Robotic Training in Transplant Surgery Fellowship: Fellow Perception and Trends Over the Last 7 Years

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Introduction

- The indications for robotic approaches within abdominal transplant and HPB surgery are expanding.
- Procedures once done as open or laparoscopic approaches, such as the donor nephrectomy or kidney transplant, can now be done robotically.
- The robotic approach may confer the advantages of shorter postoperative hospital stays and less postoperative opioid use.
- Current study describes fellows' perception of robotic training at our institution and highlights trends in fellow participation in robotic surgery since the initiation of a robotic transplant program in 2017.

Methods

- Single center, retrospective review of the robotic experience of 9 abdominal transplant fellows (ASTS) over a 7-year period (2017-2024).
- Cases were stratified by participating fellow, academic year, case category (transplant or HPB), case complexity, and role of participating fellow (console or bedside assist).
- Cohort of 9 fellows was divided into two groups to assess changing patterns of robotic fellowship training: the early era (fellows 1-4) and the late era (fellows 5-9).
- A 10-question survey was administered to the fellows to assess their views on robotic training during fellowship as well as the future of robotics in transplantation.

Results

Total number of robotic cases on transplant service	**860**
Number of robotic cases with fellow participation	692 (80.4%)
Robotic cases with fellow participation (n=692)	
Transplant	**337 (49%)**
Living donor kidney	252 (75%)
Kidney transplant	57 (17%)
Living donor liver	0 (0)
Liver transplant	4 (1%)
Other transplant related surgeries	24 (7%)
HPB	**355 (51%)**
Liver	87 (25%)
Pancreas	61 (17%)
Biliary	136 (38%)
Gastric	30 (8%)
Other HPB related surgeries	41 (12%)

Table 1. Robotic case total during the study period, qualified by fellow participation and a division into either the HPB or transplant categories.

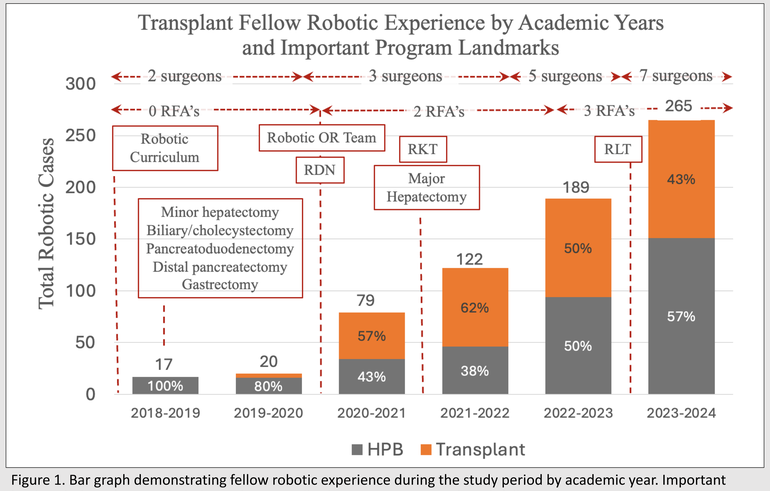


Figure 1. Bar graph demonstrating fellow robotic experience during the study period by academic year. Important landmarks have been included correlate overall robotic program growth with fellow training.
RFA = robotic first assist (transplant trained), RDN=robotic donor nephrectomy, RKT=robotic kidney transplant, RLT=robotic liver transplant.

	All Fellows N=692	Early Era (Fellows 1-4) (N=168, 24.2%)	Late Era (Fellows 5-9) (N=524, 75.7%)	P-value
Average number of robotic cases per fellow in fellowship (mean)*	96.1	42	139.4	.007
Transplant*	**44.8**	**21.5**	**63.4**	.041
Living donor kidney	33.3	18.5	45.2	.072
Kidney transplant	7.4	2	11.8	.023
Living donor liver	0	0	0	
Liver transplant	0.6	0	1	.089
Other	3.4	1	5.4	.019
HPB*	**51.3**	**20.5**	**76**	.013
Liver	12.8	4	19.8	.008
Pancreas	9.8	3.5	14.8	.028
Biliary	19.4	7.8	28.8	.009
Gastric	4.6	3.3	5.6	.301
Other	4.8	2	7	.049
High complexity cases	68%	69.3%	66.9%	.634

*All case averages have been calculated using extrapolated case numbers for fellows 8 and 9, who had completed one year of fellowship at the end of the study period.

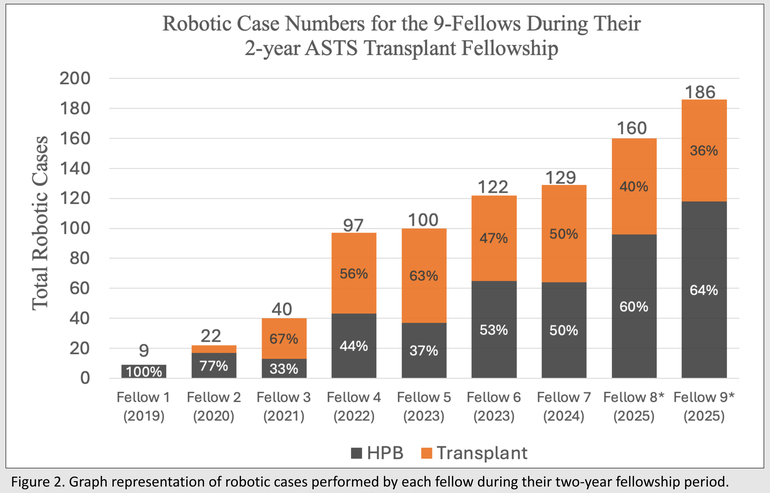


Figure 2. Graph representation of robotic cases performed by each fellow during their two-year fellowship period. Fellows are arranged in chronological order with year of fellowship completion.
*Robotic case numbers for last two fellows have been extrapolated based on numbers at the end of first year of fellowship

Survey Results

- All participating fellows indicated that robotic experience during fellowship is either very or extremely important to a career in transplant surgery.
- All fellows indicated that training in robotic surgery will improve a fellow's prospects of finding a job after fellowship completion.
- 78% of fellows believe that the indications for robotics in transplant will broaden significantly, with a small cohort expressing the point of view that the robotic approach will become the gold standard for many, but not all, transplant surgeries.

Conclusions

- Fellowship curriculums currently lack a standardized approach to robotics, which is discordant with the current fellow expectation of robotic training during fellowship.
- Incorporating formal robotic training in transplant surgery fellowships better prepares fellows for the ongoing evolution of transplant surgery.