

SMOKING AND PERIOPERATIVE OUTCOMES

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Background: Patients are often concerned about the effects of smoking on perioperative risk. Consequently, smoking cessation therapy is more effective when introduced before surgical procedures – making the preoperative period a “teachable moment.” However, the efficacy of cessation advice may be limited by the paucity of information about smoking and perioperative risk. Our goal was thus to determine the effect of smoking on 30-day postoperative outcomes in non-cardiac surgical patients.

Methods: We evaluated 635,265 patients from the American College of Surgeons National Surgical Quality Improvement Program database. 520,242 patients met our inclusion criteria of whom 103,795 (26.5%) were current smokers. 82,304 smokers (79%) were propensity-matched with non-smoker controls. Smokers were defined in the ACS-NSQIP database as “patients who reported smoked cigarettes in the year prior to admission for surgery.” Patients who smoked cigars or pipes or used chewing tobacco were not included. The amount of smoking was defined in terms of pack-years. Non-smokers were defined as those who reported never smoking. Matched smokers and non-smokers were compared on the major and minor composite morbidity outcomes as well as individual outcomes. For smokers, we also assessed the relationships between amount of tobacco consumed, measured in pack-years, and a composite outcome (any major morbidity) using logistic regression.

Results: Smokers were (38%, 95% CI, 111-172%) more likely to die than non-smokers. Smokers also had significant increase in the risk of pneumonia (209%, 180-243%), unplanned intubation (87%, 158-221%), and mechanical ventilation (53%, 131-179%). Smokers were significantly more likely to experience cardiac arrest (57%, 110-225%), myocardial infarction (80%, 111-292%), and stroke (73%, 118-253%). Smokers also had significant increases in superficial (30%, 120-142%) and deep (42%, 121-168%) incisional infections; sepsis (30%, 115-146%), organ space infections (38%, 120-160%), and septic shock (55%, 129-187%). Within current smokers, the amount of smoking was associated with increased odds of having any major morbidity after adjusting for the confounders; each relative ten pack-years increase was associated with increased odds [95% CI] of 4% [2%, 5%]. As seen in Figure 1, the odds of having any major morbidity versus non-smokers increased disproportionately with the amount of smoking, being significantly greater in all patients who smoked more than 10 pack-years.

Conclusion: Our analysis of a large population that well represents United States general surgical cases indicates that smoking is strongly associated with increases in mortality and serious postoperative complications. Quantification of increased mortality and documentation of a broad range of serious smoking-related complications may enhance clinician’s ability to motivate smoking cessation in surgical patients.

