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Short Communication

Teaching cadaveric laparoscopic anatomy in medical curriculum – An essential learning option

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ABSTRACT

Teaching anatomy to the medical students is shifting from learning the traditional gross anatomy with didactic lectures to learning anatomy by laparoscopic dissection on the cadavers. The open dissection hall teaching is loosing relevance to learning clinical anatomy with laparoscopic dissection live by the medical students. Laparoscopic demonstrations can generate interest in surgery in the students that would otherwise not be possible in the preclinical years. Additional advantages of laparoscopic anatomy learning are improved three-dimensional orientation, increased dexterity and development of team working skills among students. The magnified laparoscopic views and the ability to deeply explore anatomical features to demonstrate the basic anatomy better with full clarity does makes an impression on the young medical students. The major disadvantage is student may feel the lack of pleasure of tactile sensation, of touching the anatomical organs during laparoscopic demonstration.

1. Introduction

"Whatever the future holds, it is important not to change simply because change is possible".

With the non-availability of cadavers in the majority of the medical colleges in India and the escalating cost of preserving the cadavers in the anatomy dissection hall, the trend in anatomy teaching is shifting towards digital teaching with videos. With the thrust being given on early clinical exposure and experience, teaching laparoscopy on cadavers is the new armamentarium and the students are exposed to the magnified view of the anatomical organs in the body in a three dimensional view and it was seen that laparoscopic demonstrations did generate interest in surgery and in clinical anatomy that would other-wise be absent in the preclinical years.[1] Laparoscopy in fresh frozen cadavers allows for views like those witnessed in the operating room and is being used effectively in undergraduate and post-graduate medical education in many parts of the world currently.

1.1. Why the need for laparoscopy in Anatomy curriculum?

In a study on undergraduate teaching, it was seen that the knowledge of anatomy of abdominal wall and peritoneal cavity improved from 62% to 91% in students after exposure to surgical video. Similarly, knowledge regarding laparoscopy improved from 37% to 85% and awareness about surgical video as an additional method of learning improved from 46% to 89%. Almost 93% of students were able to appreciate the organs and structures within the intraperitoneal cavity when laparoscopy was used for teaching the clinical anatomy.[1] With majority of the

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surgery being done laparoscopically in clinical practice, it is very important for the first year MBBS medical graduates in the early part of their career to understand the minimally invasive surgical anatomy too as visualized with a laparoscope. This learning experience of anatomy with laparoscope also provides an opportunity for students to consider their future speciality and the field for their residency programme.[2]

In view of Laparoscopic inguinal hernia repair becoming one of the treatment options for surgeons, it is very important for the students to learn the laparoscopic inguinal anatomy well in the early part of the career to decrease the learning curve during surgical practice later. This logic is the same for abdominopelvic or oesophageal surgeries too.

In another study, more than 75% of students found the laparoscopic demonstrations of anatomy highly valuable, and students perceived a significant increase in their understanding of abdominopelvic anatomy ($P < 0.01$). It resulted in 62% of students with previous interest in surgery and 10% of students without previous interest in surgery reporting increased interest in pursuing surgical careers.[3] Another study reiterated that students strongly indicated that the laparoscopic videos helped them understand aspects of anatomy they were unable to learn about through open dissection of cadavers especially of the anatomy of the gastroesophageal junction and lesser sac, and that the videos helped them identify structures through a laparoscope in real-time.[4] Three-dimensional anatomy training with dissection models resulted in an increase of spatial and three-dimensional understanding of the anatomy of the inguinal region for the participants in another study.[5] This study showed that identification and recognition of anatomical structures can be better trained in a three-dimensional environment because the actual use of this kind of information (the actual test) will always be in a three-dimensional setting, in the operation theatre.

"The foundation of the study of the art of operating must be laid in the dissecting room" – Robert Liston

2. Conclusion

As there is change in the trend from open surgery to laparoscopic surgery in clinical practice, the art and science of learning the clinical anatomy by the undergraduate students are also slowly changing from didactic class with open dissection on the cadavers to laparoscopic clinical anatomy teaching. There is a difference in the orientation of anatomy between open versus laparoscopy and its very important for the medical graduates to understand and grasp the changing trend and adapt themselves in learning the clinical anatomy. The major problem of learning laparoscopic anatomy is that it is not yet advanced enough to overcome its disadvantage of the lack of tactile sensation.

Last but not the least, the laparoscopic dissection allows the student to have a "surgeon's eye view", so it should be viewed as an adjunct to the more modern approach of anatomy teaching.

3. Conflict of Interest

None.

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