

Factors Influencing the Decision of Surgery Residency Graduates to Pursue General Surgery Practice Versus Fellowship

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Objectives: Surgery residency serves 2 purposes—prepare graduates for general surgery (GS) practice or postresidency surgical fellowship, leading to specialty surgical practice (SS). This study was undertaken to elucidate factors influencing career choice for these 2 groups.

Methods: All US allopathic surgery residency graduates from 2009 to 2013 (n = 5512) were surveyed by the American Board of Surgery regarding confidence, autonomy, and reasons for career selection between GS and SS. Surveys were distributed by mail in November 2013, with follow-up mailings to initial nonrespondents.

Results: Sixty-one percent (3354) of graduates completed the survey; 26% pursued GS, and 74% SS. GS expressed greater levels of confidence than SS across the common surgical procedures queried. Confidence increased with each year after completion of residency for GS but not SS. The decision to pursue GS or SS was made during residency by 77% and 74%, respectively. Fifty-seven percent of those who chose GS indicated that a GS mentor significantly influenced their decision. GS rated procedural variety, opportunity for practice autonomy, choice of practice location, and influence of a mentor as reasons to pursue GS practice. SS listed control over scope of practice, prestige, salary, and specialty interest as reasons to pursue SF. Both groups expressed a high degree of satisfaction with their career choice (GS, 94%; SS, 90%).

Conclusions: Most graduates who pursue GS practice are confident and content. The decision to pursue GS is strongly influenced by a GS mentor. Lack of confidence may be a more significant factor for choosing SS. These findings suggest opportunities for improvements in confidence and mentorship during residency.

Keywords: career selection, general surgery, graduate medical education, surgery residency, surgery workforce

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Surgery residency serves 2 purposes—to prepare graduates to enter either general surgery (GS) practice or postresidency surgical fellowship, leading to specialty surgical practice (SS). Several recent studies have suggested that graduates of GS residency programs do not feel prepared for independent practice.^{1,2} This concern has been shared by postresidency fellowship directors and fellows of the American College of Surgeons.^{3–5}

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As more trainees pursue fellowship training, there are fewer graduates to populate the growing deficit of general surgeons needed to serve the public. This trend has resulted in fewer general surgeons in practice today, with a 25% decline over the past 2 decades⁶ and an additional projected 18% decline over the coming 2 decades.⁷ Rural areas have been particularly affected. If this trend toward specialty training continues, worsening of the workforce shortage is predicted, which has raised alarm among many thought leaders in surgery.^{8,9}

The purpose of this investigation was to better understand the perceived confidence of surgeons who had recently completed their residency training. Factors influencing the decision of surgery residency graduates to pursue GS practice versus fellowship training leading to specialty practice were also investigated.

METHODS

All US allopathic GS graduates who completed residency from 2009 to 2013 (n = 5512) were surveyed to assess opinions regarding confidence, autonomy, educational experiences, perceived differences between general and specialist surgeons, and career selection and satisfaction. The survey instrument was developed by the directors and executive staff of the American Board of Surgery (ABS). The ABS sponsored this research and retained the independent market research firm of Anderson, Niebuhr & Associates, Inc. (Arden Hills, MN) to conduct the study. Surveys were distributed by mail in November 2013, with up to 2 follow-up mailings to nonrespondents. For the purposes of analysis, general surgeons were defined as those who did not pursue additional training following the completion of GS residency while specialist surgeons (SS) completed additional training.

Survey records were linked through identification variables to the ABS Candidate/Diplomate database to help explain and assess the relationship between survey responses and surgeons' background characteristics. Database variables included demographic characteristics, residency and postresidency training and/or practice experiences (including program features, residency operative experience, fellowship type, and practice setting), and ABS examination performance.

For this study, survey responses were analyzed using statistical comparisons that examined the following variables: program completion year (2009 through 2013); residency program type (university-based, community-based/independent, or military); and surgeon type (GS vs SS). Statistical methods included descriptive statistics, correlation analysis, logistic regression analysis, and analysis of variance (ANOVA). Statistical analysis was performed with SPSS software (version 22, IBM Corp., Armonk, NY), using 2-sided hypothesis testing with a significance level of 0.05.

RESULTS

There were 3354 respondents to the survey (overall response rate: 61%). GS comprised 876 of the total respondents (26%), with SS accounting for the remaining 74%.

