Surgical ethics and the challenge of surgical innovation

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Abstract Surgical ethics as a specific discipline is relatively new to many. Surgical ethics focuses on the ethical issues that are particularly important to the care of surgical patients. Informed consent for surgical procedures, the level of responsibility that surgeons feel for their patients’ outcomes, and the management of surgical innovation are specific issues that are important in surgical ethics and are different from other areas of medicine. The future of surgical progress is dependent on surgical innovation, yet the nature of surgical innovation raises specific concerns that challenge the professionalism of surgeons. These concerns will be considered in the following pages.

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Surgical Ethics

It is an honor to give the 2014 Edgar J. Poth, MD lecture. My sincere thanks to Dr Kenric Murayama for inviting me to give this presentation. I am going to talk today about 3 things. First, I will review distinctive aspects of surgical ethics that make it different from medical ethics in general. Second, I will talk about professionalism in surgery. Third, I will discuss innovation and how it is managed. I will suggest that these topics are interrelated and very important to the future of surgical care. I hope that you will indulge me as I relate several personal experiences to illustrate my points. Given the limited time, I will not be able to construct arguments to support each and every one of my suggestions. As Ken mentioned in his introduction, I am an endocrine surgeon, so I have to use an example of something that I know about. For this reason, I will use thyroidectomy as the example during the course of this discussion.

Let me begin by talking about surgical ethics. Today, it is not unusual to find discussions of ethics at surgical meetings and in surgical journals. However, 25 years ago when I was applying to surgical residencies and told faculty at different programs that I was interested in surgery and in ethics and that I was getting a PhD in philosophy, there was not much interest. In fact, there was very little interest on the part of surgical chairs and program directors in the possibility of a surgeon being interested in ethics. The level of interest was about as much as if I had said I was interested in modern dance. The only person who actually did ask me about it was Dr David Nahrwold, Chair and Program Director at Northwestern University. His interest was a major reason why I did my residency in surgery at Northwestern and now have the good fortune of counting Dr Nahrwold as a mentor and friend.

Despite the increasing attention that surgeons pay to ethical issues, there are still some people who are not familiar with the term, “surgical ethics.” Some of you may feel similarly that “medical ethics” is something familiar and widely discussed, but is “surgical ethics” any...
different? Although surgical ethics is certainly part of medical ethics, I would suggest that there are 3 important aspects of the surgical care of patients that makes surgical ethics different from medical ethics. I will not spend a lot of time developing these ideas fully, but it is important to note the 3 central aspects of surgical ethics. First, I believe that the nature of informed consent for surgery is very different from informed consent in other areas in medical care. The fact that a patient is willing to lie down and be in a completely vulnerable position (in my case, to allow me to cut their throat) suggests the high level of trust that our patients place in us. I contend that this level of trust is something that changes informed consent in surgery. Because we surgeons obtain informed consent from our patients for surgery all the time, we almost forget how very significant it is that our patients trust us enough to allow us to operate on them. This is an important component of surgical ethics that we ought to pay more attention to.

Second, the nature of responsibility in surgical care is different from the nature of responsibility in other areas of medicine. This is a complicated idea to present in a short period of time, but I would suggest that the best illustration of how important the nature of responsibility is to surgeons is from a book by sociologist Charles Bosk entitled, *Forgive and Remember.* Some of you may be familiar with the book. If not, I encourage you to read it. It is a sociological study of a surgical residency program. Charles Bosk was a graduate student at the University of Chicago, and he did his field work at the University of Chicago where I am now on faculty.

Bosk was particularly interested in morbidity and mortality conferences and how errors are addressed. There are a number of important observations that Bosk makes, but among the most important for understanding how surgeons think about responsibility is his observation that when the patient of an internist dies, colleagues ask, “What happened?” However, when the patient of a surgeon dies, colleagues ask, “What did you do wrong?” I believe the difference in how surgeons and others talk that Bosk astutely recognized reflects a fundamental and critical difference in how we surgeons think about our responsibility for our patients. I believe that the sense in which a surgeon feels personally responsible for an operative complication is different from how other physicians feel about bad outcomes.

