Do Increased Training Requirements in Gastrointestinal Endoscopy and Advanced Laparoscopy Necessitate a Paradigm Shift? A Survey of Program Directors in Surgery

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BACKGROUND: Many modifications to the traditional residency model contribute to the ongoing paradigm shift in surgical education; yet, the frequency and manner by which such changes occur at various institutions is less clear. To address this issue, our study examined the variability in endoscopy and laparoscopy training, the potential impact of new requirements, and opinions of Program Directors in Surgery (PDs).

METHODS: A 22-item online survey was sent to 251 PDs in the United States. Appropriate parametric tests determined significance.

RESULTS: In all, 105 (42%) PDs responded. No difference existed in response rates among university (56.2%), university-affiliated/community (30.5%), or community (13.3%) program types ($p = 0.970$). Surgeons alone (46.7%) conducted most endoscopy training with a trend toward multidisciplinary teams (43.8%). A combination of fellowship-trained minimally invasive surgeons and other surgeon types (66.7%) commonly provided laparoscopy training. For adequate endoscopy experience in the future, most PDs (74.3%) plan to require a formal flexible endoscopy rotation ($p < 0.001$). For laparoscopy, PDs intend for more minimally invasive surgery (59%) as well as colon and rectal surgery (53.4%) rotations (both $p < 0.001$). Respondents feel residents will perform diagnostic endoscopy (86.7%) and basic laparoscopy (100%) safely on graduation. Fewer PDs confirm graduates will safely practice therapeutic endoscopy (12.4%) and advanced laparoscopy (52.4%). PDs believe increased requirements for endoscopy and laparoscopy will improve procedural competency (79% and 92.4%, respectively) and strengthen the fields of surgical endoscopy and minimally invasive surgery (55.2% and 68.6%, respectively). Less believe new requirements necessitate redesign of cognitive and technical skills curricula (33.3% endoscopy, 28.6% laparoscopy; $p = 0.018$). A national surgical education curriculum should be a required component of resident training, according to 79% of PDs.

CONCLUSIONS: PDs employ and may implement varied tools to meet the increased requirements in endoscopy and laparoscopy. With such variability in educational methodology, establishment of a national surgical education curriculum is very important to most PDs. (J Surg 65:418-430. © 2008 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: laparoscopy, endoscopy, simulation, surgery training, accreditation

COMPETENCY: Medical Knowledge

INTRODUCTION

With the rapid adoption of minimally invasive approaches to many general surgery procedures, Program Directors in Surgery (PDs), along with national surgery organizations, had to re-evaluate resident training methodology. Recognizing this pervasive shift in patient care, the American Board of Surgery (ABS) recommended greater general surgery resident exposure to minimally invasive techniques. Accordingly, PDs labored to integrate flexible gastrointestinal endoscopy and laparoscopy into residency programs using varied educational concepts and methods.[1] More recently, the Residency Review Committee for Surgery (RRC-S) increased the minimum number of endoscopy and laparoscopy cases necessary for graduating trainees by 293% and 250%, respectively.[1,2] This change, in combination with Accreditation Council for Graduate Medical Education (ACGME) duty-hour restrictions, challenged PDs to graduate

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more technically accomplished residents in less time.[1,3-7] PDs correctly realized that the archetypal teaching methodology based on clinical experience alone would no longer ensure trainee success in the evolving landscape and technical training pressures of minimally invasive care.[1,4,5]

