Lower Airway Emergencies

Anterior Mediastinal Mass

Massive Hemoptysis

Peter Slinger MD, FRCPC
25 y.o. F, Diagnostic Biopsy
Anterior Mediastinal Mass

? History

? Physical Exam

? Investigations

? Management
Anterior Mediastinal Mass
25 y.o. F, c/o cough + supine dyspnea x 2 mo.
Diagnostic Biopsy

? Physical Exam

? Investigations
Variable Intra-thoracic Airway Obstruction
Before Rx

After Rx

### Abnormal Flow-Volume Loops in Patients with Intra-thoracic Hodgkins Disease


<table>
<thead>
<tr>
<th>Flow-Vol. loop</th>
<th>N (25)</th>
<th>CT Trach. 0-mild</th>
<th>CT Trach. Mod.</th>
<th>CT Trach. Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>11</td>
<td>8</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Fixed Obstr.</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Variable Extra-Thor</td>
<td>7*</td>
<td>5</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Variable Intra-Thor</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

(* No CT evidence of Extra-Thor. Trach. Obstuct.)
Anterior Mediastinal Mass
25 y.o. F, c/o cough + supine dyspnea x 2 mo.
Diagnostic Biopsy

? Investigations
Anterior Mediastinal Mass
25 y.o. F, c/o cough + supine dyspnea x 2 mo.
Diagnostic Bx.

? Management
Anterior Mediastinal Mass

Concepts:

◆ NPIC Anesthesia
  (Noli Pontes Ignii Consumere)
Anterior Mediastinal Mass

Concepts:

- **Symptoms**: dyspnea/cough vs. syncope

- **Symptoms**:
  - mild: supine no problem
  - moderate: supine some problem
  - severe: cannot lie supine
Anterior Mediastinal Mass

Concepts:

- NPIC Anesthesia
- Symptoms: mild/mod./severe
- Procedure: Diagnostic vs. Therapeutic
Anterior Mediastinal Mass Concepts:

- NPIC Anesthesia
- Symptoms: mild/mod./severe
- Procedure: Diagnostic vs. Therapeutic
- Children vs. Adults
Anterior Mediastinal Mass Concepts:

- NPIC Anesthesia
- Symptoms: mild/mod./severe
- Procedure: Diagnostic vs. Therapeutic
- Children vs. Adults
- Patients: safe/ unsafe/ uncertain for NPIC
Anterior Mediastinal Mass
NPIC Anesthesia:

 ucfirst

Safe: Asymptomatic adult no tracheal compression

Unsafe: Severely symptomatic adult/child, child CT trach. compress. ≥ 50%

Uncertain: all others
25 y.o. F, Diag. Bx.  
Ant. Mediastinal Mass

? Management:  
safe  
unsafe  
uncertain
Management for Uncertain Patients for “NPIC” Anesthesia:

**ALL Patients:**
- Determine optimal positioning
- Secure airway beyond stenosis if possible
- Rigid bronchoscope

**Selected Patients:**
- LMA
- Helium/O2
Cardiopulmonary Bypass Standby?
Anterior Mediastinal Mass
25 y.o. Female
Post-op. mediastinoscopy/biopsy

Severe dyspnea post-op. in Recovery Room
Perioperative Complications in Adults with Mediastinal Mass
Bechard P, et al. Anesthesiology 100: 826-34, 2004

N= 105; M’scope, sternotomy, VATS, thoracotomy, other

- **Intraop.** 4/105: hypotension/ AF/ hypox. predictors: pericardial effusion.

- **Postop.** 11/105 (7 life-threat.): resp. fail., atelectasis, pneumonia
  predict: preoperative s/s, tracheal compress. > 50%,
Anterior Mediastinal Masses

- **History**: dyspnea/cough, syncope
- **Lab.**: CT +/- Echo
- **Management**: NPIC safe/unsafe/uncertain, Diagn. ? local p.r.n.
- **Myths**: Flow/vol. loops, CPB standby
- **Postoperative**
60 y.o. F, Left Nephrectomy

- Renal Cell Ca.
- Previous Mitral valve replacement
- Controlled CHF
- LVEF 20%
- Pulmonary Hypertension
60 y.o. F, Open Left Nephrectomy

- Thorac. Epidural T8-9
- Difficult intub., small chin
- Art. Line, PA catheter
- Laparoscopic convert to open, 6h. Surg.
- 3L blood loss, transfused 6U RBC, 2 FFP
60 y.o. F, Nephrectomy Post-op.

