



Perioperative Considerations for Patients with BMI > 55



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I have no disclosures

Objective:

Identify characteristics of patients with BMI > 55 which place them more at risk from bariatric surgery

Discuss challenges in operative positioning, visualization and technique and tips to overcome them

Utilize knowledge of the physical and metabolic effects obesity has on the dosing of medications in this patient population

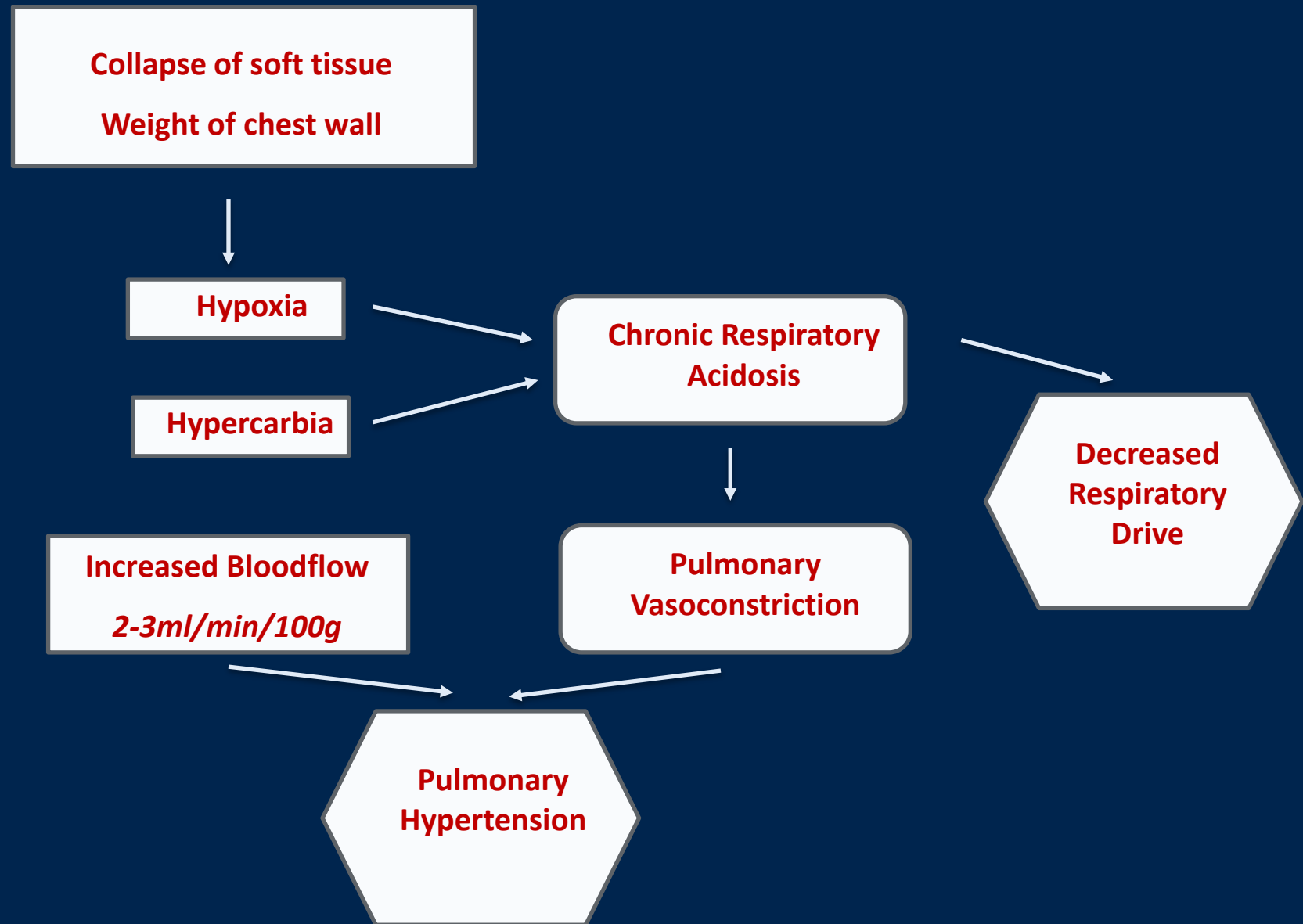
Preoperative

- Physical challenges of increased tissue mass combined with metabolic changes caused by obesity lead to increased risks of surgical and anesthetic complications



ABCs...

