

Role of Anatomists and Surgeons in Clinical Anatomy Instructions Inside and Outside the Operating Room

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ABSTRACT

Dissection of cadavers is the best mode of learning gross anatomy but illustrations, photographs, slides and posters also play important role. To refresh the knowledge of gross anatomy of senior medical students and young clinicians, anatomists and surgeon can play a very important role in and outside the operation room prior to surgery. Anatomists can demonstrate the gross anatomy with the help of prosected specimens, illustrations, photographs and dissection procedures of that particular region to be operated before surgery in the operating room or in the anatomy laboratory on the cadavers and specimens to refresh their knowledge of regional anatomy.

Key words: Gross anatomy; instructions; anatomists; surgery.

INTRODUCTION

In undergraduate medical training, anatomy is needed to teach the students in fourth and fifth year due to various reasons^{1,2}. Some of the medical institutions have shortened the duration of gross anatomy in their curriculum for the introduction of newly emerging specialties in medical sciences³. Anatomy is considered a prime learning issue in the operating room². Dissection of cadavers is no doubt the best mode of learning gross anatomy even today but medical illustrations, photographs, slides and posters of regional anatomy has an important role from Vesalius in 1538 to latest edition of Gray's Anatomy⁴. These illustrations are very helpful to revise the knowledge of gross anatomy for the senior medical students as they provide visual positive reinforcement in the learning process.

To facilitate clinical anatomy instructions in surgery and allied clinical sciences, the University of South Florida has developed a system of instruction in which regional anatomy is taught both before and during the surgical procedure in operating room⁵.

Anatomists can play a very positive role to make this method more practical and effective for the students in two different ways.

A : Role of anatomists in the operating room

As the patient to be operated upon is prepared for surgery, medical students on duty can review with the help of surgeon and anatomist the anatomical illustrations, radiographs, MRI, C.T Scan etc. of the relevant area of surgery. Sometimes patients are admitted on the same day of their surgery. The students who are allotted that particular patient may

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have forgotten the detailed anatomy of that particular region. They can be demonstrated normal regional anatomy along with some of the common anatomical anomalies or variants with the help of slides, plastinated specimens and models before the conduction of surgery. They can also be demonstrated the structures in layers to be dissected during operation. To start with, this method can be practiced in commonly performed operations like nephrectomy, herniorrhaphy, laparotomy, cholecystectomy and fracture dislocations. During the operation when it is safe for the patient, the operating team pauses to look at the illustrations pertaining to those phases of procedure. Students can be asked to identify the anatomical structures on the patient and confirm them from illustrations. For example during nephrectomy, from incision to removal of kidney there are many steps. The surgeon can ask the students about the structures encountered during these steps starting from skin to kidney. Similarly, during repair of inguinal hernia, students can view the illustrations of normal inguinal anatomy. They may be asked to identify the external oblique, internal oblique and transverses abdominis muscles, inguinal ligament, ilio-inguinal nerve and vessels, internal inguinal ring and inferior epigastric vessels. These illustrations can give frontal, sagittal and three-dimensional views.

B: Role of anatomists out of the operating room

This method can also be practiced, if a group of students is directed to attend the anatomy museum one day before the specific operation where clinical anatomists can illustrate to them gross anatomy of that particular region with the help of illustrations, models and dissected cadavers.

The efficacy of this method was experienced and evaluated in University of South Florida recently through verbal feedback and a questionnaire to the

students of last 8 years(5). The commonest questions asked from the students were divided into two categories.

1. Students who could see the deeper structures during operation while standing nearby the operation table.
 - a) Prior to my seeing these slides of the regional anatomy during the operation, my knowledge of these structures was: (good / fair or poor).
 - b) After I viewed the anatomical slides intra operatively, my knowledge of regional anatomy was: (greatly / moderately / slightly / not improved).
 - c) During the operation I was able to see the deep structures: (well / moderate / intermittently / seldom / poorly).
 - d) The illustration helped me to recognize the structures during the operation: (greatly / moderately / little / no help).
 - e) In the most recent study, students were asked: The illustrations helped me to form a spatial (three-dimensional) concept of the operating area: (no / little / moderately / great help).
 - f) 96 % of students of this group rated that this method was of great or moderate help while only 7 % claimed of little or no help.
2. Feedback was also taken from the students who could not see the deeper structures during operation.
3. 87 % of the students of this group rated in moderate or great help. Whereas 13 % claimed little or no help

FEATURES OF THIS METHOD

- It can be used during or before the operation.
- It gives immediate relevance to the learning process.
- This method provides varying degrees of knowledge.
- Favorable acceptance of this method by the students of graduate and postgraduate courses.

DISCUSSION

The students accepted this method of teaching anatomy because anatomy is taught to the students in early years of their course then again they need it in final year or during post graduation. This gap results in their reduced knowledge about the subject. Lack of practical anatomy (dissection on cadavers) which has been replaced by theoretical anatomy in

some of the institutions due to non-availability of unclaimed or donated bodies. Dissection of cadavers is said to be the most important and best method of learning gross anatomy throughout the world even today. Lack of individual attention to students during their academic session may be one of the causes of the inadequate knowledge of gross anatomy.

It was postulated that non-verbal memory storage is more stable than verbal memory storage over intervals of hours to days⁶.

According to another study, the recognition memory seems to indicate that adult subjects in memory experiments will encode and store both pictorial and verbal codes to simple pictures. Whereas they do not naturally doubly encode words alone. They consider two memory encoding to be better than one⁷.

It is proved that learning process of the students is enhanced by having visual confirmatory stimuli to assist the learning process in addition to verbal instructions for the teachers in gross anatomy laboratory and operating room.

Keeping in mind the effectiveness of the system of instruction developed by University of South Florida, this method can be introduced in the curriculum of senior medical students and postgraduates of medical institutions on trial basis followed by evaluation.

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