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Complications—A Surgeon's Notes on an Imperfect Science By Atul Gawande, M.D. New York, Metropolitan Books, Henry Holt & Co., 2002. Pages: 269. Price: \$24.

Complications: A Surgeon's Notes on an Imperfect Science is a collection of stories based on the experiences of a surgical resident at a major teaching hospital in Boston. The author, Atul Gawande, M.D., presents a refreshingly humanistic approach to both surgery and to the care of patients in general. This book is for all readers, medical and nonmedical, young and old alike. In fact, even my 17-yr-old, thinks-he-wants-to-be-a-doctor, son is engrossed in the book. The central tenet of the book is that medicine is an imperfect profession. Physicians are not without failings, which include personal, professional, and technical shortcomings, and individual chapters address each of these sensitive issues. Moreover, patients are human, and thus imperfect, too. A technically perfect operation does not always produce a good outcome. Patients do not always comply with their physician's advice. While hoofbeats usually mean horses, occasionally a zebra will appear. And just as physicians do not always make wise decisions, patients in kind often fail to act in their own best interests.

The writing style is crisp, concise, and skillful. Gawande, a regular contributor of science and medical articles to *The New Yorker*, demystifies complex topics of anatomy, physiology, and pharmacology in a manner that is technically correct and understandable by those with limited or no medical background, while still maintaining an air of compassion. In the chapter entitled "A Queasy Feeling," we read a marvelous description of the physiology of nausea and vomiting, but the reader also experiences a personal glimpse into the hellacious suffering of a woman experiencing a pregnancy complicated by unrelenting *hyperemesis gravidarum*. Anyone who has ever had their face turn red in a social situation will identify with the predicament described in the chapter "Crimson Tide," the saga of a television news broadcaster whose very livelihood is threatened by frequent, severe, and unprovoked blushing. What follows is not only a superb description of the physiology of blushing, and a surgical procedure uniquely developed to cure this problem, but also moral and teleologic implications of this universal human emotion. Other chapters address topics such as "flesh-eating" bacterial infection, morbid obesity and the development of bariatric surgery, the care of the terminally ill patient, medical research and informed consent, and the role of the autopsy in modern-day medical care.

Much in this book involves topics directly related to anesthesiology. The opening chapter, "Education of a Knife," will ring true to every anesthesia resident, as the author meticulously describes the learning process of becoming proficient at central line insertion. The surgical intern describes watching his senior resident: "She drew back on the syringe. And she was in. You know because the syringe filled with maroon blood. 'If it's bright red, you've hit an artery,' she said. 'That's not good.'" (p 12) The theme of central line insertion, however, is merely metaphor, as this chapter delves into much deeper concepts of medical education—how residents learn and how attending physicians or senior residents teach. "When Doctors Make Mistakes" is a tribute to the specialty of anesthesiology, describing the advances in patient safety and monitoring developed by anesthesiologists, including capnography, pulse oximetry, and the development of medical simulation and its role in physician education. This chapter even includes acknowledgment that the single word contained inside the official seal of the American Society of Anesthesiologists is "Vigilance." How many surgeons are aware of that? For that matter, how many anesthesiologists? (Not many, as an informal survey of both faculty and residents in my own department would indicate.) Particularly gripping is the story of the trauma patient arriving in the emergency department in need of emergent tracheal intubation. The unsupervised surgical resident, attempts, without success, to place an oral endotracheal tube. Subse-

quent attempts at a surgical airway are fraught with technical difficulties. Finally, an attending anesthesiologist arrives and performs a successful intubation. The follow-up to this case also is a very realistic and accurate description of the all-too-familiar "dance" that occurs at departmental morbidity and mortality meetings: "The successful M&M presentation inevitably involves a certain elision and a lot of passive verbs. No one screws up a cricothyroidotomy. Instead, 'a cricothyroidotomy was attempted without success.' The message, however, was not lost on anyone." (p 59) Another exemplary chapter of interest to anesthesiologists, entitled "The Pain Perplex," includes both historical vignettes and modern day concerns regarding the treatment of chronic pain, including references from Descartes, to A- δ and C-fibers, to gabapentin. This chapter explores the misery in the lives of patients so afflicted and is part pharmacology, part psychology, and part philosophy—hence it is a fairly accurate reflection of a typical pain clinic.

The book identifies many actual physicians by name, including several prominent anesthesiologists, such as Henry Beecher, Ellison Pierce, David Gaba, among others, and their contributions to the development of our specialty. In addition to being a pleasure to read, it is a brilliant and provocative expose into the realities of imperfect physicians attempting to care for imperfect patients. The book is filled with compassion, written with elegance and respect, and punctuated with bits of humor. This reviewer recommends that all anesthesiologists take a few hours, put down the latest medical textbook, and read "*Complications*." You won't be disappointed.

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Holding Court with the Ghost of Gilman Terrace: Selected Writings of Ralph Milton Waters, M.D. Edited by David C. Lai M.D. Park Ridge, Illinois, The Wood Library-Museum of Anesthesiology, 2002. Price \$30.

