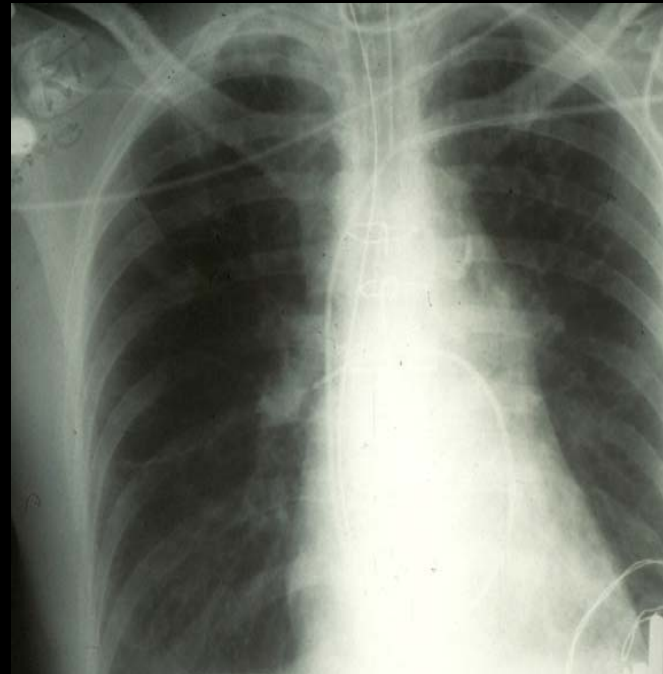


Lower Airway Emergencies

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



Flow

PEFR

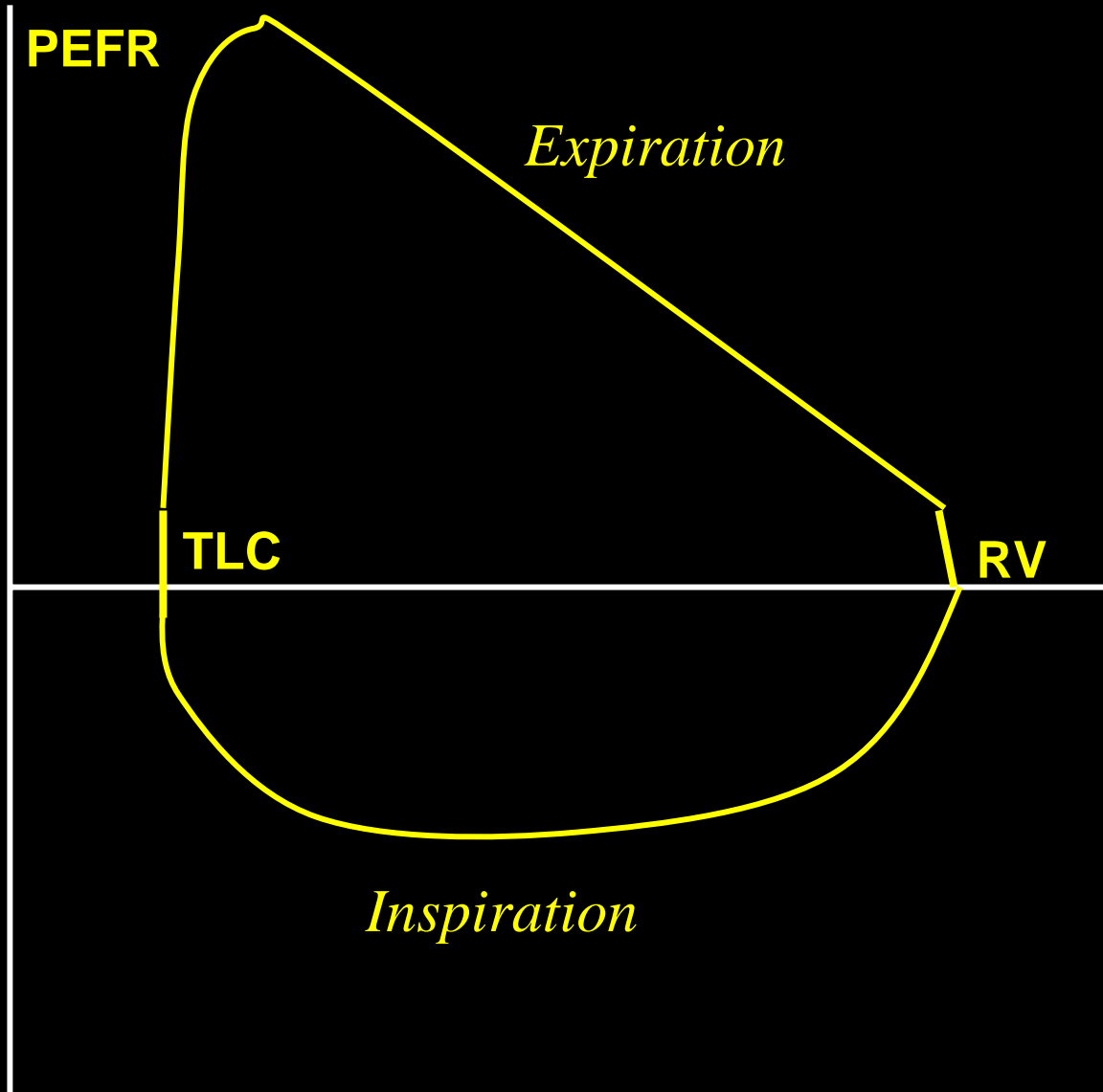
Expiration

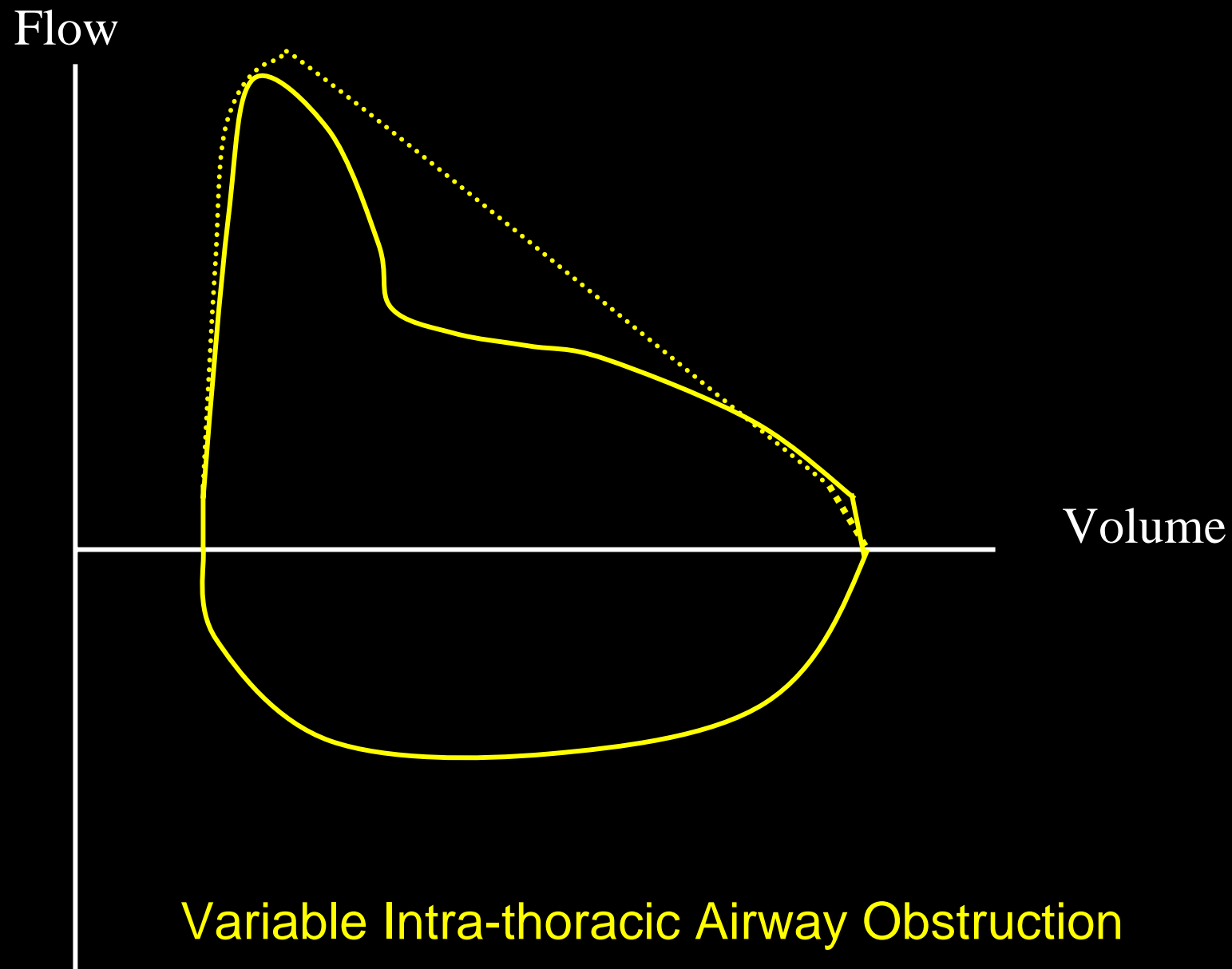
TLC

