

# The Effect of Formal Robotic Residency Training on the Adoption of Minimally Invasive Surgery by Young Colorectal Surgeons

David E. Disbrow, MD,\* Stephanie M. Pannell, MD,\* Beth-Ann Shanker, MD,\* Jeremy Albright, PhD,\* Juan Wu, MS, ScD,\* Amir Bastawrous, MD,<sup>†</sup> Mark Soliman, MD,<sup>‡</sup> Jane Ferraro, MPP,\* and Robert K. Cleary, MD\*

\*Colon and Rectal Surgery, St Joseph Mercy Hospital Ann Arbor, Ann Arbor, Michigan; <sup>†</sup>Swedish Colon and Rectal Clinic, Swedish Cancer Institute, Swedish Medical Center, Seattle, Washington; and <sup>‡</sup>Colon and Rectal Clinic of Orlando, Orlando, Florida

**OBJECTIVE:** The minimally invasive approach to colorectal surgery is still underused. Only 50% to 60% of colectomies and 10% to 20% of rectal resections for cancer are performed laparoscopically. The increasing adoption of the robotic platform for colorectal surgery warrants re-evaluation of minimally invasive surgery (MIS) training techniques. Although considering lessons learned from past laparoscopic training, a standardized national robotic training program for colon and rectal surgery residents was developed and implemented in 2011. The objective of this study was to assess the effect of this program on the usage of MIS in practice following residency training.

**DESIGN:** An internet-based 18 question survey was sent to all colon and rectal surgeons who graduated from ACGME-approved colon and rectal surgery residencies from 2013 to 2016. The survey questions were designed to determine MIS practice patterns for young colon and rectal surgeons after residency training for those who participated in the standardized national robotics training course when compared to those who did not participate. Grouped bar charts with error bars are presented along with summary statistics to offer a descriptive overview of training experiences by cohort.

**SETTING/PARTICIPANTS:** This study is a survey of colon and rectal surgeons who completed colon and rectal surgery

residencies to include all 52 programs across the United States.

**RESULTS:** The overall survey response rate was 37.2% (109 of 293). Most (79.8%) of the colon and rectal surgery resident respondents participated in the formal robotic training course. The average respondent reported that 84% of colectomy cases and 74.8% of rectal resections done after residency training by all respondents were by the MIS approach. The laparoscopic approach was most prevalent for colectomies for both course participants (laparoscopic 55.1%, hand assisted lap 14.5%, and robotic 15.7%) and nonparticipants (laparoscopic 53.8%, hand assisted lap 12.3%, and robotic 15.9%). For rectal resections, the robotic approach was the preferred option for course participants (laparoscopic 24.5%, hand assist lap 14.0%, and robotic 39.2%) whereas laparoscopic and open approaches were used more often by nonparticipants (laparoscopic 36.8%, hand assist lap 8.0%, robotic 26.8%, and open 28.4%). Barriers to robotic implementation included lack of robotic mentors, inadequate robotic assistance, and the preference for the laparoscopic approach.

**CONCLUSION:** The usage of MIS by young recently fellowship-trained colorectal surgeons is higher than previously reported. The proportion of rectal cases done robotically is higher compared to colon cases and with an apparent decrease in open rather than laparoscopic surgery, suggesting selective usage of robotic surgery for more challenging cases in the pelvis. Methods to more effectively increase the usage of minimally invasive approaches in colorectal surgery warrant further evaluation. (J Surg Ed ■■■-■■■. © 2017 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflicts of interest: Robert K. Cleary, MD; Amir Bastawrous, MD; Mark Soliman, MD have received honoraria for education by Intuitive Surgical. All other authors have no conflicts of interest.

Correspondence: Inquiries to Robert K Cleary, MD, St Joseph Mercy Hospital Ann Arbor, 5325 Elliott Dr, Suite #104, Ann Arbor, MI 48106; fax: +(734) 712-8151; e-mail: Robert.Cleary@sjoeshealth.org

