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Vivid look at anatomy practical lessons, end of debate!

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Abstract
Macroscopic anatomy (gross anatomy) is the examination of human body parts merely using eyesight. Several methods were developed to deliver the scientific facts to healthcare students. Dissection of cadaver is one of the oldest methods. But due to lack of resources, previously prepared (dissected) cadaveric parts are delivered to the students during practical lessons, which are called prosection. In last few years, an innovative method emerges, which is now widely used in universities, i.e. virtual anatomy. The current debates about the use of cadaveric dissection and prosection versus the use of virtual anatomy software is the initiative to write this article. The author hopes that, at the end of reading, the reader come to a definite conclusion about the using virtual anatomy in teaching.

Keywords: Anatomy, practical, teaching, dissection, prosection, virtual

1. Introduction

Anatomy is considered the most significant item of healthcare education. Study of anatomy through cadaveric dissection is viewed as the unique feature of medical and dental curricula. However, it seems that, we are now entering a new paradigm shift, assisted by new technologies. The author reviewed the debates on the value of (use of the cadaver by dissection and prosection) as opposed to the use of (virtual anatomy software) in aiding anatomical understanding, wishing that debate comes to an end.

Cadaveric dissection has been the iconic practice of anatomy teaching since the 16th and 17th centuries and it was reinforced by the growing sense of the creation of a professional monopoly. [1, 2] Learning anatomy through dissection enables the mental mapping of the body internal structure [13, 4, 5].

Benefits identified (and not exclusively developed) by such practice are development of cognitive knowledge, recognition of different structures relationships, setting a firm ground to study other curricula where anatomical facts are essential (e.g. physiology, internal medicine and oral surgery), touch-mediated perception of the body (also it can be developed in a clinical sessions where students palpate and percuss), establishing the primacy of the patient, initiating professionalism and lastly promoting team working.

Prosection is the dissected cadaver or cadaver part by professionals which is then delivered to students during practical lessons [6]. During dissection, students gain knowledge by doing; while during prosection, students learn by, either observing the dissection session or examining the specimen

Despite the arguments in favour of dissection activity, many anatomy departments have adopted prosections as a main learning methodology. The shift to prosection was not derived by the fact that it is more beneficial than dissection, but it was derived by multiple innovatively non-related factors. The drivers for this shift to preosection have been difficulties in both gaining cadavers and transportation cost, leading to high student: cadaver ratios [7, 8]. It is clear now that few students dissect enough to allow motor skills development). Some anatomists suggested that the cadaver has little clinical relevance [9]. May be caused by its appearance (texture and colour), cadaveric limited mobility and smell [10].

Other causes of this shift are difficulties in maintaining or disposing cadavers, long hours required for study by dissection, limited teaching time and the need to maximise the use of the limited number of available cadavers [11, 12, 13].

There is recognition amongst anatomist that dissection may not be the best methodology for acquiring and retaining knowledge. No studies have stated that long-term retention of anatomy related knowledge is an exclusive outcome of dissection. Some scholars reported that, alternatives such as prosecution are just as effective in the teaching of anatomy [14, 15, 16, 17]

Virtual reality software's are, anatomically accurate, highly detailed, virtual, three dimensional models of human body; It is using a cloud-based virtual body, which allows students to continue learning during the course and throughout their clinical years. Many factors made medical and dental schools seek for many alternatives of cadaver usage; the most popular used alternative is virtual reality softwares. There are many health and safety implications related to the use of cadavers, which include, exposure to embalming chemicals, inadequately preserved human material and infectious diseases such as hepatitis, tuberculosis, transmissible spongiform encephalopathy and human immunodeficiency virus [18].

Some scholars have concluded that both dissections and prosections have a negative impact on students' respect for human life [19]. Some studies have reported corps causes extreme anxiety and emotional disturbances in some students [20]. As a result, many medical schools in the United States of America have abandoned entirely the use of cadavers [21].

