

Impact of Fellow versus Resident Assistance on Outcomes of Minimally Invasive Surgery



Boston University School of Medicine

Susanna W.L. de Geus, Sherif Aly, Cullen O. Carter, Teviah E. Sachs, Donald T. Hess,
Jennifer F. Tseng Luise I.M. Pernar



Background

The pursuit of fellowship training after general surgery residency has become increasingly common. Anecdotally, fellows impact residents’ operative experience, in part because faculty prefer to operate with fellows, at times invoking safety concerns.

The aim of the present study was to compare the impact of trainee level on the outcomes of selected minimally invasive surgery (MIS) procedures to determine if giving preference to fellows on grounds of outcomes is justified.

Methods

Patients who underwent elective laparoscopic para-esophageal hernia repair (PEHR), sleeve gastrectomy (LSG), Roux-en-Y gastric bypass (RYGB), splenectomy (LS), cholecystectomy (LC), or ventral hernia repair (VHR) with assistance of a general surgery chief resident or fellow were identified from the American College of Surgeon’s National Surgical Quality Improvement Program database (2007-2012). Propensity scores were created for the odds of undergoing procedures assisted by a fellow based on age, sex, BMI, ASA class, diabetes mellitus, and current smoking status. Patients were matched 1:1 based on propensity score.

Results

Table 1. Outcomes for patients who underwent splenectomy, cholecystectomy, or ventral hernia repair after matching.

	Splenectomy			Cholecystectomy			Ventral hernia repair		
	Resident participation (n=220)	Fellow participation (n=220)	p-value	Resident participation (n=2,290)	Fellow participation (n=2,290)	p-value	Resident participation (n=830)	Fellow participation (n=830)	p-value
Overall complications	33 (15.0)	29 (13.2)	0.58	210 (9.2)	190 (8.3)	0.30	49 (5.9)	33 (4.0)	0.07
Minor complications	10 (4.6)	10 (4.6)	>0.999	23 (1.0)	39 (1.7)	0.04	19 (2.3)	6 (0.7)	<0.001
Major complications	25 (11.4)	20 (9.1)	0.43	191 (8.3)	158 (6.9)	0.07	34 (4.1)	28 (3.4)	0.44
Operating time, median	131 min	125 min	0.44	68 min	71 min	<0.001	87 min	85 min	0.35

Table 2. Outcomes for patients who underwent para-esophageal hernia repair, sleeve gastrectomy, or gastric bypass after matching.

	Para-esophageal hernia repair			Sleeve gastrectomy			Roux-en-Y gastric bypass		
	Resident participation (n=2,137)	Fellow participation (n=2,137)	p-value	Resident participation (n=643)	Fellow participation (n=643)	p-value	Resident participation (n=4,190)	Fellow participation (n=4,190)	p-value
Overall complications	5.9%	5.3%	0.46	5.3%	6.2%	0.47	8.2%	7.5%	0.29
Minor complications	1.7%	1.9%	0.64	2.6%	2.6%	>0.999	3.6%	3.7%	0.95
Major complications	4.6%	3.9%	0.25	3.1%	4.0%	0.37	5.4%	4.6%	0.11
Operating time, median	132 min	137 min	0.07	91 min	122 min	<0.001	135 min	158 min	<0.001

5,145 patients underwent PEHR, 1,396 LSG, 9,656 RYGB, 863 LS, 13,434 LC, and 3,069 VHR. Fellows assisted in 41.7% of PEHR, 49.2% of LSG, 56.4% of RYGB, 25.7% of LS, 17.1% of LC, and 27.0% of VHR cases. After matching, overall and severe complication rates were comparable between cases performed with assistance of a fellow or chief resident. Median operative time was longer for LSG, RYGB, and LC when a fellow assisted.

Conclusions

Surgical outcomes were similar between fellow and chief resident assistance in MIS procedures, arguing for increased resident participation in complex laparoscopic operations without fear of compromising patient safety.