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Editorial

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Implementation of new technology: how to best train the trainers

Operative techniques in colorectal surgery have significantly evolved in recent decades from open surgery to minimally invasive approaches utilizing hand assisted laparoscopy, pure laparoscopy, trans-anal approaches, and a robotic platform. The wide adoption of minimally invasive approaches into clinical practice has been largely due to the clearly described benefits including shorter lengths of stay postoperatively [1,2], improved body image [3], decreased infertility rates [4,5], and decreased intravenous narcotic use [1]. However, each minimally invasive approach has its own limitations. Laparoscopy, for example, can be challenging in the pelvis due to the constraints of the bony pelvic anatomy and the limitations of degrees of freedom with the current laparoscopic instrumentation and camera technology. A trans anal technique for a distal proctectomy is still in its infancy, and while there are limited reports suggesting equivalent postoperative outcomes [6–8], the learning curve is long before mastering this technique and concerns of carbon dioxide embolism may hinder its use [9,10]. A robotic approach builds on the known techniques of laparoscopic surgery with improved dexterity, visualization and ergonomics compared to traditional laparoscopy. With an extensive body of literature now reporting equivalent safety and efficacy outcomes as compared to conventional laparoscopy [11,12], and other reports of its equivalent outcomes in ileal pouch anal anastomoses [13], the robotic platform has become increasingly utilized in both benign and malignant colorectal operations [14,15]. However, there are again limitations - narrow visualization and lack of haptic feedback [16,17]. With increasing adoption by colorectal surgeons and their trainees, instruction, feedback, and safe integration into clinical practice are paramount. Training courses are a useful source of instruction, but not available to all practicing surgeons and their trainees, especially now that utilization is much more common. Thus, it becomes crucial to teach mentors the optimal way to instruct, and understand what is considered critical for learning the technical aspects of the robot.

Ruiz *et al.* wrote a very thoughtful paper on the importance of not only robotic training, but the standardization of training by teaching the trainers *how* and *what* to teach. New technological advances introduced in the operating room require careful implementation with standardization, ongoing instruction, and evaluation to be safe and eventually advantageous for the patient. The challenge is that not all teachers instruct the same way; in fact, not all teachers find the same content useful, rank content of varying importance in the same order, or provide real time feedback in the same method. Thus, the educational experience can become fragmented with varying levels of instruction, and thereby, a heterogenous product of trainees. This then creates a new technology being used at varying degrees of ability and expertise which is not fair to patients being treated.

In their paper, Ruiz *et al.* used the Delphi method to gather expert consensus on a consistent curriculum for training the trainers. Questions were asked regarding how the training should be implemented and the most important aspects to include in a training course, and how many trainees a proctor should train per year to be proficient. Experts in robotics consistently stated that 'training' should be taught, in a defined program, in an attempt to deliver a consistent curriculum to the trainee. The art of operating is not always taught easily, and some do it much better than others. Trainers felt they should be trained in how to deal with the difficult trainee, and valued instruction on how to optimize feedback, physical instruction, and technical skills training. Interestingly, despite the increasing use of teleproctoring in surgery internationally, there was not a consistent opinion about the use of virtual reality in teaching. As technology changes rapidly, this may play a more important role in training. Overall the authors highlight an important feature of technological advances that have to be safely implemented and taught among colleagues and in training programs: it's not just the mentees and surgical trainees who get a certificate of completing a course, but it is also the trainer who gets a certificate in how to train. This is a key component that often gets overlooked. This paper underscores the critically important step of teaching the teachers how to educate in order to achieve the greatest experience for safe implementation of a new technological advancement.

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