

Resident Participation for Select General Surgery Procedures is Associated with Varying Outcomes

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Objectives: Resident participation in surgical procedures leads to longer operative times without negatively affecting clinical outcomes. The purpose of this study is to compare differences in operative times, morbidity and mortality for laparoscopic vs. open general surgery procedures with and without resident involvement.

Methods: A retrospective observational study was performed using ACS NSQIP data from 2005-2012. Laparoscopic and open basic and advanced general surgery procedures were identified using eight CPT codes. Resident cases were defined as cases with resident/attending available or resident/attending present. One-to-one propensity matching was performed to compare resident cases with non-resident (attending only) cases, based on patient age, race, ethnicity, BMI, gender, comorbidities, ASA class and case classification. T test and Chi Square test were used for statistical analysis.

Results: 221,582 matched cases included: laparoscopic and open appendectomy (60,032;10,888), cholecystectomy (68,086;5,574), partial colectomy (16,050;19,060) and roux-en-y gastric bypass (37,388;4508). The average difference in operative time for all procedures was 21.5 minutes longer for resident cases and was significantly longer for open cases than laparoscopic (28.59 vs 19.94 minutes, all $p < 0.00$). Resident involvement was associated with decreased mortality for laparoscopic cholecystectomy (111/34041 vs 66/34041, $p < 0.001$) and open partial colectomy (435/9530 vs 379/9530, $p < 0.045$), but associated with more takebacks to OR for open partial colectomy (616/9530 vs 775/9530, $p < 0.0$) and open gastric bypass (67/2254 vs 111/2254, $p < 0.001$). Resident cases had increased superficial surgical site infections for laparoscopic cases and organ space infections for open cases (all $p < 0.04$).

Conclusion: Resident involvement prolongs operative times and despite increased morbidity is associated with lower 30-day mortality rates for laparoscopic cholecystectomy and open partial colectomy. Resident involvement is associated with mixed outcomes.