

Surgical Argument

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Upon reading the title, many of you will be expecting an article that deals with angry surgeons or hostile and emotionally laden exchanges between two angry people. Argument, however, does not always have a negative or pejorative connotation. In his slim volume *A Rulebook for Arguments*¹, Anthony Weston defines an argument as "a set of reasons or evidence in support of a conclusion" or alternately, as an attempt to support certain views with reasons. Weston further points out that arguments are essential to determine which view is best, to promote inquiry and to explain and defend how one has reached a specific conclusion. It is this latter consideration and the importance of teaching the rules of argument to our students, our residents and ourselves that this brief essay will review.

Argument is commonplace in the world of surgery. We listen to students defend their differential diagnoses when we make rounds on patients. Residents present arguments each week during M&M conferences. We all use argument during our presentations at committee meetings and from the podium at the ASE annual meeting. The clarity and quality of our argument determines how our written manuscripts and abstracts will be perceived.

Weston lists seven general rules for argument then provides twenty-three others that he divides under the headings of argument by

example, by analogy, from authority, about causes and from deduction. His first rule states that arguments must distinguish premises from conclusions. Premises are statements that give reasons, for example, "Mrs. Jones has pain in the right lower quadrant." They are followed by conclusions: "...therefore, I believe that she has acute appendicitis." Residents often present surgical arguments to attendings by stating the conclusion first: "We have a new, 22 year old female patient in the ED with acute appendicitis," and follow with their premises, or reasons for making this diagnosis. Teachers should examine these premises to help their students improve both the clarity and completeness of their arguments. Few of us would accept the above premise as being sufficiently supportive of a diagnosis of acute appendicitis and would ask the student for a more detailed explanation, or list of premises, that lead to the conclusion. What is the patient's history? What are the patient's examination findings, including the pelvic exam? What about supporting lab tests? Although in today's world we can expect to be told that the CT scan offers the definitive proof, it is our responsibility to help students develop critical thinking by examining both premises and conclusions.

Ideas should be presented in a natural order, that is, present the conclusion first followed by premises, or set out premises first and

draw a conclusion. Novices often mix the two thus creating confusion. The "natural" order of argument in support of a medical diagnosis is presentation of the patient's history followed by the physical examination findings and any supporting laboratory results. The call from the ED physician that begins with "I have a young woman here that I need you to see whose CT scan is consistent with appendicitis" may lead us to a false sense of security in the conclusion. By paying attention to the order of argument we can avoid missing critical information. We must assure that appropriate premises support each conclusion. Remember the wisdom behind the old joke that the surgeon is the one who does the rectal exam.

Make sure that your premises are reliable. How many times have you heard the following: Attending: "What did you find on examining the abdomen?" Student: "Well-I-I, I didn't actually examine the patient, but John Smith told me that she has point tenderness in the right lower quadrant." Ultimately, you must judge the reliability of the examination, which is why surgeons should also confirm findings by performing their own examinations. This helps both in assuring our own level of comfort and as a means of teaching a student or resident correct examination techniques. Unreliable premises often show up in the surgical literature. Consider the following from a recent article

from the FDA on thromboembolic adverse events after the use of recombinant human coagulation factor VIIa (rFVIIa)², a drug licensed for use in patients with hemophilia. In the results (read: premises) section, the authors state that adverse events occurred in 76 patients with hemophilia and in 151 patients with off-label use. They conclude, "Randomized controlled trials are needed to establish the safety and efficacy of rFVIIa in patients without hemophilia (my emphasis). Does the premise support this conclusion? Shouldn't the conclusion be that trials are needed in ALL patients to determine the safety and efficacy of rFVIIa, since the premise states that adverse events occurred in both groups? Alternately, should the authors state as one of their premises that since rFVIIa has been tested in hemophiliacs in randomized trials that the rate of adverse events was found to be acceptable, therefore no further studies are needed in hemophiliacs? This may sound like nit-picking to some of you, but the message hidden in the flawed premise and conclusion may reflect the fact that the rFVIIa has been approved for use in hemophiliacs so it must be safe enough and that off-label use is the bad actor.

Be concrete and concise in argument. In short, speak in medical-ese. Dr. Charles Roth began our second year medical school class's introduction to physical diagnosis at Georgetown with "Ladies and gentlemen, you are about learn 50,000 ways to say 'Hm-m-m.'" This is essential in surgery. Pain in the abdomen is not enough to make a diagnosis of

appendicitis. Pain in the right lower quadrant is better; pain that began in the peri-umbilical region and moved to the right lower quadrant is better still. Do your students know the difference between pain and tenderness? Do they make this distinction in their presentations?

Weston's fifth rule is to avoid loaded language in argument. Language that is intended only to invoke an emotional response serves only to distort a position or to detract from the seriousness of a conclusion. "I can understand how you would think that, Sue, since you are only an intern, so let me tell you what I think." "John, you must have been sleep-deprived to come to that conclusion." "Dr. Spence, this article is really funny but it has no place in the surgical literature."

The sixth rule states "arguments depend on clear connections between their premises and between their premises and conclusions." "Ms. Jones is a 20 year old patient with a 2-day history of peri-umbilical pain that has moved to the right lower quadrant." Premise 1 in support of a conclusion, or diagnosis of acute appendicitis is that she has a classic history of pain. "On examination, she has point tenderness in the right lower quadrant." Given the pain history (Premise 1), she should have localized tenderness in the right lower quadrant. (Premise 2 follows Premise 1) "We saw no evidence of inflammation on pelvic exam and there was no cervical motion tenderness or masses." (Premise 3) Premise 2 supports the diagnosis of acute appendicitis but it also requires evidence against a

gynecological cause, leading to Premise 3. Premises 1, 2 and 3 lead logically to subsequent premises – an elevated white blood cell count and evidence of an edematous appendix on CT scan – all of which are connected to the final conclusion or diagnosis.

Rule seven requires us to stick to one meaning for each term we use. In surgery, this rule requires us to make sure that our students and residents know what commonly used terms mean. Does your student know what rebound tenderness is? Can your resident locate McBurney's point? Perhaps the most misused word in medical literature is "significant." Does this mean I give this argument a great deal of weight — ... "this is a significant finding..." or does it mean that the odds of this event occurring by chance alone are 5% or less ($p = .05$)? Does significance mean cause and effect or simply association? Clarity in argument depends on concise and consistent definitions.

I've discussed only the first section of Weston's work in my attempt to point out the relevance of argument to surgical education. I encourage you to read Weston's the book in its entirety, hoping that you will find it as enlightening and useful as I did. ■

References

1. A Rulebook for Arguments, 3rd edition. Anthony Weston, Hackett Publishing Co., Indianapolis/Cambridge, 2000.
2. O'Connell KA, Wood JJ, Wise RP et al. Thromboembolic adverse events after use of recombinant human factor VIIa. JAMA 2006, 295:293-298.