

LEARNING IN THE OR

Pearls of wisdom from seasoned vitreoretinal veterans and recent graduates.

BY CHRISTOPHER M. ADERMAN, MD; FERHINA ALI, MD, MPH; AND KATHERINE TALCOTT, MD



Your first experiences in the OR as a vitreoretinal surgery fellow can be overwhelming. There is a steep learning curve, calling on you to grow not only in your technical skills but

also in your judgment. As retina fellows across the country transition to a new academic year, we find ourselves trying to navigate the subspecialty and learn as much as we can from our surgical attendings and patients. We asked both recent graduates and seasoned retina attendings for advice based on their experience.



What tips can you offer for setting up the patient, the microscope, and yourself at the beginning of a case?

Marc Spirn, MD: Spending long hours at the microscope can lead to chronic back and neck strain. Paying attention to your body position and that of the patient is the best way to avoid body fatigue and discomfort. Before the patient enters the room, I typically figure out my chair height and position. The chair height should be set to allow a comfortable knee bend (slightly less than 90°)—like sitting in a chair at the kitchen table. Your spine and head should be in a neutral position. Avoid hyperextending your head by making sure the microscope oculars are properly positioned.

Sunir J. Garg, MD: First, I ask the fellows to look at the patient to make sure that the patient's head is at or over the top of the bed. Sometimes they leave the patient in the middle of the gurney and find themselves wishing for a detachable head halfway through the case. Next, I encourage my fellows to sit on the surgical stool and make sure that their seat height and body position are comfortable. Once they are comfortable, I ask them to bring the microscope into position so that the oculars are at the appropriate height and tilt. Hopefully, by doing this, they do not find themselves leaning forward. Finally, I ask them to wheel the patient toward the microscope and adjust the bed up and down to bring the eye into focus without touching the scope.

This usually enables the fellow to be comfortable for the case. Many times, instead, fellows put the bed roughly where they think it should go, and then adjust the microscope, the chair, and their body to the eye—it should be the other way around.

Dean Elliott, MD: The surgeon should sit as close to the patient's head as possible while concentrating on remaining upright with good posture. This is important, as it is easy to slouch into a relaxed position during a long case, which will lead to a position with shoulders forward and neck extended and, ultimately, to neck pain. Each surgeon should ensure that the setup is appropriate for him or her. Do not compromise your position based on the attending's size and shape. Sometimes we switch seats with the fellow several times during a case, and during each switch it is important to take the time to ensure optimal ergonomics.

Bryan Kun Hong, MD: I like to make sure that there is enough space under the patient's head to fit my legs without bumping the wrist rest, while still allowing me to be able to reach the pedals comfortably. Pearl: Make sure that the wrist rest comes as high as your hip when positioning the patient.



What are the most common mistakes retina fellows make when they are learning vitrectomy?

Yewlin Chee, MD: It is important to come to the OR prepared. Know all the functions on the pedals for the vitrectomy machine and the microscope; both can and should be practiced before the fellow's first case until they are second nature. It is difficult to learn how to properly maneuver instruments inside the eye with your hands if you are uncertain about what has to be done with your feet. When I was assisting my attendings as a fellow, I occasionally found it useful to look outside the oculars of the microscope to watch how they were holding their hands and maneuvering the eye.

Dr. Elliott: The most common mistakes at the beginning of fellowship are lack of familiarity with the viewing system, failure to have the eye in the center of the field at all times, poor use of the endoilluminator, and lack of microscope control via the foot pedals. It is extremely important to learn these skills as early as possible. Once they are mastered and become automatic, all attention can be directed toward the more complicated steps such as membrane peeling.

Dr. Garg: When I was in med school, one of the senior general surgeons said, "Surgery is about exposure and visualization; the rest is just fun." I think that holds true for retina surgery too. Everyone wants to start peeling

membranes, but mastering the fundamentals of holding the instruments properly, making yourself comfortable in the operating room, appreciating the microscope (particularly with wide-field viewing) as the most important instrument, and understanding how to position the instruments in the eye safely and comfortably are all critically important skills. Learning how to peel membranes will come, and it will come easier and with greater success once you have mastered the fundamentals.