The survey was completed by 1065 women (32%) and 2289 men (68%). Table 1 lists the breakdown of specialty training experience type that SS identified.

Confidence

Confidence to operate independently: To gauge respondents' sense of autonomy, questions were asked regarding the ability to operate independently. On the question regarding confidence to operate independently as a general surgeon, 94% of GS respondents were mostly or very confident in their ability to operate independently as a general surgeon. The remaining 6% described themselves as "somewhat" or "a little" confident.

In comparison, 90% of SS reported being mostly or very confident in their ability to operate independently as a specialist surgeon. The remaining 10% reported feeling "somewhat" or "a little" confident.

TABLE 1. Survey Respondents by Fellowship Training Experience

	Frequency	%
Advanced gastrointestinal surgery	14	0.6
Bariatric surgery	62	2.7
Breast surgery	110	4.7
Colon and rectal surgery	249	10.7
Complex general surgical oncology	18	0.8
Surgical critical care	326	14.0
Endocrine surgery	58	2.5
Hepatobiliary surgery	32	1.4
Minimally invasive surgery	296	12.7
Oncology	140	6.0
Pediatric surgery	136	5.8
Plastic surgery	176	7.6
Thoracic surgery	218	9.4
Transplantation	106	4.5
Trauma/burns	78	3.3
Vascular surgery	312	13.4
Total	2331	100

Confidence with specific procedures: Survey respondents were asked to rate their confidence with 16 common surgical procedures that are core to GS residency training. For the purposes of analysis, survey responses of "very" and "mostly" confident were combined, as were "somewhat" and "a little" confident. Responses were compared between GS and SS (Figs. 1 and 2).

Overall, GS tended to be very or mostly confident in their ability to perform laparoscopic appendectomy, laparoscopic cholecystectomy, exploratory laparotomy for small bowel obstruction, inguinal herniorrhaphy, ventral herniorrhaphy, esophagogastroduodenoscopy (EGD), right colectomy, and tracheostomy. Although more than half of general surgeons were very confident in their ability to perform most measured procedures, fewer than 80% were very or mostly confident to perform screening colonoscopy, colonoscopy with polypectomy, laparoscopic right or left colon resections, thyroidectomy, laparoscopic Nissen fundoplication, or arteriovenous fistula for dialysis.

For SS, the trends for confidence across the range of procedures queried were similar to GS, but SS tended to express less confidence across the range of procedures, with fewer than 70% expressing confidence with colonoscopy (screening or polypectomy), laparoscopic colon resections, thyroidectomy, and laparoscopic Nissen fundoplication.

Confidence Analyzed by Logistic Regression

We further analyzed confidence by logistic regression to examine associations between confidence and career choice. When confidence with individual procedures across the 16 operations surveyed was examined by logistic regression, confidence ratings themselves did not improve classification precision for career choice (GS vs SS, 73.8% without predictors, 74.1% with predictors). However, confidence ratings for 5 procedures were associated with GS career choice (vs SS): screening colonoscopy, colonoscopy with polypectomy, inguinal herniorrhaphy, arteriovenous fistula for dialysis, and exploratory laparotomy for trauma. To further explore this phenomenon, the 16 queried procedures were classified into easy,

