5-2017

Concurrent Surgery and Informed Consent

Andrew M. Weller
College of the Holy Cross, wellerd500@gmail.com

Concurrent Surgery and Informed Consent

College Honors Thesis

Andrew M. Weller

Advisor: William E. Stempsey, S.J., M.D., Ph.D.

Reader: Alvaro E. Jarrín, Ph.D.

Abstract

This thesis seeks to construct an ethical course of action for concurrent surgery, a practice brought into the public eye by *The Boston Globe*, which argued against allowing one attending surgeon to oversee two cases on separate patients in different operating rooms. First, the common morality and its four main principles relevant to biomedical ethics will be described which will be subsequently used to show that concurrent surgery is allowed according to non-violation of the principle of non-maleficence through current empirical evidence, and supported by the principle of beneficence and justice. Next, the principle of respect for autonomy will be shown to require informed consent in order to ensure proper patient understanding of the nature of the procedure. This thesis will end by discussing the current public, hospital, and political reactions to the debate in order to summarize current accordance with this thesis' ethical argument and propose informed recommendations to doctors, hospitals, and law makers, as discussed in the conclusion.

Acknowledgements

I would like to thank the following people for their advice, well-wishes, guidance, and inspiration in the course of this project:

My mother, Maria Weller, and father, Andrew Weller, for supporting my attendance at Holy Cross in more ways than just financially, as well as my extended family.

My advisor, Father William Stempsey, who has challenged me intellectually over the last two years, in the classroom and in the office, and has inspired me to reach beyond the physical aspects of medicine to the social, philosophical, and spiritual aspects as well.

My friends, especially Katrina Morris, Thomas Vignati, and Caroline Tibbitts for encouragement and Nicholas Sinclair and Bridget Connolly for introducing me to this topic through the sharing of *The Boston Globe* article on concurrent surgery.

Doctor Dennis Burke, for bringing the practice of concurrent surgery to light, and for relentlessly pursuing what he felt was right even in the face of resistance.

Table of Contents

Introduction

In October of 2015, the *Boston Globe* Spotlight Team released an extensive story, called "Clash in the Name of Care," based on an investigation into the practice of concurrent surgeries at Massachusetts General Hospital (MGH).[1] Concurrent surgeries occur when one physician is simultaneously attending two or more surgeries on different patients in different operating rooms. This controversial practice occurs in a minority of all surgeries, and is almost exclusively limited to high profile surgeons in teaching hospitals such as MGH. Although the practice has been around for decades, the debate on the both the ethics and the practicality of the technique is only now firing up thanks in part to this report.

The *Boston Globe* news story, as well as internal emails and interviews of patients and doctors supporting both sides of the issue, tell the tale of Tony Meng, a patient who underwent a cervical corpectomy to remove parts of degenerating vertebra in his neck. The surgery included removal of several pieces of cervical vertebrae from the anterior side of the neck before Meng was flipped and operated on posteriorly. During this complicated eleven-hour-long surgery, nerve function between Meng's brain and lower abdomen began to fade. As his surgeon, Doctor Kirkham Wood, pressed on with the procedure, nerve function did not improve. When Meng woke up, he was paralyzed from the neck down, a risk he acknowledged he knew about beforehand during the informed consent process. During litigation, however, he learned that his surgery overlapped with another spinal surgery on a woman in an adjacent operating room with

[1] J. Abelson et al. "Clash In The Name of Care." *Boston Globe*, October 25, 2015, accessed May 3, 2017, https://apps.bostonglobe.com/spotlight/clash-in-the-name-of-care/story/.

Dr. Wood also as the attending physician. An attending physician, or just "attending," is the head surgeon who has ultimate responsibility and control over a case. In fact, seven hours of Meng's eleven-hour surgery overlapped with this patient. Although Dr. Wood was physically present for the specialized part of the surgery during which the paralysis complication occurred, he never informed Meng beforehand that his surgery ran concurrently with another, a fact that Meng claimed would have influenced his decision to undergo the surgery in the first place. This became the major argument in Meng's malpractice suit against Dr. Wood.

Dr. Wood and his legal team argued that nothing in the medical record indicated that the complication was caused by Dr. Wood not being present. Furthermore, neither common practice in the field nor legal precedent required the concurrency of a surgery to be disclosed in the informed consent process. In addition, the president of Massachusetts General claimed in an interview with *The Boston Globe* that the hospital has never found a case where the use of concurrency has caused harm; however, this hospital review has not been published.[2]

The investigative report of the Boston Globe, in addition to presenting the individual case of Mr. Meng and Doctor Wood, includes arguments both for and against the practice of concurrent surgeries. Proponents of concurrent surgery say that the practice increases hospital efficiency and access to expert medical specialists without subtracting from quality of care. Furthermore, this practice is especially important in large teaching hospitals like MGH because of the pressing need to train fellows and residents. By allowing multiple procedures with the same attending physician, one highly trained professional can theoretically instruct twice as many trainees. It is important for

[2] Ibid.

future leaders in healthcare, specifically residents and fellows, to learn from these unique cases, especially when only a handful of individuals have the ability to perform complex procedures like Meng's surgery. This, coupled with the fact that double-booking can distribute top medical care to up to twice as many people with no demonstrated increased risk for negative patient outcomes, makes the use of concurrent surgeries seem like an easy choice.

However, opponents say that concurrent surgery carries an inherent risk to the patient even if limited research into actual risk indicates safety. Patients that are double-booked may have increased time under anesthesia, for example, and of course, it is possible that the attending surgeon in charge will not be immediately present if the patient experiences unexpected complications during a concurrent surgery. Judgment of risks aside, opponents claim that patients still have a right to know if physicians, to whom they give permission to operate, have divided attention and responsibility during surgery.

This case and others broken by the *Boston Globe Spotlight Team* ask important questions about the safety, morality, and legal backing of concurrent surgeries. Hospitals, patients, and the press have been quick to offer answers. Massachusetts General has responded by offering a website which explains the need for concurrent surgeries and publicizes the hospital's official perioperative policy on concurrent surgeries.[3] Reasons to operate concurrently mirror those of the wider medical community. These reasons include trauma, citing the hospital's response to the Boston Marathon bombing, optimal use of operating rooms and surgical teams, access to leading physicians, timeliness of care, and education of residents and fellows. The hospital's perioperative policy

[3] "Concurrent/Overlapping Surgery," *Massachusetts General Hospital.* accessed February 12, 2017, http://www.massgeneral.org/overlapping-surgery/.

highlights expectations of the attending and the surgical team, including specification of where the attending can or cannot be. It explicitly prohibits three overlapping surgeries. However, it is important to note that this policy includes nothing about the need to disclose concurrency in the informed consent process.

It is important to realize the two separate yet equally important questions to be analyzed in this debate: should concurrent surgeries be allowed, and secondly, do concurrent surgeries need informed consent of the patient? First, I will show that concurrent surgery is generally permissible. Secondly, I will argue that although concurrent surgery is a valid medical practice, informed consent by the patient is always required except in certain emergency situations.

In my first chapter, I will introduce the moral principles at play in the question of concurrent surgeries and informed consent, including beneficence, nonmaleficence, justice, and respect for autonomy, and I will argue that concurrent surgery should be allowed based on the principles of nonmaleficence and justice. In my second chapter, I will show that informed consent is needed for concurrent surgery in order to fulfill the moral principle of respect for autonomy. Lastly, in my third chapter, I will highlight and discuss the current response to the increased attention to concurrent surgery induced by the *Boston Globe* report. The response of the public, government agencies, hospitals, and professional organizations will show the current direction of the practice.

Chapter 1: Moral Principles and Concurrent Surgery

To decide the proper action for both the practice of concurrent surgery and informed consent for those surgeries, it is important to first establish the moral principles related to these questions. These moral principles will become the moral foundation upon which concurrent surgery and consent for it will stand. In the beginning of this chapter, I will set up this moral foundation by showing how moral principles arise from a universal morality called the common morality. I will end by showing that concurrent surgery is permissible according to the principle of nonmaleficence and warranted according to the moral principle of justice.

Moral Background: The Common Morality and Moral Principle

Arguments using an ethical framework such as the one used here must begin with a definition of ethics and morality. Morality can be used both descriptively and normatively. Descriptive morality is simply a description of a body of standards and principles accepted by a particular group of people or an individual, while normative morality is a code of conduct that should be accepted under particular conditions by all rational persons.[1] Ethics, specifically normative ethics, is a type of philosophy that attempts to determine moral codes of conducts and justifications for those courses of

[1] Bernard Gert and Joshua Gert, "The Definition of Morality," *The Stanford Encyclopedia of Philosophy,* Spring 2016, accessed February 19, 2017, https://plato.stanford.edu/archives/spr2016/entries/morality-definition/.

action.[2] Thus, this discussion on concurrent surgery and informed consent is an ethical discussion because I am attempting to provide a specific course of action for the practice and consent of concurrent surgery.

Within any morality are principles and rules which together lead to moral action. Moral principles are common but non-specific values of right and wrong within morality. For example, the principle of respect for autonomy implies that one should respect another's freedom to choose one's own destiny. However, this principle does not give a direct pathway to a specific action, and leaves only a general description of the "right" thing to do, which in the case of medical ethics, is to act so that you always respect the autonomy of the patient. Thus, moral principles do not specify particular actions.[3]

Moral rules specify and focus this moral pathway to particular action. For example, respect for autonomy leads to the specific rule, "respect the autonomy of patients by following their advance directive." This is a type of rule known as a substantive rule, or a rule which applies a moral principle to an action. Other types of rules involve authority rules, which determine who has the capacity to make decisions and/or perform them, and procedural rules, which establish a guideline of actions to be followed in a particular circumstance. For example, the rules for distributing scarce medical resources, like organ transplants, are procedural rules.[4]

In addition, moral principles imply moral virtues, which are ideal character traits of a moral person who accepts, upholds, and acts according to the corresponding moral principle. For example, benevolence is the character trait of a person who upholds and

---

[2] Tom L. Beauchamp and James F. Childress, *Principles of Biomedical Ethics,* 7th ed., (New York: Oxford University Press, 2013), 1.
[3] Ibid., 13-14.
[4] Ibid., 14-15.

practices the principle of beneficence. Many virtues together make up a character of a moral person.[5]

With the terms used in this discussion of informed consent defined, I will now go on to explain the common morality, which will be used to analyze concurrent surgery and consent.