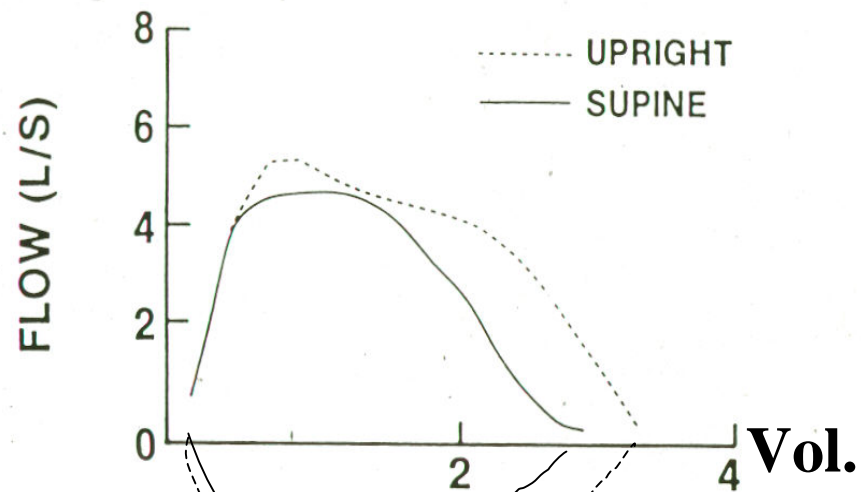
RV

Volume

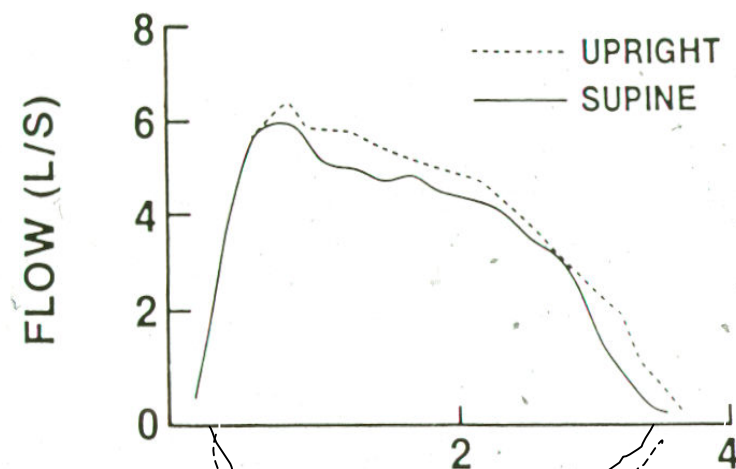
Inspiration







Before Rx



After Rx

Neuman, et al. Anesthesiology 60: 144, 1984

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

(Vander Els, et al. Chest 2000; 117: 1256-61)

Flow-Vol. loop	N (25)	CT Trach. 0-mild	CT Trach. Mod.	CT Trach. Severe
Normal	11	8	3	0
Fixed Obstr.	7	3	1	3
Variable Extra-Thor	7*	5	2	0
Variable Intra-Thor.	0	0	0	0

(* No CT evidence of Extra-Thor. Trach. Obstuct.)