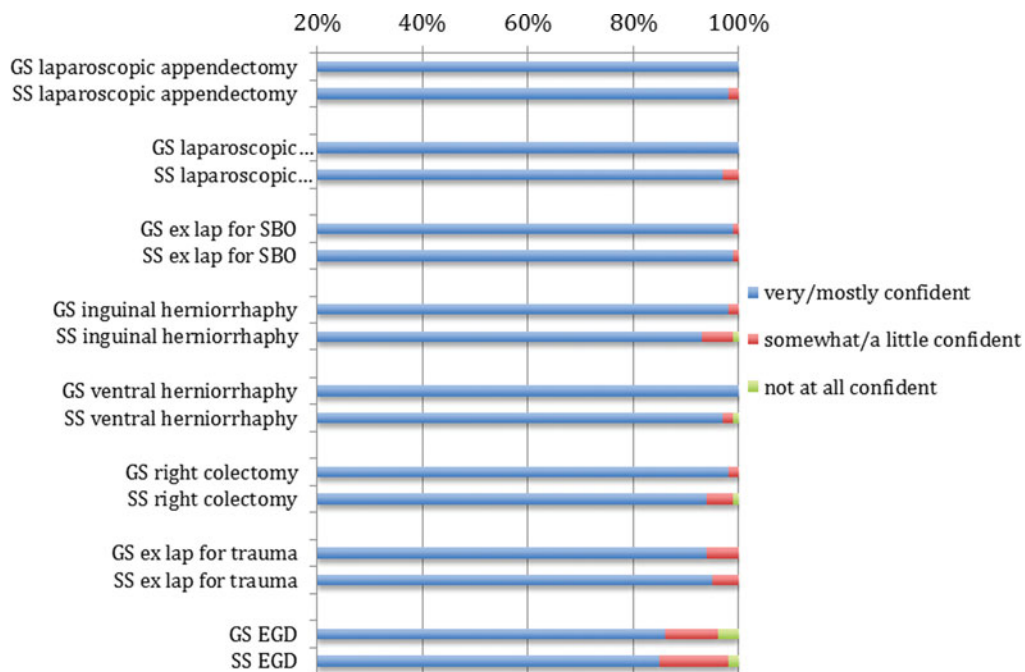


FIGURE 1. Respondents' confidence performing specific procedures (part 1). EGD indicates esophagogastroduodenoscopy.

moderate, and complex groups. The logistic regression was then repeated using average confidence scores within each group to predict career choice. Although the groups of procedures were statistically significant, they did not improve classification precision compared with the null model (73.8% in both models). Thus, fellowship training does not seem to be associated with increased confidence with the selected procedures; however, it should be noted that the level of confidence expressed by all respondents was quite high, with little variability between the 2 groups; thus, differences were generally small.

Impact of Years Since GS Residency on Confidence

When years after completion of residency was examined, confidence was shown to improve across the procedures queried for GS but not SS. When confidence ratings were compared across cohorts (defined by completion year) by 1-way ANOVA, the confidence scores for general surgeons tended to be higher for cohorts that had been in practice longer. When the cohort that had been in practice the longest (2009 graduate group) was further analyzed for all procedures queried, only inguinal herniorrhaphy and arteriovenous fistula for dialysis were significant predictors of GS group mem-

bership. As with the logistic regression model using all years and the grouped procedures, the “easy” procedure group was statistically significant but did not improve classification accuracy (76.7% with and without predictors). The trend for increased confidence over time was not the same for the specialists, as their confidence tended to be lower for the cohorts that had been in practice longer. Thus, SS express less confidence with the range of procedures over time.

Relationship Between Confidence and Postgraduate Training Experience

To further understand the influence of postresidency training on expressed confidence, we sought to evaluate the relationship between confidence and fellowship type versus lack of postresidency training (GS).

Table 2 displays the descriptive statistics for the postgraduate experiences on the basis of reported overall average confidence level (determined by average of the 16 procedures queried). The table is sorted from highest to lowest confidence rating. Note that those who pursued no further postgraduate training (GS) had the second highest levels of confidence (behind pediatric surgery).

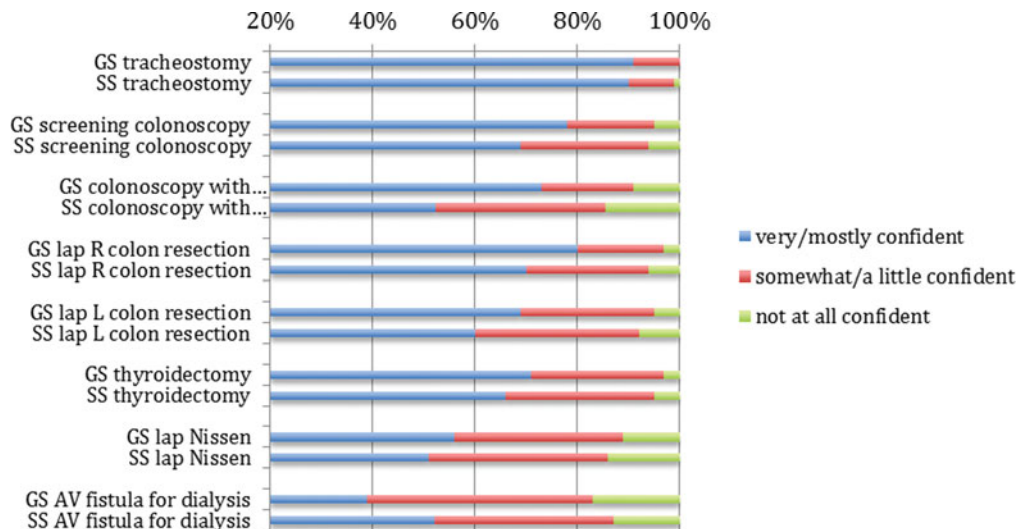


FIGURE 2. Respondents' confidence performing specific procedures (part 2). AV indicates arteriovenous.