Virtual reality softwares allow; exploring of human body, fast search functions, frequent updates, available for all relevant computer and mobile phones platforms. It allows users to explore the human body in three dimensional (3D) ways. With easy-to-use navigation, view systems and organs down to their

smallest parts, and understand in detail how the human body works [22].

Some programs also allow instructors to customize lessons and include quiz modules that can track performance of student. Furthermore, cadevers can be used for a limited number of years (as it tears), while Virtual softwares can be used for many years (with updates available every now and then) [23]. By offering rich, detailed anatomical images to relevant and useful health information, softwares allow students to lean anatomy in a revolutionary new way [24]. It present educational advantages, with eliminating the problematic, cadaver-related; ethical consideration [25].

Studies show that some students participate in anatomy practical lessons using dissection or prosections reluctantly out of fear [26]. Several peer-reviewed comparative studies concluded that the educational outcomes of students who are taught using non- cadaveric methods are equivalent or superior to those of their peers who use cadevers dissection and prosection [27].

Others question the usefulness of using alternatives, arguing dissection or prosection of cadavers are required for in-depth learning and teach skills alternatives cannot [28]. Some scholars go so far as to argue that cadavers and prosections are irreplaceable in the teaching of medicine [29].

1.1 End of Debate

The primary two purpose of dissection and the use of the cadaver have always been to gain understanding of the living body and to transfer this science to healthcare students. It is fair to ask if the second purpose can be better achieved through other means in undergraduate medical and dental courses. An anxiety may underlie the responses to the previous fair question. Some anatomists currently feel that their subject is under threat [30].

With diminishing resources and decreasing numbers of qualified lectures. A move away from cadaveric usage may be misinterpreted as a downgrading of the importance of anatomy itself as a component of medical and dental training. Nothing is further from the truth; human structure remains an extremely significant part of the knowledge base of students. The question is rather about what kind of anatomy it should be. It is in anatomical understanding that dissection must base its firmest defence. However, anatomical knowledge per se is not the goal of medical and dental education: this, rather, is to produce good practitioners.

It is no longer acceptable to publish any student satisfaction studies, which are poorly designed or merely likely to support the prejudices of lecturer in either direction. It is essential to attempt to identify measurable outcomes, employing both qualitative and quantitative approaches, and to have some means of comparison between different methods of instruction [31].

As any new teaching method requires time to be developed, we may find that the first few years of a new methodology are not representative, and perhaps the research period should be extended accordingly [32]. It is potentially difficult in medical and dental education to determine the clinical outcomes of a teaching methodology.

Another area of research would concern, if lack of exposure to cadaveric dissection in the undergraduate course made students either less or more likely to undertake careers in surgery. It would be of interest to explore whether students were more or less likely to select courses featuring different methods of instruction [33].

In some professions allied to medicine and dental, such as hospital nursing or dental assistants, the experience of anatomy has often been rather limited. In physiotherapy, students understand human anatomy in practice life. There is also scope for co-operation between undergraduate and postgraduate students, including those engaged in professional development, which is likely to be beneficial to both.

Working with the living body has high emotional impact. It is common to witness fresh students placing their hands on the living human body for the first time, and becoming speechless. This is because they may never have placed their hands on human patient. It is inspiring to watch their development towards professionalism over the course of an academic year.

Today, the cadaver is often not the first patient that the student encounters as some students meet patients in the first week of their studies, and it is fair to suggest that the first patient is best achieved either a real patient in a clinical setting or in the simulated environment of a clinical skills laboratory.

2. Conclusion

It may be true that dissection allows for the ingrainment of a scientific methodology which is the base of diagnostic practice. But, it seems more likely that the biggest value of dissection is in the process of active learning and the self-discovery that occur during learning, rather than inculcation of the scientific method.

Evidence-based practice and evidence-based medicine, now integral components of many medical and dental curricula, are likely to be more useful vehicles for espousing the inculcation of the scientific method.

3. References

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