- Ventilated 2h in ICU, FiO2 0.4
- HR 82, BP 110/68, PA 40/22, PCWP 17
- ABG: PaO2 190, pH 7.38, PaCO2 42
- Extubated
60 y.o. F, Nephrectomy Post-op.

- Post-extubation: Massive Hemoptysis
- Severe Dyspnea, SpO2 80%, HR 110, BP 150/100, PA 45/28
- ? Diagnosis
60 y.o. F, Nephrectomy Post-op.

- Post-extubation: Massive Hemoptysis
- Severe Dyspnea, SpO2 80%, HR 110, BP 150/100, PA 45/28
- ? Diagnosis
- ? Treatment
Management of the Patient with PA Catheter Induced Pulmonary Hemorrhage

1. Position with the bleeding lung dependent
2. Endotracheal Intubation. How? Then?
Management of the Patient with PA Catheter Induced Pulmonary Hemorrhage

1. Position with the bleeding lung dependent
2. Endotracheal Intubation, oxygenation, airway toilet
3. Lung Isolation: How?
Techniques of Lung Isolation:

- Single Lumen Tubes
- Double-lumen Tubes
- Bronchial Blockers
Video Laryngoscope + Tube Exchanger

Glidescope
Management of the Patient with PA Catheter Induced Pulmonary Hemorrhage

1. Position with the bleeding lung dependent
2. Endotracheal Intubation, oxygenation, airway toilet
3. Lung Isolation: Double-lumen tube /BB/ single-lumen EBT
4. What about PA catheter?
Management of the Patient with PA Catheter Induced Pulmonary Hemorrhage

1. Position with the bleeding lung dependent
2. Endotracheal Intubation, oxygenation, airway toilet
3. Lung Isolation: Double-lumen tube /BB/ single-lumen EBT
4. Withdraw PA cath. several cm., deflated
Management of the Patient with PA Catheter Induced Pulmonary Hemorrhage

1. Position with the bleeding lung dependent
2. Endotracheal Intubation, oxygenation, airway toilet
3. Lung Isolation: Double-lumen tube /BB/ single-lumen EBT
4. Withdraw PA cath. several cm., deflated
5. Ventilation Management?
Management of the Patient with PA Catheter Induced Pulmonary Hemorrhage

1. Position with the bleeding lung dependent
2. Endotracheal Intubation, oxygenation, airway toilet
3. Lung Isolation: Double-lumen tube /BB/ single-lumen EBT
4. Withdraw PA cath. several cm., deflated
5. Position bleeding lung non-dependent + PEEP/CPAP
Management of the Patient with PA Catheter Induced Pulmonary Hemorrhage

1. Position with the bleeding lung dependent
2. Endotracheal Intubation, oxygenation, airway toilet
3. Lung Isolation: Double-lumen tube /BB/ single-lumen EBT
4. Withdraw PA cath. several cm., deflated
5. Position bleeding lung non-dependent + PEEP/CPAP
6. Definitive Treatment?
Management of the Patient with PA Catheter Induced Pulmonary Hemorrhage

1. Position with the bleeding lung dependent
2. Endotracheal Intubation, oxygenation, airway toilet
3. Lung Isolation: Double-lumen tube /BB/ single-lumen EBT
4. Withdraw PA cath. several cm., deflated
5. Position bleeding lung non-dependent + PEEP/CPAP
6. Transport to Medical Imaging
False Aneurysm
RLLobe PA

Embolization Coil
RLLobe PA
Lower Airway Emergencies

- Anticipation
- Airway Equipment/Help
- Training
- Management: Maintain Spont. Vent. Direct Vision (if possible)