Dr. Hong: The most common mistake is one that everyone makes without realizing it: clutching the instruments tightly, particularly when things get stressful. One of my mentors taught me to grasp instruments just tight enough to rotate or manipulate them in your fingertips, but lightly enough that they could easily be pulled out of your hand with minimal effort.

More important, do not grow defensive when your attending criticizes you; a defensive attitude does not become a fellow.



Visualization is key to vitreoretinal surgery. How do you best use noncontact wide-angle viewing systems to visualize the periphery?

Dr. Spirn: You cannot operate if you cannot see. Most new fellows move the vitrector but keep the light pipe position fixed. In general, the vitrector should be in the middle of the spotlight with illumination on all sides (ie, left, right, anterior, and posterior). As the vitrector moves, so should the light pipe to keep the vitrector centered in the spotlight. This prevents one from bumping into structures that may be hidden in the darkness. When using noncontact wide-angle viewing systems, I tend to start the case completely zoomed out. Staying zoomed out prevents one from losing sight of the big picture.

Dr. Garg: There are several important steps to using a wide-angle viewing system. The eye should be in a neutral position, the microscope should be centered, and the microscope should be brought into position over the visual axis. Having done this, the light pipe should be in one hand, and the microscope should be brought as close to the apex of the cornea as possible without touching. This gives the widest field of view.

I ask that the fellows magnify the optic disc so it is as big as possible, and then that they should critically focus on the macula and disc. At that point, mag out. That critical focus makes the rest of the surgery easier. This technique will also serve you well when you start doing heads-up display vitrectomy.

The other important thing to do is to move the microscope pedal while you are steering the eye around. I tend

“ Learning how to peel membranes will come, and it will come easier and with greater success once you have mastered the fundamentals.

- Sunir J. Garg, MD

to keep the eye fairly neutral during vitrectomy. When I do move the eye to get out into the periphery, I rotate it minimally, maybe a deflection of 20° to 30° off-center. As I am moving the eye down, I push the microscope joystick away from me; when I move the microscope left, I move the joystick to the left, etc. Doing this allows me to maintain good focus with a wide field of view in all positions.

Dr. Hong: If you are using a binocular indirect ophthalmomicroscope (BIOM, Oculus), give yourself enough space between the lens and the cornea to first bring the fundus into focus before secondarily lowering the scope closer to the eye to achieve a wide-angle view. Unlike the Resight viewing system (Carl Zeiss Meditec), the focusing mechanism of the BIOM has a high degree of excursion. With both the BIOM and the Resight, make sure that the noncontact viewing lens is as close to the cornea as possible without getting fogged up or touching the cornea.



What can you do to gain and hold your attendings' trust? How do you stay in the operating chair?

Dr. Elliott: The most important thing is to demonstrate that you care about the patient. The patient's outcome is much more important than the fellow's surgical log book, and the desire to obtain a good result is the reason we are all here. Sometimes that means that the fellow will just be assisting, and an observant fellow can learn a lot by doing so. Follow-up during the postoperative period is also very important. There is nothing worse than not caring about the patient's result. In order to obtain the privilege of operating, fellows should be well prepared at all times. We expect them to remember what we previously told them so their knowledge base can continue to grow.

Dr. Chee: Knowing the details of the case (including ocular and surgical history, preoperative visual acuity, lens status, etc.) before stepping into the OR is a must. During the case, your attending will be more likely to allow you to

stay in the surgeon's chair if you demonstrate that you can follow his or her directions. Avoid making erratic movements, operating in areas where you have poor visualization, and fumbling with foot pedals. During fellowship, I found it helpful to keep a book listing each of my attendings' preferences, including how they draped the patient, how they preferred wound construction, and other details pertinent to specific kinds of cases.

