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Effect of Changing Patterns and Requirements of Endoscopic Training in Surgical Residency

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This study aimed at looking at the effect of changing patterns and requirements of endoscopic training in surgical residency. Recognizing the increasing role of endoscopy, the minimum required scope number was increased to 85 (including at least 35 esophagogastroduodenoscopies (EGD) and 50 colonoscopies) for graduates completing their program in June 2009. The purpose of our study was to see how this new requirement affected the endoscopic performance of residents. A retrospective study was done examining the performance of residents, based on data from the national Accreditation Council for Graduate Medical Education (ACGME) logs from 1990–2010. For graduating residents, we compared data for various procedures from 1990–2008 to 2009–2010. For colonoscopies, the average increased from 32 to 63. Increases were also found in their chief year, from 7 to 18.8. For EGD, the average increased from 25 to 34. In their chief year, the average more than doubled from 4.4 to 9.7. There were no increases for other endoscopic procedures such as endoscopic retrograde cholangiopancreatography (ERCP), bronchoscopies, and cystoscopies between the 2 time periods. When an increased requirement for endoscopy was instituted by the ACGME, there was an increase in the number of colonoscopies and EGD performed by the graduating residents, although there was no difference in the numbers of other scopes (e.g., cystoscopes, bronchoscopes, and ERCP) for the same time period.

Key words: Endoscopy training – Surgical residency – Accreditation Council of Graduate Medical Education – American Board of Surgery – Competency – Minimal requirements

Flexible endoscopy is increasingly central to the practice of general surgery. Surgeons should therefore be at the forefront of this surgical frontier to provide the optimal diagnostic and therapeutic options for their patients. With the increasing role of endoscopy in general surgery, it is vital that training programs keep pace and provide adequate endoscopic training for general surgical residents.[1] Rec-

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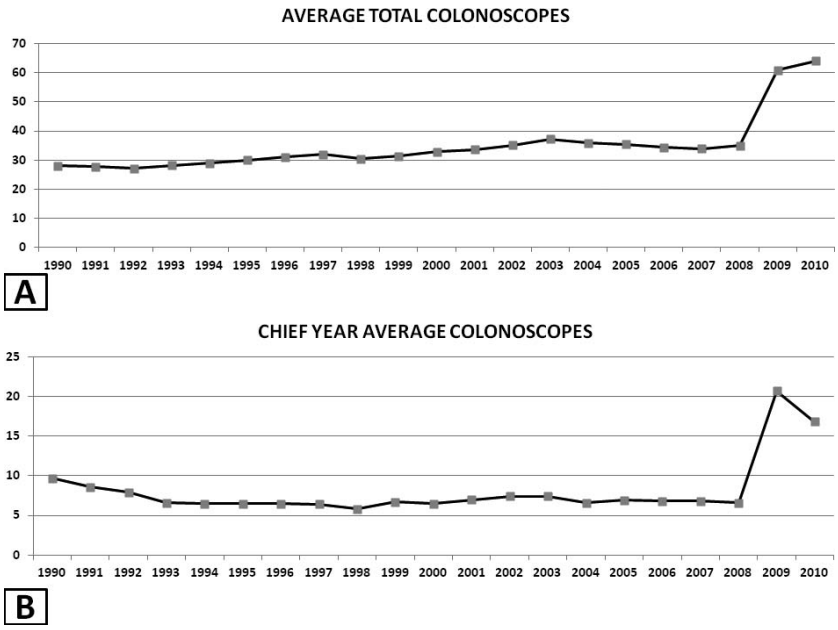

Fig. 1 (A) Average total number of colonoscopies performed by residents during the entire residency. (B) Average number of colonoscopies performed by residents during their chief year.

ognizing the increasing role of endoscopy in 1985, the American Board of Surgery (ABS) recommended a minimum of 29 endoscopic cases to be performed by graduating surgical residents. There have been concerns raised by gastroenterologists regarding privileging/credentialing general surgeons to perform to endoscopies. The argument is that the number of scopes performed during general surgery residency is very low for the resident to be a competent endoscopist at the end of the residency. The required number was increased to 85 [including at least 35 esophagogastroduodenoscopy (EGD) and at least 50 colonoscopies] for graduates completing program in June 2009.[2] A retrospective study was done to see how this new requirement affected the endoscopic performance of residents by looking at the Accreditation Council of Graduate Medical Education (ACGME) national data.

