Assessing the impact of a 2-day laparoscopic intestinal workshop

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Background: Surgical educators have responded to the demand for increased skills in minimally invasive surgery by offering short technique-focused workshops at academic centres. The purpose of this study was to determine the impact of a comprehensive laparoscopic intestinal workshop for the adoption of laparoscopic colonic surgery.

Methods: A 2-day comprehensive laparoscopic intestinal surgery workshop included didactic teaching and supervised hands-on practice of numerous laparoscopic colon resections on a cadaveric model. Participants completed pre-, post- and 6-month postcourse questionnaires.

Results: The participants ($n = 39$) had been in practice for a mean of 10 (interquartile range 3–18) years. Fifty-one percent ($n = 20$) were already performing laparoscopic colectomies as part of their practices prior to the course. Regardless of whether they were performing laparoscopic colectomies prior to the course or not, attending the 2-day workshop improved their self-assessed preparedness to perform laparoscopic colectomies. Six months after the intestinal workshop, 10 of 16 respondents who were not performing laparoscopic colectomies prior to the course had performed at least 1 since the course. Seven of these individuals had a preceptor for their first case. Reasons cited for not performing a laparoscopic colectomy since the workshop included perceived inadequate surgical skill set, a lack of preceptor and the lack of an appropriate patient.

Conclusion: A comprehensive laparoscopic intestinal workshop contributed to the perceived acquisition of advanced laparoscopic surgical skills. Local laparoscopic preceptorship was an important adjunct to the workshop for the incorporation of laparoscopic colorectal surgery into practice.

Contexte : Les formateurs en chirurgie ont répondu à la demande de compétences accrues en chirurgie à effraction minimale en offrant dans des centres universitaires de brefs ateliers portant sur 1 technique à la fois. Cette étude visait à déterminer l'effet sur l'adoption de la chirurgie du côlon par laparoscopie d'un atelier intégré traitant de laparoscopie intestinale.

Méthodes : Un atelier intégré d'une durée de 2 jours portant sur la chirurgie intestinale par laparoscopie comportait une formation théorique et des exercices pratiques sous surveillance au cours desquels les participants ont pratiqué de nombreuses résections du côlon par laparoscopie sur un modèle de cadavre. Les participants ont rempli des questionnaires avant et après le cours et 6 mois plus tard.

Résultats : Les participants ($n = 39$) exerçaient depuis en moyenne 10 (intervalle interquartile de 3 à 18) ans. Cinquante-et-un pour cent ($n = 20$) pratiquaient déjà des colectomies par laparoscopie avant le cours. Qu'ils aient pratiqué ou non des colectomies par laparoscopie avant le cours, la participation à l'atelier de 2 jours a amélioré leur préparation autoévaluée à pratiquer des colectomies par laparoscopie. Six mois après l'atelier, 10 des 16 répondants qui n'avaient pas pratiqué de colectomie par laparoscopie avant le cours en avaient effectué au moins 1 depuis. Sept d'entre eux ont bénéficié d'un précepteur pour traiter leur premier cas. Les compétences en chirurgie jugées inadéquates, le manque de précepteurs et le manque de patients appropriés étaient au nombre des raisons invoquées pour ne pas avoir pratiqué de colectomie par laparoscopie depuis l'atelier.

Conclusion : Un atelier intégré portant sur la chirurgie intestinale par laparoscopie a contribué à l'acquisition perçue de techniques avancées de chirurgie par laparoscopie. Le préceptorat local en laparoscopie a constitué un ajout important à l'atelier et a permis d'intégrer dans la pratique la chirurgie colorectale par laparoscopie.

Most Canadian general surgeons believe that acquiring advanced minimally invasive surgical (MIS) skills is important.¹ Currently, most surgeons are developing their advanced MIS techniques, such as those required for laparoscopic colorectal surgery, while in practice. This has posed a substantial challenge to surgical educators who have responded to this demand primarily through short, technique-focused workshops conducted at academic centres.¹⁻³ Surgeons have reported that these courses have resulted in an improvement of knowledge and basic skills related to MIS procedures.⁴ The objective of this study was to further assess these short courses, specifically a comprehensive 2-day laparoscopic intestinal workshop for the adoption of laparoscopic colonic surgery into practice.