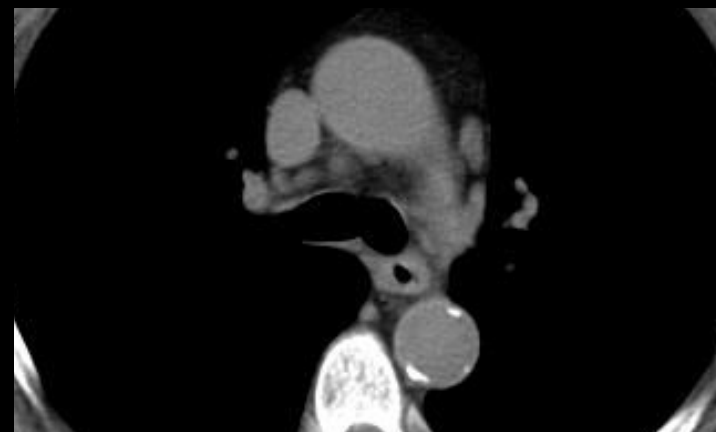
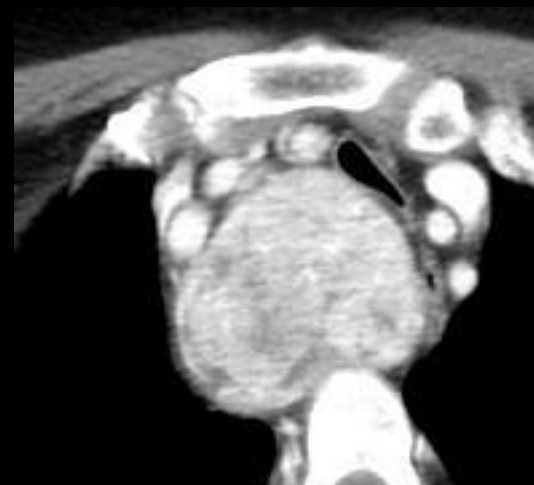
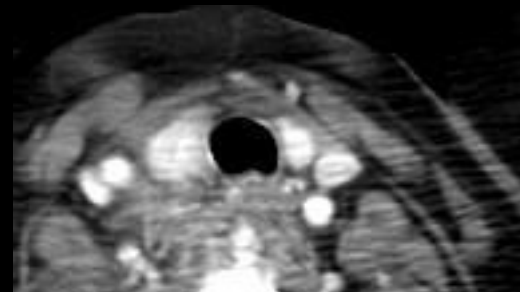
Anterior Mediastinal Mass

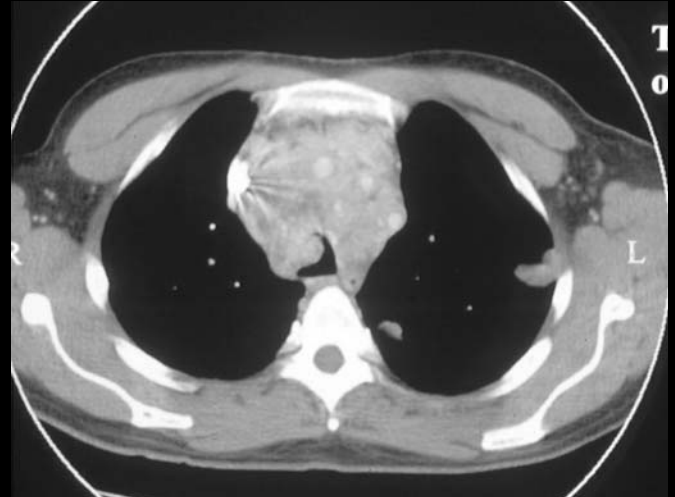
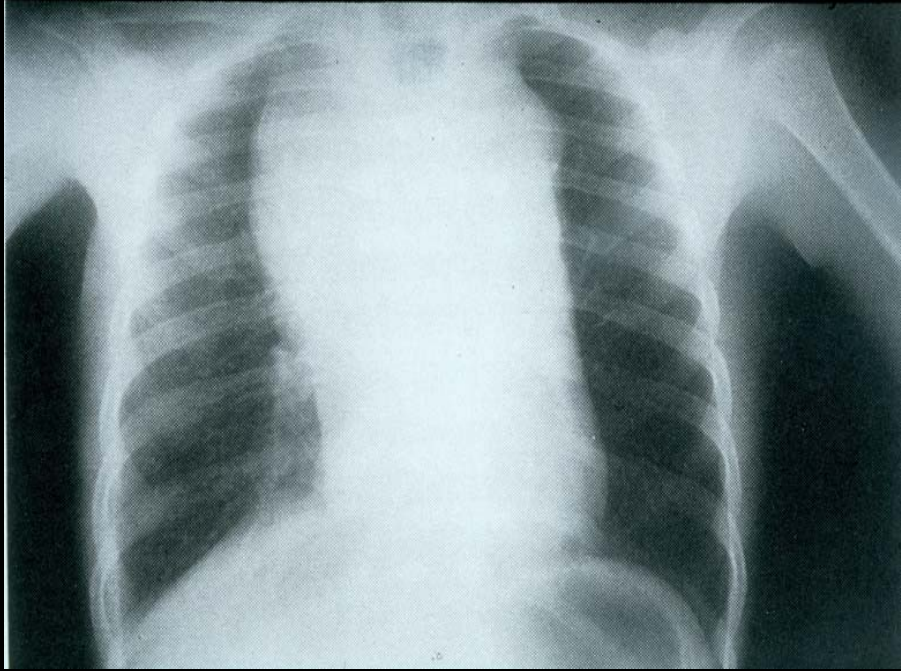
25 y.o. F, c/o cough + supine dyspnea x 2 mo.