The common morality is the set of moral norms which are universal across all societies, cultures, religions, and moral theories. While each of these many moralities can be the subject of descriptive morality, the common morality is a code of conduct which should be accepted by all rational persons. Therefore, the common morality is not merely a morality; it is the set of norms shared by all persons committed to morality, no matter their particular societal background.[6]

In other words, across the diverse array of the societies, cultures, religions, and philosophical traditions of humanity, there are some basic moral principles which each society generally accepts as true and good. Although different cultures and societies may have different justifications for these moral principles and have different interpretations on how to achieve the principles' goals, the principles themselves remain constant no matter the context within any particular morality. This means that the principles which make up the common morality are not exhaustive; a particular morality has unique norms and principles not found other moralities (after all, this uniqueness is part of what distinguishes a particular morality from any other). However, no morality contains norms which violate the common morality, and thus the common morality remains universal.[7]

---

[5] Ibid., 3.
[6] Ibid., 3.
[7] Ibid., 5.

It is important to note that these principles not only exist across cultures and societies, but across the most prominent normative moral theories as well, although the principles are substantiated and confirmed differently by each. For example, beneficence, to do good to another, is a universal moral principle because it is accepted as right by all people who are serious and committed to being moral people. Different moral theories may have different reasons for being beneficent, but all accept beneficence. For example, utilitarianism claims that one must be beneficent because it generally increases the overall happiness of many people, while a deontologist requires beneficence simply because it is the right thing to do - it is an a priori duty. Similar arguments exist for any other moral principle within the common morality.

Importantly, as I apply principles of the common morality to concurrent surgery with rules and specifications, the common morality may not validly extend at every step along the way. Similar to Beauchamp and Childress, I do not imply that all of my applications of the principles of the common morality absolutely claim the authority of the common morality.[8] However, because I start from these universal principles, my argued-for actions at least attempt to achieve the same universal good that all cultures and normative ethical theories accept, which gives those actions justification through their starting point.

To provide specificity, here are some rules of the common morality: do not kill, do not cause pain of others, prevent harm, tell the truth, allow others to make their own decisions, and do not steal. These rules entail virtues which are universally accepted as

[8] Ibid.

admired character traits: nonmalevolence, honesty, integrity, and kindness, to name a few.[9]

Although many more principles, rules, and virtues can be added to the common morality, four moral principles of the common morality have been determined as especially relevant to biomedical ethics and they form the ethical discussion on concurrent surgery and informed consent. These are nonmaleficence, the goal of not harming another; beneficence, the goal of increasing the welfare of another; justice, the goal of distributing risk, harm, and good fairly across a group of people; and respect for autonomy, the goal of not interfering with another's ability to make their own decisions and to choose their own destiny. As stated earlier, all four of these are principles under common morality and are thus universal and applicable within medicine to every patient and physician.[10]

However, although these moral principles are universal, because different cultures and societies have different interpretations and justifications for these basic moral principles, cultures may weigh these and other moral principles differently. This may lead to different substantive, authority, and procedural rules and customs across cultures, each equally valid in ensuring their respective moral principles. For example, research has shown that Asian groups have a greater tendency to make collective medical decisions than Americans, who are more individualistic. For example, Asian and Pacific Islanders are more likely to defer or share a decision with another family member, to think of elderly family members first when making medical decions about themselves, and be less

[9] Ibid., 3.
[10] Ibid., 13.

willing to decide against family wishes.[11] This is a greater emphasis on care of family than respect for individual autonomy, highlighting differences in the application of moral principles across cultures. For example, an Asian patient may wish to consult with his or her family about concurrent surgery more than an American patient. I will not address how my response to concurrent surgery may specifically change in different cultural contexts, but I do propose that my argument for concurrent surgery and consent may need to be further modified to include different cultural particularities.

I will argue that these four principles of common morality can be applied to the case of concurrent surgery and informed consent in order to yield a clear, consistent, universal course of action that is based in the universality of the common morality. In this chapter, I will show that the practice of concurrent surgery is permissible according to the principle of nonmaleficence and beneficence, and that the principle of justice supports the use of concurrent surgeries. I will use empirical evidence to back up these claims. In the next chapter, I will apply the principle of autonomy derived from the common morality to show that informed consent is required for these concurrent surgeries.

Nonmaleficence and Concurrent Surgery

Here, I will show that concurrent surgery is permissible by examining two of the principles of the common morality, nonmaleficence and beneficence, which get at the heart of the responsibility of a doctor for his or her patient. Nonmaleficence and beneficence arise out of the general responsibility of a doctor to promote the general

[11] Linda A. McLaughlin and Kathryn L. Braun, "Asian and Pacific Islander Cultural Values: Considerations for Health Care Decision Making," *Health & Social Work* 23, no. 2 (1998): 116-126.

welfare of his or her patients.[12] This theme of promoting the welfare of others stems from the common morality. In the case of a doctor-patient relationship, this general welfare is carried out through the promotion of health by cure or prevention of disease in a patient. This is described in the Hippocratic Oath as "help, or at least, do not harm."[13] This phrase of the Hippocratic Oath can further be broken down into four main elements: (1) One ought not to harm, (2) One ought to prevent harm, (3) One ought to remove harm, and (4) One ought to do good.[14]

From here, these elements crystallize into beneficence and nonmaleficence based on the negative and positive duties that they entail. The first element, to do no harm, is a negative duty because the physician must refrain from acting in a harmful way, the first consideration in the justification of any medical action. This is nonmaleficence. The second, third and fourth elements all require actions of the doctor, and therefore imply positive duties and fall under the umbrella of beneficence.

Therefore, any medical decision must be determined by weighing the medical outcomes against these two principles. When a procedure has a double effect, when it has both a positive outcome and negative side effects, these competing interests must be balanced according to the doctor's duty of beneficence, to promote the well-being of a patient through a good treatment, and nonmaleficence, the duty to not harm the patient through adverse side effects.[15] The majority of medical treatments have both positive and negative effects, and therefore concern both duties. For example, a blood draw causes

---

[12] William K. Frankena, *Ethics*, 2nd ed., (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1973), 47.

[13] Ludwig Edelstein, *The Hippocratic Oath, Text, Translation and Interpretation,* (Baltimore: Johns Hopkins Press, 1943), Supplement 1.

[14] Ruth R. Faden, and Tom L. Beauchamp, *A History and Theory of Informed Consent*, (Oxford: Oxford University Press, 1986), 10.

[15] Beauchamp and Childress, *Principles of Biomedical Ethics*, 20-22.

pain and carries a small risk of infection, but also has the potential to provide data for accurate diagnoses.

According to this weighing analogy, a procedure is permitted, (neither required nor forbidden) if there are neither positive nor negative outcomes, or if the positive and negative outcomes completely cancel each other out (the weighing is neutral). A procedure is required if positive outcomes exist while negative outcomes do not, or if positive outcomes outweigh the negative outcomes (the weighing is net positive).

The practice of concurrent surgery, like any other medical procedure, must be shown to be morally required, or at least permitted, by weighing the medical outcomes according to the above process. However, when the effects of concurrent surgeries are limited to an individual patient, concurrent surgery only carries risk, and does not have the potential to benefit one particular patient. Nothing about having one's surgeon attend to another patient simultaneously could possibly benefit that one patient's medical outcome. In other words, an overlapped surgery offers no outcome-based medical benefit to an individual person compared to a non-overlapped surgery. No doubt, positive outcomes do exist for overlapping surgeries, as will be shown later, but these beneficial outcomes only arise once a system of multiple patients is considered. Therefore, the outcomes of concurrent surgery to an individual patient do not concern the moral principle of beneficence because there is no opportunity for concurrency to benefit an individual.

Thus, it follows that the principle of beneficence does not influence the permissibility of concurrent surgery. With no individual positive outcomes, for concurrent surgery to be permitted, it will have to be shown that there are also no

negative outcomes associated with concurrent surgery. According to the principle of nonmaleficence, concurrent surgery will need to show neither medical harm nor risk for the practice to bepermitted. If concurrent surgery is shown to have a high risk of harming the patient, then the action of concurrent surgery and the duty to uphold the principle of nonmaleficence are in conflict, and the practice itself is not permitted and is forbidden.

Not surprisingly, it is easy to think of potential risks of an overlapped surgery compared to a non-overlapped one. If a surgical complication occurs, the attending surgeon could be delayed in getting back to the operating room because he or she is with another patient. This can be exacerbated when the second operation is difficult or out of the immediate vicinity. Furthermore, this requires the attending to leave the second patient, potentially leaving this patient under anesthesia for longer than expected or necessary.[16] To be able to connect these potential risks to the principle of nonmaleficence, the actual empirical negative outcomes associated with these risks must be used to determine the actual risk of harm that concurrent surgery carries which will then show the moral acceptability of overlapping surgery. Only if the procedure objectively does no or very little harm to the patient does the practice become permissible under the principle of nonmaleficence.

Nonmaleficence and Concurrent Surgery: Empirical Evidence

Current evidence shows that concurrent surgeries do not lead to negative patient outcomes, and therefore concurrent surgeries are permissible under the principle of

[16] Michelle M. Mello and Edward H. Livingston, "Managing the Risks of Concurrent Surgeries," *JAMA* 315, no. 15 (2016), 1563-1564; Alexander Langerman, "Concurrent Surgery and Informed Consent," *JAMA Surgery* 151, no. 7 (2016), 601-602.

nonmaleficence and the weighing process described above.

