Perceptions of Graduating General Surgery Chief Residents: Are They Confident in Their Training?

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BACKGROUND: Debate exists within the surgical education community about whether 5 years is sufficient time to train a general surgeon, whether graduating chief residents are confident in their skills, why residents choose to do fellowships, and the scope of general surgery practice today.

STUDY DESIGN: In May 2013, a 16-question online survey was sent to every general surgery program director in the United States for dissemination to each graduating chief resident (CR).

RESULTS: Of the 297 surveys returned, 76% of CRs trained at university programs, 81% trained at 5-year programs, and 28% were going directly into general surgery practice. The 77% of CRs who had done >950 cases were significantly more comfortable than those who had done less ($p < 0.0001$). Only a few CRs were uncomfortable performing a laparoscopic colectomy (7%) or a colonoscopy (6%), and 80% were comfortable being on call at a Level I trauma center. Compared with other procedures, CRs were most uncomfortable with open common bile duct explorations (27%), pancreaticoduodenectomies (38%), hepatic lobectomies (48%), and esophagectomies (60%) ($p < 0.00001$). Of those going into fellowships, 67% said they truly had an interest in that specialty and only 7% said it was because they were not confident in their surgical skills.

CONCLUSIONS: Current graduates of general surgery residencies appear to be confident in their skills, including care of the trauma patient. Fellowships are being chosen primarily because of an interest in the subspecialty. General surgery residency no longer provides adequate training in esophageal or hepatopancreatobiliary surgery. (J Am Coll Surg 2014;218:695–706. © 2014 by the American College of Surgeons)

During the past decade, there has been considerable debate about the confidence of the graduating general surgery chief resident (CR). The proportion of residents pursuing fellowship training has increased from 55% to upwards of 80% since 1992.[1,2] Some have interpreted this as showing that graduates are concerned about their skills.[3] Numerous surveys have sought to determine the competence and confidence of general surgery residents. All of these have addressed major concerns about the state of general surgery training in the United States.[4-6] The only 2 studies that directly surveyed categorical general surgery residents were not specific to CRs and they did not ask about the performance of specific operations.[3,7] Our survey is the first to look at graduating CRs exclusively and ask them about their overall confidence in their operative skills and patient management, the management of specific cases, and their reasons for either extending their training into fellowship or entering directly into practice. Our hypothesis, based on personal observation as program directors (PDs), was that most CRs are satisfied with their training and confident about their skills.

The current status of surgical education and the scope of practice of today's general surgeon are also interwoven into this study. A Blue Ribbon Committee Report on Surgical Education published in 2005 recommended that general surgery residency become 3 years of core training followed by 3 more years of subspecialty or additional general

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Abbreviations and Acronyms

ABS = American Board of Surgery
ACS = American College of Surgeons
CR = chief resident
OCBDE = open common bile duct exploration
PD = program director
RRC = Residency Review Committee
TTP = transition to practice

surgery training.[8] This stimulated a national discussion, still ongoing, about the optimal structure of the residency. To date, the 5-year paradigm has been continued, with no basic changes. But with the increasing tendency toward subspecialization, it appears that general surgery is becoming progressively less broad based.

METHODS

In May 2013, a 16-question survey created at www.surveymonkey.com was sent by email to every general surgery residency PD in the United States, to be forwarded to each of their CRs. During the next 45 days, the survey was resent twice to the PDs. The questions included items pertaining to demographics, the nature of the residency program, the number of major cases completed by graduation, fellowships, trauma experience, and comfort with independently performing 12 specific operations chosen from the Surgical Council on Resident Education curriculum under the auspices of the American Board of Surgery (ABS). The following cases were classified as "essential-common": laparoscopic colectomy, colonoscopy with polypectomy, thyroidectomy, and modified radical mastectomy. The following cases were "essential-uncommon": open common bile duct exploration (OCBDE), gastrectomy, distal pancreatectomy and sentinel lymph node biopsy. The following cases were "complex": right hepatic lobectomy, pancreaticoduodenectomy, esophagectomy, and low anterior resection. The responses offered for this question were: "very comfortable," "comfortable," "somewhat comfortable," and "uncomfortable." There was also an open-ended question asking if there were any aspects of general surgery that the CR was ill-prepared to deal with independently (Table 1). The study was reviewed by the University of Missouri Kansas City School of Medicine IRB. It was approved and deemed exempt from a requirement for informed consent.

Descriptive statistics were used to assess the survey responses and are reported as percentages. Statistical differences by demographic variables were analyzed using chi-square analysis. The 4 procedural confidence levels were assigned numerical scores (1 = uncomfortable, 2 = somewhat uncomfortable, 3 = comfortable, and 4 = very comfortable) to facilitate statistical analysis. Mean "confidence scores" were calculated for each procedure. A mean summary confidence score for the 12 procedures was calculated for each CR. Overall confidence among procedures was analyzed using chi-square analysis with the Bonferroni correction ($p < 0.0008$) for multiple comparisons ($n = 66$). Multivariate stepwise logistic regression analyses, performed using Minitab software (version 16.2.3, Minitab Inc.), were performed evaluating the summary confidence score as the dependent variable and demographic and program-related variables as the independent variables to identify predictors of procedural confidence. Analysis of variance was used to identify differences in procedural confidence by case volume. Statistical significance was defined as $p < 0.05$.

RESULTS

There were 297 survey respondents. Because there were 1,097 graduates from general surgery residency programs in 2013, based on data from the American College of Surgeons (ACS) and the ACGME, this gave a 27% response rate. Sixty-seven percent of respondents were male and 81% graduated from 5-year programs. Seventy-six percent of respondents were completing their training in a university medical center, 22% at an independent medical center, and 2% in a military residency program. Sixteen percent of the respondents had 2 to 3 CRs in their programs, 52% had 4 to 6, and 32% had >6. In response to the question "How many major cases will you have completed by graduation?" Forty percent responded between 951 and 1,150 and 36% responded >1,150 (Table 2). The number of major cases did not differ significantly between independent and academic medical centers, but there was a significant variance by region of the country ($p = 0.037$) with CRs in the South and Northeast performing more cases and CRs in the West and Midwest performing fewer cases overall.

Only a few CRs were uncomfortable performing the 4 operations described as essential-common: laparoscopic colectomy (7%), colonoscopy with polypectomy (6%), thyroidectomy (3%), and modified radical mastectomy (2%). Among the essential-uncommon operations, 27% were uncomfortable performing OCBDE, but only 11%, 14%, and 5% were uncomfortable completing gastrectomy, distal pancreatectomy, and SLNB, respectively. Finally, of the 4 operations listed as "complex," the uncomfortable responses were esophagectomy (60%), right hepatic lobectomy (48%), pancreaticoduodenectomy (38%), and low anterior resection (7%) (Fig. 1). Of note, 80% of the respondents were comfortable being on-call at a Level 1 trauma center and, when asked how