

# Anterior Mediastinal Mass – Anesthetic Implications

## Anesthetic Pearls: Anesthetic Implications and Management of Anterior Mediastinal Mass

**Pre-Op Evaluation** – thorough search for airway obstruction / distortion

1. Chest X-ray
2. Pulmonary flow-volume loops
3. CT scan – usually the size and degree of tracheal compression can be identified by CT and is often a useful predictor of the degree of airway difficulty during anesthesia. Check for tumor effect on surrounding structures.
4. Detailed history and physical evaluating clinically the evidence of tracheobronchial compression. **Imperative to determine if patient has dyspnea, and if so in what position.** Also check for evidence of impaired cerebral circulation, CVA history, and signs of Lambert-Eaton Syndrome.
5. Flexible fiberoptic bronchoscopy under topical anesthesia is an alternative method for evaluating airway obstruction.
6. Symptomatic patients requiring diagnostic tissue biopsy should be done under Local / Regional anesthetic technique.
7. If tissue type is radiation sensitive, then pre-op radiation to shrink the tumor should be performed. Potential disadvantage of this treatment is alteration of histologic tissue appearance making later tissue identification difficult.

**Note:** The severity of pre-op pulmonary symptoms may have NO relationship as to degree of respiratory compromise encountered during anesthesia. There are many asymptomatic patients that have developed unexpected airway obstruction during anesthesia.

**Induction:** method selected depends on pre-op airway assessment.

Definitely have **SURGEONS IN THE ROOM**, +/- cardiopulmonary bypass pump immediately available.

**Adult:** Fiberoptic intubation +/- sedation. If patient must remain sitting to achieve adequate ventilation, induce anesthesia in sitting position.

**Infants/Children:** Inhalation induction while maintaining spontaneous ventilation.

**If obstruction occurs:**

1. Change position – placing the patient supine / prone may be lifesaving.
2. Rigid bronchoscope – place scope or single lumen ETT past the obstruction.
3. Direct Laryngoscopy – attempt placement of single lumen ETT past the obstruction.

Airway obstruction may be due to changes in lung & chest wall mechanics associated with:

1. Change in position.
2. Onset of muscle paralysis that previously maintained airway patency.

**Position:**

Supine position may worsen airway obstruction by decreasing gas volume in thorax due to cephalad displacement of diaphragm and increased central blood volume. Mediastinal mass may also compress cardiac chambers and pulmonary artery which can lead to life-threatening arterial hypoxemia, hypotension, and even cardiac arrest. Position the patient in most hemodynamic and ventilatory neutral position as possible.

**Maintenance:**

1. Spontaneous ventilation & muscle relaxant avoidance is recommended but usually not possible during maintenance of anesthesia during thoracotomy, thoracoscopy, and VATS.
2. Fluid therapy – cautious administration secondary to acute worsening of SVC syndrome by volume overload.
3. Drug-induced diuresis can decrease tumor volume but also may produce an associated decrease in preload in patients with already compromised venous return causing severe hypotension.
4. Surgical bleeding may worsen in patients with increased CVP.

**Special Issues related to anterior mediastinal masses:**

1. SVC obstruction.
2. Obstruction of major airways
3. Cardiac compression

*\*\*The latter two may become apparent only on anesthetic induction*