One leading study on the matter, which took place over two years and involved 3,600 thoracic surgeries of 20 types, showed no statistical difference in operating length between concurrent and nonconcurrent surgeries for 17 of those surgery types. Only one type of surgery had an increase in operating time with concurrency and two groups actually took statistically less time to operate than if the surgery was concurrent. This study also compared medical complications in the concurrent and nonconcurrent groups, and found no increased occurrence of risk-adjusted outcomes for concurrent surgeries in any of the 20 groups.[17] Risk-adjusted outcomes mean that for each, the inherent probability of negative outcomes was adjusted so that all types of surgeries could be compared to each other independently of their natural differences in risk.

It should be noted that this study has a few major limitations, one being that it only evaluates thoracic surgery and leaves out other types like orthopedic, abdominal, and neurological surgery, all of which are commonly double-booked in teaching hospitals. In addition, the study made no distinction between surgeries that overlapped for only a few minutes in the beginning and the end (where a resident usually makes the opening and closing maneuvers anyway) and surgeries that completely overlap with another. Both of these aspects are important to the case study of Mr. Meng, described in the introduction, as his surgery was both orthopedic and had full overlap with another surgery. Here, a fully overlapped surgery occurs when the attending surgeon is

[17] KW Yount, JR Gillen, IL Kron et al., "Attendings Performing Simultaneous Operations in Academic Cardiothoracic Surgery Does not Increase Operative Duration or Negatively Affect Patient Outcomes," paper presented at AATS annual meeting, April 25–29, 2015, Seattle, WA, accessed November 1, 2016, http://aats.org/annualmeeting/Program-Books/2014/2.cgi.

overseeing two or more surgeries for the entire duration of one surgery, and not just during the opening and closing. Again, this is the type of concurrent surgery that I am most concerned with. Furthermore, this study has not yet been published in a scholarly journal and has thus not yet been peer-reviewed, which requires an increased caution in drawing strong conclusions. Finally, this study is the most extensive statistical study on concurrent surgery to date, and the results have not yet been repeated, which is important in the process of the scientific method. Therefore, this study only tentatively indicates that concurrent surgeries are no less dangerous than individual surgeries.

Another study of a different type also showed that concurrent procedures are feasible. This study, instead of depending entirely on past patient data, used a simulation of patient flow. This simulation used statistical parameters from the real data of operation teams to predict the flow of patients through those same operation teams operating concurrently or nonconcurrently. Since the simulation was based on real data from the Duke Medical Center Endoscopy Unit, meaning that its results are tied to actual observation and have real-world implications. When physicians were allowed to attend two operating rooms at once, the results of this study did not show an increase in the amount of time in the operating room, nor an increase in patient waiting time compared to a model where physicians attended one operating room at a time.[18]

However, this study is limited because it is mainly an analysis on medical team and nurse placement and does not explicitly simulate changes between a physician overseeing one operating room or two. In addition, this study only describes one type of specialty – simple endoscopic procedures. Concurrent surgeries with full overlap are

[18] Javad Taheri et al., "A Simulation Study to Reduce Nurse Overtime and Improve Patient Flow Time at a Hospital Endoscopy Unit," *Proceedings of the 2012 Winter Simulation Conference (WSC)*, IEEE, 2012.

usually much more complex and serious. Therefore, it is tough to draw strong conclusions from this study, although it does indicate a general acceptability of the practice of concurrent surgery.

Doctors also assert that concurrent surgery, when ran by a highly skilled and experienced operating room team, increases the efficiency of surgery. In the commentary section of an article which found a lower mortality rate using video-assisted pulmonary lobectomy techniques than thoracotomies, the author in response to a question on morbidity and mortality explains that he believes that his procedure's success is partially due to the efficiency of his operations.[19] That is, he can perform 6-10 surgeries a day when they are overlapped, and the experience his team has accrued doing these surgeries this quickly has improved patient outcomes. Certainly, a report of favorable results is evidence against adverse outcomes. It is important to note, however, that this anecdotal evidence is just that - a reasonable opinion not backed up by empirical scientific analysis. Therefore, its support for the safety of concurrent surgery should be considered tentative.

Studies and discussions in the current literature on the viability of concurrent surgery viability end here. Although the practice of concurrent surgery has been the standard of care in many teaching hospitals for decades, it is only in the very recent past that researchers have begun to examine the practice with a scientific eye. Although high-profile investigative reports like the *Boston Globe*'s and lawsuits like Mr. Meng's may speed up future focus on the topic via public response, the need for more objective data and input on this issue is essential.

---

[19] Robert J. McKenna, Ward Houck, and Clark Beeman Fuller, "Video-assisted Thoracic Surgery Lobectomy: Experience with 1,100 Cases," *The Annals of Thoracic Surgery* 81, no. 2 (2006): 421-426.

Indeed, opinion articles largely written in response to the recent public attention agree that current evidence around concurrent surgery does not suggest adverse outcomes; however, they also claim that further investigation on concurrent outcomes compared to those of non-concurrent operations is still of great importance, and "is a knowledge gap worthy of funded health services research." [20] However, until this confirmation is complete, ethicists and doctors must look at the evidence available today, and this evidence suggests that the potential risks, including increased operating time, time under anesthesia, and increased possibility for complications, do not translate into significant adverse outcomes compared to non-concurrent operations. Therefore, the practice of concurrent surgery does not violate the principle of nonmaleficence, at least with knowledge available today.

In summary, throughout the studies and articles above, there is only evidence, albeit tentative, that concurrent surgery is not associated with an increased risk of harm. Furthermore, there is no evidence showing that concurrent surgery increases risks compared to non-concurrent surgery. With no evidence of negative outcomes, the principle of nonmaleficence is not violated and thus the concurrent surgery according to the principles of beneficence and nonmaleficence is permitted according to the common morality.

It is important to note that for now, concurrent surgery is permitted, and not yet ethically required. To be required, there has to be a concrete benefit, or increase in "good," caused by concurrency. In other words, now that concurrent surgery is permitted,

[20] Mello and Livingston, "Managing the Risks," 1563-1564; Georgia M. Beasley, Theodore N. Pappas, and Allan D. Kirk, "Procedure Delegation by Attending Surgeons Performing Concurrent Operations in Academic Medical Centers: Balancing Safety and Efficiency," *Annals of Surgery* 261, no. 6 (2015), 1044-1045.

there is no reason not to allow overlapped surgery, but there is not yet a reason to allow it.

Justice, Collective Beneficence, and Concurrent Surgery

After concluding that concurrent surgery is allowed under the moral principle of nonmaleficence because it does not produce substantial medical risk to the patient, I will now show how the principles of justice and beneficence create reasons for the practice. . As stated, nonmaleficence has only proven permitability; it is justice and beneficence that validate the practice and justify it. . Justice and beneficence provide positive outcomes to concurrent surgery and establish the "good" of the procedure; this justifies its practice.

The moral principles of justice and beneficence can be thought of as increasing the greater good to those receiving and in need of receiving medical care through an increase in the amount of good action and fair distribution of that action. While beneficence exists to increase the good of a single patient or a collection of people, justice is the equal, fair, or due distribution of benefit and risk to a collection of people.[21] Overlapping surgery is specifically concerned with the distribution of medical benefit, and not risk. As I will show, there are two main ways the greater good is increased from concurrent surgery: increased patient access to doctors, and increased training of future medical professionals including medical students, residents, and fellows.[22]

The first benefit of concurrent surgery is the increased number of patients who can receive care from one physician. This is collective beneficence as a collection of

---

[21] Faden and Beauchamp, *History and Theory*, 14-15.
[22] Mello and Livingston, "Managing the Risks," 1563-1564.

patients are receiving more care, and thus the general good is increased. This is the benefit with the most direct impact on the current patient population, as it is not reliant on future medical access resulting from the training of future professionals. Increasing access to doctors becomes especially important once it is understood that the doctors who perform concurrent surgery are frequently the most renowned doctors in their specialties and have the expertise to tackle the most serious, delicate, and rare cases. With increased specialization in the medical field, it is now very much possible, and even common, for a handful of doctors to be the only ones in the nation qualified to perform these special cases. There is, therefore, an even greater need to maximize the number of patients that these top doctors can treat.

The literature supports this idea. One opinion article in the Journal of the American Medical Association argues that by increasing access to sought-after surgeons, concurrent surgery could help avoid life-threatening delays resulting from long patient waiting lines and overall low access.[23] According to the rules of supply and demand, increased patient access will also drive up "supply" for these procedures, which could lower costs of care. With surgery more affordable, public access also increases as more people are able to afford care.

Quantitative evidence supports these opinions by showing this increased patient access. Computer models based on real operating data from nine surgeons showed that parallel processing of patients increased the average number of surgeries done by each surgeon per day by 0.42. Here parallel processing occurs when two operating rooms prepare patients in an alternating fashion so that one attending physician can switch between two operating rooms to work on the critical parts of each procedure. The

[23] Ibid.

opening and closing are done while the attending is in the critical portion in the other operating room, hence parallel processing is a type of concurrent surgery. Since real data was used from different surgeons, this study shows that parallel processing increased efficiency no matter the operating style of the surgeon, where each could have unique methods of closure, opening, and technique.[24]

In another study focusing on uncomplicated hernia repairs, room turnover times were reduced 45% when these same parallel processing techniques were used.[25] It is important to note here that these studies examined relatively uncomplicated surgeries; one study only used regional anesthetic, and the other study focused on routine hernia repair. Even though these specifically do not address high profile, high risk concurrent surgeries, these studies generally show that concurrent surgery does indeed increase efficiency and thus patient access, thereby lending concrete support to concurrent surgery in other areas like highly specialized surgeries in teaching hospitals.

The second benefit of concurrent surgery is the increased ability to train the next generation of medical professionals by delegating responsibility and providing supervised practice opportunities to residents and fellows.[26] This provides the opportunity for high quality care of future patients because future attending surgeons are trained. An increase in the amount of future surgeries is an increase in collective beneficence. In addition, justice has the potential to be increased because this increased ability to treat future patients could be distributed equally and fairly to more people within the population. This

---

[24] Michael J. Brown et. al., "Improving Operating Room Productivity via Parallel Anesthesia Processing," *International Journal of Health Care Quality Assurance* 27, no. 8 (2014), 697-706.

[25] Mark A. Malangoni, "Assessing Operating Room Efficiency and Parallel Processing," *Annals of Surgery* 243, no. 1 (2006), 15.

