

Is dissection humane?

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Abstract

Dissection is being jeopardized in the modern medical education. It has unrelentingly faced the lashes of time and has been the scapegoat for numerous convenient curricula reforms and subjective biases. The cadaver is unparalleled in establishing core knowledge among the medical community and it needs to be appreciated in a new light in the "cyber anatomy" realm of today. This article elucidates the medical and ethical validity of continuing human body dissection in medicine which outweighs all the prejudices associated with it.

Keywords: *Cadaver, Dissection, Education, Ethics.*

Introduction

Ever since the advent of medicine, life sciences have been running parallel to therapeutic sciences in forming the concepts of human life and the treatment of diseases which threaten it. The basic requisites for understanding man's diseases come only after understanding man's body. Since times immemorial, the cadaver has been the fundamental and oldest source for providing gross morphologic details of human anatomy to medical learners.

What is dissection?

Dissection (also called anatomization) is usually the process of disassembling and observing the human body to determine its internal structure and as an aid to discern the functions and relationships of its components. Dissection is often performed as a part of determining a cause of death in autopsy and is an intrinsic part of forensic medicine.

Discussion

The issue of human dissection; an everlasting moral debate:

The dissection of humans has always been an object of controversy among the stake holders of the religious and civilized society (1). There are many who consider dissection to be the ultimate insult to the dead and the most extreme breach of privacy of a person. Some philosophers label dissection as a "blasphemous" violation of humanity itself and the "last act of torment" ever possible. Still, cadaver dissection has continued in the medical curriculum because of the obvious benefits of delivering first hand, unabridged and original morphological information of the human body. The diverging schools of thought have not deterred the practical and clinically oriented medical / surgical institutions in continuing their cadaver oriented studies.

History of dissection

In the past, anatomization of the body of convicted persons was sometimes ordered as part of the punishment. The bodies were taken to the local slaughterhouse, dismembered and their remains were denied a burial as a symbol of insult.

The earliest science oriented systematic human dissections were carried out by the Greeks in the early part of the third century BC. In the 13th century Christian Europe, dissection and autopsy of humans was regularly carried out with reasonable socio-cultural and religious acceptance.

Throughout history, the dissection of human cadavers for medical education has experienced various cycles of legalization and proscription in different countries. But no universal prohibition of dissection or autopsy was exercised during the middle ages. Then in modern history, many scandals clouded the dissection labs. The ways to obtain a body from "front doors" were full of legal hurdles and prompting many institutions to consort to unethical means, because the only bodies legally available were those of executed criminals which were scant to meet the rising educational demands. In the 19th century there were increased incidents of grave robberies in the United States. The most notorious incident occurred in 1788 in New York, where a doctor waved to a child with the hand the mother's corpse that had been robbed of its grave (1). In response to this event, a law was passed in New York in 1789 that prohibited the robbing of tombs. Then there was the William Burke and William Hare scandal of 1829 who were found guilty of killing the guests at their boarding house and selling their bodies for dissection. Burke was hung, dissected, and exhibited as an apt punishment for his deeds (2). These incidents led to formulation of new laws that legalized dissection of all unclaimed or voluntarily donated bodies.

The present situation

Unfortunately, the current laws dealing with commercialization of human bodies are not immune to loopholes, tedious procedures and stringent biases. This has stimulated unethical practices for obtaining cadavers on one hand and the "student- cadaver ratio" being put in serious jeopardy on the other hand in the modern academia.

The barriers to continuing human dissection are not only socio-religious. There are logistic and organizational barriers also; including the time constraints of modern medical curricula, lack of dissection trained personnel, scarcity of sufficient dead bodies available for dissection, student overloads, costly maintenance of dissection labs, health risks of prolonged formalin exposure and

dead body contact; along with the ethical issues of human body exploitation as well.

The introduction of computers as an alternative teaching tool has brought some relief to the stifled, overburdened education system of the 21st century medicine. The computers have emerged as "quick relief" potions in the times of cumbersome, didactic, superfluous gross anatomy. Unlike a cadaver, they are free from formalin smell, risk of dead body related infections and don't require the specialized training of dissection. Computers are time and cost friendly, aesthetical and easily manipulated, to obtain diverse view points. They provide colorful reversible and repeatable digital information and hence; they have procured many patrons in the medical education community (3).

Presently, the medical education community has polarized into two belief systems; the 'pro-dissection traditionalists' who consider dissection as an integral part of anatomy education and the 'anti-dissection modernists' who regard dissection as obsolete and dispensable (4).