TABLE 2. Confidence by Postgraduate Training Type

Postgraduate Training	N	Mean	SD	Minimum	Maximum
Pediatric surgery	136	4.49	0.38	3.06	5.00
None (GS)	876	4.40	0.46	2.31	5.00
Thoracic surgery	218	4.37	0.51	2.25	5.00
Complex general surgical oncology and oncology	158	4.35	0.37	3.38	5.00
Plastic surgery	175	4.34	0.52	2.00	5.00
Minimally invasive surgery	294	4.34	0.44	2.31	5.00
Bariatric surgery	62	4.31	0.48	2.88	5.00
Colon and rectal surgery	249	4.28	0.44	2.75	5.00
Advanced GI and hepatobiliary surgery	46	4.26	0.53	2.81	5.00
Transplantation	106	4.24	0.44	2.88	5.00
Critical care and trauma/burns	404	4.23	0.49	1.94	5.00
Vascular surgery	310	4.20	0.66	1.56	5.00
Endocrine surgery	58	3.99	0.57	2.06	4.94
Breast surgery	109	3.93	0.70	1.00	5.00
Total	2325	4.27	0.52	1.00	5.00

GS indicates gastrointestinal.

There was a clear, statistically significant difference between residents who pursued a fellowship (SS) and those who entered SS immediately after training (ANOVA, $F = 43.35$, $P < 0.0001$), indicating high levels of confidence among those who did not enter fellowship training. When ANOVA analysis was performed to examine whether there were differences between *specific* fellowships, the results were also statistically significant ($F = 8.21$, $P < 0.000$), suggesting that at least one of the fellowships had a significantly different mean confidence rating (ie, pediatric, breast, and endocrine surgery were outliers). Notably, however, all of the confidence ratings are quite similar (a range of 0.56 between the lowest and the highest), suggesting small practical differences between the specific fellowship confidence ratings.

Relationship Between Confidence and Reported Total Case Log Experience

To determine whether a correlation existed between levels of procedural confidence expressed by survey respondents and total case numbers performed during residency, the data set that included matched responses for individual survey respondents and their case logs as recorded in the ABS database was queried. The correlation between the overall number of cases performed during residency and the average confidence level (averaged across all procedures) was 0.210, suggesting lack of an association. An ANOVA was performed comparing the 4 quartiles (based on number of cases) and the average confidence level. Although this analysis proved to be statistically significant, we question the practical significance; the difference in confidence ratings between the first (lowest number of cases) and the fourth (highest number of cases) was only 0.28. In addition, the effect size (omega squared) was 0.00, suggesting that there was no meaningful difference between the quartiles in terms of their confidence. Thus, despite what we may have predicted, it seems that procedural case numbers during residency did not have an impact on expressed confidence after training. This could be due to the fact that the vast majority of trainees met and exceeded current required case minimums during residency training, suggesting that case numbers alone, as currently required, did not have an impact on procedural confidence.

Career Decisions

Timing

Seventy-seven percent of general surgeons made the decision to practice GS during residency. Other cited times included during medical school (9%) and after residency (7%), with during or before college making up the remainder. Among SS, 74% decided to pursue fellowship during residency and 19% did so during medical school. The remainder chose SS during or before college or after residency.

Reasons Behind Career Selection

Respondents were asked to select from among a number of possible responses that best explained their reasons for their career choice, between GS and SS. A given respondent was allowed to select all responses that applied to his or her situation. In addition, respondents could write text responses to an open-ended question regarding reason(s) behind individual career selection. These were analyzed and grouped thematically.

Among GS, 35% indicated a greater variety of cases and broader scope of practice as influential in their career choice; 26% indicated that they desired no additional training and/or they had confidence in their current level of training. Table 3 summarizes the responses to the query for why an individual chose a career in GS.

