



Morbid Obesity

Practicing Beyond the SAMBA Guidelines

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Objectives

1. Recognize co-morbidities associated with morbid obesity.
2. Formulate institutional guidelines for preoperative medical optimization and patient selection in morbidly obese patients undergoing ambulatory surgery.
3. Develop perioperative anesthetic care plans for morbidly obese patients to safely undergo ambulatory surgery.

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Body Mass Index (BMI)

$$\text{BMI} = \frac{(\text{weight in kilograms})}{\text{height in meters}^2}$$

Centers for Disease Control and Prevention: www.cdc.gov/obesity/adult/defining.html

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Body Mass Index (BMI)

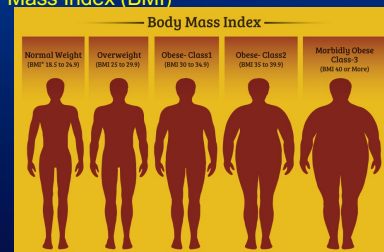


Image: Truweight
Centers for Disease Control and Prevention: www.cdc.gov/obesity/adult/defining.html

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Ambulatory Setting

- Bariatric surgeries in obese patient population
 - Gastric banding

Joshi GP, et al. Anesth Analg 2013;117:1082-91
Waskins BM, et al. Obesity Surgery;15:1045-49

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Independent Risk Factors for Perioperative Morbidity

- Obese BMI
- Chronic obstructive pulmonary disease
- History of transient ischemic attack or stroke
- Hypertension
- Previous cardiac surgical intervention
- Prolonged operative time

Anesthesiology, 2013, 119(6):1310-21
Minerva Anestesiol, 2003, 75(5):259-68

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Unanticipated Admission after Ambulatory Surgery

- Patient risk factors
 - Prolonged surgical duration
 - American Society of Anesthesiologists physical status classification ≥ 3
 - Increased BMI
 - Advanced age ≥ 80 year-old
 - Cardiac disease

Can J Anaesth. 2013; 60(7): p. 675-83
Arch Surg. 2007; 142(3): p. 263-8

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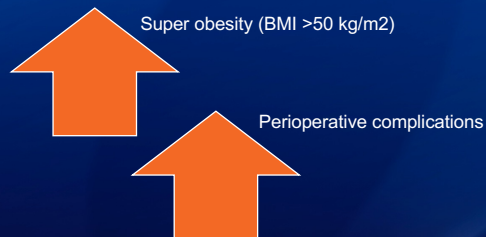
Obesity

- Overweight or obese patients with BMI ≤ 35 kg/m² who are otherwise healthy do not have an increased risk of adverse outcomes.
- Obesity associated comorbid conditions are more important than BMI alone for perioperative risk assessments of obese patients.

Br J Anaesth. 2016; 116(3): 319-21
Lancet. 2003; 361(9374): 2032-6

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Super Obesity



Josh GP, et al. Anesth Analg 2013;117:1082-91
Gununathan U and Myles PS. Br J Anaesth. 2016;116:319-21

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Super Obesity



Images: TLC

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Morbid Obesity



Image: Daily Star

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Morbid Obesity

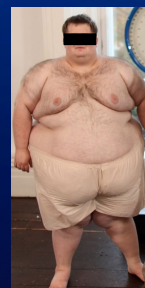


Image: Wales News Service

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Morbid Obesity

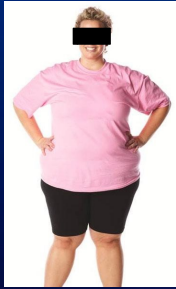


Image: Nutrolution

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Morbid Obesity Apple vs. Pear?

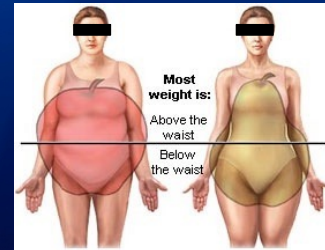


Image: Bariatricfu

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Morbid Obesity-Related Co-Morbidities

- Cardiovascular disease
- Type 2 diabetes mellitus (DM)
- Hypertension
- Stroke
- Dyslipidemia
- Osteoarthritis
- Some cancers
- Obstructive Sleep Apnea (OSA)

Joshi GP, et al. Anesth Analg 2013;117:1082-91
Burton BT, et al. Int J Obes Relat Metab Disord 1995;9:155-169
Joshi GP, et al. Anesth Analg. 2012;115:1060-8

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Obstructive Sleep Apnea (OSA)

- OSA alone is not a determinant of perioperative complication
- Increased incidence of
 - Hypertension
 - Arrhythmias
 - Heart failure
 - Pulmonary hypertension
 - Neurocognitive dysfunction

Joshi GP, et al. Anesth Analg 2013;117:1082-91
Burton BT, et al. Int J Obes Relat Metab Disord 1995;9:155-169
Joshi GP, et al. Anesth Analg. 2012;115:1060-8

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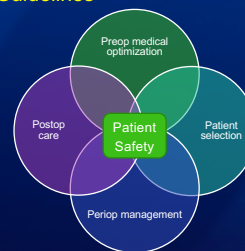
Institutional Guidelines

1. Preoperative medical optimization
2. Patient selection
3. Perioperative management
4. Postoperative care

Joshi GP, et al. Anesth Analg 2013;117:1082-91

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Institutional Guidelines



Joshi GP, et al. Anesth Analg 2013;117:1082-91

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Preoperative Evaluation & Medical Optimization

- Difficult airway
- Cardiovascular diseases
- OSA
- DM

Joshi GP, et al. *Anesth Analg*. 2012;115:1060-8

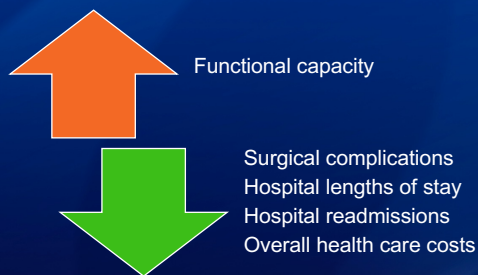
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Functional Capacity

- ≥ 4 metabolic equivalents (METs): Patients with moderate to excellent functional capacity can generally proceed to surgery without additional preoperative cardiovascular testing.