Surgery curriculum redesign and implementation strategies must address the shortcomings of the traditional training model, which include unpredictability and inconsistency in technical and cognitive experiences, as well as no formal proficiency evaluation on graduation.[4] Structural strategies to improve residency education in endoscopy and laparoscopy consist of challenging current regulatory policies, adapting formal rotations, establishing skills laboratories (mandatory by 2009), using supplementary training venues, and implementing other curricular interventions.[1,8,9] Improvements in residency structure should be combined with new philosophical concepts to enhance surgery training. These concepts include implementation of validated technical skills curricula, standardized measures of proficiency, mental training, and mandatory simulation-based learning.[1,2,4,10-13] The latter serves an effective means to develop and assess resident psychomotor skills, shorten learning curves, and improve performance of endoscopic and laparoscopic procedures.[14-26] To address these structural and philosophical issues, the Association of Program Directors in Surgery, working jointly with the American College of Surgeons, formed the Surgical Skills Curriculum Task Force. The Task Force created plans to distribute an Internet-based comprehensive National Skills Curriculum designed to ensure resident "operating room readiness."[1,27,28] Components of this curriculum include the validated Fundamentals of Laparoscopic Surgery (FLS) as well as the development of Fundamentals of Endoscopic Surgery (FES) programs, which are modules that provide skills training and proficiency assessment.[1,27] PDs enthusiastic for a modern competency-based approach to surgery training certainly recognize the impact such changes might have on trainees and residency programs.[4]

These structural and philosophical modifications to the traditional residency model contribute to the ongoing paradigm shift in surgical education; yet, the frequency and manner by which such changes occur at various institutions may be less clear. A desire for a better understanding of how PDs plan to provide cognitive and technical training for general surgery residents now and in the future, particularly related to minimally invasive surgical skills, led to the creation of a survey sent to all PDs in the United States. The survey examined the current variability in flexible endoscopy and laparoscopy training; investigated the impact of new operative requirements on potential structural and philosophical adaptations; and assessed opinions of PDs regarding adoption of a national, comprehensive surgical education curriculum.

METHODS

After Institutional Review Board approval, a 22-item electronic survey was created by the authors using commercially available software (SurveyMonkey.com) and sent anonymously to PDs at each of the 251 ACGME-accredited general-surgery training programs in the United States. Current electronic mailing addresses for each PD were obtained from multiple sources, which included the Fellowship and Residency Electronic Interactive Database (FREIDA), American College of Surgeons (ACS) membership database, individual program websites, and from selected residency coordinators in surgery (when necessary). This was done to avoid distribution of surveys to individuals other than PDs. The survey was sent to all PDs on 3 separate occasions over 6 weeks in the fall of 2007. To prevent duplicate responses, each survey was identified using a unique Internet protocol address, and respondents were not required to name themselves or their program.

Multiple items queried PDs regarding their program type as defined by FREIDA, tenure as residency director, academic appointments, current scope of practice, and clinical experience with endoscopy and/or laparoscopy. Questions also requested information about existing fellowships within their institution and defined the primary facilities and faculty involved in endoscopy and laparoscopy training. Four items inquired as to current and projected components of cognitive and technical skills curricula used for teaching basic and advanced minimally invasive techniques, which includes the required use of simulators prior to real operative procedures. Several items addressed the mandatory use of and obstacles related to implementing the FLS curriculum. The validated FLS program is an example of a currently available national, standardized curriculum for a specific skill set.[29] One item asked whether PDs believe 2007 residency graduates nationally are well trained for the safe practice of basic and advanced endoscopy and laparoscopy. Additional items probed the opinions of PDs regarding the impact of increased endoscopy and laparoscopy experience on duty hours, competency, fellowship pursuits, credentialing practices, overall operative experience, and necessity for redesign of cognitive and technical skills curricula. The remaining item asked PDs to grade their level of agreement using a Likert-type scale with 4 statements designed to assess use of a national, comprehensive surgical-education curriculum. A representation of the survey instrument is presented in the Appendix.

Applicable demographics of the respondents including program type were compared. Descriptive statistics and frequencies were determined. A mixture of analysis of variance (with Tukey's HSD), Pearson chi-square, and McNemar's nonparametric tests applied to dichotomous traits with matched pairs of respondents were used to assess statistical significance, which was set at an alpha level of 0.05. Analyses were performed using SPSS 16.0 for Windows (SPSS Inc., Chicago, Illinois).

RESULTS

In all, 105 (42%) PDs responded. No difference existed in response rates among university (56.2%), university-affiliated/community (30.5%), or community (13.3%) program types based on a comparison of observed and expected proportions