

Arthur E. Guedel Memorial Anesthesia Center

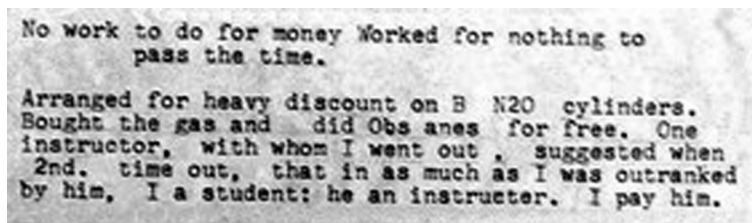
"Anesthesia"

By Merlin Larson, M.D.

On May 26, 1928, Ralph Waters wrote a letter to Arthur Guedel with the comment that Guedel should not write a book about something that he could not define. In Waters' own words:

You can't write a book about something you don't know what is. You don't know what is anesthesia. Therefore I'm sending you a definition: "Anesthesia is the reduction of reflex irritability to such a point as to make a required piece of surgery possible without pain or annoyance to the patient. Although Novocain may completely relieve pain, unless it is accompanied by sufficient mental sedation for that patient is not anesthesia. If the surgery can be done by mental suggestion or hypnotism, these measures for that case and patient are anesthesia."

Guedel answered Waters' letter within one week. As Guedel's correspondence often did, the letter contained abundant speculation about a number of subjects. He did not expand upon the subject of "what is anesthesia." Guedel was a practical man and seemed to be mostly concerned about actually giving anesthetics rather than thinking about what the word meant. In the early days of anesthesia it was not easy to find paid work. In his dairies he notes that he often provided anesthetics without pay (Figure 1), simply because he enjoyed the work and apparently was gratified by his results.



No work to do for money Worked for nothing to pass the time.

Arranged for heavy discount on B N2O cylinders. Bought the gas and did Obs anes for free. One instructor, with whom I went out, suggested when 2nd. time out, that in as much as I was outranked by him, I a student: he an instructor. I pay him.

Figure 1. Excerpt from one of Guedel's written diaries, undated. It is apparent that he was not puzzled by the questions that Waters had raised, but was concerned about developing a remunerative practice. The note confirms that Guedel brought not only his anesthetic apparatus (see Figure 2) but also the anesthetic agents. *Courtesy of the Guedel Anesthesia History Museum.*

Guedel Center (cont'd)

The word “anesthesia” has a long history. It was used by several early Latin, Greek, and Islamic authors including Plato, Aristotle, Epicurus, Demosthenes, Galen, Hippocrates, and Avicenna. The common meaning was to signify insensitivity of any body part to touch. The Roman physician Dioscorides Pedanius was the first to use the word “anesthesia” in the context of drug-induced loss of sensation. His book entitled *de Materia Medica*, written in the first century of the Common Era, was translated into Arabic where it survived the dark ages, and then reappeared in the western medical literature in the 14th century.

Oliver Wendell Holmes chose the word “anesthesia” to describe the phenomenon that occurred on October 16, 1846, when William Thomas Green Morton delivered ether vapor to Gilbert Abbott while the surgeon John Collins Warren excised a vascular tumor of Abbott’s neck. By 1928 anesthesia providers had discovered new methods for allowing surgery to proceed without discomfort, which included spinal anesthesia and peripheral nerve blocks. Waters’ new description of anesthesia thus included regional anesthetics and hypnosis. He proposed that a regional anesthetic without adequate anxiolysis for that particular patient should not be labeled anesthesia.

Although Waters could not have predicted the variety of agents that are currently available, his definition is broad enough to include low dose ketamine, dexmedetomidine, neuroleptic agents, lidocaine infusions, monitored anesthesia care, and other methods where the patients are not always asleep but the surgery can proceed without *annoying* them. It would also include anesthetic techniques such as low concentration epidural anesthesia for labor and delivery, during which sensation is not usually totally lost but the labor proceeds *without annoying* the laboring mother.

In 1928, Waters and Guedel were giving anesthetics without intravenous access and this limited the interventions they could make. Muscle relaxants were 12 years into the future and surgical stress was not treated with opioids or adrenergic antagonists for another 40 years. The concept of anesthesia as a triad of components consisting of hypnosis, analgesia, and muscular relaxation was introduced in the 1950s. Our ability to maintain hemodynamic stability and provide muscular relaxation does allow the surgeon to “make a required piece of surgery possible” so Waters’ definition still applies with these added features.

A trend is underway that will eventually make Waters’ definition inadequate to explain what we do when we administer an anesthetic. Read the following conversation that would be consistent with Waters’ definition and consider whether you agree with it. Here we have the 1960 postoperative interview:

Guedel Center (cont'd)

“Good morning, I’m Doctor X and I provided your anesthetic. How are you doing?”

“Good morning Doctor, yes, I’m okay. Your anesthetic was fine.”

“Excellent. Did you have any sickness, fatigue, or pain?”

“Yes, the pain has been nearly intolerable and I have been nauseated and I vomited twice.”

“Sorry to hear about that, but I am happy to hear that you were satisfied with the anesthetic.”

“Yes, doctor, your part did *not annoy* me at all. I expected to have pain, weakness, and sickness; after all, I had a major operation.”