Dr. Spirn: Move your hands slowly, and listen carefully. When your hands move fast, complications can happen—especially early on. Move your hands more slowly than you think they should move. This includes when entering and exiting the eye. If you move slowly, your attending can alter your behavior before a problem arises.

Also, if you are not comfortable performing a certain task, speak up. As time goes on, you will become more comfortable, but being honest will go a long way toward earning your attending's trust.

Dr. Garg: When I say stop, I want the fellow to stop. If they stop when I say stop, I automatically trust them more than if they keep going, even just for another moment. When I want to switch seats with them, they need to stop immediately and switch.



What do you eat for breakfast and snacks in the OR?

Dr. Spirn: I am certainly not a nutritionist, but there are two nutritional tenets I try to adhere to on my OR days: stay hydrated, and avoid sugar. If you do not feel good, you cannot do your best work. Staying hydrated is critical to feeling your best. Avoiding sugary foods prevents fluctuations in both my energy level and my mood. For breakfast, I eat a whole grain English muffin with almond butter. Midmorning, I refuel with a low-sugar energy bar, and for lunch I have a sandwich—usually either egg salad or tuna salad on whole wheat bread. My drink of choice at all times is good old-fashioned water.

Dr. Hong: At breakfast, I eat high-calorie but wholesome foods that are high in protein for sustained energy: a two-egg sandwich (not from McDonald's) or oatmeal and yogurt. While in the OR, small packets of peanut butter and jelly on whole wheat, fruit, and unsalted nuts keep me going.

Dr. Elliott: They say that breakfast is the most important meal of the day—and it is if you want to get fat. This myth is perpetuated by people who are or will become overweight, as you will never hear a thin person extolling the virtues of eggs, bacon, hash browns, and a buttered biscuit. A very light breakfast will maintain your energy and keep you alive.

Dr. Chee: I do not have a specific routine, but I always make sure I have eaten something before heading to the OR. I am not above a bar of chocolate toward the end of a long day, either. ■

Section Editor Christopher M. Aderman, MD

- second year vitreoretinal surgery fellow, Wills Eye Hospital, Philadelphia, Pa.
- caderman@midatlanticretina.com

Section Editor Ferhina Ali, MD, MPH

- second year vitreoretinal surgery fellow, Wills Eye Hospital, Philadelphia, Pa.
- fali@midatlanticretina.com

Section Editor Katherine Talcott, MD

- second year vitreoretinal surgery fellow, Wills Eye Hospital, Philadelphia, Pa.
- ktalcott@midatlanticretina.com

Yewlin Chee, MD

- assistant professor of ophthalmology at UW Medicine; vitreoretinal surgeon at Harborview Medical Center, Seattle, Wash.
- financial disclosure: none acknowledged
- cheey@uw.edu

Dean Elliott, MD

- the Stelios Evangelos Gragoudas Associate Professor of Ophthalmology at Harvard Medical School and Massachusetts Eye and Ear, Boston, Mass.
- financial disclosure: none acknowledged
- dean_elliott@meei.harvard.edu

Sunir J. Garg, MD

- an assistant professor of ophthalmology at Thomas Jefferson University and Wills Eye Hospital Retina Service and a surgeon at Mid Atlantic Retina, all in Philadelphia, Pa.
- financial disclosure: none acknowledged
- sunirgarg@yahoo.com

Bryan Kun Hong, MD

- ophthalmologist at Vitreo-Retinal Associates in Worcester, Mass.
- financial disclosure: none acknowledged
- bhong@midatlanticretina.com

Marc Spirn, MD

- an assistant professor of ophthalmology, at Thomas Jefferson University and Wills Eye Hospital retina service and a surgeon at Mid Atlantic Retina, all in Philadelphia, Pa.
- financial disclosure: none acknowledged
- mspirn@midatlanticretina.com