A Well-Structured, Timed Curriculum That Incorporates Simulated Laparoscopic Surgical Training Improves Resident Education and Passage of the FLS Exam

Kfir Ben-David, MD, FACS
Department of Surgery, University of Florida, College of Medicine, Gainesville, FL

Abstract

New methods of developing and teaching laparoscopic skill sets are necessary because it is becoming increasingly clear that laparoscopic surgery requires a completely different skill set with manipulation of surgical instruments on a two-dimensional video screen in an actual three dimensional operative field. Spatial relationships, psychomotor skills and the development of ambidextrous skills in a small intra-abdominal space are often a very difficult task for novices to perform when learning the principles of minimally invasive surgery. With the added restrictions on work hours, teaching residents to proficiently perform these advanced laparoscopic procedures, essentially requires them to master some of these techniques prior to their actual performance in the operating room environment. This is most often accomplished with the aid of surgical simulators. Structured task repetition practice over a number of sessions instead of massed training during a single session are important aspects of motor training that are pivotal to achieving proficient laparoscopic skill acquisition and long-term retention. Although these principles have been embraced by many academic centers, a little more than half of the surgical programs with surgical simulations have mandatory resident attendance. This infers that many surgical residency programs may not be instituting an appropriate structured simulation curriculum. Hence, uniform training and thus mandatory participation can lead to good compliance that can be translated to maximum curricular efficiency.

Introduction

Results: All graduating general surgery chief residents passed their Fundamental Laparoscopic Skills exam as required by the American Board of General Surgery.

Conclusions: A well-structured, timed curriculum that incorporates simulated laparoscopic surgical training that is easily accessible to the trainee improves surgical performance and resident education. On-going routine practice with laparoscopic trainees leads to better performance, surgical outcome, intraoperative laparoscopic skills, better module for resident education and passage of the Fundamental Laparoscopic Skills exam as required by the American Board of General Surgery.

Methods

• A well-structured, timed curriculum was established which incorporated simulated laparoscopic surgical training.
• The FLS manual skills program consisting of 5 tasks of increasing complexity was implemented within our surgical skills course:
  • Task A: peg transfer: A series of 6 plastic rings are picked up in turn by a grasping forceps from a pegboard and then placed around a pool on the corresponding right-sided pegboard. All of the rings are transferred from the left to right, the process is reversed, requiring transfer from the right to left.
  • Task B: pattern cut. In this exercise, a 4-inch square gauze is suspended by clips. The surgeon is required to cut a precise circular pattern from the gauze along a previously marked 1-mm-wide template.
  • Task C: ligation loop. For this task, the trainee must introduce the pretied ligation loop (endloop) through one trocar, while controlling a tubular structure (foam appendage) using a grasping forceps through the other trocar. The loop is then cinched precisely on a previously marked 1-mm line on the appendage.
  • Task D and E: suturing with intracorporeal and extracorporeal knot tying. In these exercises, a 2-Drills suture with a curved needle is introduced through the trocar and positioned properly using the needle holders. A stitch is then placed through target points on either side of a slit in a Penrose drain, and the suture is tied using either an extracorporeal (instrument) technique (task E, 12-cm-long suture) or an intracorporeal (instrument) technique (task D, 12-cm-long suture).

Results & Conclusions

References

- A Well-Structured, Timed Curriculum That Incorporates Simulated Laparoscopic Surgical Training Improves Resident Education and Passage of the FLS Exam.