

Resident and attending assessments of operative involvement: Do we agree?



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Abstract

BACKGROUND: General surgery residents' (GSRs') operative experience likely improves with increased involvement. We explored GSRs and attending surgeons' (ASs') perceptions of GSRs' operative roles.

METHODS: GSRs and ASs completed surveys postoperatively regarding responsibility for several operative tasks (incision opening, dissection of minor and major structures, major suturing, and incision closure). Analyses used chi-square test ($P < .05$) and Spearman's rank correlation (ρ).

RESULTS: A total of 151 pairs of surveys were collected. Interpair agreement on GSRs involvement varied for each category (ρ range: .30 to .67), and GSRs underestimated their involvement for every step. GSRs frequently performed the majority of each task (range: 86% to 97%). Decreasing operational complexity, acute operations, and junior ASs (<5 years in practice) were each associated with increased agreement and GSRs involvement in operative tasks.

CONCLUSIONS: GSRs involvement was extensive, and agreement with ASs was high overall. Some discrepancies remain in several categories based on operational complexity, acuity, and ASs experience. © 2016 Elsevier Inc. All rights reserved.

Surgical training has traditionally followed a Halstedian model in which residents are entrusted with gradually increasing responsibility as they amass experience. This steady progression is of particular importance in the operating room, where residents must develop expert technical skills over a relatively short 5-year period. Surgical maturation requires comprehensive involvement in and out of the operating room, yet, more recently, apparent obstacles to resident autonomy have arisen. Duty

hour restrictions, increased oversight, and patient objections, among other factors, have challenged residents' operative autonomy and exposure to operations.^{1,2} Concerns about patient outcomes, operational efficiency, and relative value unit (RVU) goals have also provided disincentives for attending surgeons (ASs) to grant residents increased roles in care.³ The convergence of these factors has altered the landscape for surgical trainees.

Resident participation in the operating room can be thought of as a series of related but independent steps, including opening or closing the surgical incision or the dissection of minor or major anatomical structures. The residents' role in these tasks must gradually increase in order for them to establish independence; ideally, they must also be able to accurately assess their own involvement and development. We set out to determine the degree of

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responsibility residents assume for a set of operational tasks, as well as how they perceive their intraoperative role relative to attending evaluations.

Methods

We created and employed a postoperative survey (Appendix) consisting of a series of questions regarding resident contributions to 5 operative tasks: the opening of the incision (OPE), the dissection of minor structures (MIN), the dissection of major structures (MAJ), suturing or anastomoses (SUT), and the closing of the incision (CLO). Responses on who performed each of these tasks were recorded on a 5-point scale ranging from “completely attending” to “completely resident.”

All surveys were completed at a single tertiary academic medical institution in an urban environment. Anonymous article surveys were distributed to each of the hospital’s operating rooms. A presentation regarding the instructions, utility, and exclusion criteria for the study was given to the entire department, and included an open forum to answer questions. Both general surgery residents (GSRs) and ASs were asked to fill out the survey following each operation they jointly performed. GSRs and ASs were asked only to fill out a survey for operations in which one ASs and one GSRs were present for the entire operation. They were asked not to fill out surveys for operations that met exclusion criteria: operations involving multiple ASs, fellows, physician extenders, or for which multiple residents were involved in the major parts of the operation. Surveys that were, nonetheless, completed from such operations were excluded from our analysis. Where ASs and GSRs responses differed, ASs responses were given deference for the purpose of analyzing resident involvement in each task.

Each respondent also provided background information, including ASs years in practice (YIP), GSRs postgraduate year (PGY), incision time, and title of operation performed. ASs were later classified as junior ASs (YIP <5) or senior ASs (YIP ≥5). GSRs were similarly classified as junior GSRs (PGY 1 to 3) or senior GSRs (PGY 4 to 5). Operations were categorized as low, moderate, or high complexity after careful review of operation titles by independent and blinded surgeons. Operations were classified as either acute or elective and assorted into 8 categories based on region or specialty: head and neck, thorax, upper gastrointestinal, lower gastrointestinal, skin and soft tissues, vascular and transplant, trauma and acute care surgery, and inguinal and umbilical hernia. To assess the changes that occurred with the change in PGY, surveys completed before June 24, 2015 were considered “academic year 2014 to 2015,” and surveys completed on or after June 24, 2015 were considered “academic year 2015 to 2016.”

Survey responses were cataloged and analyzed using SPSS (IBM SPSS Statistics for Windows, version 20.0.

Armonk, NY: IBM Corp.). Spearman’s rank correlation coefficient (ρ) was calculated to evaluate how often ASs and GSRs responses were concordant and, where it existed, the degree of interpair disagreement. The frequency of interpair agreement and the extent of GSRs involvement in each operative task was compared between groups using chi-square analysis, seeking a significance level of $P < .05$.

Results

A total of 387 surveys were collected over the course of 3 months (May through July, 2015) representing 226 distinct operations. Although a true denominator could not be determined, there were 686 applicable operations performed over this period, yielding a response rate of at least 33%. Of the surveys submitted, 85 (22%) met exclusion criteria, with 302 surveys (151 corresponding GSRs-ASs pairs) available for analysis. Matching surveys were paired based on operating room and incision time. ASs surveys were completed more often by junior ASs ($n = 82$) as compared with senior ASs ($n = 67$), and GSRs surveys were completed more frequently by senior GSRs ($n = 126$) as compared with junior GSRs ($n = 21$). Respondent demographics and case characteristics were recorded (Table 1).

GSRs involvement was high in every operative task. ASs credited GSRs with completing at least 50% of each task in a vast majority of cases (OPE: 97% of cases; MIN: 95%; MAJ: 86%; SUT: 93%; and CLO: 99%), whereas they completed tasks with no GSRs contribution sparingly (Fig. 1).

Senior GSRs were more likely to complete at least half of MIN (96% vs 85%; $P = .04$), but no other significant differences in involvement were appreciated between junior and senior GSRs. Regardless of their own experience, GSRs were more likely to complete a majority of MIN (99% vs 90%; $P = .01$) and SUT (99% vs 87%; $P = .01$) when working with junior ASs. During academic year 2014 to 2015, GSRs were also more likely to complete most MAJ (91% vs 76%; $P = .01$) and SUT (97% vs 87%; $P = .04$) (Table 2). With increasing operational complexity, GSRs participation significantly decreased in both MAJ (low complexity: 96%; moderate complexity: 82%; high complexity: 71%; $P < .01$) and SUT (100%; 92%; 82%; $P < .01$) (Fig. 2A). GSRs in acute operations were also more likely to perform most MAJ (100% vs 79%; $P < .01$) and SUT (100% vs 90%; $P = .04$) (Fig. 2B). Operation region or specialty demonstrated a significant relationship with GSRs involvement in OPE ($P < .01$), MIN ($P < .01$), and MAJ ($P < .01$).

In analyzing overall interpair agreement, GSRs survey responses were the same as ASs responses most frequently for CLO (68%; $\rho = .51$), followed by OPE (63%; $\rho = .30$), SUT (59%; $\rho = .66$), MIN (53%; $\rho = .42$), and MAJ (51%; $\rho = .67$). Where disagreement existed between GSRs and ASs, GSRs more often underestimated their role in every operative task (OPE: 60% of disagreeing pairs; MIN: 73%; MAJ: 68%; SUT: 69%; and CLO: 62%) (Fig. 3).

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