



Redefining dogma and repealing of false rules—finding the true limits of medicine and surgery

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The field of medicine is made of rules that have been handed down by one generation of practitioners to the next. In its infancy, medicine was an apprenticeship where individual experience was passed on with little or no scientific understanding. As medicine matured, the scientific method and evidence-based medicine became paramount and essential in progressing care and bringing more reproducible results to patients and practitioners alike. The lessons learned became tenets that guided the practice of physicians into the current era. This code of order is often created by members in our specialties who are doing research that define the standard of care for the conditions we encounter. As those who have chosen to enter the field, physicians are taught these tenets and, for the most part, are expected to follow them.

However, at its core, medicine's primary aim is to bend the laws of nature. Medicine takes the principles and power of the natural order to fight against it. Surgery is the zenith of that precept. That fight produces the advancements that have propelled medicine and surgery to what we now have in the 21st century. In all disciplines of medicine, especially surgery, those who have balked the current beliefs to advance the science are elevated as leaders and heroes. Every year brings new advancements in scientific understanding, technology, and, consequently, medical care. It will always be a body in motion trying to solve the next

problem or overcome the next hurdle. From time to time, the hurdle is an incorrect rule or false dogma.

The idea of only using minimally invasive techniques to resect mediastinal lesions less than 5 cm has been echoed by many but is not based on any real data (1). In Dr. Alqudah and his colleagues' work, they yet again show us that subjective rules toward the acceptable use of robotics in large mediastinal masses is simply that—subjective (2). Considered originally to be a contraindication, the successful robotic resection of these 10 cm or larger anterior mediastinal masses described in this case series gives further evidence that the original perception of only using minimally invasive techniques for masses 5 cm or less is clearly a doctrine that must be changed and discarded. As cited in their paper, others have found similar results. Burt *et al.*, in using the database of the International Thymic Malignancy Interest Group, looked for determinants of complete resection comparing minimally invasive and open thymectomy (3). They found that size was not a risk factor for positive margins in minimally invasive thymectomy. Using the National Cancer Database, comparing open to minimally invasive thymectomy for stage I to III thymoma, Yang *et al.*, also showed no difference in margins with size, but the data did show an increased use in smaller tumors, as one would expect (1).

The answer of what size one can use a robotic approach

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will likely never be answered with a true randomized trial. However, through periodic reviews of large databases, we will see an increase in the usage of robotics for the removal of larger masses everywhere, but especially in the mediastinum. Few would argue the benefits of minimally invasive approaches for these patients. The clear advantage of improved visualization and the instruments in robotics will continue to push the minimally invasive surgical treatments to more and more indications. We have seen this with lung resections, as groups are performing double sleeves all robotically (4,5). Rules regarding the size of masses will clearly be the first to go.

In the end, the decision to operate will not be defined by size. With the continued advancement of technology and the push for individualized care, numbers will no longer be absolute. Over time, most of the other contraindications will become relative and may disappear altogether. The limit will be what surgeons can do and what the patient can handle. Every patient will be viewed with a fresh set of eyes, looking only at what can be done, not being limited by the rules and dogma of past days.

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