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:

- ◆ Safe: Asymptomatic adult no tracheal compression
- ◆ Unsafe:
Severely symptomatic adult/child,
child CT trach. compress. $\geq 50\%$
- ◆ Uncertain: all others

25 y.o. F, Diag. Bx.

Ant. Mediastinal Mass

? Management:
safe
unsafe
uncertain



Management for Uncertain Patients for “NPIC” Anesthesia:

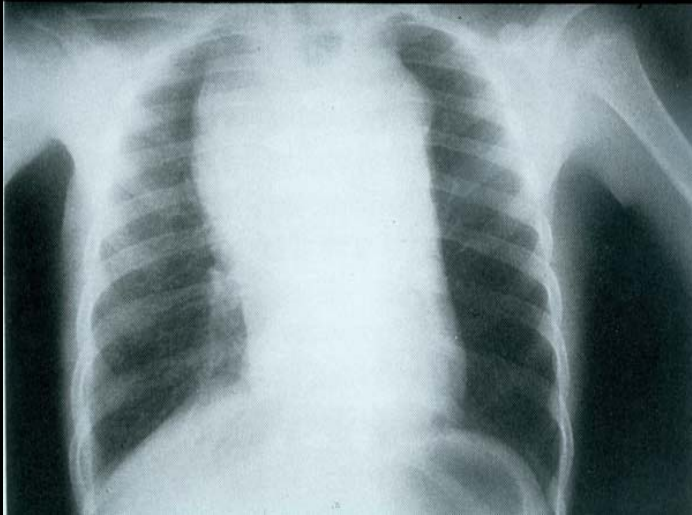
ALL Patients:

- ◆ Determine optimal positioning
- ◆ Secure airway beyond stenosis if possible
- ◆ Rigid bronchoscope

Selected Patients:

- ◆ LMA
- ◆ Helium/O₂

Cardiopulmonary Bypass Standby?