Circulation. 2014. 130(24): p. e278-333.

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Br J Surg. 2016. 103(5): p. 504-12
Semin Oncol Nurs. 2015. 31(1): p. 13-30
Orthop Nurs. 2002. 21(5): p. 43-51

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Functional Capacity

- Poor preoperative functional capacity
 - Additional testing
 - Specialty consults
 - Preoperative medical optimization

Joshi GP, et al. *Anesth Analg*. 2012;115:1060-8

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Preoperative Medical Optimization

- Non-optimized comorbid medical conditions
 - May not be good candidates for ambulatory surgery

Joshi GP, et al. *Anesth Analg*. 2012;115:1060-8

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The Society for Ambulatory Anesthesia (SAMBA) Consensus Statement

- Preoperative selection of adult patients with OSA
 - STOP-Bang criteria for preoperative OSA screening
 - OSA is suspected → proceed with a presumptive diagnosis of OSA
 - Consideration of a patient's co-morbid conditions during the patient selection process

Joshi GP, et al. *Anesth Analg*. 2012;115:1060-8
Joshi GP, et al. *Anesth Analg*. 2013;117:1062-91

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STOP-Bang

- ▶ **STOP Questionnaire**
 - Snororing
 - Tiredness
 - Observed you stop breathing
 - Blood Pressure
- ▶ **BANG**
 - BMI >35
 - Age >50
 - Neck circumference >40 cm (>15.7")
 - Gender male

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Obesity and OSA

■ SPECIAL ARTICLE

ESSE
Society for Anesthesia and Ambulatory Surgery

Grish P, Joshi, MBBS, MSc
Tong J, Gen, MD, MHS, FRCPC

Preoperative Evaluation

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graph TD
    PE[Preoperative Evaluation] --> PKO[Patient With Known OSA]
    PE --> PWD[Patient With Presumptive Diagnosis of OSA]
    PKO --> CO[Optimized Comorbid Conditions AND Able to use CPAP after discharge]
    PKO --> CNCO[Patients With Non-optimized Comorbid Conditions]
    PWD --> CO
    PWD --> CO2[Optimized Co-morbid Conditions AND Postoperative pain can be managed predominantly by using non-opioid analgesic techniques]
    CO --> PAS[Proceed With Ambulatory Surgery]
    CNCO --> NSAS[Not Suitable For Ambulatory Surgery, may benefit from diagnosis and treatment]
    CO2 --> PAS
    CO2 --> PAS2[Proceed With Ambulatory Surgery]
```

Preoperative Considerations:

- Comorbid conditions include hypertension, arrhythmias, heart failure, cerebrovascular disease, and metabolic syndrome.
- If OSA is suspected during the preoperative evaluation, one could proceed with a presumptive diagnosis of OSA after with caution.
- Educate surgeon, patient and family (see the text for details)

Intraoperative Considerations:

- Non-sleep analgesic techniques, when possible.

Postoperative Considerations:

- Exercise caution in OSA patients who develop prolonged and frequent severe respiratory events (e.g., sedation analgesic monitoring, desaturation, and apneic episodes) in the postoperative period.

ANESTHESIA & ANALGESIA

Anesth Analg. 2012; 115(5):1060-8

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Patient Selection

- Severity of co-morbidities
- Invasiveness of the surgery
- Anesthetic techniques
- Availability of difficult airway equipment
- Postoperative pain relief

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Perioperative Management

- Short-acting anesthetics
- Prophylaxis for common complications
 - Postoperative nausea & vomiting
 - Pain

Joshi GP, et al. Anesth Analg. 2012;115:1060-8

CONTINUES | slide

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Perioperative Management

- Invasive procedures
 - Postoperative pain
 - Requiring a large quantity of opioids
 - may not be suitable for morbidly obese patients with OSA undergoing ambulatory surgery.

MAVIA
MAY 2015
PAIN

Joshi GP, et al. Anesth Analg. 2012;115:1060-8

Perioperative Management

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 - Postoperative pain
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Joshi GP, et al. Anesth Analg. 2012;115:1060-8

Challenges for Perioperative Management

- OSA patients with specific medical conditions that do not allow the utilization of local/regional analgesia or non-opioid medications
- OSA patients who cannot utilize CPAP or BiPAP due to the ambulatory surgeries performed
- Resources/equipment availability
- Difficult IV placement

Joshi GP, et al. *Anesth Analg*. 2012;115:1060-8

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Joshi GP, et al. *Anesth Analg*. 2012;115:1060-8

Postoperative Care

- A patient's ability to follow postoperative discharge instructions
- Compliance with CPAP or BiPAP may contribute to a safer perioperative course

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Postoperative Care

- Education to the caregivers

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Conclusion

- BMI should not be the sole factor for patient selection in ambulatory surgery.
- Morbid obesity is associated with high incidence of OSA, cardiovascular disease, DM, hypertension, and stroke.
- Morbidly obese patients with appropriate preoperative medical optimization and perioperative management can safely undergo ambulatory surgery.

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Questions & Discussion

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