The deeper issue that needs to be considered

The enormous advances of computer based learning cannot be undermined. However, despite all their technology, the computers can never simulate the "real" in terms of establishing structural concepts (5). They cannot achieve the variations, pathology and biodynamics of man's body, and, with all their advancements, will still remain an artificial synthetic medium. Hence, they can not instill core anatomy knowledge among the "upcoming health personnel" in much the same way as a cadaver can. The student who is deprived of cadaver based learning will only see the appearance or location of a body structure but he /she will never be able to feel the texture, friability, toughness or elasticity of that structure. Such learning will be superficial, protocol - oriented learning and hence, can not be regarded as a deep approach to learning (4). The replacement of active dissection time by digital labs might produce a generation of confused, ill informed physicians and surgeons who have been spoon-fed on "intangible, abridged concepts" and who are unfamiliar with the complete reality of human body and life. This gamble on technology may be too risky in terms of patient's safety and well being which will lie solely in the hands of these future caretakers of health. Hence, the modern technological amenities should be reassessed in terms of their "functional, cognitive utility" rather than their "convenience".

The cadaver has survived the most important test of pedagogical fitness- "the test of times". Dissection is unparalleled as an educational tool for instilling gross anatomy concepts. There are long term cognitive benefits to the students of an active learning process involved in cutting through

various layers to expose morphologic details in a step wise manner. It provides an ideal training ground for future biomedical applications, clinical endeavors and invasive procedures. The psycho-visual-tactile multi-sensory stimuli that are part of a dissection ritual leave an indelible mark on the minds of learners and aids recall (4). This hypothesis has been statistically proved by improved exam scores of cadaver dissection groups as compared to intervention groups using other learning alternatives (5).

The computers provide intricate multidimensional spatial configurations while the cadavers instill psychomotor dexterity, lexical enhancement and bioethical values. They reflect two different approaches to learning and combined; they can work wonders in the medical system (5, 6) and produce doctors who can work more effectively towards an ideal fulfillment of the Hippocrates oath.

Human dissection: an ethical perspective

The right to a decent burial is the most basic right of any human being. The cadaver remains deprived of this right for the benefit of our medical students and future care takers of health. A cadaver helps to preserve life science even in death. This is a symbol of generosity at its zenith and it deserves our extreme gratitude and reverence. The immense courage needed to give away the body of a loved one for dissection must be acknowledged and respected by all.

Even though withholding the cremation of the dead is viewed by many moral skeptics as inhuman, unsocial and against religion; and there are complex ethico-legal issues of autonomy as well; still we must remember that beneath this violation of normal human rituals, underlies a much deeper benefit to humanity.

The intimate study of the dead is the only way to effectively train our future physicians and surgeons in the intricacies of human body. The bioethical values and reflective learning stimulated by the study of the dead help medical students to deal with issues concerning life, death and dying at a relatively early stage in their medical career which will ultimately train them towards being better doctors. Dissection enhances communication, team work, leadership, experiential learning and group dynamics. Most importantly, it enables the student to confidently face the picture of death that is so important in treating life. This experience cannot come through any other source of simulation and there is no short cut way around it. Cadaver dissection imparts to the medical learner that much needed strength of character that he/she will need during future clinical or hospital emergency settings. A student trained on the cadaver will not become baffled or nervous at the sight of

impending death or life threatening trauma and this perseverance and steadfastness will determine and define his /her role as a doctor and health care giver in future. Along a wider picture, the thorough knowledge of the human body gained through dissection will prevent accidental damages to the related structures during invasive and non invasive procedures and impart better clinical skills to medical personnel.

The recent obsessive interest of general public with the anatomic details of human body is evident by the huge popularity of anatomy art shows and body exhibitions in the so called "body worlds"(7). But the very concept of such obscene displays is questionable. Such displays are only there for the sole purpose of callously attracting money by making a bawdy exhibit of the privacy of another human being like us. They lack the noble intention of imparting any medical knowledge to the future caretakers of health (very unlike dissections). Such shows are an insult to the dead. They don't lie in the same league as cadaver dissections where the first lesson learnt by medical undergraduates is that of reverence to the human body which is their temple of learning and applicable knowledge.

Conclusion

When we deal with the dead, the margin between ethical and unethical is hair lined and fragile. It is very important to define the boundary between meaningful, judicious use, commercial exploitation and ravenous abuse. The purpose should be noble and ethically justified if we are to use; as a mere tool; another person who once had a full life legend behind him. Our motives should be clear, productive and humane if we are to deal with cadavers.

The pivotal role of the cadaver in the assimilation of core biomedical knowledge among medical learners cannot be disregarded and hence, it must remain a central tool in medical education. The barriers to dissection are mainly logistic and psychological; an issue that can be solved through proper strategic organizational planning and an improved access to scientifically oriented information in order to rule out emotional biases.

Also, the current cadaver crisis faced by many medical institutions can be resolved through increased awareness and proactive community involvement. Cadaver donation, if done in an ethically, morally and legally justified manner, can help to preserve our cadaver heritage as the essence of medical anatomy studies and clinical therapeutics. It will reinstate the fast declining "cadaver-student ratio" which is paramount in the making of future doctors and surgeons.

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