Morbid Obesity

Anesthetic Pearls: Anesthetic Implications and Management of Morbid Obesity

Increased BMI

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Increased O_2 Requirement

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Increased Blood Volume

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Increased LVEDV

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Increased Stroke Volume
- **Increased Cardiac Output**

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LV Hypertrophy
- **Eventual LV Failure**

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Increased LVEDP

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Increased PAOP

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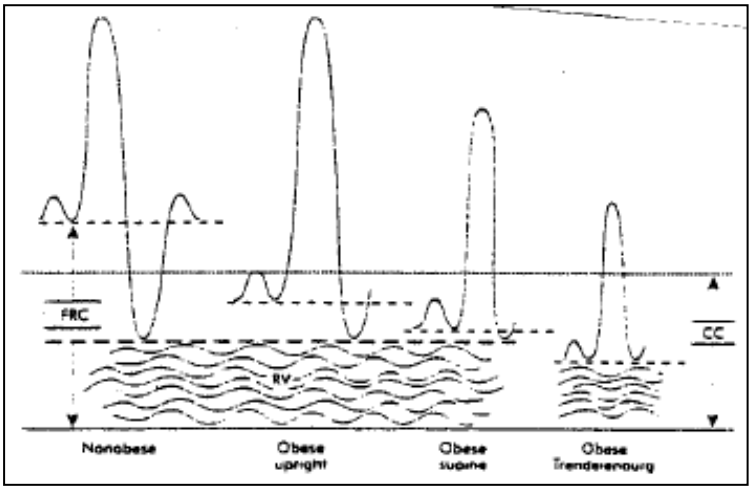
Pulmonary HTN
- **Eventual RV Failure**

Cardiovascular Changes

- Depiction of cardiovascular changes (see schematic at right)
- Obese persons require increased cardiac output to meet the increased oxygen needs.
- Achieved by increasing the preload & stroke volume (HR is usually normal).
- CVP & wedge are chronically elevated.

Pulmonary Changes

- **Restrictive ventilation defect** (**low FEV1 & FVC** but normal ratio FEV1 / FVC).
- Lung compliance "normal" but low chest wall compliance
- Pulmonary Function Tests – decreased lung volumes, ERV (expiratory reserve volume), FRC (functional residual capacity), and TLC (total lung capacity); increased closing capacity.
- Rapid & shallow respiratory pattern to minimize the work of breathing.
- Closure of distal basal airways leads to ***V/Q* mismatch** & increased shunting.
- Fat metabolism leads to increased 0_2 consumption & $C0_2$ production.
- Therefore causing chronic **hypercarbia** & **hypoxia**.
- Sequela of **Cor Pulmonale** (pulmonary HTN, RVH, pulmonary vasoconstriction, and increased blood viscosity leading to RV failure).



Gastrointestinal Changes

- Gastric secretions have increased volume & acidity (Bicitra +/- H2 blocker).
- Rate of gastric emptying is not impaired.
- Increased intra-abdominal pressure increases risk of reflux & aspiration.

Anesthetic Implications

- Full stomach precautions .
- Potentially **Difficult Airway** (LMA, oral airway, Eschmann / bougie, Glide Scope, Fiberoptic).
- High incidence of **Post-Op Hypoxemia**.