My mother always wanted to be a history teacher—and her enthusiasm rubbed off. As members of the history community know, I'm a fan of good historical articles. Such work is not an esoteric luxury—what we know about our origins and forebearers helps define who we are today. Find me a neurosurgical resident who doesn't know Harvey Cushing, or a medicine resident who is unaware of Osler. This book deals with someone who has a place in anesthesia that is akin to these others, not because of a great body of original work, but because he, perhaps more than any other individual, set the stage for anesthesia as a true medical profession and academic discipline. Many of the leaders in our specialty today can directly or indirectly trace their lineage back to this man and his department in Madison, Wisconsin. I was trained by Dr. Richard Kitz, who trained under Dr. Emmanuel Papper, who trained under Dr. Emory Rovenstine—who trained under Waters. I work in a department founded by Stuart Cullen, who was trained by Rovenstine, and who in turn trained Ted Eger, John Severinghaus, Bill Hamilton, etc. And the branches of the tree get longer every year.

In one sense, this book is tough to review. It's not a narrative, it's not a story, and it makes no attempt to synthesize or summarize. It's not really about Ralph Waters but rather is a compilation of original papers, book chapters, essays (some on history), and other materials by Waters himself. It's not "history" but rather original historical source material. However, anyone who wants to know "where we came from" owes it to himself or herself to read this book. This is not the first such publication from the Wood Library and Museum—but it's a wonderful

example of how the WLM serves our profession by preserving and disseminating material that would otherwise be exceptionally difficult for the average anesthesiologists to find.

Ralph Water's career began at a time when the concept of "anesthesiologist" didn't really exist, and ended it in the 1960s when the concept was well established—in large part through his own efforts. The single factor that struck most me forcefully when reading the various items was Waters' remarkable wisdom, not about medicine or anesthesia *per se* (although that's pretty impressive), but about those aspects of personal and intellectual behavior that are necessary for a person or group of persons to call themselves "professional" or to define themselves as a specialty. He tells us about the time when physicians who wished to "specialize" did little more than hang out a shingle identifying themselves as specialists; there were very few formal residencies and no "specialty fellowships." Thereafter, it was trial and error—with the patient being the unwitting victim. When Waters started out in general practice in Sioux City, Iowa (in 1913), there were no "anesthesiologists" and almost no one who "unofficially" specialized in the delivery of anesthesia (certainly not in the midwest). Anesthesia was delivered by everyone from office secretaries to nurses, to students—basically anyone who could be instructed in how to pour ether onto a gauze-covered mask. For unclear reasons, Waters was unsatisfied with this situation and decided to become one of these self-taught specialists, practicing medicine himself and also providing anesthesia services to his fellow physicians. Over time, the latter became his sole activity. Perhaps he simply saw an opportunity. To improve his skills, he even spent a few months with Francis McKesson in Cincinnati, the closest he came to any formal training in anesthesia. But as early as 1919, he began speaking out in support of the need for developing anesthesia as a medical specialty. In a 1918 presentation at the South Dakota State Medical Association entitled "Why the Professional Anesthetist" (published in *The Lancet* in 1919), he stated, "if by chance, any doctor present can influence a medical-school curriculum one iota toward better instruction in the administration of anesthetic drugs, both general and local, I pray that he may exert all that influence. By that means only can the doctor of medicine of the future be

saved the necessity, which must be yours and mine, of digging it out for himself." In 1927, he had his own opportunity to do just this, when he moved to Madison, Wisconsin, to become the physician in charge of anesthesia at the State Hospital (the predecessor of the University of Wisconsin Hospitals) and soon thereafter to develop what is almost certainly the first academic department of anesthesia in the United States. If judged by his progeny, Waters may be the single most successful department chair ever.

I won't attempt to summarize all of the remaining contents of the book. There are, however, some fascinating items. Consider the following from a paper entitled "A New Intratracheal Catheter," published with Arthur Guedel in *Anesthesia and Analgesia* in 1928: "case 3: Dog of about twenty pounds was anesthetized with ethylene. . . . The catheter was introduced and (the endotracheal tube cuff) inflated. The apparatus was connected and the dog, together with soda lime container, were complete submerged in water and kept there for a period of 1 h (!). During this time there was nothing unusual in the respiration, or pulse or the general conduct of the animal under anesthesia. . . . (after removal from the tank and emergence from anesthesia, the dog) . . . stood up, shook the water off, and lay down for a nap."

Waters was one of the legitimate pioneers of endotracheal anesthesia—something we take for granted today. There are other examples of areas in which he was a pioneer. . . . Again, however, the real heart of this book is not Dr. Water's original researches—but rather his thoughts, observations, and recommendations, which are as relevant to our specialty today as they were in 1920, 1930, 1940, 1950, and 1960.

I haven't had this much fun with a book in a long time. I think it belongs on the shelf of every anesthesiologist.

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