

Faculty perspectives regarding effective use of clinical anatomy in teaching of clinical subjects

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Abstract

Introduction: In recent years, an integrated approach is adopted in many universities for use of anatomy in clinical teaching. Therefore it is rational to have hands on experience on specially embalmed cadavers before starting surgery on living human beings. So this study was undertaken to evaluate faculty perspectives regarding effective use of clinical anatomy in teaching of clinical subjects. **Objectives:** 1. To study perspectives of faculties regarding integrated approach in clinical teaching by incorporating it with clinical anatomy teaching. 2. To evaluate effectiveness of use of clinical anatomy in clinical teaching. **Material and Methods:** In this study we used specially embalmed cadavers for use of postgraduate teaching of surgeries. In the department of Anatomy, clinical teachers performed demonstrative surgeries on cadavers with simultaneous teaching with the help of anatomist. **Results:** All teachers from clinical subjects as well as anatomy opined that use of clinical anatomy can boost confidence and minimize intraoperative complications. They also mentioned such kind of training gives necessary anatomical knowledge which is foundation for excellence in clinical procedures. **Conclusion:** In conclusion clinical Anatomy can be used effectively in the beginning if post graduate education of clinical subjects. Also dedicated courses or workshop of short duration like 1 to 2 days can be framed for individual clinical procedures.


Keywords: Clinical Anatomy, Surgical skills training, cadaveric training, medical education.

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INTRODUCTION

With emergence and development of medical education technology, paradigms are being shifted in medical education towards competency based medical education. Knowledge of anatomy can be used more effectively in teaching of clinical subjects to impart competency based medical education. Anatomy is one of the oldest subjects

in medicine. Although having evolved over time, the common purpose of the scientific field, over decades, and even centuries, is the explanation of the structure and morphology of the human body. Traditionally, most professional anatomists were also clinically trained; and, therefore, their research was oriented toward the human structure¹. In Germany, the discussion about anatomy, and how anatomy related to clinical medicine, peaked at that time in a well-remembered article by the anatomist Herbert Lippert about the "Dehumanization of anatomy and medicine."² He called for a more clinical and living, teaching approach for undergraduate anatomy, resulting in a broad controversial discussion in the whole medical community. In recent years, an integrated approach is adopted in many universities for use of anatomy in clinical teaching e.g. Sectio chirurgica, an anatomically moderated, surgical prosection which is held in parallel to the dissection course.³ In India basic sciences like anatomy are being taught during first one year of medical

curriculum. Usually students get admitted to postgraduate courses approximately 4-5 years after learning of Anatomy dissections. Due to such large time gap there are fair chances of forgetting minute details of internal morphology of different structures. Therefore it is rational to have hands on experience on specially embalmed cadavers before starting surgery on living human beings. So this study was undertaken to evaluate faculty perspectives regarding effective use of clinical anatomy in teaching of clinical subjects.

MATERIAL AND METHODS

This study was conducted at NDMVPS Medical College, Adgaon, Nashik in 2009. In this study we have embalmed six cadavers with saturated salt solution so that they can be efficiently used for surgical as well as medical training. Saturated salt solution was prepared by using 20 kg Sodium Chloride, one liter 20% Formaldehyde, 0.2 liter Phenol, 0.5 liter Glycerine, 4 liters Isopropyl Alcohol and 19.3 liters water⁴. The embalming process consisted of making a 3-cm incision in the femoral triangle or posterior cervical triangle; the femoral artery or common carotid artery was then cannulated, one cannula cephalad and one toward the feet. The cannulae were connected to a Porti boy pump, and approximately 1.0 L of embalming fluid was injected into the leg, the cannula was locked off, and 5.0 L was then injected through the cephalad-placed cannula. The cannulae were left in place overnight and then removed the following day, following which the femoral artery or the common carotid artery was ligated and the incision was closed. Once embalming was completed, the body was placed in a sealed plastic body bag and stored at room temperature⁵. To investigate the infectious risk from each cadaver, bacterial and fungal culture tests were performed. The samples were obtained

from the pharynx and the rectum using cotton swabs before embalming cadavers and then 14 days after embalming. There was no growth of bacteria or fungi on culture. This special embalming technique resulted in flexible condition of joints and soft tissue quality was acceptable for surgical skills training. Special ties were formed with various clinical departments like general surgery, ENT, obstetrics and Gynecology and general medicine. These departments were asked to inform 4-5 days prior whenever any resident is going to perform a surgical procedure for first time. Arrangements were made available in the department of Anatomy for teaching those residents clinical anatomy related to that particular procedure. Then clinical residents are called upon to the Anatomy department along with their teachers. In the Anatomy department senior clinical teachers performed characteristic and demonstrative surgeries on cadavers moderated by an anatomist. Then resident was given hands on experience on other cadaver. All these procedures were also shown to undergraduate students. Evaluation: A pre validated structured questionnaire was given to all anatomy and clinical teachers for evaluating effectiveness of this study. The questionnaire contained 10 items and is reproduced in the appendix.