[26] Mello and Livingston. "Managing the Risks," 1563-1564.

might help ensure equal distribution of care in the near future. This however is only a possibility to increase justice because the larger amount of surgeries could be distributed unfairly, such as only to those that can pay for surgery.

In the current training of these persons, medical schools are associated with a teaching hospital, and these hospitals also provide residencies and fellowships for medical students. Residents gradually take on more and more complex cases and are given more independence as they move through the four years of their program, while fellows are trained to be able to take on any general case in their specialty. They only need to learn the most complex cases and procedures from the top attending doctors to be able to operate on the most complicated cases. In both cases, it is easy to see how increased patient throughput will also increase exposure to these trainees and even make it possible to train more people. With the already apparent low access to these top doctors, training more people to be at the top level through the use of concurrent surgeries will only increase capacity, and will thus allow more people to benefit. In addition, these residents and fellows are fully trained to be able to perform opening, closing, and non-critical portions of their assigned procedures. The patient is never left alone with unqualified doctors even in concurrent surgeries.

As touched upon, it is important to note that because of the uncertainty of the future, justice-based benefit of more equally distributed care is only possible and is not guaranteed. Even if concurrency increases the training of and access to future professionals, concurrency may still not uphold the principle of justice through more equal distribution because future healthcare systems could not distribute their increased capacity for care evenly. They might only provide their medical care to the rich, for

example. However, increased training now does certainly allow the possibility for an increase in justice later though more equal distribution even if it does not guarantee it. Thus, there is still a potential benefit in justice through concurrent surgery.

No matter the actual increase in justice, however, simple increase in future number of surgeries no matter the distribution is still an increase in collective beneficence if the number of patients in need remains constant. This is because the number of treated future patients would still increase through greater training even if distribution would not. All in all, both the increase in collective beneficence and the potential for increased justice-based distribution justifies the practice of concurrent surgery despite its limitations.

Therefore, the justification of concurrent surgery is accomplished through an increased capacity to treat more patients by a) increasing efficiency and patient load of doctors, especially highly specialized ones, b) by increasing the capacity to train future medical professionals which increases access to medical procedures in the future, and c) by creating the possibility for more equal distribution of medical care in the future. All of these increase the greater good by either increased population treatment or more fairly distributed health care procedures.

Chapter 2: The Requirement of Informed Consent

In Chapter One, I introduced the common morality and established the importance of the four moral principles to medical ethics: beneficence, nonmaleficence, justice, and respect for autonomy. After application of these moral principles to the practice of concurrent surgery, I showed that the practice was allowed according to the principle of nonmaleficence and beneficence, and that the practice was valid according to the fairness it may cause under the principle of justice and the good it causes under the principle of collective beneficence, or good for more people. Now, I will show that common morality's moral principle of respect for autonomy requires informed consent.

To arrive at this conclusion, I will first establish three key requirements of an autonomous action: intentionality, understanding, and non-control. Then, I will show that the five elements of informed consent - disclosure, comprehension, voluntariness, competence, and consent - ensure that the action of informed consent is also an autonomous action as defined by the three elements of autonomous action. With these five elements established, I will apply each to the practice of concurrent surgery to show that concurrency must be included in the consent process.

The Essential Elements of Autonomous Action and Informed Consent

To apply the common morality's moral principle of the respect for autonomy, the term "autonomy" must be defined. Here, autonomy is taken to be the capacity for one to live one's own life according to the reasons and motives that are taken to be one's own,

and not the result of outside manipulating or distorting forces.[1] This concept applied to a patient considering undergoing a medical procedure means that an autonomous patient would choose to undergo or to not undergo a medical procedure according to his or her own reasons or motives. These would not be unduly influenced by any outside manipulating or distorting forces, including from the doctor, family, friends, or acquaintances. Specifically focusing on the doctor-patient relationship, the actions of the doctor should not unduly manipulate or distort a patient's own decision to undergo medical treatment.

Next, it is important to note that this definition of autonomy describes an ideal case. Faden and Beauchamp claim that this ideal definition of autonomy places large undue expectations upon a patient. An ideally autonomous person is "consistent, independent, in command, resistant to control by authorities, and the source of his or her basic values and beliefs."[2] A problem arises here because this ideal standard would render most choosers and most choices not fully autonomous - the requirements are simply too high.

The moral principle of respect for autonomy overcomes this problem in an important way. Respect for autonomy does not require a person to guarantee and verify that the choice of another is autonomous to this ideal standard. The principle of respect for autonomy, first, requires one to act as though another has a capacity for autonomy and, second, requires one to assume that another is using their autonomy to do an autonomous action. This requirement respects the ability and capacity others to be autonomous, but does not require someone to ensure that others are ideally autonomous

[1] John Christman, "Autonomy in Moral and Political Philosophy," *The Stanford Encyclopedia of Philosophy,* spring 2015, accessed February 21, 2017.

[2] Faden and Beauchamp, A *History and Theory,* 236.

all the time, which would be impossible. Hence, the principle is only *respect* for the autonomy of others, and does not include the need to ensure that others are fully autonomous.

Secondly, respect for autonomy and informed consent considers the autonomous *action* of a patient, and less so the autonomy of the patient himself or herself. Here, there is a clear distinction between the autonomous choice and the autonomous chooser,. This effectively focuses the debate of informed consent and concurrent surgery on *actions* of autonomy, and not the *person* that is doing that action.[3] In terms of autonomous action, it can be said that a person acts autonomously only if a person acts in three ways: (1), intentionally, (2) with understanding, and (3) without controlling influences.[4] Firstly, for an action to be intentional it needs to be "willed according to a plan" and therefore this action is either intentional or unintentional and is not on a spectrum.[5] A person either wills an action according to a plan or does not will an action according to a plan; one cannot only partly will an action according to a plan. In the case of consenting to a medical procedure, a patient can either intend for the procedure to be done, or not intend it to be done, and cannot only partly intend to undergo the procedure.

Furthermore, an action is not autonomous if it is unintended. To illustrate this point, consider the example of person accidentally knocking over a glass of water onto a coworker's paperwork. This action is not an autonomous action because the person did not intend to spill the water; he or she did not will this action according to a plan. Therefore, this action is not autonomous.

---

[3] Ibid., 239.
[4] Ibid., 238.
[5] Ibid., 241-248.

In addition, this example also illustrates my above distinction between autonomous action and autonomous persons. Here, the action was not autonomous, even though the person who spilled the water could have been an autonomous person. Clearly, autonomous choices and autonomous choosers are different. I look at autonomous action specifically in my discussion on informed consent because I am attempting to ensure that the decision to undergo a concurrent operation is an autonomous choice; I am not concerned with ensuring that the patient undergoing the operation is or is not an autonomous person.

The second condition of an autonomous action is understanding. A person needs to have understanding of an action itself in order to make a genuine evaluation of that action's relation to that person's beliefs and reasons. Here, a substantially understood action is one where a person has adequate apprehension of all the relevant propositions or statements that correctly describe (1) the nature of the action, and (2) the foreseeable consequences of and possible outcomes that might follow as the result of performing or not performing the action.[6]

Note that understanding, unlike intentionality, is on a spectrum. Things can be less understood or more understood, and there is not a discrete separation between understanding and non-understanding. In addition, a person does not need to have *complete* understanding of an action for that action to be autonomous, but only an *adequate* understanding. Complete understanding is an ideal which is very unlikely, if not impossible, to achieve, and thus patients cannot be expected to have this ideal to execute an autonomous action.[7] They do, however, need to have adequate comprehension of all

[6] Ibid., 252.
[7] Ibid., 261.

relevant details. Here, adequate comprehension means that the patient understands enough about the procedure that they recognize the general medical reason for the procedure and how it may give particular health benefits and present health risks.

Thirdly, autonomous action needs to be non-controlled by outside influences. Faden and Beauchamp consider non-control also to be on a spectrum. At one end of the spectrum is completely controlled action, which is defined as coercion. Coercion occurs if someone influences another by threatening harm that renders the person unable to resist acting to avoid it.[8] Persuasion lies at the opposite end of the spectrum on the completely non-controlled end. Persuasion occurs when one person influences another person with factual input and their own advice in an open, non-clandestine appeal to reason, never at the expense of a person's own reasons or motivations.[9] In the middle of the spectrum between coercion and persuasion lies manipulation, where one person's actions unduly influence another's autonomy by circumvention of that person's ability to control their own action. Manipulation is different from both persuasion and coercion because it is an "influence of a person by non-coercively altering the actual choices available to a person, or by non-persuasively altering a person's perception of those choices."[10] Thus, manipulation lies in the gray areas between persuasion and coercion. Examples of manipulation include seduction, deception, and indoctrination.[11] A person acting autonomously is said to be non-controlled only if they are neither manipulated nor coerced, and only persuaded, to act in a certain way.

---

[8] Ibid.
[9] Ibid.
[10] Ibid.
[11] Ibid., 261-262.

These are the basic necessities of *any* autonomous action; the *specific* autonomous action of consenting to undergo a medical procedure must also have these three necessities to be autonomous. The five elements of informed consent ensure that each of these three elements of autonomous action is fulfilled. Since the five elements of informed consent are rooted in the three elements of autonomous action, I will be able to apply the five elements to the case of concurrent surgery to determine how informed consent and concurrency are related.

As stated earlier, these five concepts of informed consent are disclosure, comprehension, voluntariness, competence, and consent. Together these elements ensure accordance of consent with the universal definition of autonomous action. Because of the correspondence between the elements of informed consent and the elements of autonomous action, authorizations of doctors to perform treatment fit the universal definition of autonomous action if they also fit the definition of informed consent according to these five elements.

