“Should a Resident Participate in My Cancer Operation?”: Elucidating Trainee Level Effect on Oncologic Outcomes

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RATIONALE/NEED

Surgical complications delay adjuvant therapy in oncology patients. Current literature remains unclear regarding the effect of resident involvement on oncologic outcomes, with inappropriate resident coverage possibly endangering patients despite surgeon oversight. The aim of this study was to assess resident trainee level effect on 30-day overall morbidity in cancer patients undergoing major surgery.

METHODS/DESCRIPTION

Cancer patients undergoing non-emergent major intra-abdominal (appendix, bladder, colon, esophageal, gallbladder, gastric, gynecologic, kidney, liver, pancreas, rectal) and major non-abdominal (breast, skin and soft tissue, thyroid) operations from 2005 to 2012 were identified in the ACS-NSQIP database. Demographics, co-morbidities, recent chemotherapy, resident level and 30-day outcomes were analyzed. Multivariate logistic regression models assessed overall morbidity.

RESULTS

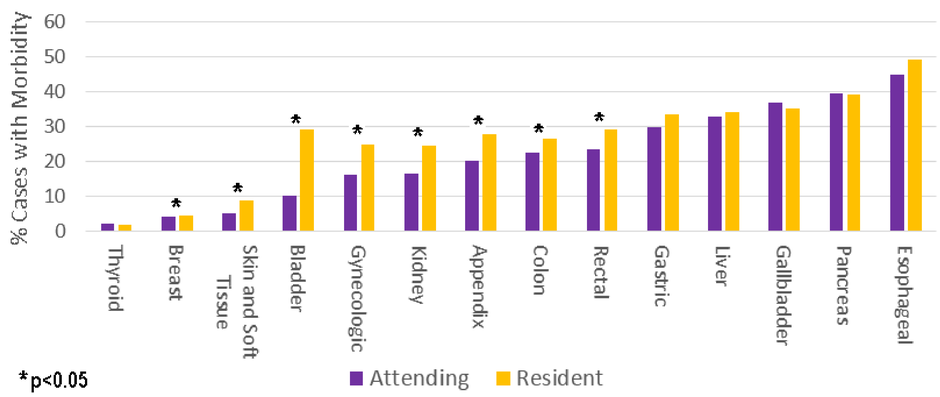
155,620 cancer patients undergoing major intra-abdominal (n=75,668) or major non-abdominal (n=79,952) procedures were captured. Demographics were clinically similar across attending and PGY levels. Rates of serious, minor and overall morbidity increased significantly with PGY level, along with operative time and length of stay. For major intra-abdominal procedures, all resident levels except PGY2 adversely affected overall morbidity (Table 1). Above PGY4 level, resident involvement had a stronger association with adverse outcome than preoperative co-morbidities and preoperative chemotherapy. In contrast, only PGY2 and PGY5 were independently associated with worsened overall morbidity following major non-abdominal cancer procedures, while PGY1 were associated with improved morbidity. Interestingly, on evaluation of procedure codes, esophageal, gastric, gallbladder, liver, pancreas, and thyroid procedures demonstrated no effect of resident involvement on overall morbidity (Table 2).

Table 1. Multivariate Analysis of Resident Contribution to Overall Comorbidity in Cancer Patients

	Intra-Abdominal				Non-Abdominal			
	OR	95% CI		P value	OR	95% CI		P value
Reoperation	8.55	7.97	9.18	*	3.66	3.35	4.01	*
Chemotherapy	1.57	1.46	1.69	*	1.76	1.53	2.04	*
Cardiac Comorbidity	1.3	1.23	1.36	*	1.61	1.39	1.86	*
Hepatic Comorbidity	2.21	1.96	2.49	*	4.18	2.07	8.45	*
Neurologic Comomobidity	1.33	1.25	1.41	*	1.59	1.38	1.84	*
Pulmonary Comorbidity	1.59	1.49	1.7	*	2.14	1.81	2.53	*
Vascular Comorbidity	1.19	1.15	1.24	*	1.31	1.22	1.42	*
PGY1	1.29	1.12	1.47	*	0.84	0.74	0.95	0.006
PGY2	Not significant				1.22	1.09	1.36	0.001
PGY3	1.28	1.2	1.37	*	Not significant			
PGY4	1.49	1.41	1.57	*	Not significant			
PGY5	1.74	1.66	1.82	*	1.16	1.03	1.32	0.017
PGY6	1.69	1.58	1.8	*	Not significant			
PGY7	2.2	1.99	2.42	*	Not significant			
PGY8-10	2.61	2.31	2.96	*	Not significant			

*p<0.001

Table 2. Resident Contribution to Overall Morbidity by Procedure



CONCLUSIONS

Resident level is independently associated with increased overall morbidity in patients undergoing selected major surgical procedures. Understanding which complex oncologic procedures demonstrate effect of resident involvement on overall co-morbidity is necessary to maximize patient outcomes.

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