

- Avoid myocardial contractility depressants (e.g., barbiturates).

Maintenance

- Maintain myocardial contractility, reduce afterload, and normalize PVR.

Extubation

- May be delayed owing to CV and pulm insufficiencies

Adjuvants

- Rx inotropes; digitalis and diuretics

- May be less responsive to catecholamines
- Regional anesthesia: Debated and not recommended by some (sympathectomy and volume status) or preferred (reduce preload) by others

Postoperative Period

- Inotropic support and mechanical assistance may be needed.
- Pulm edema develops in 2–16% of pts.

Anticipated Problems/Concerns

- Pulm edema may necessitate prolonged ventilation with high FIO₂.
- RV and/or LV failure in the postop period.

Constipation

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Risk

- Median prevalence of constipation in adults is 16% (studies range 0.7–79%); in adults aged ≥60 y, it is 33.5%.
- Prevalence may be higher in nonwhite and institutionalized populations.
- Male:female ratio: 1:1.5.

Perioperative Risks

- Increased risk of gastroparesis and N/V
- Increased intra-abdominal pressure
- Altered resp mechanics and delayed weaning from mechanical ventilation
- Poor nutritional status impairing wound healing

Worry About

- Risk of pulm aspiration on induction
- Increased peak and mean airway pressures, which may predispose to barotrauma
- Decreased chest wall compliance and tidal volumes, which promote atelectasis and increase shunt fraction and alveolar dead space (may cause hypoxemia and hypercarbia)

- Severe abdominal distension, which may decrease cardiac output (decreased venous return and ventricular compliance/contractility)
- Delayed enteral feeding

Overview

- A syndrome defined by difficult or infrequent passage of stool, hardness of stool, or a feeling of incomplete evacuation that occurs in isolation or secondary to another underlying disorder
- Classified into three groups: Normal transit constipation, slow transit constipation, and pelvic floor dysfunction/defecatory disorders
- Diagnosis made on clinical history (symptoms, comorbidities, and medications) and assessment of colonic transit and anorectal function

Etiology

- Slow colonic transit may reflect colonic motor dysfunction or inadequate caloric intake.
- Pelvic floor dysfunction/defecatory disorders may result from inadequate propulsive forces or increased resistance to evacuation.
- Secondary causes include endocrine or metabolic disorders (e.g., diabetes mellitus), neuro disorders

(e.g., Parkinson disease), and medications (e.g., opioids, anticholinergics, antidepressants, calcium channel blockers).

- Nearly 50% of patients on long-term opioids experience constipation.

Usual Treatment

- There is no evidence that constipation can be treated by increased fluid intake unless there is evidence of dehydration.
- Increased physical activity is associated with less constipation.
- First-line therapy includes soluble dietary fiber and bulk-forming laxatives.
- Second-line therapy includes osmotic laxatives, stimulant laxatives, enemas, intestinal secretagogues, serotonin 5-HT₄ receptor agonists, and bile acid transporter inhibitors.
- Opioid-induced constipation may be treated with peripherally acting mu-opioid receptor antagonists.
- Surgical intervention is indicated only after nonsurgical measures have failed and symptoms compromise activities of daily living.

Assessment Points

System	Effect	Assessment by Hx	PE	Test
CV	Decreased cardiac output (decreased ventricular compliance/contractility and venous return)	Severe cephalad movement of diaphragm	Abdominal distension, narrow pulse pressure	CXR, ECHO
RESP	Elevated diaphragm, atelectasis, hypoxemia, hypercarbia	Dyspnea, tachypnea, orthopnea If mechanically ventilated, increased peak and mean airway pressure	Rales, pleural effusions	ABG, CXR
GI	Decreased intestinal/gastric motility	Abdominal pain, N/V	Abdominal distension	Abdominal imaging

Key References: Bharucha AE, Pemberton JH, Locke GR 3rd: American Gastroenterological Association technical review on constipation, *Gastroenterology* 144(1):218–238, 2013; Webster LR: Opioid-induced constipation, *Pain Med* 16:S16–S21, 2015.

Perioperative Implications

Preoperative Preparation

- Assess volume status.
- Check lytes if receiving laxative therapies.
- Consider preop NG tube placement.

Monitoring

- Standard monitors

Airway

- Attention to airway pressures

Induction

- Consider rapid-sequence induction.

Maintenance

- Avoid nitrous oxide in pt with intestinal obstruction.
- Consider multimodal analgesic techniques and regional anesthesia to minimize use of opioids.

Extubation

- Consider preop resp status. Extubation to noninvasive positive pressure ventilation may be useful.

Anticipated Problems/Concerns

- Potential for prolonged wean from mechanical ventilation in the critically ill
- Risk of infection from bacterial overgrowth and gut translocation
- Delayed enteral feeding because of constipation