Competence, one of the elements of consent, is the ability of someone to act autonomously. The ability of a person to act autonomously corresponds to the element of autonomous action of understanding because a competent person has the potential to act autonomously, and thus has full ability to first understand a medical intervention and then intend to do it. Competence is the physical ability to comprehend disclosure and consider it according to one's own reasons and beliefs. For example, children and the severely mentally disabled are considered people not generally able give an autonomous consent to treat because they lack the cognitive functioning necessary to accurately understand and weigh the risks and benefits of a procedure. To respect autonomy, another person

(usually a family member or a healthcare power of attorney) needs to step in to make the autonomous choice in the incompetent person's best interest. Competence is a very complicated concept, and there are many volumes and articles that attempt to define and determine who has substantial competence.[12] These considerations are not discussed here, but the need for patient competence is still put forth in the case of concurrent surgery as with all informed consents.

Disclosure and comprehension also are associated with understanding. Here, disclosure consists of explaining and describing the proposed procedure, while comprehension is when the patient processes this information correctly. In other words, disclosure is communication of the knowledge necessary for understanding from doctor to patient, while comprehension ensures that that information is received and processed by the patient accordingly.

The next element of informed consent, voluntariness, corresponds to the requirement of non-control of an autonomous action. If something is voluntary, it is not under the influence of coercion or manipulation; it is acted only according to a person's own reasoning and the persuasive, but not manipulative, information and advice given from the doctor.[13]

The last element of informed consent, actual consent, sometimes called authorization, corresponds to the element of intentionality for autonomous action. This step is the culmination of understanding a procedure and its risks. This final step includes

[12] Ibid., 275-294.

[13] Nir Eyal, "Informed Consent," *The Stanford Encyclopedia of Philosophy*, fall 2015, Edward N. Zalta (ed.), accessed February 22, 2017.

a formal authorization, such as a signature, which signifies the autonomous agreement to allow the doctor to proceed with the treatment.[14]

After first defining autonomy according to three elements, and second, specifying my focus to autonomous action and not to autonomous persons, I have associated the five elements of informed consent to the three elements of autonomous action. Now I will apply these five elements of informed consent to the action of concurrent surgery to determine how to proceed. Accordance of my argument with the five elements of informed consent will guarantee that my course of action is consistent with the moral principle of respect for autonomy.

The Need to Disclose Concurrency

Disclosure and comprehension are both necessary for understanding, which again is defined as adequate comprehension of all relevant propositions and statements that correctly describe (1) the nature of the action and (2) the foreseeable consequences of and possible outcomes that might follow as the result of performing or not performing the action.[15] Since disclosure is necessary for understanding, when determining whether or not an aspect should be disclosed in the informed consent process, it is necessary to determine if that aspect affects the nature of the surgery or the surgery's consequences.

I argue that concurrency, which is full or substantial overlap of one procedure with another, fundamentally affects the nature of the surgery and is thus relevant enough to the patient to be required for understanding of the procedure.

---

[14] Faden and Beauchamp, *History and Theory*, 275.
[15] Ibid., 252.

Even if concurrency does not increase risk or improve patient outcomes, as shown in chapter one, the need to disclose still exists because concurrency modifies the nature of the surgery in all circumstances, no matter the outcome, thus, the need to disclose concurrent surgery is independent of these expected outcomes. This means that if continued research shows either a decrease or increase in risk, informed consent will still be required. This does not invalidate the need to discover the true effects of concurrency: the true effects, good or bad, will show whether or not concurrency increases the possibility of harm to patients, and will thus show medical benefit of the procedure itself. However, the need for informed consent is required no matter what that research uncovers.

Concurrency affects the nature of a surgery by significantly modifying the responsibility of the attending surgeon. This comes from the definition of an attending surgeon by the American College of Surgeons as "the primary surgeon responsible for the orchestration and progress of a procedure." [16] The presence of multiple responsibilities changes the role of the primary attending physician, and thus deeply changes the nature of the operation itself.

Consider the plausible example of a serious event happening in one concurrent surgery which requires the attending to switch from one patient's operating room to another's. Here, the responsibility of the attending toward the first patient clearly influenced the attending's responsibility toward the second because the second procedure needed to be temporarily suspended to help the first patient. These intertwining

[16] American College of Surgeons, *Statements on Principles*: The Operation—Intraoperative Responsibility of the Primary Surgeon, accessed April 1, 2017, facs.org/about-acs/statements/
stonprin/.

responsibilities affect the nature of each surgery, because in each case, the patient shares the doctor's full attention with another patient. Even if doctors can safely balance these multiple responsibilities, the patient does not have the sole attention of the doctor that they authorize to treat them. Disclosure of concurrency should be required in informed consent so that this dual responsibility is made known to the patient.

Concurrency must also be disclosed because concurrency affects the patient's understanding of the nature of surgery. Without disclosure, patients assume that the physician will be physically present during the whole operation, and they thus have an inaccurate conception of surgery's true nature. It is up to the physician to disclose his or her actual presence, which may only include the critical portions of the procedure, so that the patient better understands the true nature of the surgeon's presence.

Evidence showing that patients do not understand the true nature of concurrency without disclosure can be found in the public's reaction to concurrency. Widespread reactions of government, hospitals, and the general public indicate that many people were surprised by the existence of concurrency in today's medical practice. Furthermore, the reaction to concurrency was largely negative - the practice itself was called into question. In general, patients' previous idea of the nature of surgery did not include concurrency, and when the truth of concurrency was uncovered, widespread reaction occurred as a result. Basically, if people are surprised when they discovered concurrency, and reacted to it with disapproval and caution as they did, this indicates that their perception of the nature of surgery was changed by their discovery of concurrency.

These specific reactions will be discussed in Chapter Three. Specifically, the response of hospitals, of medical associations and governing agencies, and of the public

to concurrency will be analyzed and categorized. For now, it is only important to know that these reactions exist and give support to the fact that concurrency affects the nature of surgery because it indicates inconsistency between patient expectation and reality.

In addition to disclosure, the other elements of autonomous action relating to understanding still apply – these are competence and understanding. As discussed earlier, competence is a highly debated element of informed consent, and I do not discuss what makes a patient competent to consent here. Furthermore, a patient must not just hear disclosure, but must also understand what that disclosure entails. The doctor still has the responsibility to check for competence before disclosure, and understanding after. For example, once the physician discloses concurrency, they must verify that the patient does not misunderstand concurrent surgery as something else. They must also ensure that a patient is competent to understand.

On the Possibility of Manipulation and Coercion

Informed consent also must be voluntary to be an autonomous consent. Voluntariness specifically comes from the requirement of non-control in an autonomous action. Both manipulation and coercion are forms of control of the patient. In other words, disclosure of concurrency alone is not enough to guarantee that the decision to operate concurrently is an autonomous decision. The attending physician also must not manipulate or coerce the patient, and simple disclosure is not enough.

Firstly, a physician must not coerce the patient into agreeing to concurrent surgery. Coercion occurs if someone influences another by presentation of a threat of

harm that renders the person unable to resist acting to avoid it.[17] In this case, if the attending threatens the patient with any form of harm if the patient does not consent to a concurrent surgery, even if the physician discloses concurrency, than the consent is still not valid as autonomous. Here, the autonomy of the patient is hindered because the patient is no longer able to make a free decision since their decision is controlled by threat of harm. Coercion can occur in many ways, as any intentional threat to the patient's safety renders a decision nonautonomous, but generally, an instance of coercion would occur when a doctor tells or implies to the patient that he or she will harm the patient if they do not consent to surgery upon disclosure of concurrency.

Manipulation is less extreme than coercion, but still renders a patient's consent invalid and nonautonomous and thus also must be avoided. As stated earlier, manipulation is where a person's actions unduly influence another person's autonomy by circumvention of a person's own ability to control their own action.[18] An example of manipulation related to concurrency is when a doctor purposefully expresses disdain or unwillingness to discuss concurrency upon disclosure. For example, take the case of a patient being unsure about undergoing a surgery when they hear that it will be concurrent. Then, the doctor tells the patient that if they don't agree with the concurrency, that they can simply elect to not do the surgery and find another surgeon. The doctor does not offer to help the patient find another nonconcurrent provider, does not offer to change the schedule so that the surgery is nonconcurrent, and does not attempt to persuade the patient to undergo the operation despite the concurrency. This is manipulation because the doctor is using his or her ability to withhold lifesaving help to

[17] Beauchamp and Childress, *Principles of Biomedical Ethics,* 261.
[18] Ibid.

the patient to manipulate the patient into consenting anyway. If the patient is pressured into consenting by the doctor only because of this hassle and deception, then the patient's decision is not autonomous.

Physicians should also be aware of the potential for structural inequality to increase potential for manipulation. Embedded in social structures, like wealth, class, education level, and race, is an increased susceptibility to marginalization by others who hold more social power through these same structures. For example, a patient who is uncomfortable with concurrent surgery and has a low income and health insurance with low benefits may be more apprehensive about consenting to a high-cost specialized medical procedure. A lower amount of the above manipulation may unduly influence them, showing increased vulnerability. Similar considerations for other social inequalities must be considered.

Instead, if a patient is reluctant to undergo a concurrent procedure, the doctor should persuade the patient to reconsider, perhaps by telling why the concurrency should not affect the outcome of the procedure through explanation of the process, appeal to empirical evidence, or clarification of its justice-based benefits. The doctor should highlight that it is not essential for him or her to be physically present during the opening and closing portions because the other doctors in the room are fully qualified to operate despite the attending being elsewhere. If the patient is still resistant, despite the low probability of adverse effects, than the doctor should respect the patient's decision to not undergo the concurrent operation. From here, the doctor should still attempt to provide the patient with care, either by referral to another provider or by modification of scheduling and plans so that the patient's procedure is not overlapped. As stated, the

doctor should not manipulate the patient into receiving concurrent surgery anyway by threatening or implying that the patient will be harmed by not consenting. This would lead to coercion or manipulation and would invalidate the consent.

In conclusion, informed consent is required to respect the autonomy of a patient to choose their own destiny and to control their own health. I show that disclosure is required in the case of concurrent surgery because concurrency affects the nature of the procedure itself. This need to disclose is independent of the consequences of concurrency. Furthermore, I maintain that in addition to disclosure, the doctor cannot manipulate or coerce a patient into receiving concurrent surgery when the patient expresses non-approval of the concurrency.