- Airway
 - 40-90% have OSA
 - > 3x O₂ Consumption
- Overall
 - Difficult to mask
 - Difficult to ventilate
 - Quick to desaturate
 - Difficult to wake up
- Impaired gastric Emptying
 - Increased aspiration risk

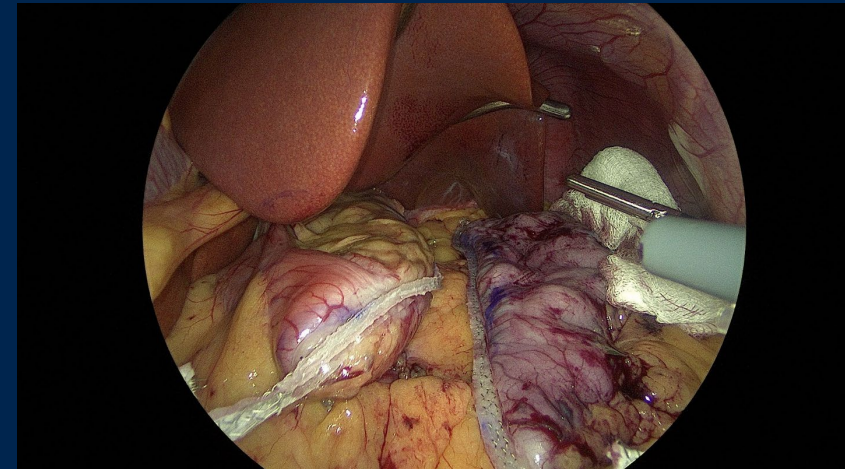
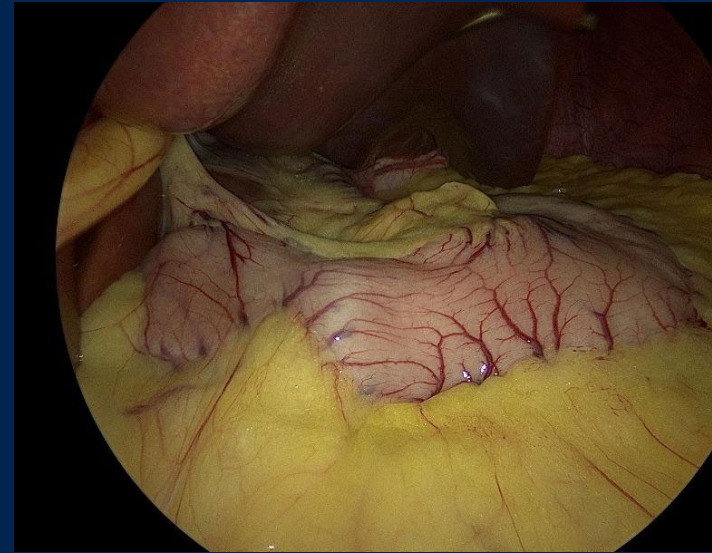


Intraoperative

- Positioning
 - Prolonged operations with patients in the **supine** position increase the risk of gluteal rhabdomyolysis and IVC compression resulting in decreased venous
 - **Trendelenburg** positioning increases risk of atelectasis, hypoxemia, and exacerbation of limited cardiac reserve.
 - **Reverse Trendelenburg** facilitates intubation and shifts visceral fat to allow better visualization
- Port Placement
 - Pt in slight RT to shift soft tissue
 - Utilize fixed landmarks

Operative challenges

- Maximize exposure early
- Port placement is key
 - Avoid torque
 - Instrument reach
- Decrease in abdominal domain
- Large, heavy liver



Medication Dosing

- Issues with weight to be used
 - Lean body weight (LBW)
 - Ideal body weight (IBW)
 - Adjusted body weight (ABW)
- Not only lipophilic drugs are affected



Common meds and Recommendations

- **Lovenox:** BMI <50 40mg sc daily, BMI >50mg 60 sc daily
- **Cefazolin:** 3g (widely used but insufficient data to date)
- **Anti-emetics:** *Ondansetron and droperidol:* weight independent
- **Anesthetic agents:**
 - Non-depolarizing neuromuscular blockers: IBW
 - Succinylcholine, sugammadex: Actual BW
 - Other common anesthetic agents and local: LBW

Stanford Health Care Antimicrobial Dosing Guide for Obesity



Stanford Antimicrobial Safety and Sustainability Program
Last approval date 1/18/2024

