Does Case Exposure Impact General Surgery Residents' Self-Evaluation of Robotic Operative Performance and Entrustment?

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BACKGROUND

- Self-evaluation of operative skills and entrustment are critical for resident learning
- Comparing resident and attending evaluations of entrustability allow for establishing shared expectations and performance benchmarks
- Robotic-assisted surgery is increasingly utilized and incorporated in general surgery resident training
- General surgery residents have less exposure to robotic-assisted surgery (RAS) compared to open and laparoscopic surgeries (OLS)

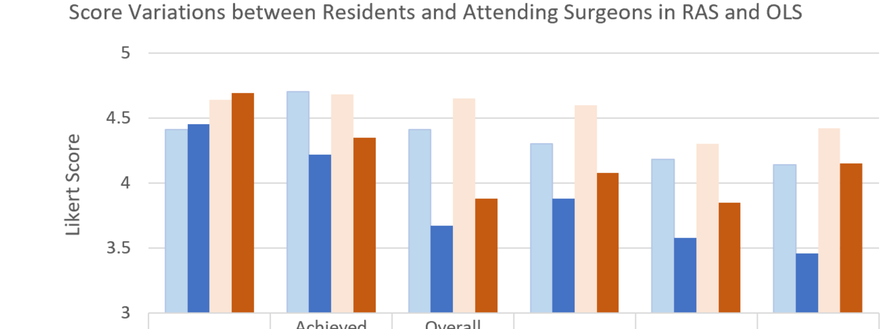
- **Do resident and attending evaluations of surgical entrustability differ between RAS and OLS operations?**

METHODS

- Retrospective extraction of RAS and OLS cases between 2020-2022
- 3 procedures
  - Cholecystectomy (Ch)
  - Inguinal hernia repair (IH)
  - Ventral hernia repair (VHR)
- Surgical Entrustable Professional Activities (SEPA) evaluations of these procedures performed by chief residents (PGY 5)
  - Both attending surgeon and resident assessment
- Descriptive statistics and ANOVA performed
  - $P \leq 0.05$ is considered statistically significant
  - Effect size Cohen's d ≥ 0.80 is considered large effect

RESULTS

- Qualifying operations during study period were 71.1% (n=2972) OLS and 28.9% (n=1209) RAS
- SEPA evaluations from 84 cases acquired across all three case types and surgical approaches (**Table 1**)
- On average, chiefs graded their learning, surgical skills, autonomy, and entrustment lower in RAS cases than OLS cases (**Figure 1**)
- In RAS, 3 of 6 resident self-assessment scores were significantly lower than attending, vs OLS, where 1 of 6 were (**Table 2**)



	Learning Goal	Achieved Learning Goal	Overall Technical Performance	General Skill	Overall Autonomy	Prospective Entrustment
RAS-Attending	4.41	4.7	4.41	4.3	4.18	4.14
RAS-Resident	4.45	4.22	3.67	3.88	3.58	3.46
OLS-Attending	4.64	4.68	4.65	4.6	4.3	4.42
OLS-Resident	4.69	4.35	3.88	4.08	3.85	4.15

Figure 1. Score Variations Between Resident and Attending EPAs in RAS and OLS

Table 1. Operations Performed by Case Type and Surgical Approach

Case Type	RAS	OLS
Cholecystectomy (Ch)	19	12
Inguinal Hernia Repair (IH)	27	8
Ventral Hernia Repair (VH)	10	8
Total	56 (67%)	28 (33%)

Table 2. Resident and Attending EPA Scores in RAS and OLS

Measure*	RAS				OLS			
	Attending Mean	Resident Mean	P value	Cohen's d	Attending Mean	Resident Mean	P value	Cohen's d
Learning								
Learning Goal	4.41	4.45	0.7660	0.06	4.64	4.69	0.8357	0.06
Achieved Learning Goal	4.70	4.22	0.0003	0.78	4.68	4.35	0.1667	0.39
Surgical Skill								
Overall Technical Performance	4.41	3.67	<0.0001	1.01	4.65	3.88	0.0001	1.14
General Skill	4.30	3.88	0.0036	0.61	4.60	4.08	0.0148	0.70
Autonomy								
Overall Autonomy	4.18	3.58	0.0020	0.65	4.30	3.85	0.1502	0.41
Entrustment								
Prospective Entrustment^	4.14	3.46	0.0001	0.82	4.42	4.15	0.228	0.34

* 5-point Likert Scale: 5 = Best performance or Most autonomy; 1=Worst performance or Least autonomy. ^ "Prospective Entrustment": 4 = Able to lead the case; 3 = Passive Guidance is needed to perform the case.

CONCLUSION

- There are greater score variations between attending and chief resident evaluations of operative performance and future entrustability in RAS than OLS
  - This may represent a mismatch in understanding of performance benchmarks for procedures
- Enhancing shared understanding of benchmarks in RAS will help with trainee RAS competency development