One might ask why we would ever desire to move away from this paradigm. It was simple and uncomplicated, and everyone understood what the anesthetic was. For these reasons, it is likely that a large percentage of anesthesia practitioners even today conduct their practice in this manner. Nevertheless, within the past 50 years, there has been a trend toward expanding the concept of anesthesia into the postoperative period. The reason for taking on this added responsibility is that we have learned that patients want it. The problem today is not so much whether we should take on this responsibility, but rather how we are supposed to be paid for doing it. In many ways our predicament is similar to that expressed by Guedel 100 years ago: It is rewarding work but a fiscal disaster.

This concept of anesthesia has had a slow evolution and it is still underway. During the era of Waters and Guedel, the surgeons would manage every aspect of the postoperative period, including the analgesics. Guedel was traveling between hospitals each day to provide anesthetics for specific surgeries. He was usually on his way to another appointment once the patient had awakened. Accordingly, he was not concerned about postoperative problems and so the surgeon dealt with them.

Recovery rooms were introduced in the 1950s and the issues that occurred there became part of the anesthetic, insofar as the nurses would look to the anesthesia practitioners to manage problems of hypotension, respiratory failure, and pain. In the 1980s acute pain services were introduced and were usually directed by the Anesthesia Departments. This further lengthened the time of involvement of anesthesia practitioners into the first two or three days after the surgical date. The longer-term involvement of the anesthesiologist has slowly progressed during each decade since the mid-twentieth century. As a sign of

the contemporary interest in long term outcomes, the ASA and the journal *Anesthesiology* are sponsoring a symposium to be held at this year's ASA Annual Meeting in San Diego on "Outcomes beyond the Operating Room," clearly a concept that the Waters' concept of the anesthetic would not have envisioned.



Figure 2. Guedel brought his own equipment to the hospital. This image shows his tools and the bag in which he transported them to various hospitals. Photograph by the author.

One of the methods to improve long-term outcome is to incorporate nerve blocks into the anesthetic and often these are placed before the induction of the "anesthetic." With this new definition of anesthesia, the patient has to be informed as to the reasons why "block" needles should be part of the anesthetic. Why should they be placed prior to the induction of anesthesia? Why is that part of the anesthetic? Do I have to undergo this extra procedure to have the anesthetic? Clearly, to the anesthesiologist who wants to make available perioperative pain relief and to minimize nausea and vomiting from opioid therapy, the definition of anesthesia needs to be expanded to include the continuation of nerve blocks during the anesthetic and into the first 24 to 48 hours after the operation is finished.

Consequently, what we do no longer fits in with Waters' definition and does not always fit with what patients think that we *can* do. Televised documentaries show the simple blow dart anesthetics given to wild animals and some patients think we perform a similar technique on them:

Patient: "Just knock me out, doctor."

Anesthesiologist: "I think we can do better than that for your case."

Holmes suggested other words to define the specialty in his letter to Morton: anti-neuric, aneuric, neuro-leptic, neuro-lepsis, and neuro-stasis, but none

of these words fit in with what we are progressing towards. George W. Crile suggested the word “anoci-association,” but that is cumbersome. “Perioperative physician” seems a bit presumptuous because it appears to encroach upon what the surgical team should be doing, like pulling drains and advancing diets, but then again there is more to the peri-operative experience than just the technical aspects of the surgery. We could be called “anocicists” or “anociologists” (root word is *nocere*, meaning “to do harm”): “I will be your anociologist for the next few days.”

Between the time when Holmes coined the word “anesthesia” and the Waters letter is a span of 82 years. This year (2010) is another 82 years since the quoted Waters letter was sent to Guedel. In the interim it has become apparent that what we mean by an anesthetic has undergone a change during these 82 years. What will our idea of anesthesia be another 82 years from now, in 2092?

Now, with a nimble use of word derivations from languages we no longer speak or read and certainly do not understand, we can move from here to a creative and curiously different perspective on anesthesia. For the moment, just consider this:

“Anesthesia” is a physical condition or state related to “esthesia,” which is defined as the capacity for “feeling” or “sensation,” and the “an” negates it into a “lack of feeling.” “Anesthetic” is a drug used to produce “anesthesia,” and it has as its root “esthetic,” defined (dictionary.com) as “pertaining to a sense of the beautiful,” and thus *anesthetics* would be drugs employed to produce a loss of a physical sensation or perhaps a loss of the perception of beauty (a non-physical sensation).

Now, in popular culture we label those who perform facials and advise customers on makeup as “estheticians.”

In contemplating this modern usage of the root word esthetics, could we begin to rethink our role into some kind of negation of beauty, e.g., an- (without)-esthesia? Maybe we might someday drop the “an,” or at least produce “esthetic anesthetics,” for then we would also be estheticians of sorts—of the mind, not the face.

Could we develop the anesthetic experience into a beautiful event? We have at our disposal the most potent mind-altering drugs that have ever been devised by the pharmaceutical industry. Anyone who has given anesthetics for several years has had the occasional patient say that the experience was so exhilarating that they would like to return for a repeat session (without the surgery) sometime in the future. This outcome usually comes about through pure luck

because it is impossible to repeat consistently, given our rudimentary science. Why not strive to provide this service to our surgical patients on a daily basis?

We encounter patients who are at a low point in their life. A cancer or a gallstone requires removal. A hernia or a major joint needs fixing. The surgical experience gives them pain, stress, fatigue, and stomach upset. Could we someday consistently provide these (usually) unhappy patients with an uplifting beautiful anesthetic, free of pain, vomiting, and fatigue? This is one idea for the definition of anesthesia (perhaps renamed perioperative esthesia) in the year 2092.

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