Finally, I believe that surgical ethics is different because surgical innovation is different from innovation in other areas of medicine. There is nothing like the Food and Drug Administration for surgical techniques. New drugs require careful study and significant oversight by the Food and Drug Administration before they can be offered to patients off clinical trials. In contrast, consider a surgeon who thinks that doing an operation differently is going to benefit his or her patient. Even if the surgeon has never seen the procedure done in this novel fashion, he or she is not only allowed to do the operation in the new way, but is expected to do what is best for the patient. Surgeons are expected to exercise creativity on the part of patients to benefit them even if it means doing a procedure in an innovative manner. The level of flexibility that surgeons have in the operating room with no real oversight is, I believe, critical to surgical innovation and surgical progress. Now this lack of oversight of surgical innovation may be a good thing or a bad thing depending on how you look at the world. Nevertheless, it is clearly very different in surgery than it is in other areas of medical care.

**Professionalism in Medicine and Surgery**

Let me take just a moment to talk about professionalism. Today, professionalism is one of those things like apple pie that everyone is in favor of. If I tell a physician that I am interested in professionalism, most will respond, “Me too.” Very few people today are opposed to professionalism in medicine and surgery. The topic of professionalism in medicine has recently exploded. There are several recent books addressing such topics as: professionalism in medicine, measuring medical professionalism, teaching medical professionalism, and educating physicians to encourage professionalism. Despite this growing literature, I still have difficulty finding a good definition of professionalism because many of them are circular. I did find one that I thought was very helpful from the Canadian Journal of Surgery: “In return for professional autonomy, self-regulation and a recognition of their unique place in society, the public demands of physicians accountability, ethical standards and an altruistic manner of delivering care.” There are 3 concepts in this definition that are critical for us to keep in the back our minds as we talk about innovation—namely, self-regulation, ethical standards, and altruism. I believe that these 3 concepts are all critical to our professionalism as surgeons.

**Surgical Innovation**

Let me now turn to discuss innovation in surgery and why it is important to the future of the surgical care of patients. Most surgeons would agree that innovation is a good thing. Much as Henry Ford is reported to have once said: “If you always do what you have always done, you will always get what you have always got.” This quote suggests that to move forward, you must do something different. You must be innovative or else there will be no change and no progress. How we do most operations today has changed, and if it hasn’t changed, then we are doing what we did decades ago, and that is not usually beneficial for our patients.

Innovation in surgery is most commonly the result of creative attempts to solve individual patient problems. Sometimes, innovation occurs with a truly novel idea when someone completely changes the way they do something. However, more commonly, innovation happens as a result of small changes that allow us to move toward
something beneficial. I believe that most surgeons would agree that innovation is the way forward in surgery. Innovation is what is needed to make things better in the future.

Unfortunately, new ideas are not always good ideas and there are many great examples of this fact from the historical record. In the interest of time, I will just mention a couple of new ideas that were actually bad ideas. Internal mammary artery ligation was, for a time, a very popular way to treat angina. The rationale for the operation was that patients have angina because of lack of blood flow to the heart; if the internal mammary artery is ligated, more blood will be pushed into the coronary vessels. This seemed like a good idea and thousands of patients had the operation performed on them. Many surgeons—in fact, very well-respected academic surgeons—made their reputations doing this operation. We now know that this procedure is not effective at treating angina. Just one other example of an innovative treatment that was not effective is radiation to treat acne. Certainly, radiation is not a surgical advance, but rather was used to treat many things such as enlarged thymus, acne, asthma, ear infections, and enlarged tonsils. As an endocrine surgeon, I am still operating on patients today who received radiation as children and now have thyroid cancer or hyperparathyroidism. Radiation was thought at the time to be a tremendous advance, but rather than benefiting patients, it wound up harming them. These examples lead us to a central question that I do not think we often give enough attention to: namely, how do we decide if an innovation is actually an advance? The assumption often made by the public is that everything new is improved. I believe that as surgeons, we also often assume that if something is new, then it must be better. But how do we really decide if something that is new is actually better?