SHC Antimicrobial Dosing Guide for Obesity

Definitions and Equations

BMI = $\frac{\text{weight (kg)}}{\text{height}^2 (\text{m}^2)}$

WHO BMI Classification	Definition
Obese Class I and II (obese)	BMI 30-40 kg/m ²
Obese Class III (morbidly obese)	BMI ≥ 40 kg/m ²

Body Weight	Equation ¹
IBW (kg)	Male: $50.0 + 2.3 \times (\text{number of inches over } 5 \text{ ft})$ Female: $45.5 + 2.3 \times (\text{number of inches over } 5 \text{ ft})$
Ideal body weight	
AdjBW (kg)	$\text{IBW} + C \times (\text{TBW} - \text{IBW})$
Adjusted body weight	C = either 0.3 or 0.4 (AdjBW _{0.3} or AdjBW _{0.4})
LBW ₂₀₀₅ (kg)	Male: $\frac{0.726 \times \text{IBW}}{0.886 + 0.214 \times \text{BMI}}$ Female: $\frac{0.726 \times \text{IBW}}{0.782 + 0.214 \times \text{BMI}}$
Lean body weight	
LBW (for anti-tuberculosis medications):	<ul style="list-style-type: none"> Obesity: ATS/CDC Guidelines recommend dosing based on estimated lean body weight. Lean Body Weight (men) = $(1.10 \times \text{Weight(kg)}) - 128 \times (\text{Weight}^2 / (100 \times \text{Height(m)}^2))$ Lean Body Weight (women) = $(1.07 \times \text{Weight(kg)}) - 148 \times (\text{Weight}^2 / (100 \times \text{Height(m)}^2))$
TBW (kg)	
Total/actual body weight	

Table 1.^{1,10} Recommended Antibiotic Dosing in Obesity (BMI ≥ 30 kg/m²)

Drug	Dose ^a	Study Type ^b			Comments
		Case studies	PK/PD studies	Clinical outcomes	
Acyclovir ^{10,11,12}	Use ideal or adjusted body weight		•	•	<ul style="list-style-type: none"> PK study: 5mg/kg IV x1 showed that dosing based on IBW in obese patients led to lower AUC than dosing by TBW in normal-weight patients. Authors suggest using AdjBW Renal function may be a more important consideration than weight-based dosing in obese patients No difference in AKI rates with AdjBW compared to IBW dosing¹⁰
Aminoglycosides					
- At SHC, weight-based dosing is recommended. For AUC/MIC targeted bedside dosing approach, see references 151-152					
Amikacin	Use adjusted body weight (AdjBW _{0.4}) for initial dose		•		Adjust by TDM
Gentamicin ^{15,41}	Use adjusted body weight (AdjBW _{0.4}) for initial dose		•		Adjust by TDM
Tobramycin ^{15, 17, 21, 42}	Use adjusted body weight (AdjBW _{0.4}) for initial dose		•		Adjust by TDM
Amoxicillin ± clavulanate	Amoxicillin: 1g PO every 8 hours Amoxicillin/clavulanate: 875mg/125mg PO every 8 hours or 2000mg/125mg XR PO BID		•		
Ampicillin	Insufficient data		•		<ul style="list-style-type: none"> Consider upper limit of normal dosing in severe infections,^c e.g. up to 2g q4h Single study with 6 patients: higher V_d but decreased Vd/kg_{TBW}, CL unchanged^d

<https://med.stanford.edu/content/dam/sm/bugsanddrugs/documents/antimicrobial-dosing-protocols/SHC-ABX-Obesity-Dosing-Guide.pdf>

Enhance Recover After Surgery (ERAS)

- 8mg IV dexamethasone 90 min prior to induction for ↓PONV and inflammation
- Minimize fluids to maintain normovolemia and optimize tissue perfusion/oxygenation.
- Opioid sparing multi-modal approach
- Lung protective ventilation
- OSA pts use home CPAP in immediate post op period
- Obesity hypoventilation syndrome pts placed on BiPAP/NIV

Additional options

- PONV Reduction:
 - Aprepitant PO Cap 80 mg x 1
 - Bicitra (sodium citrate/ citric acid) PO soln 30 mL (antacid)
- Analgesia Optimization:
 - Gabapentin PO Cap 600 mg x 1
 - TAP block with solution of 20cc liposomal bupivacaine, 60cc 0.25% marcaine plain and 120cc of injectible saline
- Close f/u via phone with high risk patients. Infusion center appointment for 2 days post-op

- *The difference is Life-Changing...*

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