Assessing Faculty Evaluation of Surgical Performance with Global Rating Scores

Matthew Karam, Steven Long, Mary-K Skalitzky, Lanchi Nguyen

THE UNIVERSITY OF IOWA

Introduction

- Global rating scores are a commonly used method for evaluating resident performance in both clinical settings and the operating room.
- In orthopedics, a new rating scale, the O&P score, has been developed by the American Board of orthopedic surgery.
- Currently the orthopedic resident program at Iowa is asking residents to request O&P evaluations from faculty after select procedures.
- We set out to evaluate the inter and intra-observer reliability of the O&P score, as well as how it compares to more objective measures of performance.

O&P Rating Scales

- O-score assessments evaluate eight different domains of the surgical procedure including: Pre-procedure Plan, Case Preparation, Technical Performance, Knowledge of Specific Procedure Steps, Visuospatial Skills, Post-procedure Plan, Efficiency and Flow, and Communication on a scale of 1-5.

Rating	Description
1	"I Had to Do"
2	"I had to talk them through"
3	"I had to prompt them from time to time"
4	"I needed to be in the room just in case"
5	"I did not need to be there"

- P-score evaluations include a single-question summative evaluation on a scale of novice (I) to advanced (V)

Rating	Description
I Novice	Attending provides maximum assistance; resident demonstrates knowledge of anatomy, demonstrates basic operative skills
II Low Intermediate	Resident performs approach with minimal assistance, identifies most critical steps, proficiency with technical skills, increasing ability to perform different key parts of operation, demonstrates room setup and equipment management
III High Intermediate	Resident can perform the approach and almost all critical steps, proficiency with component technical skills, assistance is required for the most challenging portions of the procedure
IV Supervision only, competent	Resident knows steps and transitions easily, can direct and assist a junior resident, can manage patient safety and coordinate the operative team, perform the procedure in practice independently
V Advanced Expertise, proficient	Performance matches that of an advanced surgeon, capable of performing complex procedures independently, and of independent management of intraoperative complications

Objectives

- Establish the inter and intra rater reliability of faculty O&P scores
- Determine how O&P Scores correlate with objective metrics of surgical performance such as procedure duration, use of fluoroscopy, and implant position
- Implement a controlled study during our PGY2 skills week to evaluate O&P scores
- Provide evidence that O&P scores are an effective measurement of competence for surgical skills as a required element for orthopedic residency training in the future

Preliminary Results and Discussion

- 200 O&P evaluations of resident performance were completed by faculty from July 2022 through April 2023. Each resident averaged 10 evaluations.
- Among PGY2 residents, 74% of all O-scores were 3 or greater, and 50% had an overall P-score of III or greater.
- Highest scores were seen in pre-procedure plan, case preparation, post-procedure plan, and communication. Lower scores were seen in technical performance, knowledge of procedure steps, visuospatial skills, and efficiency/flow.
- O&P scores were directly correlated with resident year regardless of type of procedure. There was no correlation with case complexity
- Some scores varied by up to 2 values between faculty. Additionally, scores by the same faculty also varied between multiple case dates for the same resident and procedure.

PGY2 O&P Score Averages per Procedure

O-Score	Carpal Tunnel Release	Tibial Plateau	Uni/Bi-Malleolar	Distal Radius	Average
PreProcedure Plan	3.0	4.0	5.0	3.5	3.4
Case Preparation	3.2	4.0	4.0	3.0	3.3
Technical Performance	2.7	4.0	4.0	2.0	2.8
Knowledge of Specific Procedure Steps	2.7	4.0	4.0	2.5	2.9
Visuospatial Skills	3.0	4.0	4.0	2.0	3.0
PostProcedure Plan	3.7	4.0	5.0	4.0	3.9
Efficiency and Flow	3.2	4.0	4.0	2.5	3.2
Communication	3.8	4.0	5.0	4.0	4.0
Average	3.1	4.0	4.4	2.9	3.3
P-Score	2.17	5	4	2	3.29

PGY2 O&P Score Averages per Resident

O-Score	Resident 1	Resident 2	Resident 3	Resident 4
Pre-procedure Plan	3.5	3.5	4.5	3.4
Case Preparation	3.5	3.5	4.5	3.2
Technical Performance	3	3	4.5	2.6
Knowledge of Specific Procedure Steps	3.1	3	4.5	2.8
Visuospatial Skills	3.1	3.5	4.5	3
Post-procedure Plan	3.8	3.5	5	3.8
Efficiency and Flow	3.2	3	4.5	3.6
Communication	3.8	4.5	4.5	4.2
Average	3.375	3.4375	4.5625	3.325
P-Score	2.8	2	4.5	3

- O&P scores were effective in predicting residents' preparedness and surgical skill level during residency training.
- More standardized procedures need to be created to determine whether these scores are objective and reliable regardless of the faculty completing the evaluation.

Assessment Plan

- On Friday May 12th, the final day of our annual PGY2 skills week, we will implement a study by video recording residents during their cadaveric assessments. A faculty will supervise and assess the live surgical performance of the residents using O&P scores.

- Other faculty will review the videos blinded and grade performance using the same rating scale.
- By having multiple faculty assess the same resident, and multiple ratings by the same faculty, we will be able to determine the inter- and intra-rater reliability of the O&P score.
- In addition, we can examine how O&P scores of the faculty correlate with objective metrics of surgical performance such as time, use of fluoroscopy, and implant position

Timeline:

Event:	Date:
PGY2 skills week	Early May 2023
Faculty performance assessment from video	May and June 2023
Data analysis and study write up	June/July 2023

Budget Justification and Total:

Skill Assessment	Number of cadavers needed:	Cost:
Tibial nail placement	6 lower leg specimens	$475/cadaver = $2,850
Distal radius fracture fixation	6 upper extremity specimens	$525/cadaver = $3,150
Carpal tunnel assessment	0 (re-use upper extremity)	
	Total:	$6,000

Acknowledgments