

Objective

- Patients may perceive resident procedural participation as detrimental to their postsurgical outcome
- Our objective is to investigate whether otolaryngology-head and neck surgery (OHNS) housestaff participation is associated with surgical morbidity and mortality

Methods

- OHNS patients were analyzed from the American College of Surgeons National Surgical Quality Improvement Program 2006-2013 databases
- We compared the incidence of 30-day postoperative morbidity, mortality, readmissions, and reoperations in patients operated on by resident surgeons with attending supervision (AR) with patients operated on by an attending surgeon alone (AO) using cross tabulations and multivariable regression

Results

	All Patients N = 27,018	Resident and Attending N = 9,511	Attending Only N = 17,507	P-Value
Morbidity				
Superficial surgical site infection	243 (0.90)	148 (1.56)	95 (0.54)	<0.001
Deep incisional SSI	86 (0.32)	50 (0.53)	36 (0.21)	<0.001
Organ space SSI	44 (0.16)	25 (0.26)	19 (0.11)	0.003
Wound dehiscence	105 (0.39)	74 (0.78)	31 (0.18)	<0.001
Pneumonia	174 (0.64)	103 (1.08)	71 (0.41)	<0.001
Unplanned intubation	127 (0.47)	63 (0.66)	64 (0.37)	0.001
Pulmonary embolism	31 (0.11)	20 (0.21)	11 (0.06)	0.001
On ventilator >48 hours	77 (0.29)	40 (0.42)	37 (0.21)	0.002
Progressive renal insufficiency	13 (0.05)	9 (0.09)	4 (0.02)	0.010
Acute renal failure	13 (0.05)	7 (0.07)	6 (0.03)	0.159
Urinary tract infection	106 (0.39)	36 (0.38)	70 (0.40)	0.789
CVA/Stroke with neurological deficit [§]	23 (0.09)	13 (0.14)	10 (0.06)	0.032
Coma >24 hours	4 (0.01)	1 (0.01)	3 (0.02)	0.669
Cardiac arrest requiring CPR [†]	30 (0.11)	18 (0.19)	12 (0.07)	0.004
Myocardial infarction	25 (0.09)	19 (0.20)	6 (0.03)	<0.001
Graft/prosthesis failure	60 (0.22)	47 (0.49)	13 (0.07)	<0.001
DVT/Thrombophlebitis requiring treatment ^{††}	48 (0.18)	26 (0.27)	22 (0.13)	0.006
Sepsis	109 (0.40)	59 (0.62)	50 (0.29)	<0.001
Septic shock	22 (0.08)	11 (0.12)	11 (0.06)	0.146
Total Morbidity Events	1,327	769	571	-
Total Number of Patients with ≥1 Morbidity Event	979 (3.62)	545 (5.73)	434 (2.48)	<0.001
Mortality				
Deceased	64 (0.24)	31 (0.33)	33 (0.19)	0.026
Length of Stay				
LOS, mean days ± SD	1.80 ± 7.51	2.97 ± 10.24	1.17 ± 5.38	<0.001
30-Day Unplanned Readmission				
Readmissions* N=6,203	190 (3.06)	111 (3.72)	79 (2.45)	<0.001
30-Day Unplanned Reoperation				
Reoperations** N=12,019	401 (3.34)	230 (3.95)	171 (2.76)	<0.001

^{||}SSI=surgical site infection, [§]CVA=cerebrovascular accident, [†]CPR=cardiopulmonary resuscitation, ^{††}DVT=deep vein thrombosis, *unplanned readmissions only recorded in 2012, **unplanned reoperations only recorded in 2011 and 2012

30-Day Morbidity			
Multivariable Regression			
	Odds Ratio	95% Confidence Interval	P-Value
Attending Only	Referent		
Resident and Attending All Patients	1.05	0.89 – 1.24	0.554
Otology/Neurotology	0.65	0.26 – 1.59	0.344
Head and Neck	1.03	0.76 – 1.38	0.858
Facial Plastics	1.37	0.23 – 8.28	0.403
Rhinology/Sinus	-	-	-
General Otolaryngology	0.96	0.56 – 1.65	0.880
30-Day Mortality			
Attending Only	Referent		
Resident and Attending All Patients	0.91	0.49 – 1.70	0.768
30-Day Unplanned Readmissions			
Attending Only	Referent		
Resident and Attending All Patients	1.29	0.92 – 1.81	0.139
Otology/Neurotology	-	-	-
Head and Neck	1.20	0.63 – 2.26	0.576
Facial Plastics	-	-	-
Rhinology/Sinus	-	-	-
General Otolaryngology	2.12	1.18 – 3.81	0.012
30-Day Unplanned Reoperations			
Attending Only	Referent		
Resident and Attending All Patients	1.28	0.91 – 1.80	0.149
Otology/Neurotology	-	-	-
Head and Neck	0.86	0.55 – 1.35	0.514
Facial Plastics	-	-	-
Rhinology/Sinus	-	-	-
General Otolaryngology	1.21	0.75 – 1.95	0.441

- 27,018 cases with primary surgeon data available, with 9,511 AR cases and 17,507 AO cases
- 3.62% had ≥ postoperative complication
- AR cohort = 5.73% v. AO cohort = 2.48% (p<0.001)
- After multivariable analysis, no significant difference in:
 - morbidity (OR=1.05 [0.89-1.24])
 - mortality (OR=0.91 [0.49-1.70])
 - readmission (OR=1.29 [0.92-1.81])
 - reoperation (OR=1.28 [0.91-1.80])
- No difference between PGY-levels for adjusted 30-day morbidity or mortality

Conclusions

- There is an increased incidence of morbidity, mortality, readmission, and reoperation in OHNS surgical cases with resident participation, which appears related to increased comorbidity in the AR cohort
- After controlling for all other variables, resident participation was not associated with an increase in 30-day morbidity, mortality, readmission, or reoperation odds
- These data suggest that OHNS resident participation in surgical cases is not associated with poorer short-term outcomes

References

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