

Prevention of Postoperative Pulmonary Complications



Amber Taylor, MD, Zachary DeBoard, MD,
Jeffrey M. Gauvin, MD, MS*

KEYWORDS

• Postoperative • Pulmonary complications • COPD • Respiratory failure

KEY POINTS

- Postoperative pulmonary complications (PPCs) are common and infer greater risk of morbidity and mortality to surgical patients.
- Careful preoperative evaluation can identify undiagnosed and undertreated illness and allow for preoperative intervention.
- Surgical, anesthetic, and patient factors contribute to developing PPCs.
- Certain high-risk groups may benefit from presurgical optimization of known disease as well as specific postoperative maneuvers.
- Comorbidities that greatly increase risk include chronic obstructive pulmonary disease (COPD), obesity, obstructive sleep apnea (OSA), obesity hypoventilation syndrome (OHS), pulmonary hypertension (PH), and smoking.

INTRODUCTION

PPCs represent a significant burden of illness in surgical patients. The reported incidence is 5% for general surgical patients but as high as 20% in select groups undergoing high-risk procedures.^{1–3} PPCs are as common as cardiac complications in general surgical patients.⁴

PPCs represent an important cause of mortality with rates as high as 25% depending on the operation and complication.¹ Abdominal surgical patients who develop postoperative pneumonia experience a 10-fold increase in mortality over those who do not, as well as longer length of stay.^{5,6} In addition, PPCs increase 30-day readmission rates and may be a marker for decreased long-term survival in elderly hospitalized patients.⁷ PPCs are more of a financial burden than cardiovascular or infectious complications after surgery, costing the United States \$3.4 billion annually.^{5,8}

The authors have nothing to disclose.

Surgical Education Department, Santa Barbara Cottage Hospital, 400 West Pueblo Street, Santa Barbara, CA 93105, USA

* Corresponding author.

E-mail address: jgauvin@sbch.org

Surg Clin N Am 95 (2015) 237–254
<http://dx.doi.org/10.1016/j.suc.2014.11.002>

surgical.theclinics.com

0039-6109/15/\$ – see front matter © 2015 Elsevier Inc. All rights reserved.

The spectrum of PPCs ranges from bronchospasm and atelectasis to pneumonia and respiratory failure. Atelectasis occurs in up to 90% of patients during an operation but is usually self-limited.⁹ Pneumonia occurs in up to 15% of patients after surgery and has a high associated mortality rate.^{5,10} Acute lung injury (ALI) is the most common cause of postoperative respiratory failure and is also associated with increased mortality.¹¹ The overall risk of acute respiratory distress syndrome (ARDS) among general surgical patients is approximately 0.2%; however, the risk is higher in subgroups with COPD and preexisting renal failure and those undergoing emergency surgery.¹²

A complex interplay of anesthetic factors, surgical factors, and patient factors contribute to the development PPCs. This review discusses the cause and prevention of PPCs in noncardiac surgical patients.

RISK ASSESSMENT

Smetana and colleagues⁴ conducted a systematic review of preoperative pulmonary risk stratification for the American College of Physicians, which remains the most widely cited clinical guideline (**Table 1**). Based on these findings, there is good evidence that patients with congestive heart failure, American Society of Anesthesiologists (ASA)

Table 1	
Risk factors for postoperative pulmonary complications	
Patient-Related Factors^a	Procedure-Related Factors^a
Supported by good evidence	
Advanced age	Aortic aneurysm repair
ASA class ≥ 2	Thoracic surgery
Congestive heart failure	Abdominal surgery
Functional dependency	Upper abdominal surgery
Chronic obstructive pulmonary disease	Neurosurgery
	Prolonged surgery
	Head and neck surgery
	Emergency surgery
	Vascular surgery
	Use of general anesthesia
Supported by fair evidence	
Weight loss	Perioperative transfusion
Impaired sensorium	
Cigarette use	
Alcohol use	
Abnormal results in chest examination	
Good evidence against being a risk factor	
Well-controlled asthma	Hip surgery
Obesity	Genitourinary/gynecologic surgery
Insufficient data	
Obstructive sleep apnea ^b	Esophageal surgery
Poor exercise capacity	

Abbreviation: ASA, American Society of Anesthesiologists.

^a Within each evidence category, risk factors are listed according to strength of evidence, with the first factor listed having the strongest evidence.

^b Subsequent evidence indicates that this is a probable risk factor.

Adapted from Smetana GW. Postoperative pulmonary complications: an update on risk assessment and reduction. *Cleve Clin J Med* 2009;76(Suppl 4):S60–5.

Download English Version:

<https://daneshyari.com/en/article/4310560>

Download Persian Version:

<https://daneshyari.com/article/4310560>

[Daneshyari.com](https://daneshyari.com)