

Morbid Obesity

Risk

- Incidence in USA: Approximately 5% morbidly obese

Perioperative Risks

- Increased morbidity and mortality versus normal BMI from resp and cardiac issues

Worry About

- Challenging procedures: IV start, intubation, ventilation, epidural cath placement.
- Restrictive pattern of resp disease, hypoxemia, larger O₂ demand, small FRC; OSA is common, with associated cardiac issues.

- Htn: Systemic and pulm.
- DM.
- NASH.
- Reflux, hiatal hernia, and depression.

Overview

- Defined by BMI (weight in kg/height in m²); >30 obese; >35 morbidly obese
- Cardiac and resp issues mainly due to size; large body mass to be perfused and oxygenated; increased cardiac strain and resp effort of breathing; OSA common; increased sensitivity to narcotics
- Depression common

Etiology

- Disputed role of genetics, mainly environmental and nutritional habits; essentially a form of severe malnourishment

Usual Treatment

- Medical treatment includes psychological counseling, along with decreased calorie consumption with increased exercise, if physically able.
- Surgical treatment includes gastric banding, Roux-en-Y, sleeve gastrectomy, or intestinal bypass.

Assessment Points

System	Effect	Assessment by Hx	PE	Test
CV	Htn	Fatigue, dyspnea	Auscultation, increased heart size, \pm rales	BP, ECG, CXR
	Pulm	Dyspnea, fatigue, syncope including JVP, peripheral edema, hepatomegaly, crackles	Auscultation, palpation, auscultation	CXR, ECG, ECHO
	Htn Cardiac failure Coronary disease	Chest pain, SOB		ECG, stress ECHO Coronary angiogram
RESP	Restrictive disease	SOB, including resp rate, decreased exercise tolerance	Rapid shallow breathing, hypoxemia, large neck, redundant soft tissue in neck	PFT, ABG, CXR, Hg, pulse oxygen for room air saturation
	OSA	Hx of snoring, periods of apnea in sleep, nonrestful sleep, daytime somnolence and tiredness Different screening tests (STOP-BANG)	Large neck, redundant soft tissue in neck	Overnight sleep study for apnea hypopnea index PaCO ₂ as predictor
NEURO	Depression	Hx	Question and answers, survey instruments	By psychologist and/or psychiatrist
HEENT	Potentially difficult intubation	Mallampati, upper lip bite test	Evaluation for large tongue, small interdental distance, limited ROM	
GI	NASH NIDDM	Hepatomegaly, icterus, ascites Polyphagia, polyuria, polydipsia	Palpation	LFT, PT, PTT, BUN, Cr UA, BS, GTT, HgA1c

Key References: Sinha AC: Some anesthetic aspects of morbid obesity, *Curr Opin Anaesthesiol* 22(3):442–446, 2009; Nishiyama T, Kohno Y, Koishi K: Anesthesia for bariatric surgery, *Obes Surg* 22(2):213–219, 2012.

Perioperative Implications

Perioperative Preparation

- All medications except for DM.
- Avoid sedation, unless benefit outweighs risk of postop resp depression.
- Consider prophylactic preop IVC filter placement if risk of DVT is high.
- Preop carbohydrate loading isoosmolar drink 2 to 3 h prior to surgery may benefit postop insulin resistance, nitrogen, and protein loss and decrease LOS.

Monitoring

- Routine with \pm arterial cath if cardiac status dictates or ultra obese (BMI >70 kg/m² or weight >200 kg)
- If severe cardiac or resp disease, ABG
- UO
- Central venous access if peripheral access difficult, or CVP or pulm pressures need to be monitored for cardiac disease

Airway

- Position at 30-degree head elevated (HELP) to improve probability of intubation with direct laryngoscopy; BMV difficult in 10–15% and intubation difficult in 1–2%
- Minority of pts may need awake FOI
- Prepare for difficulty with multiple airway options, such as laryngeal masks and video laryngoscopes and short-acting drugs

Induction

- Preoxygenate with pressure support if possible; complete denitrogenation.
- Rapid sequence with cricoid pressure should be considered.

Maintenance

- Drug dosing: Lipophilic dosed to real body weight; lipophobic to IBW or LBM.
- Desflurane preferable due to complete and rapid recovery; avoid nitrous; TIVA has advantages if high risk of PONV.

- Consider opioid free or low opioid intraop; use such adjuncts as NSAIDs, acetaminophen, pregabalin, lidocaine infusions, α -2 agonists.
- Appropriate goal-directed fluid infusion based on deficit, losses, and UO.
- Ventilation: Start at TV 6–8 mL/kg IBW; RR 12–14/m; PEEP 8–10; adjust as needed, recruitment helps atelectasis, volume or pressure control.

Extubation

- Wide awake, no residual volatile agent, normocapnic, responsive with appropriate resp effort and partially sitting up; consider cyclodextrin for NMB reversal.

Postoperative Period

- Rapid placement on CPAP or BiPAP decreases atelectasis.
- Good analgesia with IV PCA, NSAIDs and local infiltration with LA and rapid mobilization helps resp function and decreases DVT.

Moyamoya

Francine S. Yudkowitz

Risk

- Occurs in both children and adults, peak age at 5 y and 40 y, respectively
- Female-to-male ratio of 1.8:1
- Highest incidence in Japanese and Asian populations; familial occurrence 10%

Perioperative Risks

- Stroke

Worry About

- Hypocarbica and hypercarbica
- Adequate cerebral blood flow
- Hypotension
- Hypothermia

Overview

- In Japanese, moyamoya means “puff of smoke,” which describes the angiographic appearance of collaterals between internal and external carotid arteries.

- Chronic progressive cerebrovascular disease consisting of concentric stenosis or occlusion of the distal internal carotid arteries and large vessels of the circle of Willis with prominent basal collateral vessels.
- Histopathology shows eccentric intimal thickening by fibrous tissue, smooth muscle cell hyperplasia, and luminal thrombosis
- The most common presentation in children and adults is ischemic stroke.