



Who did the case? Perceptions on resident operative participation



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ABSTRACT

Background: The ACGME case log is one of the primary metrics used to determine resident competency; it is unclear if this is an accurate reflection of the residents' role and participation.

Methods: Residents and faculty were independently administered 16-question surveys following each case over a three-week period. The main outcome was agreement between resident and faculty on resident role and percent of the case performed by the resident.

Results: Matched responses were collected for 87 cases. Agreement on percent performed occurred in 61% of cases, on role in 63%, and on both in 47%. Disagreement was more often due to resident perception they performed more of the case. Faculty with <10 years experience were more likely to have disagreement compared to faculty with ≥10 years ($p = 0.009$).

Conclusions: There was a high degree of disagreement between faculty and residents regarding percent of the case performed and role. Accurate understanding of participation and competency is vital for accrediting institutions and for resident self-assessment meriting further study of the causes for this disagreement to improve training and evaluation.

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1. Introduction

Historically, operative volume has been a proxy for competence. However, factors such as resident work hour restrictions and increasing medico-legal/patient safety considerations have significantly changed the context of surgical training, including operative autonomy.¹ These factors, along with more to learn, contribute to the perception among graduating residents that they are inadequately prepared for practice.² Despite this, organizations such as the American Board of Surgery (ABS) and the Accreditation Council for Graduate Medical Education (ACGME) still rely on case volumes as a metric for competence.

Currently the ABS requires residents perform 750 operations within discrete categories as “operating surgeon” in order to sit for the General Surgery Qualifying Examination, and the ACGME uses the surgical case log as one metric of a residency program's operative training. Presently, the ACGME requires all residents log

operative cases on the ACGME case log website, and categorize their role as “first assistant”, “surgeon junior”, “teaching assistant”, or “surgeon chief”, without clear guidelines for each role. It is unclear however if residents know when they act as “operating surgeon” in a given case.³ Tradition holds that if the residents perform >50% of the “most important part of the case”, then they have functioned as the “operating surgeon”. This is slightly different from the definition given by the ABS, which states that a resident must “have personally performed either the entire operative procedure or the critical parts thereof ...”⁴ Based on these definitions, the accuracy of the resident case log relies not only on honest resident reporting, but also on agreement between the resident and faculty on what are the “critical parts” and whether the resident performed them.

Despite these limitations, there has been no evaluation of the degree to which faculty and residents agree on the resident's role, which is critical to the current training paradigm and to future frameworks. The purpose of this study was to determine if a difference exists between faculty and resident perceptions of resident role within a given case and to test the hypothesis that there is poor agreement as to what percent of the operation the resident performed and what their role was.

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2. Methods

Following approval from the Institutional Review Board, faculty and resident participants were recruited from the Department of Surgery. Participants were asked to complete surveys following each operative case. Participation was voluntary and uncompensated. All faculty members within the Department of Surgery were eligible for participation in the project including subspecialties. All residents on the general surgery services were eligible.

2.1. Survey design

The survey instrument was developed by a team of residents and faculty in conjunction with a PhD educator, and was based on literature reviews,^{2,5–23} and informal focus groups. The survey was designed to evaluate resident and faculty perceptions of operative experience and involvement, as well as evaluate the potential relationship between resident participation and factors such as surgeon experience and resident skill level.^{17,20,22} An initial 18-question survey was piloted with a small group of residents and faculty. Subsequent revisions also underwent pilot testing. The final survey consisted of 15 questions for faculty and 16 questions for residents with a combination of “yes/no” questions, as well as rating scales and short answers (eFigure1 and eFigure2).

2.2. Covariates

Demographic data obtained from faculty and residents included years experience or PGY level, the case performed, and the approximate number of times they had performed the case previously. A list of all cases was distributed to two senior faculty members in vascular and general surgery for categorization as basic versus complex with 100% agreement among reviewers.

2.3. Outcomes

The main outcome studied was resident and faculty perception of resident involvement in the case, as evaluated by agreement on what percentage of the case was performed by the resident (<25%, 25–50%, 50–75%, and >75%) and the residents' role in the case (first assistant, surgeon junior, surgeon chief, or teaching assistant).

2.4. Survey administration

Study personnel administered parallel versions of the survey to residents and faculty following every eligible case during a three-week period from July to August 2015. Cases were considered eligible if the faculty performing the case had volunteered to participate in the study, and if there was at least one resident participating in the surgery. Surveys were de-identified, and coded with matching numeric identifiers to facilitate evaluation by operative case.

2.5. Analysis

Data were compiled and compared for inter-case agreement between residents and faculty with regards to percent of the case performed by the resident and resident role. The agreement on both percent performed and resident role was determined using descriptive statistics. Cohen's kappa was used to determine agreement between resident and physician reported outcomes. Cohen's kappa can be interpreted as follows: values less than 0.20 indicate poor agreement, 0.21–0.40 as fair, 0.41–0.60 as moderate, 0.61–0.80 as substantial, and 0.81–1.00 as almost perfect agreement. Bivariate analysis was used to evaluate agreement on percent

of the case performed and resident role with the variables: operative type, case complexity, PGY year, and faculty experience as well as to determine association of resident and faculty characteristics with agreement, faculty and resident perceptions of role, and faculty and resident perceptions of percent performed. Exact logistic regression analyses were used to analyze the variables associated with resident and faculty perceptions of role, as well as faculty and resident perceptions of percent performed. Significance was set at $p \leq 0.05$. All statistical analysis was performed with SAS 9.4. (Cary, NC).

3. Results

One-hundred thirteen cases out of 187 cases performed during the study period were eligible for inclusion. Seventy cases were excluded because faculty were not participating in the study, 4 cases did not involve resident participation, 16 cases were eligible but not given surveys, and 10 cases failed to have either faculty or resident surveys returned. Paired responses were collected for 87/113 cases (77% response rate). Thirteen of 22 faculty members participated in the study.

3.1. Demographics

Residents in years 1–3 (PGY1-3) composed 54% of responses completing at total of 47 surveys, while senior level residents (PGY 4-5) composed 46% of responses completing 40/87 surveys (Table 1). Fifty-five faculty responses were from faculty members with less than 10 years post training (63%), and the remaining 32 responses were from faculty who had been in practice for more than 10 years (37%). Of the 87 cases, 65 cases were general surgery and 22 were endovascular cases (Table 2). The majority of cases were basic cases, such as inguinal hernia repairs. Of the 65 general surgery cases, 26% were laparoscopic (N = 17; 8 basic and 9 complex) and 74% were open cases (N = 48; 38 basic and 10 complex). Of the 22 endovascular cases, 9 were basic (e.g. angiograms and vein ablation) and 13 were complex (such as endovascular aneurysm repair).

3.2. Percent of case performed by resident

The results of bivariate analysis of both percent performed and role are shown in Table 3, while those of the multivariate analysis are shown in Table 4. Sixty-one percent of cases had agreement between residents and faculty on what percentage of the case the resident performed (Fig. 1). Cohen's Kappa for agreement between faculty and residents on percent performed was 0.61 indicating a substantial agreement. Agreement was highest for the resident performing >75% of the case. The number of years post-training for faculty was associated with disagreement on percent performed by resident on bivariate analysis, ($p = 0.0042$) and logistic regression (OR = 6.001, CI = 1.761–20.444).

Both the type and complexity of the case were significant factors for residents' perception that they performed >50% of the case.

Table 1
Demographics of respondents.

	N (%)
PGY year	
PGY 1-3	47 (54%)
PGY 4-5	40 (46%)
Faculty# years experience	
<10 Years	55 (63%)
≥10 Years	32 (37%)

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