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Importance of Cadaver dissection– A brief review report

Jyoti P Kulkarni

Department of Anatomy, Sikkim Manipal Institute of Medical Sciences, Tadong, Gangtok,
Sikkim, India

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Anatomy is a science of Morphos which encompasses the study of a structure. It is said that the functional necessity is the cause of structural innovation, because the structure has to perform a particular function. The entire edifice of medicine rests on understanding of the structure and function of the human body. To understand the function we must comprehend the structure. We as humans owe our understanding of the amazing structure of human body to the dedicated pioneers in the field of anatomical dissection who worked under very difficult circumstances. In Susrutas¹ era it was difficult to obtain cadavers for dissection. The cadaver was immersed in running water for some days. Dissection was done by peeling away layers of sodden tissue off the putrefying corpse. Dissection was performed with the help of Kusha (brush like equipment). In ancient China it was thought that “Our body with skin and hairs come from our parents. We must not mutilate it”². Later on the bodies of criminals were allowed to dissect after the Emperors orders. These bodies were dissected by the Physician to the Emperor and a skilled butcher. For centuries in Europe anatomists would procure bodies by stealing them from graveyards or steal the parts from criminals left hanging. Thus risking their own lives. No methods were evolved to preserve the cadavers so obtained and prevent their putrefaction. Anatomists hid these body parts under their own beds or within their

homes, took them out in the dead of night and dissected by lighting candle or lamp light. It was under these circumstances the great anatomist like Adreas Vesalius³, Leonardo da Vinci⁴ and John Hunter⁵ taught the science. We stand on their shoulders as we attempt to unravel the subject further. Since there were no methods for preservation of human bodies then, various natural means such as freezing, dry cold, dry heat, nature of soil, bog water were used as means to prevent putrefaction. The technique of embalming finds its roots in the ancient Egyptian mummies⁶. However this method of preservation was for the sole belief in immortality and reincarnation. This process of embalming was extended further by Anatomists to facilitate human cadaveric dissection without putrefaction. Over a period of time the methods of embalming evolved. Embalming by arterial injection method developed after Harvey's discovery of circulation. The use of formalin as a tissue hardening fluid by Dimitri D. Gerota⁷ was a break through in the process of embalming. In the late 18th century the shortage of cadavers for medical research provoked researchers to body snatching. Burke⁸ and Hare⁸ use to murder victims to asphyxiation in order to provide cadavers to the Physicians. In order to end this grave robbing and murdering the first anatomy act was passed in Britain in 1832 and they decided to provide unclaimed bodies to anatomists⁶. The cadaver available today is purely because of this act. When printing came into being Strasbourg played a crucial role in the dissemination of knowledge of Anatomy. The first official dissection hall was established in Strasbourg in 1670⁹. Anatomy was the first basic science to be established in Japan.

Now a days there are various tools available for the study of Human Anatomy. Dissection of formalin fixed cadavers is the basic tool. Plastination is a technique used to preserve a tissue by replacing an organic fluid with silicone. This method was established in 1977 by anatomist Gunther von Hagens¹⁰. Corrosion casting¹¹ is a technique in which the organ system is injected with Latex and then put in a solution of concentrated acid causing destruction of surrounding tissues. Plastination and corrosion casting are the tools specifically used for the study of vascular anatomy. In this electronic era it is pleaded that students should be taught on live human beings using newer tools such as cineradiology, sonography, CT, Radioisotope scanning and MRI. The practise of classes being taken on audio and video records is already invoked and in Anatomy too it is suggested that a teacher can be replaced

by video screening classes. The use of virtual reality¹² in medical imaging allows true virtual dissection of anatomical structures in the human body as seen in a living subject.