Innovative Approaches to Thyroidectomy

Please bear with me, but I want to briefly consider a little bit about the history of thyroid surgery. Many surgeons are familiar with Dr Samuel Gross who was a prominent surgeon featured in Samuel Eakins famous portrait, “The Gross Clinic.” Gross was one of the most influential surgeons in the 19th century America. In his 1866 textbook of surgery, he wrote the following about thyroidectomy for goiter: “can a thyroid gland, when in a state of enlargement, be removed with a responsible hope of saving the patient? Experience emphatically answers no…. If a surgeon should be so adventurous, or fool-hardy, as to undertake the enterprise, I shall not envy him… every stroke of the knife will be followed by a torrent of blood and lucky will it be for him if his victim live long enough to enable him to finish his horrid butchery… Thus whether we view this operation in relation to the difficulties, which must necessarily attend its execution, it is equally deserving of rebuke and condemnation. No honest and sensible surgeon, it seems to me, would ever engage in it.”

It is valuable to look back on Gross’ feelings about thyroidectomy to better understand how the operation has changed. Surgeons such as Theodor Kocher and many others contributed to the technical advances that today make a thyroidectomy a very safe operation and one for which it is rare to ever need to give a blood transfusion.

In recent years, much attention across many surgical disciplines has been given to “minimally invasive surgery.” Thyroid surgery has been no different in that over the past few decades, much innovation has surrounded the question of how to avoid a large (and potentially disfiguring) scar on the neck. I will not go into significant detail, but a number of approaches were suggested around the year 2000 that utilized laparoscopic and endoscopic equipment to avoid large scars on the neck. Some surgeons favored making incisions in the axillae and tunneling up to the neck to gain access to the thyroid gland. Other surgeons utilized incisions on the anterior chest wall or the breasts to gain access to the thyroid.

A popular approach has used both the axillae and breasts (the so-called bilateral axillary breast or BABA approach). Although such approaches avoided a visible scar on the neck, they have not gained much popularity in the United States. For numerous reasons, the option of avoiding a single 4-cm incision in the neck but instead having 4 small incisions, one in each axilla and one in each breast, did not engender much enthusiasm. The fact that this approach was considered an advance in some countries but not in others points to the importance of subjectivity and one’s values in determining what is considered progress.

In recent years, we all know that robotic surgery has been widely touted in the United States as a major advance. The popularity of robotic surgery has, as many surgeons know, also affected thyroidectomy in the technique of the robotic-assisted axillary thyroidectomy. This technique has been most widely popularized in Korea, but has a few major proponents in the United States. There has even been an approach to thyroidectomy using a natural orifice transendoscopic surgical approach through the floor of the mouth.

All these approaches to thyroidectomy have been designed to avoid a visible scar on the neck. Although one could debate whether such approaches are actually minimally invasive or not because often more tissue planes must be opened, the primary question that I would like to focus on is, “Are these approaches progress?” Most of the available data on these approaches suggest that there is little, if any, change in morbidity and no change in mortality in comparison to traditional open approaches to thyroidectomy. The only significant difference is a cosmetic difference. The question, therefore, becomes, “Is a cosmetic difference any less important than other differences?” I believe that this is a question that we cannot readily answer as surgeons because whether something is considered to be progress depends on what we
value. What our patients value may be different from what we as surgeons value. For this reason, we must be very careful and not jump to conclusions on either side without carefully assessing patient values with respect to these operations.

