The Future of Human Anatomy Dissection: To Train a Physician with a Cadaver or a Piece of Clay?

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In recent years, one of the more potentially devastating issues facing medical education is the idea of replacing human cadaver dissection and anatomy labs with that of clay models, previously prosected portions such as the axilla, and in some of the most low-rent cases clay models. There are a myriad of reasons for implementing such programs including but not limited to: doing away with the extensive size of human anatomy labs and replacing them with money generating research labs which have the potential to bring grants, therefore money to the institution. However, the average tuition for a first year medical student attending a state sponsored medical school is in excess of $18,000. With class sizes reaching 250 students plus that adds up to approximately $4.5 million. That’s every incoming year. For such a foundational subject as human anatomy, it only seems fair that a substantial portion of that money should be allowed to hire qualified instructors as well as have a decent department for graduate students seeking PhD’s and anatomy research. It is these PhD anatomy researchers that often develop new techniques utilized by orthopedic surgeons to treat problems that plague millions of people worldwide. All that aside, the most important thing is that highly qualified anatomists must be available to teach incoming medical students the fundamentals of anatomy for which they will base their entire medical education upon and hopefully use throughout their entire medical practice. As an instructor of new physicians, I find this to be a horrible solution to a problem which is much better addressed in several different ways. Many medical schools have already switched to pro-sections over human cadaver dissections in their anatomy labs. The long-term result of such an important alteration in curriculum is yet to be known. However, we speculate that there are major deficits that a graduate of such a program leaves and Institute with unknown to them.

It is astounding to walk through the first year anatomy lab and observe how many students take a backseat role to the discovery of how the UT of the human body is assembled. The reasons for this attitude towards human dissection are unknown and far beyond the scope of this letter to the editor, yet demonstrate a fundamental lack of appreciation towards how the human body is put together.

It is understandable, how intimidating taking apart a real human body can be upon first attempt. Many if not all medical schools go to great lengths to prepare their students to embark upon the discoveries of what is located inside the body beneath the skin. Most, often go to great lengths to also express the true honor and privilege that is bestowed upon medical students to take this once living human, complete with family, friends, and loved ones and completely disassembled their body from head to toes. In fact, the school for which I teach at, we utilize a program for which we call the honor ceremony. We gather the entire first year class a large auditorium and we explained to them the value of the donation for which has been made by the donor their family and all those involved in the efforts of training future doctors, physicians, doctors of physical training, as well as many other medical professionals. In this ceremony we impress upon the students the value of such a donation and how it has been going on for centuries in order to train physicians on what is inside their living patients. For as we know, when a patient presents to the clinic for takeoff we may not simply open their chests to look to see what is going on. Nor should they present with a stomachache, may we simply cut them open to determine the cause of their element.

Anatomy education is the foundation of all medical training, and should be respected as such. Some wise programs actually have built into their fourth year a refresher course in anatomy to ready their fourth year students for residency programs. Much knowledge is crammed into the minds of a medical school over the four-year period for which it takes to become a doctor. By the end of that four-year period, much has been forgotten. Fortunately, for most practitioners, the knowledge of exactly where the student’s nerve is located is a somewhat insignificant consequence. However, being able to appropriately palpate, percuss, and determine a healthy size liver as opposed to a disease one is significant. Furthermore, with respect to injuries to the upper legs, it is appropriate that a practitioner know whether it is the semi-sleep him him muscle or the gracilis muscle that is injured without having to take a scalpel, sedate the patient, and inflict a lifelong scar the length of the thigh to determine exactly which muscle is injured.

The idea that removing human cadavers from human anatomy studies will somehow better involve those students who feel intimidated by the disassembling of a human body will result in an overall better class of students is a falsehood. Multiple studies are currently underway to show the effect of implementing such programs and medical schools. Some specific areas that may suffer the most would include surgical subspecialties including but not limited to: general surgery, orthopedics, obstetrics, and gynecology, as well as those programs requiring extensive knowledge of nerve placement for injection purposes. The learning curve for students graduating from programs that utilize pro-sections, clay models, plastic models, virtual computer systems, and other such systems would be drastically greater than those experienced by students graduating from schools that implemented the time-tested tradition of human cadaver dissection as part of their foundational medical education.

Our group is currently working on a study to determine how implementing the services has affected the types of residency programs that US medical graduates pursue, as some residency programs rely much more heavily on anatomy than others. Preliminary data from our study is interesting and shows a significant reduction in graduates from schools using the aforementioned models as opposed to traditional methods of anatomical teaching.

A small portion of medical students from each class experience a profound connection to the study of the human body and intricacies with which it is assembled. It are these students that often remain behind and conduct important research to further the field and improve programs and efforts to regain the interests of graduating medical students, who are often burned out and already overwhelmed with the process of residency application, letters of recommendation, and their own futures.

Recently, I presented my work, at a world renowned conference showcasing the hard work of scientists from all over the world in just about every specialty imaginable related to the field of healthcare sciences. Of particular disappointment to me, was the winning award for the area of anatomical research went to a student who developed way medical students to opt for a computerized program allowing them to learn anatomy from that instead of spending time with their human cadaver. Many of the intangibles that a student receives from spending their time in the anatomy lab, with anatomy professionals, who have spent their entire lives and careers dissecting and perfecting their knowledge of human anatomy are discounted by such computerized programs such as this. I’ve witnessed that my own institution have had their qualified experts reduced in numbers while supplementing incoming students with computerized versions of lab software designed to allow them to learn the material on their own without an actual cadaver. I find this a tragic discount in the hundreds of combined years among the staff in their training and knowledge of the human body, despite their love and passion for teaching the future generation of practitioners that very well may take care of them one day in their own clinics. I’ve seen firsthand, our anatomy department subsists on the bare-bones requirements needed to get by, while other departments who generate more tangible forms of income in the form of grants instead of students tuition and fees receive higher bidding at page set up page layout g when it comes to staffing, replacement of equipment, hiring of support personnel, and the development and support of graduate programs for those interested in seeking graduate education in the field of human anatomy. Never mind, that there is a constant influx of 250+ new students each fall paying exorbitant tuition and fees to various departments.

My fear, as well as the fear of other passionate anatomists, is that with the progression of technology, which we embrace, will eventually deem the human cadaver as an accessory instead of the focus of the work. I call to action, all anatomy instructors from the junior college level up to the graduate medical education level to maintain their own personal experiences with their first cadaver, and to recall the excitement vigor that they experienced the first time that they were allowed the honor to perform their first human dissection.

The advances in technology are tremendous and seek to better our understanding of the field of anatomy, and we in no way seek to keep human cadaver dissection separate from the developments in computerized technologies. We only ask that those in positions to make important decisions about the future of such programs do not forget the utter importance of including real human cadavers and their subsequent dissection by first-year medical students. The evidence of tactile learning from the disassembling, and laying hands on such a beautiful structure has life-long lasting impact on the practitioner of medicine. It would be an utter shame to see this aspect eliminated.

We recognize there are certain circumstances in which replacing human cadavers with pro-sections, models, day or plastic replicas may be necessary such as in the case of a medical school is unable to obtain the appropriate number of human specimens and were to accomplish the job at hand. However, in America, as in many other countries, there exists sharing programs for which willed-body programs will coordinate with one another to ensure that each program has the sufficient number of cadavers to train each matriculating class, even sending cadavers to medical schools deficient in cadavers to fulfill their matriculating classes.

We believe that there is some happy medium between the incorporation of human cadaver dissection as the primary educational tool for human anatomy for future health professionals, especially physicians, while also incorporating the exciting developments of technology to help us better understand and further investigate the intricacies of the beautiful human body.

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