METHODS

A 2-day laparoscopic intestinal surgery workshop was conducted at The Ottawa Hospital by the division of general surgery at the University of Ottawa. The workshop included interactive discussions during a live laparoscopic colon resection, didactic teaching, video clips and supervised hands-on practice of laparoscopic colon resections on cadaveric models. The maximum number of participants per workshop was 12, and the ratio of laparoscopic facilitators to trainees was 3:1. From 2006 to 2007, participants from 4 workshops completed a pre-, post- and 6-month postcourse questionnaire. Summary statistics and univariate analyses were conducted using SAS version 9 statistical software.

RESULTS

Thirty-nine practising surgeons were included in the analyses. Four trainees and 1 nonresponding practising surgeon were excluded. The median age of the participants was 42 years (interquartile range [IQR] 38–52), 90% were men, the median number of years in practice was 10 (IQR 3–18) and 80% were community surgeons. Forty-four percent ($n = 17$) had taken 1 previous laparoscopic course and 41% ($n = 16$) had taken at least 2. Prior to the course, 97% and 56% had performed more than 20 laparoscopic cholecystectomies and appendectomies, respectively. Fifty-one percent reported that they had performed at least 1 laparoscopic colectomy, and 77% reported they had performed at least 1 other advanced laparoscopic procedure, such as laparoscopic Nissen fundoplication, gastric bypass, splenectomy or inguinal hernia repair. Fifty-four percent ($n = 21$) learned laparoscopic skills after their residency, and 51% ($n = 20$) were already performing laparoscopic colectomies before the course.

We sought to identify precourse factors (listed in Table 1) that could be associated with precourse adoption of laparoscopic colectomy. We did not identify statistically significant or clinically important associations with precourse factors. The number of years in practice, yearly volume of

colonic resections, availability of a local laparoscopic preceptor or the previous attendance at laparoscopic courses were not significantly associated with the precourse incorporation of laparoscopic colectomy into practice.

Immediately postcourse, the participants were asked how prepared they were to perform laparoscopic colectomies. The responses were compared with their precourse responses and are reported in Table 2. Although the mean level of reported preparedness was greater for surgeons who were performing laparoscopic colectomies before the course compared with those who were not, both groups had a statistically significant increase in perceived preparedness after completion of the course. The participants were asked if they planned to perform laparoscopic colectomies as part of their routine practice. All respondents reported that they intend to perform laparoscopic colectomies after completion of the course. However, only 11% ($n = 2$) of the surgeons who were not performing laparoscopic colectomies before the course and 40% ($n = 8$) of those who had already incorporated laparoscopic colectomies into their practices felt ready to perform these procedures without additional training. All other respondents reported that they required additional training and that they planned to continue with preceptorship.

Six months after completion of the course, the participants were asked if they had incorporated laparoscopic colonic surgery into their practices, and the results are depicted in Figure 1. Six of the 39 participants did not respond at this point. Fifteen of 17 respondents who were already performing laparoscopic colectomies prior to the course had performed at least 1 laparoscopic colectomy since the course. Ten of 16 respondents who were not performing laparoscopic colectomies prior to the course had completed at least 1 within 6 months after the course.

Table 1. Precourse readiness for adoption of laparoscopic colectomy among 39 participants of a 2-day laparoscopic intestinal surgery workshop at The Ottawa Hospital

Variable	Currently perform laparoscopic colectomy, %*	
	No, $n = 19$	Yes, $n = 20$
Years in practice		
< 10	53	45
≥ 10	47	55
Colon resections, no./yr		
< 11	18	37
11–20	18	16
> 20	65	47
Partner who performs laparoscopic colectomy	63	70
Partner who performs other advanced laparoscopic surgery	47	55
Preceptor available in your hospital to begin laparoscopic colectomy	47	40
Attended previous laparoscopic course	68	85
*Percentages were rounded to the closest whole number, so they may not add up to 100%.		

From this group, 5 included curable cancer and 7 had a preceptor for their first case. The 8 surgeons who had not performed a laparoscopic colectomy since the course cited the lack of adequate technical skills, the lack of a preceptor and the lack of an appropriate patient as reasons.