**Specific Ethical Issues in Innovative Surgery**

Continuing with the examples of innovative approaches to thyroidectomy, there are some specific ethical challenges associated with surgical innovation that warrant attention. First, obtaining informed consent for an innovative procedure is problematic. As noted previously, I believe that informed consent in surgery is a critical differentiator between surgical ethics and medical ethics. When it comes to innovative procedures and innovative techniques, I think informed consent becomes particularly challenging. Mark Twain has been quoted as saying, “It ain’t what you don’t know that gets you in trouble, it’s what you know for sure that just ain’t so.” When it comes to innovative surgical approaches, I believe that this is particularly true. We may fully understand the risks of a well-established operation. However, if something is truly innovative, the surgeon will not know what the risks of the novel operation really are.

Consider the risks of a conventional thyroidectomy. We know that the risks of permanent hypoparathyroidism and permanent recurrent laryngeal nerve injury are both in the 1% to 2% range. If we then start utilizing a novel approach to performing a thyroidectomy, what is the level of risk that I should quote for my patients? If I have done only a handful of cases, I cannot truly know what the risks are. Unfortunately, even if I have done 100 of the novel procedures, I might believe that the risks are no different from the risks of the conventional approach. However, when one is dealing with small risks, a 100 or even 500 cases may not reveal even a doubling or tripling of the risks. The way statistics work, we would have to do thousands of patients to be able to show if there is any change in risk. Therefore, we cannot really know what the true risks of the new thyroidectomy technique are at the outset, and we cannot know probably for years unless we are all pooling our data and looking at much larger numbers.

For this reason, obtaining informed consent for an innovative surgical procedure is a significant challenge. How do we disclose risks when we do not really know what they are? To do this, surgeons must become much better at explaining uncertainty.

Another important aspect of informed consent and ensuring patient safety is related to the surgeon’s experience. We all know that as a surgeon’s experience with an operation increases, he or she gets better at it. We understand the learning curve. I am better after 50 cases than after only 10. Although surgeons understand the learning curve, I am not sure that our patients do. We must then consider whether the lack of experience with a novel operation should be discussed with patients. Most surgeons would answer “Yes,” but the next question then becomes, “How should we discuss the learning curve for a new operation with patients?” I believe that if a surgeon is unwilling to be very upfront about his or her experience or lack thereof with a new operation, then he or she should not be offering it to patients. Most patients assume that surgeons offer well-established procedures that the surgeon has had significant experience with. Innovative surgical techniques are different and patients need to have that difference clearly explained to them.

An additional set of considerations requires attention when it comes to the informed consent for innovative surgical procedures. Can surgeons and patients objectively assess the benefits of new procedures? To answer this question, it is helpful to consider the motivations for a surgeon to offer an innovative approach. The surgeon may have spent time, money, and significant effort in learning a new technique. He or she may also feel pressure from the department or the hospital or the practice to offer the new technique since it might increase referrals. Now consider a patient who has been told that he or she needs a thyroidectomy and has read about the “new and improved” technique on the internet. The patient may have already made up his or her mind that the new technique must be better.

If this patient who already wants the new technique comes to see the surgeon who is anxious to offer the new technique, we have a situation in which the conventional dynamics of informed consent are dramatically changed. Generally, if I am recommending a thyroidectomy for someone with thyroid cancer, the patient may not want the operation but they understand that it is necessary. In such a circumstance, I have whatever usual incentives there may be for recommending an operation, but I do not have the added incentives of pushing a novel operation. I would explain the risks and benefits of the surgery, and if the patient agrees and trusts me, then the patient will consent to the surgery and we will schedule it. If the surgeon has significant incentives to offer the innovative operation that is beyond what is best for the patient and if the patient has already decided that the new operation is the best option, I am concerned that this dynamic is not conducive to the most effective and honest communication.

Another critical ethical issue with innovative techniques revolves around costs. We know that new technology is more costly than old technology and innovation is usually dependent on this costly new technology. We know that operative time is very expensive. In fact, in many hospitals operative time is among the most valuable commodities in the hospital. We also know that new things take longer. In the current environment when costs must be considered, how do we decide what innovative ideas we should continue to spend time learning.