Chapter 3: Current Responses to Concurrent Surgery

Concurrent surgery is a current issue in the public arena. The practice has only in the past year or two come into the public eye as an issue worthy of exploring and critiquing. Beforehand, concurrent surgery was a quiet and little talked about aspect of surgery in large teaching hospitals. Hospitals, insurance companies, and regulatory medical associations did not all include concurrency in the informed consent process, as there was neither consensus nor discussion on whether or not the practice needed consent, or whether or not it entailed risk.

The Boston Globe Spotlight report on concurrent surgery was the first to bring the practice into consideration on the large public stage.[1] After this initial report, public debate and legislative action began. In addition, hospitals put forth official statements on concurrent surgery and informed consent, and medical associations representing groups of physicians put forth their own statements on the topic within their official principles of healthcare. All of these responses constitute reactions to the issue of concurrent surgery and informed consent, and each should be considered in the discussion on the controversy.

In addition, these public reactions show that the average patient does not know of the true nature of concurrent surgery. In the eyes of the everyday patient, concurrency was not considered common practice, even though this is not true in many large teaching hospitals. Furthermore, the largely critical response toward concurrent surgery and the widespread calling for disclosure indicates that the nature of surgery is affected by concurrency. Clearly, the large reaction indicates that the public thinks it is an important

[1] Abelson et al., *Clash in the Name of Care*.

aspect of surgery because many patients did not know that the true nature of surgery may include concurrency. All of this lends support for disclosure of concurrency.

The Public Response

The response to concurrent surgery and informed consent was large enough to make hospitals institute and concretize their own policies, and for regulators and professional organizations to state their own opinions and own reviews. However, all of this was largely in response to the public outcry, which can be seen as the root cause of regulatory, hospital, and governmental response.

One way to gauge public response is analyzing public comments to the *Boston Globe* articles published about concurrent surgery, starting with the "Spotlight Report" special investigation, and continuing with post-report updates. These comments are numerous and primarily show disapproval of concurrent surgery. In an article about the nation-wide practice of concurrent surgery outside of MGH, all of the 58 comments were against concurrent surgery or for disclosure.[2] Another report telling that Mr. Meng, the patient in the *Boston Globe* article, did not win his malpractice suit had 55 of its 58 comments against concurrent surgery. Two of the 58 were neutral (not taking a side), while the other 2 comments were in support of the jury's ruling against malpractice.[3]

---

[2]Jenn Abelson, Jonathan Saltzman, and Liz Kowalczyk, "Concurrent Surgeries Come Under New Scrutiny," *The Boston Globe*, (December 20, 2015), accessed April 1, 2017, https://www.bostonglobe.com/metro/2015/12/19/concern-over-double-booked-surgeries-emerges-national-issue-for-hospitals/6IjRw2WkDYdt5oZljpajcO/story.html#comments.

[3] Jonathan Saltzman, "Double Surgery Did Not Cause Man's Quadriplegia, Jury Finds," *The Boston Globe*, (January 30, 2017), accessed April 1, 2017, https://www.bostonglobe.com/

Finally, only 1 of the 60 comments on an article reporting on the Senate Finance Committee report on concurrent surgeries was not against the practice.[4]

It is important to note that these comments do not indicate much about widespread opinion on the practice, as only those that feel strongly enough to comment on these articles will actually do so. Furthermore, many of these comments can be swayed by the bias in the article, which are all against concurrent surgery. However, the lack of contradictory support foretells that in general, the people who read the *Boston* Globe articles and are thus aware of concurrent surgery are likely to disapprove of the practice.

Finally, Massachusetts was the first state to take legislative action as a result of the debate of concurrent surgery and consent. After the widely shared *Boston Globe* report, the governor signed an executive order telling state regulating agencies and boards to review their rules and policies on patient safety protection. The regulating agencies responded with a regulatory rule which was approved by the Massachusetts Board of Registration in Medicine and needs to be approved by other state medical boards and the governor before taking effect. The rule requires surgeons to document in the medical record when they enter and exit surgeries to increase accountability with the Medicare requirement that surgeons be present for the critical portions of overlapping medical

---

metro/2017/01/30/surgeon-failed-inform-patient-about-double-booked-surgery-jury-finds/
xzWz0hrRNCDea0vYetugzK/story.html#comments.

[4] Jonathan Saltzman and Jenn Abelson, "Senate Committee Calls for Ban on Surgeons Conducting Simultaneous Operations," The Boston Globe, (December 6, 2016), accessed April 1, 2017, https://www.bostonglobe.com/metro/2016/12/05/senate-committee-calls-for-ban-surgeons-doing-simultaneous-operations/EYjO9jiAfLYJsliIrdY4LO/story.html#comments.

procedures. The rule also requires that surgeons indicate a backup surgeon should they have to leave an operating room early.[5]

It is important to note that this rule does not require consent of the patient for surgeries that overlap in the opening and closing, but it does effectively prohibit surgeons from overlapping the critical portions of the procedure with any portion of another. It is important to note that this regulation was passed executively and not legislatively. However, the fact that it was passed with little internal or external resistance and high public support indicates that the public approves of regulating concurrent surgery. Thus, this gives support to the second chapter's argument for disclosure. In addition to the public's reaction, hospitals, Medicare/Medicaid regulators, and the Senate Finance Committee also responded.

Medical Association and Medicare/Medicaid Response

Firstly, it is important to state the positions on concurrent and overlapping surgery which medical associations and medical insurance regulators have taken. These institutions are very important because they generally set healthcare precedents across the United States. The American College of Surgeons (ACS) has a goal of setting "optimal and ethical" standards of care by publishing general statements and statements of principles.[6] By accrediting healthcare providers, including hospitals and surgeons, as well

[5] Jonathan Saltzman, and Jenn Abelson, "State Acts on Simultaneous Surgeries," *The Boston Globe*, (January 7, 2016), accessed April 1, 2017, https://www.bostonglobe.com/metro/2016/01/07/massachusetts-require-surgeons-document-operating-room-comings-and-goings/2uIu1IDhmz4K8CRaJtL1vL/story.html.

[6] American College of Surgeons, *Statements on Principles.*

as monitoring the implications of healthcare regulations, the ACS is an authoritative body of surgeons on procedural and ethical issues relevant to surgery. Within its most recent update of its statements on principles revised on April 16th, 2016, months after the Boston Globe Spotlight report, the ACS took a definitive stance on concurrent surgeries.

In a section entitled, "The Operation - Intraoperative Responsibility of the Primary Surgeon," the ACS maintains that surgeons must be present for all key or critical portions of a surgical case, thereby outlawing completely concurrent surgeries where the two critical portions overlap.[7] However, this extreme practice has never been a standard, and is widely considered to be unsafe.

The ACS then goes on to distinguish between concurrent surgeries where only the opening of the second surgery overlaps with the closing of the first, and where the critical portion of surgery overlaps with the opening or closing of the first. In the first scenario, the ACS says that the attending can leave the closing process to qualified surgeons in the room, while in the second case, the ACS says that the attending surgeon must assign immediate availability to another surgeon, meaning that another attending must be designated. In both cases, the ACS says that the patient must be informed. Furthermore, the code of conduct says that this practice should never take place if it hinders the timely and seamlessness flow of either procedure.[8]

This statement of the ACS backs up my above stance on concurrent surgery and informed consent. As I argued, according to core principles, the practice of concurrent surgery can be safely carried out, as long as proper informed consent is received from the

[7] Ibid.
[8] Ibid.

patient. My conclusion is consistent with the above suggested action of the American College of Surgeons.

A second important stance relevant to concurrent surgery and informed consent is Medicare and Medicaid regulations on concurrent surgery. The Centers for Medicare and Medicaid (CMS), the federal bureau which oversees Medicare and Medicaid, develops Conditions of Participation (COP) which care-giving institutions must follow in order to be reimbursed by Medicare and Medicaid. Since Medicare and Medicaid are so widely used, most of the hospitals and healthcare providers in the country comply with Medicare and Medicaid standards in order to be reimbursed by Medicare and Medicaid.

According to these guidelines, within teaching hospitals the attending surgeon must be present for all key or critical portions of the procedure. Furthermore, during non-critical portions of the procedure, if the attending is not immediately present, he or she must be "immediately available" to return to the procedure.[9] The report goes on to say that when two procedures are overlapped, another attending physician must be designated to immediately assist the resident or fellow in the first surgery should the need arise.[10]

These guidelines are consistent with the ACS statement on principles, but are not as extensive. In both cases, the attending physician cannot overlap the critical or key portions of any two procedures, and in both cases, a backup surgeon must be designated if the key portions of the second procedure are initiated before the first procedure has ended. However, the Medicare/Medicaid guidelines do not mention anything of the need for informed consent for either the "critical portion overlap" or for the "opening and

[9] Centers for Medicare and Medicaid Systems, "Medicare Claims Processing Manual," Chapter 12 - Physicians/Nonphysician Practitioners, 100.1.2.A, accessed May 3, 2017, https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Downloads/clm104c12.pdf.

[10] Ibid. 100.2.2.A.2.

closing overlap." Because the CMS manual carries regulatory force (hospitals must follow the guidelines to receive Medicare and Medicaid reimbursement), informed consent is not yet regulated.

Hospital Response

Beneath broad federal regulation and professional recommendation are actual care-giving institutions - hospitals across the nation which perform concurrent surgery. No matter what the public regulators and professional organizations recommend for this issue, it will be the hospitals and their surgical staff which ultimately change the practice of concurrent surgery and informed consent. These reactions are largely a response to increased public debate. Teaching hospitals which perform these surgeries were quick to publish policies and explanations as to why concurrent surgery is used. This would provide information for worried and concerned patients.

MGH, as the main target of the *Boston Globe* article exposing concurrent surgery, is an interesting hospital to focus on since it bore the brunt of the criticism of the *Boston Globe* article. The hospital itself published responses and policies on its website shortly after the Boston Globe Report.[11] MGH's response is generally made up of two components. Firstly, MGH explains why concurrent surgery happens at the hospital in the first place. Here, the hospital cites five reasons, including trauma, optimal use of surgery teams and rooms, access to specialized surgeons, timeliness and availability of services,

[11] "Concurrent/Overlapping Surgery," *The Massachusetts General Hospital*, accessed May 3, 2017, http://www.massgeneral.org/overlapping-surgery/.

and education of residents and fellows.[12] These reasons are very similar to the justice-based arguments for concurrent surgery presented in the first chapter.

