What Makes a Great Surgeon?

“He is a great surgeon. The best I’ve ever seen.” Back when I was a junior resident, I recall a co-resident telling me this about one of my attendings. I remember thinking, what does this mean? How do I know when a surgeon is exceptional in the operating room?

This question came up again recently. I was eating lunch with a couple of my neurosurgical colleagues, and we were discussing a vestibular schwannoma resection I just finished, working with another neurosurgeon in their department. The surgery went very well, and I happened to mention that I thought their colleague was an excellent surgeon. Then, one of my colleagues asked me what specifically this person did that was so excellent. I gave a brief answer invoking the phrase “good surgical technique.” However, this answer was quite nonspecific and not satisfying to me.

Before this, I had not really thought in depth about what makes a surgeon great. Now, I have come to think that every surgeon could benefit from developing a well-thought-out opinion on the subject. For example, it could be an important asset in physician recruitment. Although there are many strategies used to predict if an applicant will become a collaborative, friendly, and hard-working colleague, it remains unclear to me how to identify during an interview who is or will become a great surgeon. A firm set of beliefs might prove helpful in selecting the best candidate for the position.

Similarly, this type of self-reflection might improve one’s own surgical abilities. In residency, we are taught surgical technique in a procedure-specific way. Each surgical procedure is taught in steps, much like how a cookbook contains recipes that outlines the step-by-step procedures needed to create a specific dish. We are supposed to put together everything we learn from multiple teachers and multiple types of procedures to create the synergies needed to form a deep understanding of surgical principles. This fundamental base of knowledge underlies our ability to continue to learn and adapt to the changes in surgery that will certainly occur throughout our career. However, it is not unusual for some residents to never quite reach this level of ability during their training, and presumably, this limits their ultimate potential. In addition, we all can improve. Recognizing surgical greatness is the first step in achieving it.

Finally, it is a central tenet of medicine to not cause harm. We all run the risk of limiting our surgical practice to lower-risk procedures because of the fear that we will have difficulty handling intraoperative challenges. This can happen when we have not done a certain type of procedure in awhile, or if we did this procedure recently and the patient had an untoward outcome. Although these fears may be well founded, having a firm set of principles about what it means to be a great surgeon should provide guidance, and hopefully comfort, while making tough decisions in the operating room.

Thus, the goal of this editorial was to prod trainees and practicing physicians to think about and decide for themselves what features are found in great surgeons. Here, I summarize how my experiences shaped my opinion on this matter.

During medical school, residency, and fellowship training, I had the opportunity to operate with many renowned surgeons. I also operated with even more faculty and private practice physicians who had little-to-no recognition at all. Furthermore, as a faculty member, I have observed many other surgeons operate, typically while working together on combined cases. I have also taught in courses where one of the course organizers performs a live surgery that is broadcast into the conference room. It is tough to put a number on the total number of people I have watched do surgery, but I estimate this to be about 500 (excluding residents and fellows). This number is rather large because of the number of hospitals I rotated at during residency at Baylor College of Medicine, the number of faculty I worked with during my fellowship at University of California, San Francisco, both in otolaryngology and neurosurgery, and the fact that I have held faculty positions at three different medical schools.

Out of these 500 surgeons, five stood out to me as being great in the operating room. These surgeons entered the operating room with a well-thought-out surgical plan and executed it. They looked comfortable while operating, and they conveyed an aura of safety and confidence in the operating room.

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Three surgeons stood out as being poor in the operating room. One had obsessive compulsive personality traits that made this surgeon overly conscious about less important aspects of the procedures (i.e., using specific wound closure techniques) while ignoring issues of greater importance (i.e., quality of the tumor resection). The second had health issues that affected this surgeon’s ability to safely operate. Although this surgeon was loved by his patients, clinic staff, and residents, the outcomes were not optimal. The third performed surgery on patients who did not meet commonly accepted indication guidelines. Although the surgeries tended to go well, I consider this surgeon poor because the benefits did not outweigh the risks.

Among all the rest of the surgeons, there were certainly differences and various quirks. However, I feel comfortable labeling them all as being good in the operating room. These surgeons were safe, honest, and well qualified. Some had a significant academic component to their career and some were solely clinical. They all followed the latest evidence-based medicine to qualify their patients for surgery. They performed surgery exactly as one would expect, and their patients did well afterward. I would trust a family member in any of their hands. The consistency of surgical practice among these surgeons makes me feel confident about academic medicine and our ability to effectively train the next generation of surgeons. I attribute this to the uniformity of residency training standards, national board examinations, operating room equipment, and staffing.

However, what was unique about the great surgeons? First, they seemed to move their hands slower than the good surgeons. However, the cases would finish in less time. What would typically be a 4-hour case would get done in 2.5 hours. This was because every movement was executed in a way to achieve a desired goal. Using a minimum of precise movements gets a surgery done sooner.

Second, they could (and usually did) verbally describe every step and its logical medical rationale as they operated. If I had to ask why they did something, the answer was never “this is how we do it” or “this is how I learned it in residency.” Clearly, these surgeons had thought about the disease and the surgical treatment on a deep level.

Third, each of these great surgeons had either written a textbook or a major textbook chapter related to their specialty. Interestingly, typically, what they said intraoperatively was word-for-word identical to what they had written in their textbook.

Fourth, I never saw one of them become worried during surgery when complications happened. Major bleeding, cerebrospinal fluid leaks, or tumor invasion into critical structures did not create anxiety. Generally, they discussed the issue out loud, explained their thought process, decided on how to proceed, and then did it.

Fifth, they all had ongoing research related to the conditions they operated on. My suspicion is that their deeper understanding of the disease permitted them to develop a more comprehensive preoperative surgical plan in their mind, and to make course corrections more quickly during the operation when needed.

In thinking about this question of surgical excellence, I had two surprises. First, it was not obvious to me that patients of the great surgeons had different outcomes than patients of the good surgeons. However, this observation may be biased by the fact that these surgeons were all well recognized for their surgical excellence, and so they often took care of patients with more complex diseases. Second, the public often believes a great surgeon must have very steady hands. Personally, I did not appreciate any obvious differences in tremor between good and great surgeons. Although some surgeons had more tremor than others, all seemed to find ways to manage it with careful hand support, instrument use, and magnification using loupes or a microscope. Their hands always ended up in the right place and executed the right move.

Thus, in my opinion, great surgeons are distinguished from good surgeons by their head, not their hands. A great surgeon is one who thinks deeply about the disease, who publishes extensively on it, and who can effectively use this knowledge to execute the procedure.

Everybody will certainly have different opinions on this topic. I hope you think about it and write a short letter to the editor with your thoughts.

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