

Resident Surgeons Underrate Their Laparoscopic Skills and Comfort Level When Compared With the Rating by Attending Surgeons ^{☆, ☆ ☆}

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OBJECTIVE: The development of operative skills during general surgery residency depends largely on the resident surgeons' (residents) ability to accurately self-assess and identify areas for improvement. We compared evaluations of laparoscopic skills and comfort level of residents from both the residents' and attending surgeons' (attendings') perspectives.

DESIGN: We prospectively observed 111 elective cholecystectomies at the University of Michigan as part of a larger quality improvement initiative. Immediately after the operation, both residents and attendings completed a survey in which they rated the residents' operative proficiency, comfort level, and the difficulty of the case using a previously validated instrument. Residents' and attendings' evaluations of residents' performance were compared using 2-sided *t* tests.

SETTING: The University of Michigan Health System in Ann Arbor, MI. Large academic, tertiary care institution.

PARTICIPANTS: All general surgery residents and faculty at the University of Michigan performing laparoscopic cholecystectomy between June 1 and August 31, 2013. Data were collected for 28 of the institution's 54 trainees.

RESULTS: Attendings rated residents higher than what residents rated themselves on a 5-point Likert-type scale regarding depth perception (3.86 vs. 3.38, $p < 0.005$), bimanual dexterity (3.75 vs. 3.36, $p = 0.005$), efficiency

(3.58 vs. 3.18, $p < 0.005$), tissue handling (3.69 vs. 3.23, $p < 0.005$), and comfort while performing a case (3.86 vs. 3.38, $p < 0.005$). Attendings and residents were in agreement on the level of autonomy displayed by the resident during the case (3.31 vs. 3.34, $p = 0.85$), the level of difficulty of the case (2.98 vs. 2.85, $p = 0.443$), and the degree of teaching done by the attending during the case (3.61 vs. 3.54, $p = 0.701$).

CONCLUSIONS: A gap exists between residents' and attendings' perception of residents' laparoscopic skills and comfort level in performing laparoscopic cholecystectomy. These findings call for improved communication between residents and attendings to ensure that graduates are adequately prepared to operate independently. In the context of changing methods of resident evaluations that call for explicitly defined competencies in surgery, it is essential that residents are able to accurately self-assess and be in general agreement with attendings on their level of laparoscopic skills and comfort level while performing a case. (J Surg Ed 72:1240-1246. © 2015 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: internship/residency, clinical competence, general surgery/education, education, medical, graduate/standards

COMPETENCIES: Practice-Based Learning and Improvement, Medical Knowledge, Systems-Based Practice

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INTRODUCTION

The development of operative skills throughout general surgery training depends on the resident surgeon's (resident's) ability to self-assess strengths and weaknesses.¹⁻⁴

Accurate identification of technical strengths and deficiencies allows the surgeon to actively work toward improvement and track his/her progression. To facilitate this improvement, it is important that attending surgeons (attendings) and resident surgeons (residents) are in agreement regarding residents' surgical skills and comfort level.⁵ With the introduction of the Accreditation Council for Graduate Medical Education (ACGME) Milestones, it is becoming even more crucial that residents not only gain adequate experience but also make a conscious, self-directed effort to learn and improve in the process. Furthermore, it is important that attendings understand how to accurately evaluate residents' competency, as the Milestones continue to move us toward more competency-based assessments. With growing responsibilities and limited time, residents face increasing, and at times conflicting, pressure to learn both thoroughly and rapidly to become competent surgeons on completion of their training.⁶

Previous studies suggest that attendings are less critical of residents' technical skills than residents are of themselves.^{7,8} This disparity in the perception of technical skills may be detrimental to the learning environment.⁷ A resident who is more critical and less comfortable with his/her skills may expect more teaching from the attending than what the attending realizes. However, some residents fear that actively seeking assistance is perceived as a sign of weakness.⁹ Better teaching can be facilitated by improved communication between residents and attendings in the operating room regarding technical skills and comfort level.^{8,10} Residents rank an attending's willingness to teach as the most important factor driving learning in the operating room.¹¹ This is especially important because previous research shows that, when compared with attendings' perception of feedback provided, residents are less satisfied with the intraoperative feedback they receive.¹² Better communication may contribute to the resident's ability to accurately self-assess technical skills, promoting improved autonomy and clear progression throughout the surgeon's career.^{5,7,12-14}

The purpose of this study is to examine and compare attendings' and residents' perceptions of laparoscopic skills, comfort level, and degree of operative teaching. We hypothesize that residents' self-evaluations would be lower than that of their attending counterparts, reflecting a perception gap. To test this, we directly observed a series of laparoscopic cholecystectomies and asked attendings and residents to complete a survey immediately postoperatively to rate the residents' laparoscopic skills, comfort level, and the degree of operative teaching during the case.

MATERIAL AND METHODS

Data Collection Instrument

Over a 3-month period between June and August 2013, we prospectively observed 111 laparoscopic cholecystectomies

at the University of Michigan Health System as part of a larger quality improvement initiative.¹⁵ Within this initiative, we sought to examine operative teaching and the discrepancy between residents' and attendings' perceptions. At the conclusion of each case, the resident and attending were independently provided with a survey (Appendix 1) in which they rated the resident's operative proficiency, comfort level, and the difficulty of the case. The survey used an externally validated measure of laparoscopic skills: the Global Operative Assessment of Laparoscopic Skills (GOALS).¹⁶ The GOALS measure is a 5-point Likert-type scale assessing residents' performance in 5 domains (depth perception, bimanual dexterity, efficiency, tissue handling, and autonomy), and it has been shown to have high interrater reliability for assessment of laparoscopic skills.¹⁶

In addition to the GOALS ratings, residents and attendings were surveyed on their comfort level while performing the operation, the amount of intraoperative teaching that they perceived took place during the case, and the residents' level of involvement at each critical step of the operation. Residents were also asked about their prior level of experience in performing laparoscopic cholecystectomy.

Statistical Analysis

Resident and attending survey responses were compared using 2-sided *t* tests for each aspect of the GOALS scale. Resident and attending assessments of the case's difficulty and the level of the resident's involvement while performing the operation were also compared.

This project was approved by the University's Institutional Review Board. All analyses were conducted using Stata version 12.0. A *p* value of less than 0.05 was considered significant for all analyses.

RESULTS

Residents who performed laparoscopic cholecystectomy during our study were from postgraduate year (PGY) 1 to PGY 5. Of the 111 laparoscopic cholecystectomies observed, residents in PGY 3 performed the highest number of cases (54 cases, 48.6% of total cases), followed by PGY 4, PGY 5, PGY 2, and PGY 1 residents. Fellows performed 2 of the 111 cases (1.8%). In addition to a having a range of PGY levels, residents had a broad range of previous experience with laparoscopic cholecystectomy. Only 3 cases were performed by a resident who had never performed more than 50% of the operation as the primary surgeon. The highest percentage of cases was performed by residents who had performed 11 to 20 laparoscopic cholecystectomies (36.8%), followed by residents who had performed more than 20 cases (34.2%), residents who had performed 4 to 10 cases (12%), and residents who had performed 1 to 3

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