The second aspect of this response is the clarification of concurrent surgery in the disclosure portion of the informed consent process. An updated consent form published on the website reads:

> Resident doctors, doctors in a medical fellowship (fellows) and students in medical, nursing and related health care professions receive training here, and may take part in my procedure/surgery. A team of medical professionals will work together to perform my procedure/surgery. My doctor or an attending designee will be present for all the critical parts of the procedure/surgery although other medical professionals may perform some aspects of the procedure as my doctor or the attending designee deems appropriate.[13]

Interestingly, this updated consent form clarifies many aspects related to concurrent surgery without directly disclosing concurrency. A direct disclosure of concurrency would explicitly say that the attending physician may also be the attending on another surgical case. However, the current consent form only infers that an attending may have another simultaneous case. It says that the attending will be present for critical portions of a case while not mentioning that they may be in another operating room otherwise. It is left to the patient to infer that the doctor may have another concurrent case, and thus this consent does not adequately disclose concurrency according to the standard proposed in chapter two.

It is important to note that the transparency of MGH on their actual policy is a step in the right direction. A webpage is dedicated to providing an accurate description and explanation to the practice within the hospital. Furthermore, the form does provide an

---

[12] "About Concurrent/Overlapping Surgery," *The Massachusetts General Hospital*, accessed May 3, 2017, http://www.massgeneral.org/overlapping-surgery/about.aspx.

[13] "Patient Consent to Procedure," *The Massachusetts General Hospital*, accessed May 3, 2017, http://www.massgeneral.org/news/assets/pdf/MGHConsentForm.pdf.

opportunity for the patient to ask questions to the attending surgeon. However, despite this transparency, which is directed at helping patients understand and know the true nature of the surgery they are consenting to, the hospital fails to include explicit disclosure of concurrency in its consent process. Until this is achieved, it is not guaranteed that consent to undergo concurrent surgery is a fully autonomous action as defined in chapter two.

The policies of many other hospitals have changed as a result of the increased public debate as well. In December of 2016, the Senate Finance Committee released a report on the practice of concurrent and overlapping surgery in the field.[14] To do this, they contacted 17 hospitals around the nation and asked them to describe certain aspects of the practice as it takes place in their hospital, including permitted practice, the definition of critical portion, disclosure to patients, the definition of "immediately available," arranging for a backup surgeon, and ensuring compliance with policy. The results of are as follows.

Generally, most of the definitions and prohibitions of the hospitals align with those of the American College of Surgeons. Again, here concurrent surgery occurs when a critical portion of one surgery overlaps with another's opening or closing, and overlapped surgery is when overlap exists between opening and closing only. Overlapped surgery was further clarified as when the surgeon had no reasonable expectation to return to the first surgery, and concurrent surgery as when the assignment of a second surgeon to oversee the first surgery was required. Fifteen of the 17 responses outright banned

[14] Senate Finance Comm., Concurrent and Overlapping Surgeries: Additional Measures Warranted, S. Doc., (2016), accessed May 3, 2017, https://www.finance.senate.gov/imo/media/doc/Concurrent%20Surgeries%20Report%20Final.pdf.

concurrent surgeries, while the rest either had different definitions of concurrent surgery or did not explicitly ban them (although implicit disapproval may have been present).[15]

The definition of the "critical portion" of a procedure also varied by hospital. About half of the hospitals left the critical portion of the procedure open to physician discretion (as did ACS and CMS guidelines), while the other half developed or planned to develop a list of commonly overlapped surgeries with the critical portions explicitly defined. One hospital said that there should be no explicit definition of the critical portions to allow for technological and procedural development within the field.[16] Generally, there should be consensus on the definition of the critical portion of any procedure, whether that be through explicit definitions by the ACS or CMS, or by inner or inter hospital agreement. If it is left up to the surgeon to decide the critical portion, there needs to be a method of overseeing whether or not the surgeon's practices remain safe.

The Congressional Committee also looked into the informed consent policies of these hospitals, and found that only 3 of 14 hospitals reviewed provided any disclosure that the patient's surgery was concurrent. In general, the other hospitals may have disclosed that the attending would be present for key portions of the case, but left where that surgeon would be open-ended.[17] According to my defense of informed consent for concurrent surgery, this clearly represents a shortfall in disclosure of concurrent and overlapped surgery.

Notably, one hospital elected not to change its main consent form to include concurrency, as only 1% of all surgeries in the hospital were overlapped. Instead, the

[15] Ibid., 8.
[16] Ibid., 9.
[17] Ibid., 10.

hospital required its doctors to inform the patient only if their surgery was overlapped, and once they did, to record it in the patient records.[18] This brings up an important concern of many hospitals, that the mention of overlap when there is none could unduly concern patients. This method is one way to get around this problem, while another is to only put the disclosure on the overlapped surgery consent forms, either by use of a different consent form, or by requiring initialing only if applicable.

By the ACS and CMS guidelines, during concurrent surgery the doctor is required to be immediately available should they not be physically present in an operating room, whether they be in another procedure or elsewhere. The definition "immediately available" also varies between hospital systems, possibly due to the lack of extensive definition provided by ACS and CMS. Three hospitals did not define immediately available, while about a third defined immediately available as being "on campus." This definition may lack consistency in practice because hospital campuses vary vastly in size and department location. Another hospital said immediately was 5-15 minutes.[19]

Lastly, designation of a backup surgeon for concurrent surgery is uncommon, as about half of the 17 hospitals analyzed did not require a backup surgeon to be assigned as immediately available once the primary surgeon moved to the second surgery. This is in discordance with the ACS rules, which recommend that a backup surgeon be present. Importantly, however, the ACS rules do not carry the force of law, demonstrating that hospitals may be reluctant to follow guidelines put forth by professional groups like the ACS.

---

[18] Ibid.
[19] Ibid., 12.

All in all, the Senate Finance Committee Report shows that the actual hospital policies which directly control the actions of surgeons toward their patients are inconsistent with the ACS and Medicare/Medicaid rules which directly control the actions of surgeons toward their patients. This is evident by lack of definition of terms like “critical portion,” “concurrent surgery,” and “overlapping surgery,” and of what to disclose in the consent process. A clear decision must be made on concurrent surgery and informed consent, and this decision must be instituted in a way that is equally consistent and regulatable across all hospital systems.

In addition, the Senate Finance Committee Report shows that the public has taken notice of the issue of concurrent surgery as, for the first time, a national agency has investigated the matter. The importance of concurrent surgery and informed consent to such high ranking public offices shows that the issue has the potential to significantly affect many American patients.

This also indicates that concurrent surgery does influence the nature of a procedure significantly enough that it warrants consent. There was such a large public reaction that the federal government began an investigation on the issue. People were disgruntled enough at the difference between their perception of surgery and the true nature of concurrency that their response prompted federal review.

Summarizing this discussion on the recent response to concurrent surgery, I have shown how governmental agencies including the Senate Finance Committee and the Center for Medicare and Medicaid Systems have responded to public discussion and have influenced hospital policy as a result. Generally, public response, especially to the *Boston Globe* report on concurrent surgery at MGH has largely been negative. In response, the

Centers for Medicare and Medicaid Systems' rules on concurrent surgery, specifically requiring physicians to be present for the critical portions of the procedure, has been referenced by many hospitals in their responses. In addition, the American College of Surgeons has changed their official guidelines to both prohibit concurrent surgeries where the critical portions overlap, and to limit surgeries where the opening and closing overlap. The Senate Finance Committee, in the largest review of the actual practice of concurrent surgery to date, compared actual hospital guidelines to the CMS and ACS guidelines. Their review shows a trend of hospitals toward limiting concurrent surgery, but also uncovers large discrepancies between hospitals and ACS guidelines.

Conclusion

I have argued that concurrent surgery should be allowed and that the patient should need to give informed consent for it. First, I put forth four moral principles that relate to this issue and to medicine in general. These are nonmaleficence, beneficence, justice, and respect for autonomy, and each of these arises from the common morality and should be universally recognized. I have put forth substantial empirical evidence indicating that concurrent surgery does not increase risk of complications, showing that the practice is consistent with nonmaleficence and beneficence because it does not introduce significant risk. In addition, I have provided the justice-based benefits of concurrent surgery. These include greater patient access -as doctors can increase their patient load and surgery numbers - and potential to increase future physician training through an increased number of well-trained doctors. These constitute a benefit to concurrent surgery which bestows validity to the practice.

In my second chapter, I showed how respect for autonomy is the basis of the informed consent process which attempts to ensure that a patient's decision to undergo a medical treatment is an autonomous action. To act autonomously in general, a person must act with (1), intentionality, (2) with understanding, and (3) without controlling influences. The five elements of the informed consent process include disclosure, comprehension, voluntariness, competence, and consent. Each of these helps ensure the three elements of autonomous action. Specifically, I argue that concurrency must be disclosed and understood with an explanation as to why the procedure is done and how it is safe. This is because concurrency fundamentally changes the nature of procedure

because the primary attending will not be physically present for all of the procedure, only the principal portions. This goes against the typical assumption that doctors are present for the entire surgery, and thus to avoid confusion, the actual condition of concurrency must be disclosed and explained so that the nature of surgery is clear to the patient.

After concurrency is disclosed, considerable measures should be taken to make sure that the other four requirements of informed consent are met, including verification of comprehension, competence, non-manipulation, and non-coercion of the doctor. Comprehension and competence are needed to ensure that the patient understands the action of surgery fully, while non-manipulation and non-coercion ensure that the action is voluntary: without controlling influences.

Thirdly and finally, I discussed the reaction to the increased debate of concurrent surgery, which included the negative response of the public to the practice, the governmental response by the Senate Finance Committee, the response by an official body of surgeons, and the shift in hospital policy toward clearer outlining of policy.