**KEY WORDS:** colorectal, robotic, minimally invasive, laparoscopic, residency training

**ACME COMPETENCIES:** Patient Care, Practice-Based Learning and Improvement, Systems-Based Practice

## INTRODUCTION

Adoption of the robotic approach to colorectal surgery has increased significantly since 2008. This may be due to laparoscopic surgery limitations that include a steep learning curve and the need for an experienced assistant. This is most evident for operations deep in the pelvis for rectal cancer where a stable camera platform and articulating instruments allow clear operative advantages.<sup>1-3</sup> Only 10% to 20% of operations for rectal cancer and 50% to 60% of colectomies are performed by the laparoscopic approach—a minimally invasive platform in place since 1991. Robotics may allow a minimally invasive option for operations that many surgeons consider too challenging by the laparoscopic approach and thereby increase the penetrance of minimally invasive colorectal surgery.<sup>4-10</sup> The consequent decrease in traditional open surgery would allow an increase in favorable outcomes attributed to the minimally invasive approach that include decreased hospital length of stay, perioperative pain, surgical site infections, and long-term morbidity from incisional hernias.<sup>11-13</sup>

Though laparoscopic training in general surgery residency programs has been limited by case numbers and nonclinical skills exercises, training methods have evolved to include simulation methods and instructional video.<sup>14-16</sup> In 2011, the authors developed and implemented a robotics training program for colon and rectal surgery residents based on lessons learned from laparoscopic training. This study was designed as a survey of colon and rectal surgeons who were colon and rectal surgery residents during the 2013 to 2016 calendar years to determine effectiveness and to glean insight into ways to improve minimally invasive training methods.

## METHODS

### Colorectal Surgery Residents Robotic Training Background

The Colon and Rectal Surgery Training Program that is the subject of this study and that started in 2011 to 2012 is depicted in [Appendix A](#). Data were available for the years 2013 to 2016. Totally, 235 (79.8%) of the colon and rectal surgery residents over 3 years participated in the robotic training course. Enrollment increased in later years with 50 of 52 programs (90 of 92 residents) participating in the last (2015-2016) year of the study.

Course outcomes and participant/mentor comments were presented at the annual spring Association of Program Directors for Colon and Rectal Surgery (APDCRS)

meetings. Because training resources are expensive and because many fellows were not offered the opportunity for console time upon returning to their institution after training, a pilot advanced course was offered to 13 residents at 8 programs in the 2015 to 2016 academic year at sites where the mentor had performed greater than 100 cases and could potentially offer the resident at least 35 cases during the training year. There were several criteria to determine eligibility for participation in the pilot including a letter of intent from the resident and a letter of support from the Program Director. The results of the advanced pilot will be the subject of a follow-up study.

## Study Design

An internet-based 18 question survey was sent to all colon and rectal surgeons who graduated from Accreditation Council for Graduate Medical Education (ACGME)-approved colon and rectal surgery residencies from 2013 to 2016 ([Appendix B](#)). Questions were designed to determine the number of open and MIS cases done during General Surgery and Colon and Rectal Surgery residencies for those who participated and those who did not participate in the APDCRS-sponsored national robotics training course. Questions were also designed to determine barriers to training and practice patterns upon completion of residency. A descriptive overview of training experiences by academic year is depicted by grouped bar charts.

## RESULTS

In all, 43% (126 of 293) of residents responded to the survey with 109 completing all parts of the survey—27.5% of the 109 responders were from the 2013 to 2014 academic year, 34.9% were from 2014 to 2015, and 37.6% were from 2015 to 2016. Of these, 79.8% participated in the robotic training course; 20.2% did not. During General Surgery residency, 91.7% had some exposure to laparoscopic colorectal resections with 50.0% doing greater than 25 cases. Only 55.3% of this group participated in robotic training during General Surgery residency and only 1.9% did greater than 25 cases. During Colon and Rectal Surgery residency, 100% of respondents had laparoscopic training with 66.9% performing greater than 50 cases. In contrast, 13.0% of this group had no robotic exposure and only 4.6% performed greater than 50 cases.

For course participants and nonparticipants grouped together, respondents reported that on average, 56.4% of colectomies were done laparoscopically, 15.6% were done by hand assisted lap, and 16.9% were done with robotic approach ([Fig. 1](#)). [Figure 2](#) shows that the proportion of robotic colectomies increased with time after residency completion (2013-2014: 27.5%, 2014-2015: 11.4%, 2015-2016: 11.0%). For rectal resections, the mean

Download English Version:

<https://daneshyari.com/en/article/8834709>

Download Persian Version:

<https://daneshyari.com/article/8834709>

[Daneshyari.com](https://daneshyari.com)