. Martidis: The most difficult part of teaching is instilling confidence in the fellow while at the same time offering a constructive evaluation. With time, all fellows develop the manual skills to proficiently follow direction. Only continued guidance and experience, however, can confer the ability to determine where best to initiate certain treatments such as diabetic tractional detachment repair or proliferative vitreoretinopathy peel. Also, routine cases can be approached by nearly any fellow on day 1; however, routine cases can become not-so-routine very quickly under adverse circumstances, especially in inexperienced hands. It is somewhat difficult to teach behaviors that keep fellows out of trouble and help them to get out quickly when they inevitably do get into trouble.

6. WHAT IS THE MOST DIFFICULT PART OF LEARNING VITREORETINAL SURGERY?

Dr. Rao: Knowing when to intervene in a patient's decision-making process, in my opinion, is the most difficult. One must determine when it is appropriate to offer a patient a surgical option and how to discuss the potential risks and benefits to the patient. These decisions alter people's lives, and the weight of these decisions can be hefty. Along with knowing when to intervene, one must learn how to manage stress both before, during, and after surgery. Honing techniques for patient counseling and personal stress management comes with practice and takes time.

Dr. Martidis: As with teaching, I believe that patience and confidence are the most difficult to develop for the learning surgeon. In the quest for comprehensive knowledge in a limited time frame, fellows often feel stressed and rushed to attain skills. This may cause undue constraints on learning ability, as one may be more focused on the big picture than on the individual patient on the operating table. Most of our physical actions become routine; we earn our stripes by the decisions we make and the judgment we exercise.

7. DO YOU HAVE ANY ADVICE ON HOW TO RESOLVE CONFLICTING ADVICE/INSTRUCTIONS FROM DIFFERENT ATTENDINGS?

Dr. Rao: In a word, honesty. For example, if a fellow is confronted with conflicting advice from attendings, I think it is best to be upfront and discuss with each attending the advice given by others. By being honest with them as to the source of the advice one can open up a discussion and tell them the opposing attendings' point of view and rationale. You may be surprised to find that one or the other attending will see the points raised and yield to the point of view of the other attending. Honest discussion with each attending involved will allow you to convey your interest in the field and your respect for their points of view. Open discussion permits exchange of ideas and is essential to education. Remember that the practice of medicine is as much an art as a science.

Dr. Martidis: Evidence-based medicine should always prevail. Sometimes, such evidence is not borne out of clinical trials but by observing the cause-and-effect relationships of the various actions of different physicians. When consulting an attending physician about how to approach a surgical challenge, do not be satisfied with a what-to-do answer; rather, ask why the attending believes this to be the most appropriate technique. An acceptable answer should never be, "This is how I have always done it," or "This is how I was trained."

It is important to be open-minded and critical when considering new approaches, while at the same time, maintaining respect for superiors. Finally, remember that often there is more than one good technique to accomplish a given task.

8. WHAT ASPECTS OF PERFORMING VITREORETINAL SURGERY REMAIN CHALLENGING 5 TO 10 YEARS AFTER FELLOWSHIP?

Dr. Rao: Managing patient expectations remains challenging to any retinal surgeon. The technical components of surgery can be mastered; however, one can never be certain how people will interpret your presurgical discussions. This task has become more difficult as the constraints on physician-to-patient contact time increase.

Dr. Martidis: Not to be self-serving, but there are very few cases that I would label significantly challenging within the realm of what we are able to provide patients using current surgical technology. Although it is certainly a challenge to return 20/20 vision to a patient with diabetes, massive ischemia, and a complex traction retinal detachment, it is less of a challenge to meticulously dissect membranes, relieve traction, and attempt to optimize the visual and anatomic outcome in such a patient. If surgery is approached with proper expectations and goals and given the utmost in terms of time, care, and skill, outcomes will generally be optimized (although certainly not always good).

9. HOW DO YOU DISCUSS SURGICAL COMPLICATIONS WITH A PATIENT OR A PATIENT'S FAMILY?

Dr. Rao: I am careful to approach these discussions openly and honestly. Describing the events that took place, the results of the complication, and what I did to correct the complication are very important. Patients can accept that complications occur and will appreciate your efforts to describe what happened and what you did to correct the complication.

Dr. Martidis: As with everything in medicine (and in life), honesty is the best policy. The patient and family should be promptly informed of an unintended event or consequence of surgery. Obviously, certain complications are considered less significant, such as an intraoperative peripheral break successfully treated with retinopexy. More significant complications, such as a choroidal hemorrhage, will require more frequent follow-up and management of other effects such as pain and intraocular pressure. Patients must understand the prognosis after an adverse event as well as the surgeon's plan for optimizing the outcome under the circumstances. This requires tact, compassion, and humility. Ignorance or arrogance can only lead to a potential disaster in such a case, as the truth will always come out anyway.

10. WHAT POSITIVE AND NEGATIVE TRENDS DO YOU SEE IN THE FUTURE OF TRAINING VITREORETINAL SURGEONS?

Dr. Rao: The development of surgical simulators would add a great deal to the training process. Time constraints are always a factor for teachers and students. As reimbursement for physician services goes down, I fear that spending time to teach residents and fellows will not be emphasized or rewarded.

Dr. Martidis: On the positive side, surgical indications are expanding as we are able to offer safer, "less invasive" procedures with the potential for more rapid and complete visual recovery. Our illumination systems have improved, we have tremendous viewing capabilities, fluidics have been addressed, and cutter technology has really benefited from recent advances. In my experience, patient's surgical experiences have vastly improved over the past 5 years.

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On the negative side, recent advances in intravitreal pharmacotherapy have had an early impact in decreasing certain surgical indications. Although this is certainly great for patients overall, it has started to impact the volume of surgical cases to a small degree. Retina is experiencing a gradual shift to medical treatment and, in the long term, this may inhibit learning opportunities in the surgical realm. I do not see this, however, as a significant threat to excellent training.

11. WHAT ARE YOUR FAVORITE REFERENCE TEXTS FOR LEARNING THE FUNDAMENTALS OF VITREORETINAL SURGERY?

Dr. Rao: During my training I would refer to *Michels Retinal Detachment*[1] occasionally. That said, I am not a person who learns techniques from reading text. I was fortunate to have great teachers who showed me various techniques. I would attempt the variety of techniques and then choose what worked best for me.

Dr. Martidis: For basic knowledge, I have always found Ryan's *Retina*[2] to be a good source of information. Steve Charles, MD, has produced an excellent textbook, *Vitreous Microsurgery*, that I would highly recommend as well.[3] And then there's always the handy scleral buckling publication by Regillo and Benson[4] which really is a must-read for all entering vitreoretinal fellows. ■

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