Introduction:

Obesity is a systemic disease with many implications to perioperative care. US obesity prevalence has increased from 30.5% (1999-2000) to 42.4% (2017-2018) with prevalence of severe obesity increased from 4.7% to 9.2% in the same time period. This rapid increase highlights the need for a thorough understanding of the obese patient. perioperative management of obese patients requires an understanding of anatomic and physiologic changes as well as common associated comorbidities in order to improve patient outcomes.

Figure 1: Positioning for Intubation in Morbidly Obese Patients. Adapted from Zvara et al, 2006.

Case Presentation:

Pre-operative:
The patient was a 27-year-old female with Obesity Class 3 (BMI 62), diabetes mellitus type 2, GERD, and anxiety who sustained a mechanical fall tripping over a sprinkler head with subsequent right posterior knee dislocation and popliteal artery injury. She was transferred from an outside hospital after knee reduction. Complaint of paresthesias and immobility to right foot. History of anaphylaxis to IV contrast prompted decision to intubate in ED prior to imaging. Patient placed on ramp with blankets, preoxygenated, and underwent rapid sequence intubation (RSI) with ketamine, propofol, and succinylcholine with a video laryngoscope (glidescope) for intubation.

Intra-operative:
The patient received general endotracheal anesthesia with sevofluorane and opioids as needed throughout popliteal artery repair. No significant intraoperative events occurred. The procedure lasted approximately 2.5 hours.

Post-operative:
The patient's post-operative course was uncomplicated with biphasic DP and PT signals on doppler at time of discharge.

a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. Defined as a person's weight in kilograms divided by the square of height in meters (kg/m2).

Normal	18.5–24.9	Normal range
Overweight	25.0–29.9	Preobese
Obesity class 1	30–34.9	Obese class 1
Obesity class 2	35.0–39.9	Obese class 2
Obesity class 3	≥40.0	Obese class 3

NHLBI=National Heart, Lung, and Blood Institute.
WHO=World Health Organization

Anesthetic Implications by System:

***Respiratory*:**
- Increased risk of perioperative hypoxemia
  - Decreased pulmonary compliance -> decreased Functional Residual Capacity (FRC) made worse with anesthesia and supine positioning
- Obesity increases O2 consumption and CO2 production at rest
- Association with OSA
- Risk for Obesity Hypoventilation Syndrome

Cardiovascular:
- Increased total blood volume
  - Less than non-obese patients in volume to weight (50 mL/kg vs 70 mL/kg)
- Increased Cardiac output
  - Excess body fat increases CO by up to 20-30 mL/kg
- Increased LV wall thickness
  - Hypertrophy, reduced compliance and LV diastolic dysfunction
- Increased proinflammatory/prothrombotic mediators
- Higher incidence of hypertension, thromboembolic events

Gastrointestinal:
- Risk of Regurgitation
- Increased gastric volume and lower pH
  - Increased risk for severe pneumonitis if aspiration occurs
  - Current preop fasting guidelines unchanged from normal weight
- Altered hepatic function
  - Abnormal ALTs most common
  - Liver pathologies associated w/ obesity include NAFLD, NASH, focal necrosis and cirrhosis.

Endocrine:
- Increased prevalence of hyperglycemia, insulin resistance, DM
  - RR of developing DM increases by 25% every 1 kg/m2 over BMI of 22
- Metabolic syndrome
  - Central obesity, HTN, dyslipidemia and impaired glucose metabolism
- Subclinical hypothyroid in 25% of morbidly obese
- Increased hypercoag
- Preoperative polycy
  - Suggestive of

Perioperative Managem

Preoperative evaluation
difficult ventilation or di
cardiac and pulmonary i
deconditioning. Lastly, a
deficiencies, or clotting/
obese patient.

Intraoperative Consider
invasive monitoring if NI
include head up position
fiberoptic, or supraglotti
of regurgitation is appro
weight (TBW) vs lean bo
to minimize post op resp
greater in obese than no
favored. Obese patients
but care should be taker
Lastly, post-extubation r
complications post-oper

Conclusion:

Obesity is among the mo
perioperative period. Re
techniques can help mit

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