Are Left-Handed Residents Drawn to Robotic Surgery?

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INTRODUCTION

Left handedness has been historically viewed as a disadvantage amongst surgeons[1].
- Surgical instruments are created for right hand-dominant surgeons
- There is a lack of left-handed surgeon role models for surgical residents to emulate[2]

Robotic surgery is growing quickly in the realm of general surgery, and it is frequently being used for many procedures:
- Colorectal surgery
- Bariatric surgery
- Herniorrhaphy
- Cholecystectomies

Recent studies have shown that robotic surgery can reduce the severity of hand-dominance, lending itself to be theoretically more accessible to left hand-dominant residents compared to other surgical approaches such as open surgery and basic laparoscopic surgery[3,4].
With the potential for an easier learning curve in robotic surgery, **it is possible left hand-dominant surgical residents may be more likely to favor robotic surgery compared to other subspecialties when choosing a fellowship after residency.**

METHODS

A survey questionnaire asking about demographic information, specialty interests, hobbies, and subjective views of robotic surgery was created and sent to general surgery residencies throughout the United States. An email was sent to general surgery program directors with instruction to disperse the email to their residents. Inclusion criteria consists of participants needing to be general surgery residents. The email included a link to the survey created in Survey Monkey. Survey data was obtained anonymously. There was no need for specific participant identifiers. This data collection process was performed from 3/1/21-7/1/21.

Data were analyzed using the Fisher Exact Probability Test.

RESULTS

There were a total of 69 general surgery residents who responded to the survey.

When analyzing the primary question, 1 participant was excluded due to being completely ambidextrous. Therefore, results comparing left-handed and right-handed residents included only 68 responses.

Primary Question (Table 1)
- Is there an association between the handedness of a resident and the resident's desire for pursuing a fellowship in robotic surgery?

Secondary Questions (Table 1)
- Is there an association between the handedness of a resident and…
  - Having any interest in a robotic surgery fellowship?
  - Believing the learning curve of robotic surgery to be easier than traditional laparoscopic surgery?
- Is there an association between a resident's experience participating in robotic surgery and…
  - Believing the learning curve of robotic surgery to be easier than traditional laparoscopic surgery?
  - Having any interest in a robotic surgery fellowship?
- Is there an association between the gender of a resident and…
  - Having any interest in a robotic surgery fellowship?
  - Believing the learning curve of robotic surgery to be easier than traditional laparoscopic surgery?
- Is there an association between a resident having creative hobbies and…
  - Having any interest in a robotic surgery fellowship?
- What percent of residents believe being left-handed is a burden compared to being right-handed when performing (Table 2)
  - Open surgical procedures?
  - Traditional laparoscopic surgical procedures?
  - Robotic surgical procedures?

	Response N=69	
Question: Regardless of your hand-dominance, do you believe being left-handed is a burden compared to right-handedness when performing…	Yes n (%)	No n (%)
Open surgical procedures	30 (43)	39 (57)
Traditional laparoscopic surgical procedures	24 (35)	45 (65)
Robotic surgical procedures	9 (13)	60 (87)

Table 2: Percentage of residents who believe being left-handed is a burden in open, laparoscopic, and robotic surgery

	Left-Handed n=9 (%)	Right-Handed n=59 (%)	p-values	Total N=68 (%)
Desire for robotic fellowship	3 (33)	18 (31)	0.57	21 (31)
Interested in robotic surgery fellowship	6 (67)	31 (53)	0.34	37 (54)
Believe robotic surgery learning curve is easier	4 (44)	39 (66)	0.19	43 (63)
	Surgeon Console Experience n=39 (%)	No Surgical Console Experience n=30 (%)	p-values	Total N=69 (%)
Believe robotic surgery learning curve is easier	29 (74)	15 (50)	0.03	44 (64)
Interested in robotic surgery fellowship	17 (44)	21 (70)	0.03	38 (55)
	Male n=36 (%)	Female n=33 (%)	p-values	Total N=69 (%)
Interested in robotic surgery fellowship	24 (67)	14 (42)	0.04	38 (55)
Believe robotic surgery learning curve is easier	21 (58)	23 (70)	0.23	44 (64)
	Age 26-30 n=40 (%)	Age >30 n=29 (%)	p-values	Total N=69 (%)
Interested in robotic surgery fellowship	22 (55)	16 (55)	0.59	38 (55)
Believe robotic surgery learning curve is easier	25 (63)	19 (66)	0.50	44 (64)
	Have Creative Hobbies n=41 (%)	Do Not Have Creative Hobbies n=28 (%)	p-values	Total N=69 (%)
Interested in robotic surgery fellowship	23 (56)	15 (54)	0.52	38 (55)

Table 1: Associations of resident handedness, experience, gender, and age with fellowship interests and beliefs about robotic surgery

CONCLUSIONS

- Among the results of 68 participants, there was not a statistically significant association between the handedness of a resident and the resident's desire to pursue a fellowship in robotic surgery.
- **Statistically significant associations:**
  - Residents with surgeon console experience were more likely to believe the learning curve of robotic surgery to be easier than traditional laparoscopic surgery
  - Residents with surgeon console experience were more likely to be interested in a robotic surgery fellowship
  - Male residents were more likely to be interested in a robotic surgery fellowship
- Of all participants…
  - **87% do NOT believe being left-handed is a burden compared to right-handedness when performing robotic surgical procedures**
  - 65% do NOT believe it is a burden when performing traditional laparoscopic surgical procedures
  - 57% do NOT believe it is a burden when performing open surgical procedures

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