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See one, do one, and teach none: resident experience as a teaching assistant

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ABSTRACT

Background: Training of surgical residents depends on graduated autonomy in and out of the operating room. We sought to define trends in operative volume and number of teaching cases in graduating surgical residents over time.

Methods: We queried the Accreditation Council for Graduate Medical Education general surgery case log (1999–2012) for all case categories in which graduating chief residents performed a median of 20 or more cases during their training. Median (10th and 90th percentiles) number of cases performed as surgeon chief, surgeon junior and teaching assistant (TA) were analyzed using R^2 for all trends.

Results: The median number of cases performed by graduating chief residents remained stable over time (965–971; $R^2 = 0.01$). Surgeon junior cases increased slightly (718–725; $R^2 = 0.07$), whereas surgeon chief cases decreased slightly (246–235; $R^2 = 0.08$). The most frequently performed cases were in the categories of the large intestine (125 [85,167], biliary (109 [74,167]), and abdominal hernia (99 [67.5,139]). The median number of TA cases decreased by 79% (126–27; $R^2 = 0.34$), with the most significant decrease occurring early in the study period (median: 126–22; $R^2 = 0.91$). The number of median teaching cases decreased in every category analyzed, with the most pronounced occurring in the categories of thoracic (9–0 [100%]; $R^2 = 0.37$) and breast (6–0 [100%]; $R^2 = 0.55$). The only categories with a median number of teaching cases >1 in 2012 were the large intestine (5), biliary (4), and abdominal hernia repairs (3).

Conclusions: Despite a relative stability of case volume over time, GSRs are graduating with relatively few cases recorded as TA. Improved opportunities for trainees to take on the role of TA while in residency may lead to improved confidence as surgeons on graduation.

1. Introduction

The training of surgical residents has classically been based on the Halstedian system of standardized education combined with graduated autonomy and responsibility until surgical independence is achieved [1]. With each year of residency, trainees gain confidence in caring for patients both clinically and operatively. Although the surgical aphorism of "see one, do one, and teach one" oversimplifies the expectations of residency training, there is truth in its essence: on graduation we expect our residents to be able to not only perform an operation but be able to teach it to others. Residency training has been affected both directly and indirectly by a variety of internal and external forces, including the

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Accreditation Council for Graduate Medical Education (ACGME) duty hour regulations, patient dictums, and attending preferences [2–4]. Together, these may be limiting the autonomy that residents have in and out of the operating room.

The ACGME has several requirements for the successful completion and graduation from general surgical residency [5]. These include meeting certain benchmarks of operative volume in categories such as skin and soft tissue, breast, biliary, and trauma as well as achieving a minimum performance total of 750 operations, of which 150 must be performed as a chief resident. Although this satisfies both the "see one" and "do one" criteria, there are no current requirements that address the ability of our graduates to "teach one."

A better understanding of general surgery case volume, as well as resident experience as a teaching assistant (TA), is needed to ensure that training programs are providing an appropriate educational experience for trainees. As such, the objective of the present study was to define relative trends in both operative volumes and number of teaching cases of graduating general surgery residents over a 14-y period.

2. Methods

The ACGME maintains a database that provides cumulative data on resident operative volume [6]. The database provides data on all operations performed by graduating chief residents (GCRs) during training. The number of each category of operation (e.g., breast, skin and soft tissue, endocrine, biliary, and so forth) is tabulated and stratified by resident operative role as follows: surgeon chief (reserved for cases performed during chief year), surgeon junior (all cases performed in the preceding years in which the resident was the primary surgeon), TA (where the senior resident guides a junior resident through the case), first assistant (where the resident is minimally involved in the operation), and surgeon total (the aggregate number of cases for all 5 y). Of these, only the cases logged as surgeon chief, surgeon junior, and TA receive credit toward certification, whereas cases logged as first assistant do not. The ACGME database provides medians, overall percentiles, and stratified percentiles (10, 30, 50, 70, and 90th) for these operative categories.

In the present study, the ACGME database was queried for all general surgery operations performed by GCRs between 1999 and 2012. As the focus of the study was general surgery, vascular surgery cases were excluded from the analytic cohort. In addition, to have broad applicability to all surgical residencies, only categories in which graduating surgical residents performed a median of greater than 20 cases per year were analyzed.

Standard measures of operative volume using median (10th and 90th percentiles) case volumes were reported. The ACGME data set does not provide 25th and 75th percentiles, and so the interquartile range for medians could not be reported. Trends in median case volume performed and changes in operative volume stratified by resident role (e.g., surgeon total, TA, and so forth) were examined over time (1999–2012). Raw data were not available through the ACGME, preventing certain statistical models from being used. However, linear trends in the data were examined by assessing

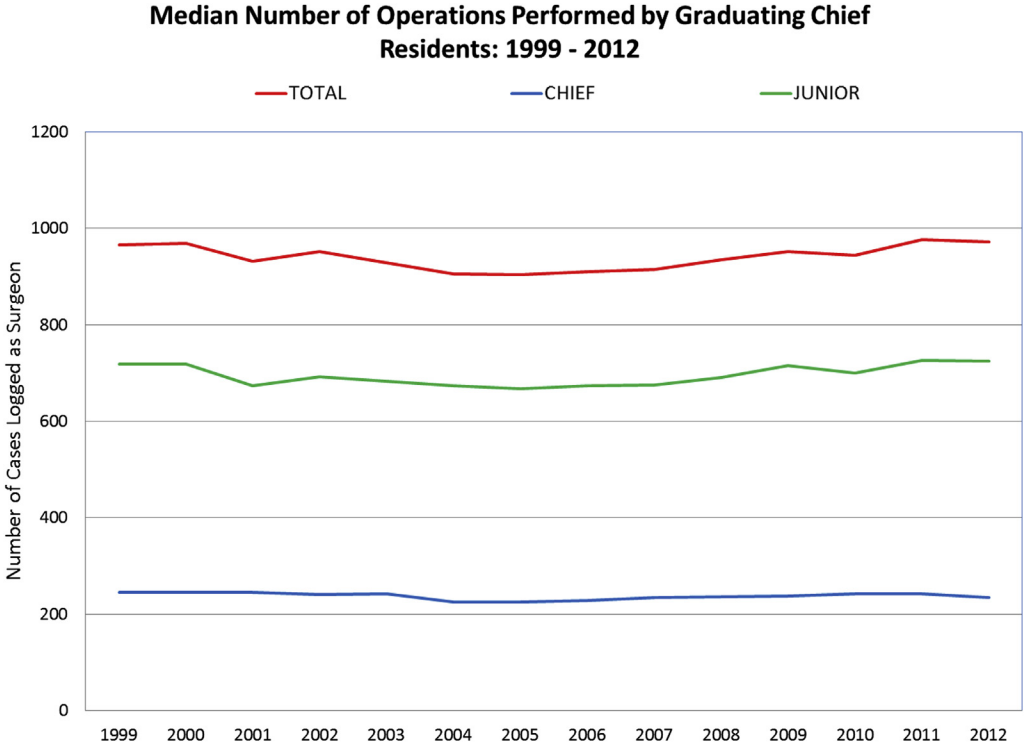

Fig. 1 – Median number of cases logged by GCRs overall (total), during the chief year and during the junior years. (Color version of figure is available online.)