DISCUSSION

The findings from this study have illustrated that brief MIS technical workshops have perceived value to surgeons who have vastly differing experience with minimally invasive colonic surgery. Similar to previously published observations,⁴ the self-reported preparedness to perform laparoscopic colectomies increased for participants regardless of their precourse experience. However, on closer examination, brief technical workshops have a different function, depending on the participants' precourse degree of adoption of advanced MIS. The workshop provides an introduction to less experienced surgeons, increasing the

confidence to move from the "intention mode" to the "action mode" of incorporating minimally invasive colonic surgery into practice if the local environment is supportive. Unlike in previously reported studies, the surgical practice of the participants in our study was assessed 6 months after the course, and some participants reported that they had incorporated laparoscopic colectomies for the first time into their practices since attending the course. Similar to previously published findings, the most important local factor is the availability of local preceptorship, but other factors, including adequate instrumentation, the availability of operating room time, experienced nurses and surgical assistants, were also cited.¹ Our study was unique in that it also explored the role of brief laparoscopic workshops for surgeons with more advanced laparoscopic experience. Our study revealed that some surgeons who had already incorporated minimally invasive colonic surgery into their practices before attending the course feel only "moderately" prepared to perform these

Table 2. Self-reported preparedness to perform laparoscopic colectomies among 39 participants of a 2-day laparoscopic intestinal surgery workshop at The Ottawa Hospital before and after completion of the course

Preparedness	Performing laparoscopic colectomies before the course			
	No		Yes	
	Precourse, n = 19	Postcourse, n = 19	Precourse, n = 20	Postcourse, n = 20
To perform laparoscopic colectomies, mean (SD) score on a scale from 1 (not at all) to 5 (completely)	2.3 (1.2)	3.6 (0.8)*	3.6 (1.0)	4.2 (0.8)*
To perform laparoscopic colectomies postcourse, %				
Yes, I am ready now	—	11	—	40
Yes, but I need additional training	—	89†	—	60‡
No	—	0	—	0

SD = standard deviation.

*Paired *t* test, *p* < 0.05.

†Plans for additional training: preceptorship 17 of 17 participants who felt they needed additional training.

‡Plans for additional training: preceptorship 9 of 12 participants who felt they needed additional training.

Fig. 1. Six-month postcourse follow-up. *Three nonresponders.

procedures and desire further training. Attendance at brief technical workshops is used by these more experienced surgeons to improve their technical proficiency; however, this does not satisfy the desire for ongoing mentorship by many surgeons.

Developing proficient skills in advanced MIS procedures outside of formal residency or fellowship programs is a challenging process. It was interesting that only 55% of our study participants had performed more than 20 laparoscopic appendectomies. The course participants may be losing opportunities to transfer advanced laparoscopic skills,⁵ as appendectomies are common procedures.

Limitations

A limitation of this study is the small sample size. However, this is reflective of the labour intensiveness and cost required to conduct these workshops. The strength of this study was the longer-term follow-up through the assessment of the perceived impact of the weekend course on the participants' surgical practices 6 months after completing the course. The goal of the 2-day laparoscopic intestinal workshop was to improve knowledge and skills, and the measure for these outcomes was self-perceived improvement. We do not know if self-perceived improvement translates to objectively assessed improvement of surgical skills in the absence of video self-assessment. However, this study documents that surgeons are currently introducing laparoscopic colectomies, often with local preceptors, into their practices within 6 months of taking the course. Therefore, the next step is to conduct and assess a comprehensive mentorship program that includes local surgical and nursing mentorship. Objective assessments for technical proficiency, as well as peri-operative clinical data, will be collected.

CONCLUSION

A 2-day comprehensive laparoscopic intestinal workshop contributed to the perceived advancement of laparoscopic surgical knowledge and skills for surgeons with varying levels of precourse incorporation of laparoscopic colonic surgery. Local laparoscopic preceptorship is an important adjunct to the workshop for the incorporation of laparoscopic colonic surgery into practice.

Competing interests: Dr. Poulin declared having received unrestricted educational grants through the Division of General Surgery from Staz and Covidien. Dr. Mamazza declared having received educational grants from Covidien. Dr. Boushey received an honorarium from Tydo (Covidien Canada) for conducting and coordinating the laparoscopic colectomy course at The Ottawa Hospital. None declared for Drs. Asano and Soto.

Contributors: Drs. Asano, Poulin, Mamazza and Boushey designed the study. Drs. Soto, Mamazza and Boushey acquired the data. Drs. Asano and Soto wrote the article, which Drs. Asano, Poulin, Mamazza and Boushey reviewed. All authors analyzed the data and approved the article's publication.

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CORRECTION

In the June issue of the *Canadian Journal of Surgery*, there was an error on p. 153 in the following commentary: Cobourn C. Bariatric surgery in Canada — bridging the gap. *Can J Surg* 2011;54(3):152-3. Rather than refer to the Trillium Health Centre, the article should have read "In many clinics, including the Surgical Weight Loss Centre, most of this care is provided by nurses rather than surgeons." This error was in the print version of the journal only; the online version has been corrected.