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Anesthetic Management of Patients with Asthma, COPD, and Restrictive Pulmonary

1. Introduction;

Pulmonary diseases are among the most common problems encountered in anesthesia. Asthma and COPD represent obstructive airway diseases, while restrictive diseases include conditions that

limit lung expansion such as pulmonary fibrosis or scoliosis. These conditions increase the risk of hypoxia, bronchospasm, and postoperative pulmonary complications

2. Pathophysiology Overview:

Disease	Main Problem	Characteristic Features
Asthma	Airway hyperreactivity and reversible obstruction	Wheezing, prolonged expiration
COPD	Chronic irreversible airflow limitation	Barrel chest, CO_2 retention, hypoxia
Restrictive	Decreased lung compliance and reduced lung volumes	Shallow, rapid breathing; ↓ TLC, ↓ FVC

3. Preoperative Evaluation:

- **History: Frequency of attacks, triggers, medications (β-agonists, steroids, theophylline).**
- **Physical Exam: Wheezing, cough, sputum production.**
- **Investigations: CXR, Spirometry, ABG if severe.**
- **Optimization: Continue bronchodilators, administer β-agonist, stress-dose steroids if needed, treat infections.**

4. Intraoperative Management:

Choice of Technique: Regional preferred if possible; General for major surgery.

Induction: Propofol, Ketamine, or Etomidate. Avoid Thiopental and Desflurane.

Airway: Deep anesthesia before intubation, IV Lidocaine (1–1.5 mg/kg).

Maintenance: Sevoflurane/ Isoflurane preferred; avoid Desflurane. Low TV, long expiration (I:E 1:3–1:4).

Drugs to Avoid: Histamine-releasing (Morphine, Atracurium). Prefer Fentanyl, Vecuronium, Cisatracurium.

5. Postoperative Management:

Extubate fully awake; give humidified O2 and bronchodilators. Use regional analgesia when possible..

Step	Asthma	COPD	Restrictive
Pre-op	Bronchodilators, steroids	Bronchodilators, ABG	Assess cause & severity
Induction	Propofol/Ketamine	Propofol	Etomidate/Propofol
Ventilation	Low rate, long expiration	Same	Low TV, moderate rate
Agent to avoid	Desflurane	N2O	High PEEP
Extubation	Fully awake	Fully awake	Avoid residual paralysis

References:

Morgan & Mikhail's Clinical Anesthesiology, 6th Edition (2022), Chapters 50–52.

Available via McGraw-Hill Medical:

https://accessanesthesiology.mhmedical.com/book.aspx?bookid=3249