

## ACE Question

**During emergence from a knee arthroscopy procedure using general anesthesia with a laryngeal mask airway, a 25-year-old, otherwise healthy woman develops laryngospasm requiring the administration of succinylcholine. An hour after the end of the case, she is in the recovery area, awake and alert, but requiring nasal cannula oxygen at 3 L/min to maintain an oxygen saturation of 94%. She has a cough productive of frothy sputum. What is the MOST likely etiology of her continued need for supplemental oxygen?**

- (A) Obstructive sleep apnea      (B) Atypical cholinesterase      (C) Laryngospasm

From the clinical scenario presented, this patient most likely has postobstructive pulmonary edema (also known as *negative pressure pulmonary edema*). Any mechanism that results in a patient making a forceful inspiratory effort against a closed glottis may cause postobstructive pulmonary edema. However, in the perioperative setting, laryngospasm is the most common cause. Young, healthy patients are felt to be at highest risk of developing postobstructive edema due to the increased negative intrathoracic pressure they are able to generate. While residual neuromuscular blockade (e.g., due to atypical cholinesterase or incomplete re-

versal) and obstructive sleep apnea should always be considered as possible causes of postoperative hypoxemia, they are not the most likely etiologies in this scenario.

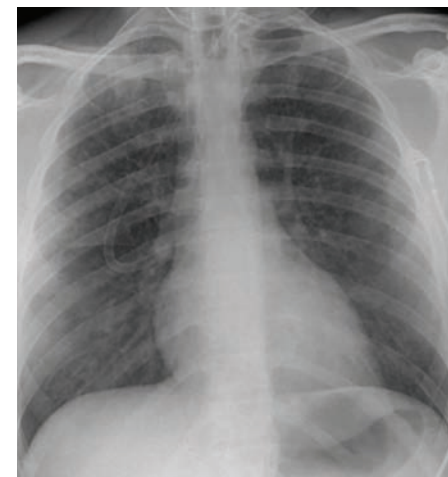
Management of postobstructive edema is mostly supportive and consists of monitoring and the administration of supplemental oxygen and diuretics. More severe cases may require noninvasive positive pres-

sure ventilation or, rarely, the need for reintubation and mechanical ventilation. ■

### Reference:

1. Gropper MA, Cohen NH, Eriksson LI, Fleisher LA, Leslie K, Wiener-Kronish JP, eds. *Miller's Anesthesia*. 9th ed. Elsevier; 2020:2593.

Answer: C



Chest radiograph of acute postoperative negative pressure pulmonary edema. *Anesthesiology*. 2010;113:200-7.

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