In all the medical colleges in India the First year medical curriculum is condensed from One & half years to one year. The time spent by students in the dissection hall is reduced. It is a notion that many aspects of basic sciences are now irrelevant and must give way to clinical sciences. The draw back of such a suggestion is evident from an example in the History of Anatomy. For over 1300 years after the death of Claudius Galen¹³ the misconception of presence of Rete Mirabile¹³ in man and multi lobulated human livers persisted. The persistence of these misconceptions was due to the fact that the teachers and students failed to dissect and verify the anatomical facts for themselves, and so it is today. The students learning anatomy must dissect and verify the facts for themselves. Otherwise how will the student get a feel of a vein as against that of an artery, a nerve as against that of a tendon or a duct? How will the relationships of various structures be engraved in memory? A finest radiologists says that there is no interpretation of the shadowy films without a deep and intimate understanding of Anatomy¹⁴. Various invasive procedures require invasion of a variety of vessels, ducts and organs for the benefit of a patient. For these procedures to be done solid foundation of Anatomy is required. The study of Anatomy evolved as a science from instinct to curiosity and from curiosity to basics of medical science. Leonardo da Vinci studied anatomy as an art. The anatomical instinct is inbuilt in a predator who knows the weak areas of its prey. The method of learning human anatomy is by dissection of human bodies. It is further fostered by dissection photographs, Atlases, live demonstration of cadaveric dissection, models, Virtual reality 3D reconstruction. However it is without a doubt that a cadaver dissection still stands the test of time and continues to be the best way to study human body structure and organisation. The student – Cadaver – Patient relationship is of paramount importance in medical education.

References

1. L. Rajgopal, GN Hoskeri, PS Bhuiyan, K Shyamkishore, History of Anatomy in India; Journal of Postgraduate Medicine; Year 2002, Vol.48, issue3, Page 243-5.
2. Claus S. Schnorrenberger, Anatomical roots of Chinese medicine & Acupuncture, J Chin Med 19 (1,2) 35-63, 2008.

3. Daniel Garrison, Malcolm Hast & North western University, www. Veslius – Fabricia.com, Northwestern University Evanston, IL USA, March 19, 2003.
4. http://en.Wikipedia.org/wiki/Leonardo_da_Vinci
5. http://en.Wikipedia.org/wiki/John_Hunter
6. Dr. Pratibha D. Athavia, History of Anatomy & Embalming Techniques, Ch-11, Pg – 48, Vikas Medical Publishers, Mumbai, 2003, ISBN No. 81-88240 -08-7
7. Sociedade Brasileira de Anatomia, Zahoi D.E, The Contribution of Romanian Physician Dimitrie Gerota to the Development of Anatomy, Braz. J. Morphol.Sci., 2008, Vol.25, no 1-4, P 153-156.
8. C.K Parikh, Parikh's Textbook of Medical Jurisprudence and Toxicology, 5th edition, CBS Publishers, Ch – 8, Pg 204 – 205.
9. Le Minor JM, Kahn JL, Arch Anat Histol Embryol 1989; 72: 125-55.
10. Cohn F. Re – inventing anatomy: The Impact of Plastination on how we see the human body. Clin Anat.2002; 15: 443 – 444.
11. Jean Francois UHL, Sylvain ORDUREAU, New computer tools for virtual dissection to study the anatomy of the vascular system, Phlebology N^o61.
12. Nieder GL, Scott JN, Anderson MD. Using Quick Time Virtual reality objects in computer assisted instructions of gross anatomy: Yorick – the VR Skull. Clin Anat 2000;13:287 – 293.
13. Richard Sugg 2013, The smoke of the soul, Medicine, Physiology and Religion in Early Modern England, The Palgrave Macmillan, books.google.co.in
14. Dr. Sunil Pandya, Anatomy – Cinderella in the Medical Curriculum, A Handbook of Department of Anatomy 2001-2002, Seth G.S Medical College, Pg 1-3.

Authors Column



Dr. Jyoti P Kulkarni has passed MS in Human Anatomy in January 2003 from Seth G.S Medical College, Mumbai University. She was awarded Kalgutkars Gold Medal by the university for scoring highest points in the subject. At present she is working as Professor and Head, Department of Anatomy, Sikkim Manipal Institute of Medical Sciences since 2013. She is a life member of Anatomical society of India and Society for clinical anatomists.