All in all, this analysis provides an ethically consistent argument for a particular course of action for a practice that is in flux as the public, hospitals, and regulators consider the issue for the first time. The first two chapters of my thesis attempt to come to an ethical or course of action which can be used moving forward to determine proper policy. The third chapter of my thesis attempts to summarize response to the topic in order to form a base from which those involved in medicine can use to make future decisions.

In addition, there are some important takeaways from this discussion on concurrent surgery which could be useful in the future. Firstly, an increase in education

would foster an easier informed consent process, especially with better scientific education. This is true for the general education of the public and the better ability of doctors to educate their patients. General education might increase patients' ability and motivation to understand the procedures being done to them because they would better comprehend the reasons why. Ability and willingness to understand the risk, benefit, and context of a medical treatment should yield more informed decisions that make autonomous action easier.

Doctors should make a greater effort to educate patients and be open to them. The doctor-patient relationship can only function with trust, and if an increasingly educated public is not met with open, transparent medicine, the public may become increasingly suspicious of doctors that hide the specifics of their work behind closed operating room doors. The strong negative reaction of the public to the *Boston Globe* article highlighting concurrent surgeries shows evidence for this instability. Also, doctors should not be afraid of patient reaction to the truth. If patients trust their doctors enough to put their lives in their hands, doctors should also trust that patients can understand and agree with their procedures if they have good reasoning, as with the case with concurrent surgery. If not, and the patients decide against a concurrency, they have every right to do so, as patients have the right to act autonomously.

Secondly, more empirical studies on concurrent surgery should be undertaken to ensure that the practice does not introduce risk in any specialty or hospital. For example, a retrospective study across multiple hospitals including records from all departments and surgery types would indicate whether any specific area of medicine shows increase risk. In addition to the verification of non-risk, these studies could also be designed to show

increased patient throughput efficiency and could show the justice-based benefits to the practice. Studies could also be designed to evaluate the consent process for patients to show what hospitals and doctors are telling patients.

Thirdly, those involved with the medical profession – regulators, healthcare system decision makers, and physicians – should consider the transparency of healthcare and how trust may be dependent on it. The issue of concurrency largely represents a miscommunication between those who provide healthcare and those that receive it. Although patients may not ever understand the process of surgery to the extent that providers do, and may not need to to achieve adequate understanding of the nature of surgery, providers clearly were not disclosing to patients an aspect of surgery considered controversial by many. This hiding of details, either intentional or unintentional, may erode patient trust as patients may believe that doctors are cutting corners or intentionally hiding actions that patients may disapprove of. Without proper communication of this information, skepticism of the intentions of doctors may grow and doctors could find it harder to convince patients to accept medicine that could help them. Whether or not the controversy of concurrency has negatively affected this trust in a measurable way has yet to be seen, but others should seek empirical evidence to shed light on this potential effect.

Finally, steps should be taken to ensure that the proper course of action for concurrent surgery is taken. The response of hospital policy to the governmental and professional body recommendations for concurrent surgery should be carefully monitored. As discussed, there should be explicit disclosure of concurrency and the reasons for it. Hospitals may follow recommendations of the government and the American College of Surgeons voluntarily. However, if hospitals are shown to ignore

these guidelines by either practicing concurrent surgeries in an unsafe manner through improper overlap, or by not requiring disclosure of concurrency in the consent process, then regulatory action may need to be taken by either the Centers for Medicare and Medicaid Systems, or by another executive body. Judicial and legislative action can also be taken to ensure the same outcome.

In the end, I hope that policy makers, healthcare providers, and most importantly, the patients that undergo concurrent surgeries can use my argument for concurrent surgery and informed consent to arrive together at a decision that respects the best interests of all.

Bibliography

Abelson, Jenn, Jonathan Saltzman, and Liz Kowalczyk. "Concurrent Surgeries Come Under New Scrutiny." *The Boston Globe*. (December 20, 2015). Accessed April 1, 2017. https://www.bostonglobe.com/metro/2015/12/19/concern-over-double-booked-surgeries-emerges-national-issue-for-hospitals/6IjRw2WkDYdt5oZljpajcO/story.html#comments.

Abelson, Jenn, Jonathon Saltzman, Liz Kowalczyk, and Scott Allen. "Clash In The Name of Care." *Boston Globe*, October 25, 2015. Accessed May 3, 2017. https://apps.bostonglobe.com/spotlight/clash-in-the-name-of-care/story/.

"About Concurrent/Overlapping Surgery." *The Massachusetts General Hospital*. Accessed May 3, 2017. http://www.massgeneral.org/overlapping-surgery/about.aspx.

American College of Surgeons. *Statements on Principles*: The Operation—Intraoperative Responsibility of the Primary Surgeon. Accessed April 1, 2017. facs.org/about-acs/statements/stonprin/.

Beasley, Georgia M., Theodore N. Pappas, and Allan D. Kirk. "Procedure Delegation by Attending Surgeons Performing Concurrent Operations in Academic Medical Centers: Balancing Safety and Efficiency." *Annals of Surgery* 261, no. 6 (2015).

Beauchamp. Tom L. and James F. Childress. *Principles of Biomedical Ethics.* 7th ed. (New York: Oxford University Press, 2013).

Brown, Michael J., Arun Subramanian, Timothy B. Curry, Daryl J. Kor, Steven L. Moran, and Thomas R. Rohleder. "Improving Operating Room Productivity via Parallel Anesthesia Processing." *International Journal of Health Care Quality Assurance* 27, no. 8 (2014).

Christman, John. "Autonomy in Moral and Political Philosophy." *The Stanford Encyclopedia of Philosophy.* Spring 2015. Accessed February 21, 2017.

Centers for Medicare and Medicaid Systems. "Medicare Claims Processing Manual." Chapter 12 - Physicians/Nonphysician Practitioners. 100.1.2.A. Accessed May 3, 2017. https://www.cms.gov/Regulations-andGuidance/Guidance/Manuals/Downloads/clm104c12.pdf.

"Concurrent/Overlapping Surgery." *Massachusetts General Hospital.* Accessed February 12, 2017. http://www.massgeneral.org/overlapping-surgery/.

Edelstein, Ludwig. *The Hippocratic Oath, Text, Translation and Interpretation.* (Baltimore: Johns Hopkins Press, 1943). Supplement 1.

Eyal, Nir. "Informed Consent." *The Stanford Encyclopedia of Philosophy.* Fall 2015. Edward N. Zalta (ed.). Accessed February 22, 2017.

Faden, Ruth R. and Tom L. Beauchamp. *A History and Theory of Informed Consent*. (Oxford: Oxford University Press, 1986).

Frankena, William K. *Ethics*. 2nd ed. (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1973).

Gert, Bernard and Joshua Gert. "The Definition of Morality." *The Stanford Encyclopedia of Philosophy.* Spring 2016. Accessed February 19, 2017. https://plato.stanford.edu/archives/spr2016/entries/morality-definition/.

Langerman, Alexander. "Concurrent Surgery and Informed Consent." *JAMA Surgery* 151, no. 7 (2016).

Malangoni, Mark A. "Assessing Operating Room Efficiency and Parallel Processing." *Annals of Surgery* 243, no. 1 (2006).

McKenna, Robert J., Ward Houck, and Clark Beeman Fuller. "Video-assisted Thoracic Surgery Lobectomy: Experience with 1,100 Cases." *The Annals of Thoracic Surgery* 81, no. 2 (2006).

McLaughlin, Linda A., and Kathryn L. Braun. "Asian and Pacific Islander Cultural Values: Considerations for Health Care Decision Making." *Health & Social Work* 23, no. 2 (1998): 116-126.

Mello, Michelle M. and Edward H. Livingston. "Managing the Risks of Concurrent Surgeries." *JAMA* 315, no. 15 (2016).

"Patient Consent to Procedure." *The Massachusetts General Hospital*. Accessed May 3, 2017. http://www.massgeneral.org/news/assets/pdf/MGHConsentForm.pdf.

Saltzman, Jonathan. "Double Surgery Did Not Cause Man's Quadriplegia, Jury Finds." *The Boston Globe*. (January 30, 2017). Accessed April 1, 2017. https://www.bostonglobe.com/metro/2017/01/30/surgeon-failed-inform-patient-about-double-booked-surgery-jury-finds/xzWz0hrRNCDea0vYetugzK/story.html#comments.

Saltzman, Jonathan and Jenn Abelson. "Senate Committee Calls for Ban on Surgeons Conducting Simultaneous Operations." The Boston Globe. (December 6, 2016). Accessed April 1, 2017. https://www.bostonglobe.com/metro/2016/12/05/senate-committee-calls-for-ban-surgeons-doing-simultaneous-operations/EYjO9jiAfLYJsliIrdY4LO/story.html#comments.

Saltzman, Jonathan, and Jenn Abelson. "State Acts on Simultaneous Surgeries." *The Boston Globe*. (January 7, 2016). Accessed April 1, 2017. https://www.bostonglobe.com/metro/2016/01/07/massachusetts-require-surgeons-document-operating-room-comings-and-goings/2uIu1IDhmz4K8CRaJtL1vL/story.html.

Senate Finance Comm. Concurrent and Overlapping Surgeries: Additional Measures Warranted. S. Doc. (2016). Accessed May 3, 2017. https://www.finance.senate.gov/imo/media/doc/Concurrent%20Surgeries%20Report%20Final.pdf.

Taheri, Javad, Ziad Gellad, Dariele Burchfield, and Kevin Cooper. "A Simulation Study to Reduce Nurse Overtime and Improve Patient Flow Time at a Hospital Endoscopy Unit." *Proceedings of the 2012 Winter Simulation Conference (WSC)*. IEEE, 2012.

Yount, KW, JR Gillen, IL Kron et al. "Attendings Performing Simultaneous Operations in Academic Cardiothoracic Surgery Does not Increase Operative Duration or Negatively Affect Patient Outcomes." Paper presented at AATS annual meeting. April 25–29, 2015. Seattle, WA. Accessed November 1, 2016. http://aats.org/annualmeeting/Program-Books/2014/2.cgi.