The early experience with laparoscopic cholecystectomy is illustrative of the problem. Early laparoscopic cholecystectomies for many surgeons took several hours in contrast to
the speed with which open cholecystectomies were performed by many surgeons. Knowing that the laparoscopic operation was taking several times longer for many surgeons, if cost was the primary consideration, we should have abandoned the technique. We would certainly, in such a scenario, not have jumped on this laparoscopic bandwagon. The problem is that things change and surgeons often get better and faster at operations. Early impressions can be completely wrong. Unfortunately, we do not know when to jump on the bandwagon. There is, in fact, a paucity of scientific evidence that allows us to say, “This is something definitely we should do; even though it may take a long time, because eventually we are going to get better and it’s going to pave the way for many other things.” We do not know at the outset what innovative operations will become the new standards for treatment. We are forced to make decisions with little data that some things we are going to pursue based on the hope that the innovative technique is a good one and others that we should not pursue.

Conclusions and Concerns

Individual surgeons are faced with the challenge of determining what innovative techniques we should offer to our patients. Sometimes the innovative technique may appeal to us as surgeons. The new approach may be very gratifying for a surgeon to perform. It may allow us to use new technology that we find challenging and fascinating. Unfortunately, when patients see something described as innovative, they often assume that it is better. They commonly want the “latest and greatest” because they believe that it is best. If both the surgeon and the patient are predisposed to pursuing the innovative procedure, then there is a risk that patients might have riskier operations performed than they should.

Let us return to the topic of professionalism. I believe that professionalism is important for innovation. There is no group or institution that determines whether a new technology or new procedure benefits our patients. As a result, the professionalism of surgeons is necessary to ensure that what is new is not automatically assumed to be improved.

One solution to this potential risk is that there should be more oversight of what innovative operations are offered to patients. However, I do not want to argue in favor of oversight as it is impossible for surgeons to have the freedom to creatively solve their patients’ problems in the operating room in the setting of restrictive oversight. However, without oversight (which is the way things are now), surgeons must make individual decisions about what to offer our patients.

So how can these ethical issues in surgical innovation be managed? I believe that the first step is thoughtful self-awareness. Surgeons must think carefully about why we do the things we do and we have to think about what the challenges are. We need to be clear when we are obtaining informed consent from our patients. If we are offering an innovative procedure and we do not know exactly what the risks are, we have to disclose these uncertainties to our patients. Unfortunately, disclosure of uncertainty is a very difficult thing for all physicians to do and perhaps even harder for surgeons who “although often wrong are rarely in doubt.”

Perhaps most importantly, surgeons must gather data to determine if patients truly benefit from surgical innovations. It is not enough (as we often used to do) to just measure our incisions and say, “smaller incision, better operation.” I would argue that it is not enough to say, “fewer incisions, better operation.” To assess the benefit of an innovative procedure, we must look more carefully at what is important to our patients. Patient-centered outcomes must define our assessments of whether a new procedure is progress or not. I also believe that a few additional conclusions are warranted. Certainly, not all innovative techniques are good for patients. We all realize this fact. Yet, deciding what innovative things to offer to patients demands engaging patients in the decision making. The potential benefits of innovative techniques must be carefully balanced against potential surgical risks—both the known and the possible. When we do not know for sure what the risks are, we must make educated guesses. We must exercise clinical judgment about what those risks are. I believe that surgeons absolutely need to engage in clinical trials or registries to assess risks and benefits. In order for informed consent to be a reality, individual surgeons must honestly discuss the uncertainties of innovative procedures with their patients and disclose that there are things that we do not know.

We must ensure that new innovation benefits our patients and not just us. I suggest to you that this is the epitome of professionalism—namely that a surgical procedure benefits our patients and not just us. For this reason, I believe that innovation is both the key to surgical progress and the greatest challenge to the professionalism of surgeons.

I cannot tell you what an honor it has been for me to give this lecture, and I thank you very much for your attention.

References