Material and Methods

The ACGME national logs for the last 20 years from 1990–2010 was reviewed. We collected data on the number of endoscopic procedures performed by general surgery residents, which included procedures such as EGD, colonoscopy, ERCP, bronchoscopy, and cystoscopy. Data was collected for the graduating residents as the number of scopes performed during their chief year and overall number during the entire residency. The number of scopes for the residents graduating in the year 2009 and 2010 were then compared with those of residents who graduated before the year 2008. Student's *t* test was used to perform statistical analysis between the groups.

Results

From 1990–2008 the average colonoscopies performed by graduating residents ranged from 27 to 35 scopes with an average of 32. This average number increased dramatically in compliance with ACGME requirement to 61 and 64 for residents graduating in the year 2009 and 2010, respectively (Fig. 1A). From 1990–2008 the average colonoscopies performed by residents in their chief year ranged from 6.4 to 9.7 scopes with an average of 7 scopes. There was between a two- and threefold increase in the average colonoscopies performed by residents in their chief year in the year 2009 and 2010, which was 20.7 and 16.8 (Fig. 1B).

From 1990–2008 the average EGD performed by graduating residents ranged from 19 to 32 scopes with an average of 25. This average increased to 33 and 35 for residents graduating in the years 2009 and 2010, respectively (Fig. 2A). From 1990–2008 the average EGD performed by residents in their chief year ranged from 3 to 8.5 scopes with an average of 4.4 scopes. This average number doubled for residents in their chief year in the year 2009 and 2010, which was 10.3 and 9 (Fig. 2B).

As shown in Table 1 there was no similar exponential change in the trends in other endoscopic procedures such as ERCP, bronchoscopies, and

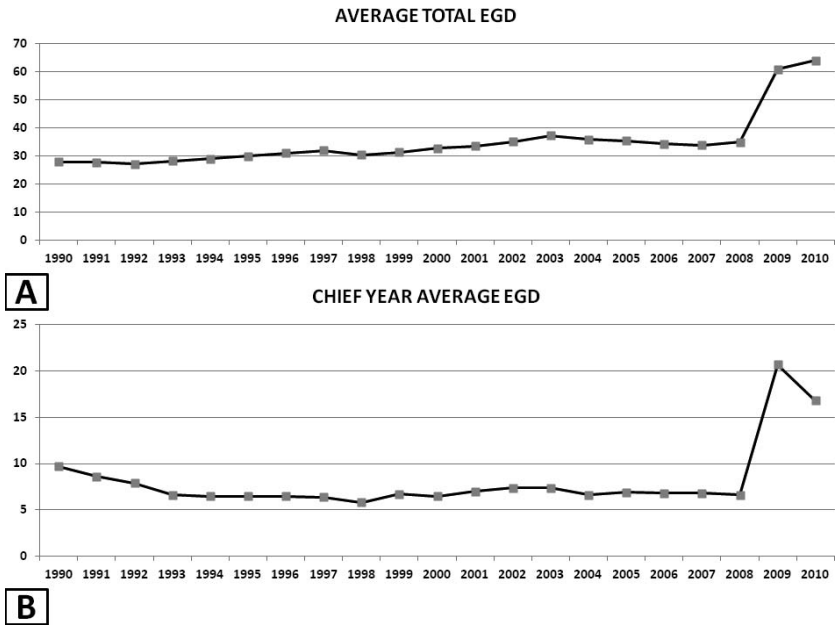

Fig. 2 (A) Average total number of EGDs performed by residents during the entire residency. (B) Average number of EGDs performed by residents during their chief year.

cystoscopies for that time period. The average total number in 2009 to 2010 showed a slight increase in ERCP and bronchoscopies and a slight decrease in the cystoscopies when compared to the previous years from 1990–2008, but this difference was not significant on student t test. The average number of ERCP performed during the chief year remained same during both the time periods. The average number of bronchoscopies performed during the chief year in 2009 to 2010 had decreased by almost half when compared to the previous years, but again this difference was not significant on Student's *t* test. Interestingly there were no cystoscopies performed during the chief year in 2009 to 2010 and this was a significant change ($P = 0.01$).