Data Analysis

In all 78 questionnaires were distributed to the various clinical teachers and anatomy teachers by personal visits to their departments. Out of these 65 were returned filled by the teachers. The response sheets were analyzed for data extraction and appropriate tables were made. The responses were categorized into three qualitative categories: positive, neutral and negative. Percentiles and percentages were calculated for quantitative analysis.

RESULTS

Table 1: Questionnaire

Sr. No.	Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Training on cadavers increase competency in basic skills like suturing					
2	Training on cadavers increase competency in advanced skills like endoscopy, intubation					
3	Training on cadavers helped in revision of minute anatomical details of clinical importance					
4	Training on cadavers helped reduce anxiety level of residents before undertaking their first surgery					
5	Training on cadavers helped to minimize intraoperative complications likepneumothorax or damage to neighboring organs					
6	Training on cadavers leads better hemostasis control with enhanced knowledge of blood supply of related organs					
7	Training on cadavers is wastage of time and there no obvious advantage					

Open Ended Questions:

1. How such training courses can be arranged in a better way?
2. What are other advantages of such clinical anatomy training?
3. Are there any limitations of such clinical anatomy training?

Table 2

Sr. No.	Item	Strongly Agree	Agree	% Positive	Neutral	Disagree	Strongly Disagree	% Negative
1	Training on cadavers increase competency in basic skills like suturing	57	6	96.9	2	0	0	3.1
2	Training on cadavers increase competency in advanced skills like endoscopy, intubation	48	9	87.7	3	5	0	12.3
3	Training on cadavers helped in revision of minute anatomical details of clinical importance	61	4	100	0	0	0	0
4	Training on cadavers helped reduce anxiety level of residents before undertaking their first surgery	63	2	100	0	0	0	0
5	Training on cadavers helped to minimize intraoperative complications like pneumothorax or damage to neighboring organs	18	28	70.8	4	8	7	29.2
6	Training on cadavers leads better hemostasis control with enhanced knowledge of blood supply of related organs	15	27	64.6	11	8	4	35.4
7	Training on cadavers is wastage of time and there no obvious advantage	0	0	0	0	29	36	100

Results of this study showed that use of clinical anatomy in teaching post graduate students of clinical subjects enhanced their confidence before beginning of any clinical procedure. Training on cadavers increased knowledge of minute details of applied anatomy relevant to their subject. It also minimized intraoperative complications. Training on cadavers in Anatomy increased their knowledge about blood vessels in the operative area leading to better hemostatic control. Teachers also mentioned that there should be dedicated workshop about individual surgical procedure. Clinical such kind of courses has certain limitations like it does not impart courage that is required to face unexpected complications those may arise in real surgeries and that can be achieved by continuous supervised practice only.

DISCUSSION

In the era of digitalization need for quality education is being priority of most institutions and societies. For excellence in life saving clinical procedures like intubation, intercostals drainage, central venous catheterization, lumbar punctures, various endoscopic and open surgeries strong foundation of anatomy knowledge is most important requirement^{6,7}. Even the main agenda of annual congress of German Society of Surgery in 2009 was "Anatomia—quo vadis?" ("Anatomy—where to go?"). In recent years globally many international universities have notices importance of clinical anatomy and have

started dedicated courses on surgical skill training on cadavers. In India such courses are present at very few places like AIIMS (All India Institute of Medical Sciences). In the past animals were used for surgical skill training, but they cannot be exactly identical to humans in morphology and also ethical issues restrict animal use in surgical skill training⁸. Use of cadavers with the help of anatomists was found to be extremely useful and feasible by various surgical training centers all over the world^{9,10,11}. Use of cadavers for surgical training imparts real size experience and it is much closer to live patient in handling tissues and instruments. The main limitation of such training is absence of active bleeding and limited period of use of cadavers. Also initial cost of establishing clinical anatomy centers for surgical training can be expensive but it can be shared by many departments of a medical college. In developing countries like India obtaining unclaimed cadavers or cadavers donated for anatomical dissection is quite easy. In medical colleges of India it is legal to use cadavers for medical education¹².

CONCLUSION

In conclusion clinical Anatomy can be used effectively in the beginning if post graduate education of clinical subjects. Also dedicated courses or workshop of short duration like 1 to 2 days can be framed for individual clinical procedures.

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