Other factors that contributed to the decision to pursue GS are graphically displayed in Figure 3. Sixty-three percent of GS indicated that having a larger variety of procedures available to them was a major influence in their decision to pursue GS; 56% credited a positive GS mentor, and 54% a more desirable scope of practice as major influences in their decision to pursue GS.

Reasons for Choosing Fellowship Training

Among SS, 57% cited interest in a particular specialty as influential in their choice to pursue specialty training. Thirty-five percent cited an interest in improving their skills as a surgeon and improving their confidence and experience as reasons to pursue specialty training. Table 4 summarizes the responses to the query for why an individual chose to pursue fellowship training.

When asked how their fellowship influenced their current position, 78% of specialist surgeons believed that their fellowship was very important in obtaining their current position. Seventy-six

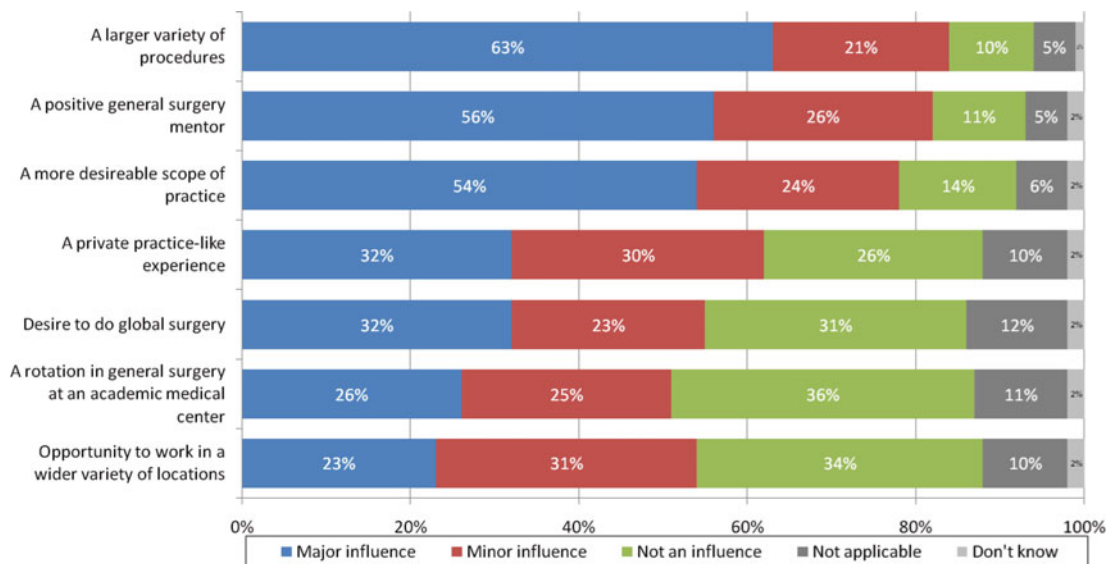


FIGURE 3. Factors that contributed to the selection of a career in general surgery.

percent agreed that their fellowship adequately prepared them for their current position, and 9% felt that their fellowship overprepared them.

Beliefs in Differences Between General Surgeons and Specialty Surgeons

All respondents were asked to evaluate perceived advantages between GS and SS practice across a number of variables. Respondents endorsed the belief that those who pursue fellowship training have a better chance to obtain more control over the procedures that one chooses to perform, greater prestige, a higher salary, and a greater sense of competence. In contrast, respondents indicated a slight advantage to GS in areas of greater control over where one can practice, greater variety of cases, and less debt after training.

Overall Satisfaction

Among GS respondents, 68% were very satisfied with their decision to pursue GS, 22% were somewhat satisfied, 2% were neither satisfied nor dissatisfied, 5% were somewhat dissatisfied, and 1% were very dissatisfied. Satisfaction varied somewhat across residency cohort/completion years, with more recent cohorts (2012–2013) reporting slightly higher satisfaction with their decision to pursue GS. However, although differences were statistically significant, the range was narrow (4.39–4.65) and most GS respondents were very satisfied.

Among SS respondents, 84% were very satisfied with their decision to pursue fellowship training, 12% were somewhat satisfied, 2% were neither satisfied nor dissatisfied, and 1% were somewhat dissatisfied. Satisfaction also varied significantly across cohort years for the SS group, although satisfaction was higher for those who

completed their GS program in earlier years (2009–2010 higher than 2012–2013). However, similar to GS findings, the range was narrow (4.65–4.88) and satisfaction for all cohorts was very high.

