Porcine Potential: Resident Perceptions of a Novel Live Animal Tissue Training Session

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Background

Robot-assisted laparoscopic surgery has increased annually over the last 15yrs.[1,2]Psychomotor skills and spatial reasoning differ between robotic-assisted laparoscopy and traditional laparoscopy. While there are training exercises available, they require access to a robotic console with an associated backpack or a dedicated training console. Few training programs incorporate live tissue models into their training curricula and there is no universal standard for training across surgical residencies. We sought to determine the face and content validity of a live porcine tissue training session and evaluate current perceptions of robotic-assisted surgery.

Methods

This is a multi-institutional study including general surgery residents (PGY2-6) who were invited to participate in a live porcine tissue training session which consisted of the following components: port placement and docking, cholecystectomy, bowel resection, and anastomosis. We conducted participant surveys to assess perceptions of the exercise, confidence in technical skills, and attitudes regarding robotic surgery in practice using likert-like rating scales. Respondents rated exercise realism, educational benefit, and effectiveness in teaching robotic skills. Pre- and post- training skills and confidence assessments were compared using Wilcoxon signed-rank tests.

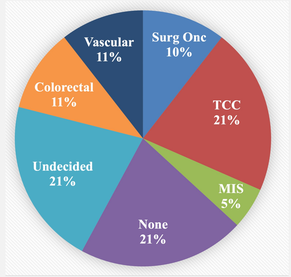


Fig 1. Participants anticipated fellowship goals after residency completion

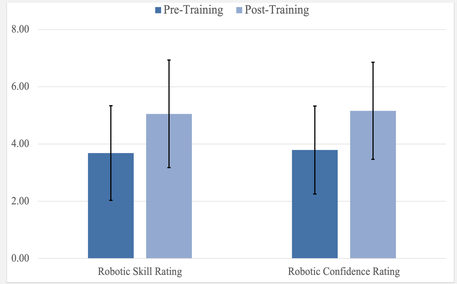


Fig 2. Resident perceptions Pre- and Post-Training on the live tissue animal model

	% of Residents	Average Use	
Robot Backpack Simulator	89%	13.3 hours	
Inanimate Tissue Drills	68%	2.5 hours	
Bedside Assist Cases	100%	22 cases	
Laparoscopic Case Experience	100%	61.5 cases (1st Assist)	85.3 cases (Surgeon Jr)
Robotic Case Experience	89%	27.7 cases (any console time)	23.4 cases (>50% procedure)

Table 1. Resident reported robotic experience prior to live tissue lab

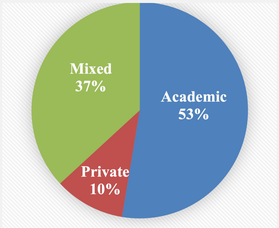


Fig 3. Participants anticipated practice type after residency

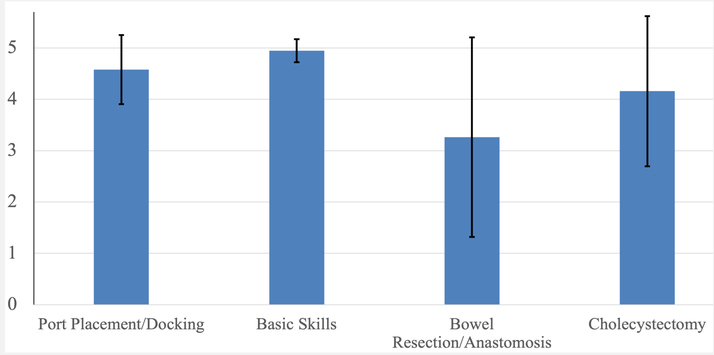


Fig 4. Resident reported usefulness of each live tissue simulation

Results

Nineteen general surgery residents participated in the porcine training exercise and completed the survey. Amongst the technical components of the session, usefulness of basic robotic skills was rated highest (4.95 on a 5-point Likert scale) followed by port placement and docking (4.58), cholecystectomy (4.16), and bowel resection/anastomosis (3.26). Following the exercise, all participants reported improvement in robotic surgical ability. Respondents rated the realism of the exercise, educational benefit, and effectiveness in teaching robotic skills all highly (9.05, 9.42, and 9.53, respectively). Post-training ratings of skills and confidence levels were statistically higher than pre-training ($p<.001$ and $p=.001$, respectively).

Conclusions

Interest in robotic surgery continues to grow amongst general surgery residents underscoring the need for a standardized curriculum. This study confirmed the face and content validity of this live porcine training exercise, which, if feasible, should be incorporated into such programs.

References

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