Discussion

To ensure that surgeons spearhead the field of endoscopic surgery, newer strategies must be developed and implemented for teaching surgical endoscopy to residents and practicing surgeons.[3] Specific strategies aimed at expanding general surgery residents endoscopic experience will offer real potential to produce a generation of surgeons optimally equipped to deal with these new trends.[4] In the past we conducted a survey of program directors (PD) looking at the current patterns of endoscopic training and provided suggestions for improvements in endoscopic experience for general surgery residents.[5] Various suggestions were provided, which included creating a dedicated endoscopic rotation, and encouraging general surgery teaching staff at performing and teaching endoscopies.

In view of these changing trends in clinical practice, in February 2006, the Resident Review Committee increased the minimum number of endoscopic procedures to 85 with at least 35 upper endoscopic and 50 colonoscopic procedures. This change was to be implemented for residents graduating in June 2009.[6,7] With these guidelines in place, programs had to bring in structural changes in their residents' training.

In an earlier survey of PDs, most PDs felt that graduates were well prepared to complete diagnostic

Table 1 Average number of procedures performed during chief year and entire residency

	Average total procedures during entire residency			Average chief year procedures		
Procedures	1990–2008 Average (range)	2009	2010	1990–2008 Average (range)	2009	2010
ERCP	0.4 (0.3–0.9)	0.5	0.6	0.1 (0–0.2)	0.1	0.1
Bronchoscopy	10.3 (8.9–13.8)	10.5	10.6	1.6 (0.1–3.4)	0.9	0.8
Cystoscopy	1.9 (1.3–3.5)	1.2	1.4	0.1 (0–0.1)	0	0

Table 2 Comparison of minimum scope requirements for general surgery with other fellowships

Procedures	General surgery	GI fellowship	Colorectal fellowship	MIS fellowship
EGD	35	130	-	-
Colonoscopy	50	140	140	-

endoscopy safely; however, less PDs felt confident about the safe performance of therapeutic endoscopy.[8] Prospective evaluation of acquisition of technical competency for 135 gastroenterology fellows by Cass et al concluded that for trainees to achieve 90% competence across all objective and subjective endpoints, at least 130 EGD and 140 colonoscopy cases were necessary.[4] Lee et al concluded that the minimum threshold number of screening and diagnostic colonoscopies for technical competence is more than 150.[9] As seen in Table 2 the minimum requirements for scope numbers for general surgery is far less than that of other fellowships. Thus the completion of the current minimum number of procedures (50 colonoscopies and 35 gastroscopies), as required by the ACGME, would not necessarily ensure procedural competence.

It is encouraging to see that since the minimum requirement of cases was increased with an appropriate notice, the programs coped well with satisfactory results. We see that there was a drastic increase in the number of scopes from the years 2008 to 2009 for colonoscopies and EGD and such similar change was not noted in other endoscopic procedures such as bronchoscopies, cystoscopies, and ERCPs. Endoscopic surgery requires dedicated skills such as 3-dimensional orientations in a 2-dimensional representation of the operating field and complex instrument handling. Endoscopy simulator training is beneficial with regard to development of psychomotor skills. Novice learners perform basic lower gastrointestinal endoscopy procedures more readily when trained on a computer-based simulator compared with those trained by traditional standard.[10,11] Cost is one of the major limiting factors behind programs not acquiring the endoscopic skill trainer. Prolonged endoscopic procedure times in the operating room over a 5-year training program add almost $50,000 to the total cost of training each resident.[12] This financial burden may be lessened with the appropriate use of endoscopic simulator and hence all the programs should aim to establish an endoscopic skills laboratory.

Although disparity occurs in the minimum number of cases to achieve competence, it is imperative that surgical educators promote consistency in endoscopy education. To ensure adequate and uniform endoscopic training to surgical residents, it is important to establish a cohesive national surgical education curriculum.

Conclusions

The field of flexible endoscopy appears to be at a new surgical frontier. As the therapeutic opportunities afforded by flexible endoscopy continue to evolve, so should its practice by general surgeons. Obtaining a broad endoscopic experience is ideal during residency. When an increased requirement was placed by ACGME, there was proportional increase in the number of colonoscopies and EGD performed by the graduating residents. Whereas there was no difference in the numbers of other scopes such as cystoscopes, bronchoscopes, and ERCP for the same time period. Few questions and suggestions are raised from this study. In the current scenario with an increased requirement of scope numbers for credentialing from hospitals at par with the gastroenterologists, should the ACGME consider increasing the number of scopes requirement? Consideration should be given for training on simulators and for curriculum on endoscopy.

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