DISCUSSION

The major finding of this study is that most recent graduates of GS residency training are confident and content, regardless of whether they pursue GS practice or additional SS training. This survey, the largest and most comprehensive in the published literature, provides a counter argument to the impression that contemporary residency graduates lack confidence and supports the findings of Friedell *et al*¹⁰ regarding significant confidence among chief residents. We find the confidence and contentment of those who practice GS to be compelling and reassuring given recent concerns over the future of GS as an appealing field of practice. Interestingly, our data show that although those who pursue fellowship training also report very high levels of confidence, this specialty training does not seem to increase overall confidence, at least compared with those who pursue GS practice. Although our survey is limited in that it queries confidence across the range of procedures that commonly constitute core procedures in GS residency training and in typical GS practice, several survey questions assess confidence to operate independently in a global sense and in the respondents' given field of practice. That specialty training does not seem to enhance that confidence raises the possibility that among those who lack confidence upon completion of residency, additional postgraduate (fellowship) training may not result in greater confidence in practice.

The decision to pursue GS is strongly influenced by a GS mentor, a desire for a large variety of procedures, and a broad scope of practice. For 23% of GS respondents, a feeling of confidence and readiness for SS was specifically indicated as a reason for foregoing additional postgraduate training. In contrast, those who selected fellowship training did so most frequently because of their interest in a particular specialty and to improve their skills as a surgeon and to improve confidence and experience in a given area. Only 7% of fellowship-trained respondents indicated a need for further training specifically to gain more confidence as a surgeon. Thus, it seems that both a dedicated interest in a specialty field and a desire for greater confidence in a particular area are the principal drivers for additional postgraduate training. Given our findings, the concerns expressed by other authors that current graduates face a "crisis of confidence" after GS residency training and seek fellowship training as a result may have been overstated.

Our study demonstrates that the impact that case mix has on confidence seems to be positive, as those who completed additional postgraduate training in pediatric surgery were the most confident among survey respondents, followed closely by general surgeons. In contrast, breast surgeons had the lowest expressed confidence across the range of procedures queried. As more and more trainees pursue fellowship training, it seems that the number of surgeons who possess confidence with the range of procedures common in GS practice will diminish. This raises concern for a surgeon's ability to practice in an environment that requires diversity of case expertise. A recent study by Valentine *et al* demonstrated that large numbers of specialty-trained surgeons include substantial "GS" cases in their practices.¹¹ In many environments, specialty-trained surgeons still take "GS" call or need the supplemental case mix of GS to meet economic goals, especially in the early years of developing a specialty practice. If confidence for GS procedures among specialty-trained surgeons is waning, we have concerns of negative implications on the future of broad-based "GS" care in the United States. This could intensify the workforce shortage for GS in the future.

To effectively address workforce demands for general surgeons in the future, important lessons could be learned from our data. First, it is notable that 77% of respondents reported that the decision to

TABLE 3. Reasons for Choosing General Surgery

Response Given	% Mentioned (n = 792)
General surgeons have a greater variety of cases and a broader scope of practice	35
Desire to become more autonomous now and end training	26
Confidence in current training	23
Desire to live and work in rural areas	14
Family commitments or constraints	12
Love general surgery	11
Financial reasons	10
More job opportunities in general surgery	9
No interest in any particular fellowship	7
Poor prospects in fellowships or accepted into only undesirable fellowships	6
Choice limited by military	5

TABLE 4. Reasons for Choosing Specialty Training

Response Given	% Mentioned (n = 2238)
Interest in a particular specialty	57
To improve skills as surgeon and improve confidence and experience	35
Narrower scope of practice and can select cases in which one wants	16
Improve marketability in job search	11
More control over work hours than a general surgeon	10
Needed more training to feel confident as a surgeon	7
Disliked the scope of practice of general surgery	6

