# Training in Laparoscopic Gastric Cancer Surgery in the Western World: Current Educational Practices, Challenges, and Potential Opportunities at a Large University Centre

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**OBJECTIVE:** The purpose of this study was to explore and understand how surgeons distribute tasks during a laparoscopic gastrectomy for gastric cancer in an academic teaching environment.

**DESIGN:** An anonymous, cross-sectional, census survey was used to poll trainees' and staff members' opinions pertaining to laparoscopic gastrectomy.

**SETTING:** Academic and community tertiary teaching hospitals, affiliated with the University of Toronto.

**PARTICIPANTS:** All surgeons, within the Department of General Surgery at the University of Toronto, who practice laparoscopic gastrectomy for gastric cancer, were invited to participate. All general surgery residents, postgraduate year 1-5, minimally invasive surgery and surgical oncology fellows at the University of Toronto were invited to participate. Overall response rate was 74.35% ($n$ = 87/117).

**RESULTS:** The results suggested that trainees do not routinely perform the major operative steps. Trainees agreed with faculty in this regard; however, there was a statistically significant difference in opinions, related to the degree of the perceived active operating of the trainees.
There was also a difference in opinion, between trainees and faculty, regarding the common reasons for takeover.

**CONCLUSIONS:** The present survey highlights that current level of active exposure of surgical trainees to laparoscopic gastric surgery might be insufficient. A lack of role clarity may further hinder an optimal educational experience during these cases. Adopting a stepwise approach, with task deconstruction, could optimize training. Additional training modalities may be required to ensure technical proficiency is acquired before independent practice. (J Surg Ed 73:749-755. © 2016 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

**KEY WORDS:** laparoscopic surgery, gastrectomy, surgical trainee, training, evaluation, surveys

**COMPETENCIES:** Patient Care, Medical Knowledge, Practice-Based Learning and Improvement

## INTRODUCTION

Work hour restrictions,[1-3] constant demand for increased operating room (OR) efficiency, medico-legal concerns[4] have resulted in reduction in operative exposure of residents and brought significant challenges in training in complex and uncommon procedures. These pressures have lead to an increased emphasis on virtual education.[5] Although simulation and didactics can enhance the learning of surgical skills, the OR remains a critical and unique environment, where trainees acquire not only their skills but also their judgment and knowledge.[4,6] Therefore, it is paramount that the intraoperative learning is as efficient as possible and that all cases are included in the trainees' learning portfolio.

There are multiple training models described in the literature that are used to enhance residents' intraoperative learning,[7,8] however, the translation of this evidence into clinical practice is still suboptimal.

Laparoscopic gastrectomy for gastric cancer is considered a complex surgical procedure that requires high level of skill and knowledge in order to achieve a successful short-term and long-term outcome. The experience of the Western

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surgeon and the exposure of trainees are effected by a number of factors, such as lower incidence of gastric cancer in the Western hemisphere,[9] different body habitus and associated comorbidities of the western patients,[10,11] most of the gastrectomies being performed at nonreferral centers[12-14] and frequently patients present initially with more advanced disease.[10]

Nevertheless, as experience in advanced laparoscopy continues to grow,[15] laparoscopic treatment of gastric cancer is here to stay. Therefore, the importance of standardized and structured laparoscopic training and competence are imperative.[11]

The first step toward standardizing the teaching of this complex procedure is to explore and understand the current learning environment and how this complex procedure is integrated in educational concepts and models.

Therefore, the objectives of the current study were (1) to determine how surgeons distribute tasks during a laparoscopic gastrectomy for gastric cancer in an academic teaching environment; (2) to explore how trainees perceive their involvement in this particular procedure and (3) to assess whether staff and trainees perceptions are similar.

## METHODS

Institutional ethics approval was obtained before starting this anonymous, cross-sectional, census survey study.

### Survey Instrument

To successfully complete a laparoscopic gastrectomy, a series of operative substeps need to be completed by the operating surgeon. A survey instrument, containing these operative substeps (14 in total), was designed using consensus by 2 expert surgeons in laparoscopic foregut surgery. These 14 operative substeps formed the core part of the survey.

A set of questions were designed to explore how often trainees perform these substeps. The participants were asked to answer the questions using a 4-point scale (1 = Yes, all the time; 2 = Yes, most of the time; 3 = Yes, sometime; 4 = No). The answer choices were the same for all the 14 core questions. A further set of questions polled opinions regarding role during surgery and perceived reasons for surgical takeover.

The rest of the questionnaire was modified to fit the profile of the participants (staff vs. trainee). A free-text comment field was also incorporated at the end of the survey.

### Study population

All surgeons, within the Department of General Surgery at the University of Toronto (UofT), who practice laparoscopic gastrectomy for gastric cancer, were invited to participate (Staff). Surgeons represented both university and university-affiliated teaching community hospitals. All general surgery residents, postgraduate year (PGY) 1-5, minimally invasive surgery and surgical oncology fellows at the University of Toronto were invited to participate (Trainees).

### Survey process

An e-mail invitation was sent out to all potential participants. A link to the online platform (SurveyMonkey, Menlo Park, CA) was included in the e-mail. The participants' responses were collected anonymously. Reminder e-mails were sent to all participants, on a weekly basis, for 3 consecutive weeks. To assure that every trainee had the opportunity to participate in this type of procedure, they were surveyed in June, at the end of the academic year.

### Data analysis

The results were analyzed using SPSS software v. 22.0 (IBM SPSS Statistics, IBM Corp., Armonk, NY). Descriptive statistical analysis was performed. Results are shown as frequency counts (%) and medians (range) due of the ordinal nature of the data. Group comparisons were performed, using Mann-Whitney $U$ test. Statistical significance between the groups was set to a $p < 0.05$.

## RESULTS

### Respondents

A total of 117 participants were invited, 20 staff members and 97 trainees (84 residents and 13 fellows). The overall response rate was $n = 87$ (74.35%). Overall, 19 surgeons (95%) and 68 trainees (70.1%) returned the survey. Staff surgeons' responses revealed that most of the respondents routinely supervised trainees at all levels. A total of 17 staff surgeons (89.5%) reported routinely supervising fellows, 19 (100%) reported supervising seniors (PGY 3-5), and 15 (78.9%) routinely worked with juniors (PGY 1-2).

Totally 3 surgeons (15.8%) reported that they did not routinely work with juniors whereas 1 (5.3%) reported never working with junior trainees. For questions pertaining to supervising a specific trainee cohort, responses from the staff member that stated never to work with juniors were excluded from analysis of the subsection on junior trainees.

Out of the 68 trainee responses, 2 participants returned incomplete surveys, missing more than 80% of the questions; therefore, although they were included in the response rate, they were excluded from final analysis ($n =$ 66 trainees included). Overall, 34 trainees (51.5%) reported having participated in a laparoscopic gastrectomy for gastric cancer during their training.