pursue a career as a general surgeon was made during residency; only 7% selected this pathway during medical school, with very few indicating that the decision was made earlier than medical school or after the completion of residency. This timing, coupled with the data that illustrate the importance of a GS mentor during residency as influential in the decision to pursue GS, suggests that residency programs that desire to have graduates pursue GS practice need to be certain that true general surgeons are present in their programs and actively engaged in residency training. In many of the more urban, university-based residency programs, a predominance of specialists and relative paucity of general surgeons on the faculty could undermine such a goal. Residency programs that have limited exposure to general surgeons and core GS rotational experiences should consider partnering with institutions and programs that are able to offer such learning experiences, just as some residency programs have to partner with others to provide experiences in more complex care, such as transplantation or trauma surgery. In addition, postgraduate experiences intended to provide structured preparation for GS practice, such as the American College of Surgeons “Transition to Practice” program, could help address myriad needs for those pursuing a career in GS, including a mentored experience in practice management, autonomous experience with broad-based SS, and a tailored experience for acquisition of additional skill sets.¹² Finally, the finding that general surgeons pursue the field to have access to the broader case mix of a general surgeon suggests that the trend of narrowing the case mix for graduating chief residents over the past 2 decades is worrisome¹³ if the workforce issues in GS are to be effectively addressed in the future. This narrowing of the case mix may also undermine the confidence of graduates, if a similar association in practice is present, as suggested by our data regarding levels of confidence among fellowship graduates.

Our study has several limitations. First, as previously stated, we queried levels of procedural confidence among all respondents across a range of 16 surgical procedures that are commonly found in a GS practice. This list was derived on the basis of those procedures that commonly constitute the core learning experience in GS residency. However, because the vast majority of respondents are fellowship trained, many likely do not practice in the range of procedures queried, and this leads to limitations in our ability to interpret these data. To offset this, we did include other questions about global confidence to practice as a surgeon in a given field, and we feel that we have sufficient data to make some inferences as to confidence levels of recent residency graduates. Second, although our response rate was fairly good (61%), there could have been some bias introduced by virtue of the limited subset that submitted their opinions for analysis.

CONCLUSIONS

This large survey of all recent graduates of GS residencies in the United States suggests that the vast majority are confident in their practices and possess high levels of satisfaction with their practice, whether GS or SS. We believe that the data on perceived differences between GS and SS surgeons can be helpful as we work toward a solution to the workforce shortfall in GS that looms in the future.

ACKNOWLEDGMENTS

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DISCUSSANTS

J.D. Richardson (Louisville, KY):

I have no disclosures. I think this is an excellent study on many levels. I think the study was well designed. It asked a number of questions in different domains, and I think the mere fact that you got 3354 residents to complete the survey offers face validity to the observations and conclusions. I think that this study does raise many important questions. The implications are enormous, in my opinion, for the workforce needs of the country.

I have the opportunity, as some may know, to be involved with the American College of Surgeons Transition to Practice Program over the past 2 years. In that capacity, I've talked with an awful lot of current chief residents and recent graduates. It is clear to be me, in that anecdotal experience, that the lack of confidence is an issue in a small but likely significant number of our trainees. I have also had conversations with a number of young surgeons who seem to be on their way to failed careers for one reason or another. Whether or not these surgeons are among the 39% of nonrespondents, I guess, is an imponderable, but it's still something that's a bit worrisome to me.

I have 1 methodologic question and 3 perhaps more philosophical questions, Mary. I know some of these may be difficult to answer, but I think, as we contemplate, they are important.

In terms of methodology, did you actually ask the respondents what they were practicing? Since over a quarter took fellowships in things such as surgical critical care or MIS, they may have well been practicing general surgery, and it would be useful to know whether or not they were actually doing general surgical procedures because that might have influenced your results.

In 1 of the tables—and I think you showed a chart—the confidence levels seemed to decrease as one pursued more narrowly based specialties such as breast and endocrine, those 2 being at the bottom, I think. I wondered whether you had an opinion based on your data about which is chicken and which is egg. In other words, do the less

competent choose a narrow field or is it the field itself and the fact that they pursue it what makes them less confident?

Because the presence of a general surgical mentor is key in choosing that career, and given the workforce needs in general surgery, should accrediting groups such as the surgery RRC demand a real-world general surgical experience, as president, Dr Ledgerwood, suggested today?

Then, finally, I think that this is probably the most imponderable but probably the most important question. Do you believe that, as a surgical educator, one could necessarily equate a resident's confidence to actual competence? There is certainly strong anecdotal experience that a trainee's sense of confidence does not always indicate practice readiness. I guess, as an educator, how confident are you between that linkage in confidence and competence? Personally, I have less confidence in that association. I find that many don't know what they don't know, and I would appreciate your comments on that.

Response From M. Klingensmith:

With regard to your first question regarding methodology, our survey did not specifically ask what the current practice mix for one of the respondents might be. These are graduates who are new to practice. We didn't request their case data, but I suppose if we followed these folks out, we could get their recertification data and leverage the database of the board to further understand what they are doing in practice. As many of us know, those who do subspecialty fellowship training often end up taking general surgery call wherever they are. Certainly, being well-versed in the breadth of general surgery will be important for all of our graduates.

With regard to your chicken-or-the-egg question, as to whether confidence begets the need for a narrow fellowship, I think that we have both chickens and eggs out there. I think that we have some people who are truly interested in the specialty, are competent and confident, but pursue a specialty that has a narrow focus, but I think that there are others who, as you suggest, perhaps do choose to limit themselves by choosing a narrow scope of practice.

With regard to whether we should mandate rotations in general surgery, I personally feel strongly that we should. I think that we have a workforce crisis that will only get worse. I would love to see there be a requirement that there is a core surgical rotation experience. I think how we would define that and what would truly constitute that may be a little difficult, but I would love to see that happen.

Then finally, you asked me, could we equate confidence and competence? I don't think we can. I know that there is literature in the psychology literature that suggests there is not always a link. As you suggested, many don't know what they don't know. That is certainly a limitation of our survey study. It would be great if we could somehow get actual outcome data and complication data from these individuals to know better what that link might be.

DISCUSSANTS

R.G. Postier (Oklahoma City, OK):

It seems to me that people choose specialty training rather than continuing in general surgery for basically 1 of 3 reasons.

One would be that they have trained in a relatively large program, where there are a lot of specialty fellowships, and they view that as the norm.

The second is that they may view the lifestyle of a surgeon doing specialty work as more favorable and more protected from the emergency room call at night and on the weekends than the general surgeon, or they simply don't have the confidence at the end of their training to go out and be independent surgeons. You have really focused on the last of those issues.

Do you have data about whether you are more likely to pursue fellowship training if you come from a large program where specialty training seems to be the norm?

Response From M. Klingensmith:

Our survey does not answer that question, but there was a paper presented on Tuesday by Dr Cogbill that does answer that question. It was a survey of residency program directors. He found that programs that have fellowships and have other subspecialty residencies, orthopedics, and so forth, those residency programs are much more likely to produce those who pursue fellowship training. If you don't have many fellowships and you are in an academic medical center or a medical center that doesn't have many other residencies, you are much more likely to produce a general surgeon.

DISCUSSANTS

H. Polk (Louisville, KY):

This manuscript is one of the ones you are all going to want to flag to read in some depth. I think there are points here that are really a here-and-now issue for general surgery, and they would add to debate, I think, in a good way. I go back to the question you have been asked twice about the general surgery role model. I think there are self-styled elite programs that have no general surgeons in them. There's nobody who can be defined as a general surgeon there, and that's a real issue. I think we ought to develop a place in medical schools just like that is for minimal access surgery or something else that's a real tenure-earning position in the center of the department, but that's a personal opinion.

On the contrary, have you questioned whether these people got their experience with the general surgeon model in the motherhouse or in some outside rotation? Our president made a very nice reference to the value of community rotations and to what extent that's a good place to get it as opposed to the motherhouse. I think those are issues that are very important.

I would make a plea again about rethinking the role for general surgeons in the main core of big academic departments and there being some kind of general surgery in the mainstream motherhouse rotation.

Let me ask you one other thing. Did you do anything about debt impacting on choices for or against general surgery?

Response From M. Klingensmith:

Our survey actually has a number of additional elements that we did not present today. Debt is one of those. There will probably be a future publication that might include some of those elements.

With regard to whether we need general surgeons in the mother ship hospital, I would say emphatically that we do. If we don't have them, we need to find them. If we don't have them, we need to establish rotations with them.

Our survey did not ask where they got their general surgery experience, but, again, I need to reference a paper that again was presented on Tuesday at the Association of Program Directors in Surgery. This was a survey that was also administered by the American Board of Surgery that Dr Cogbill presented. He has shown that over time over the past decade, the experiences in general surgery have migrated away from the mother ship. They are in affiliate hospitals by and large or what is being called the general surgery experience is really acute care surgery. That's also been a big change in trend over the past decade.

We could argue whether that's true general surgery or not, but that does seem to be what our residents are gaining as experiences in "general surgery."