Anterior Mediastinal Mass

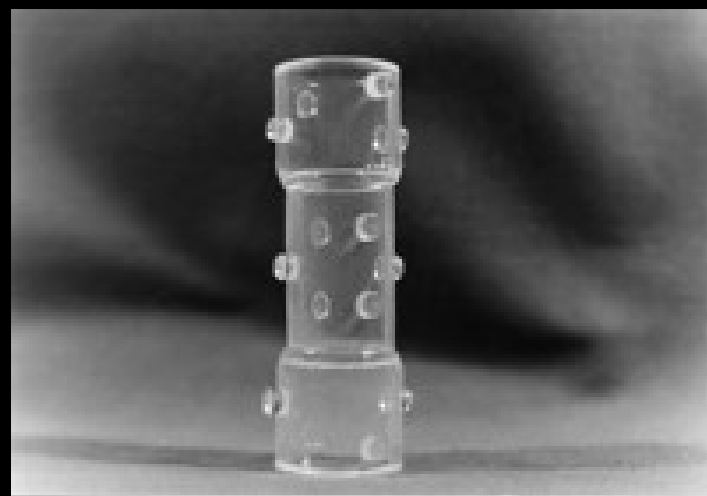
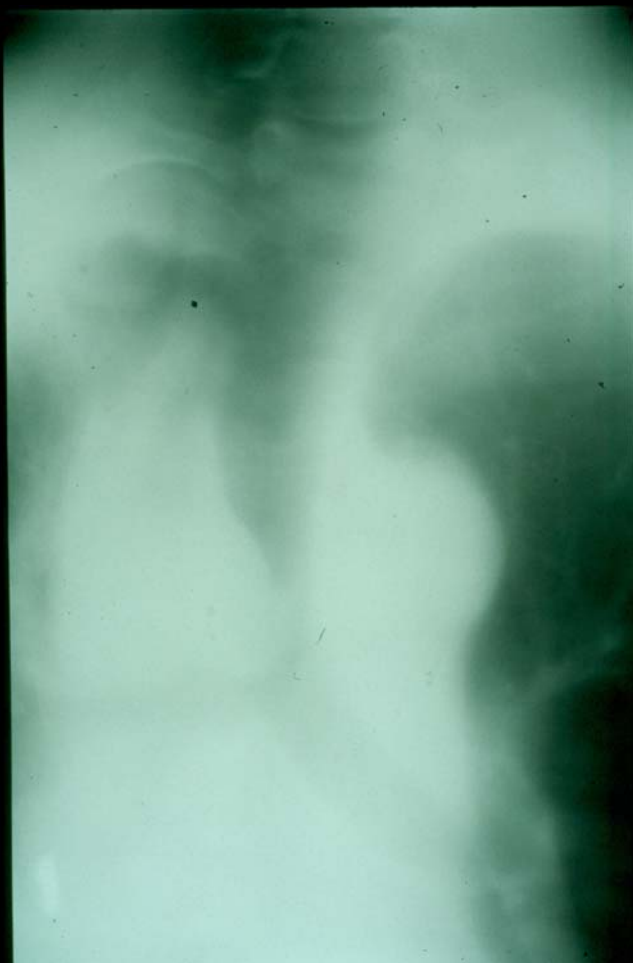
25 y.o. Female

Post-op. mediastinoscopy/ biopsy

Severe dyspnea post-
op. in
Recovery Room









Perioperative Complications in Adults with Mediastinal Mass

Bechara 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%,

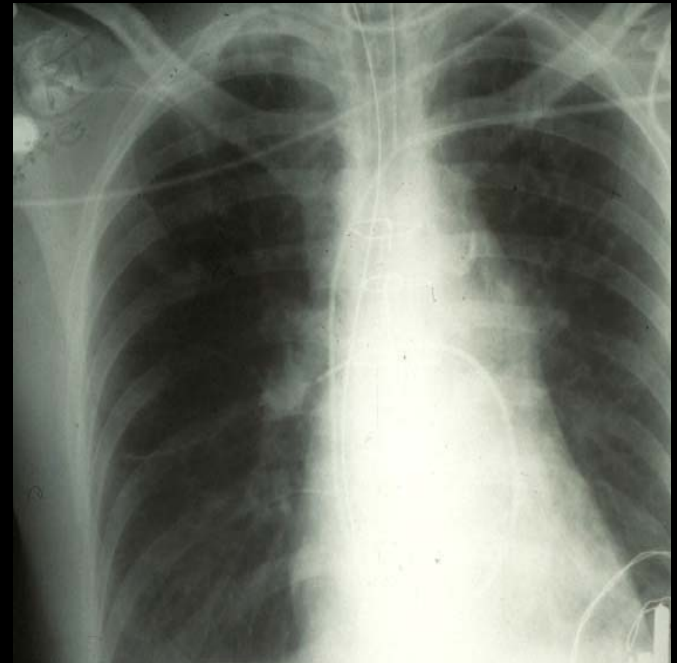
Anterior Mediastinal Masses

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



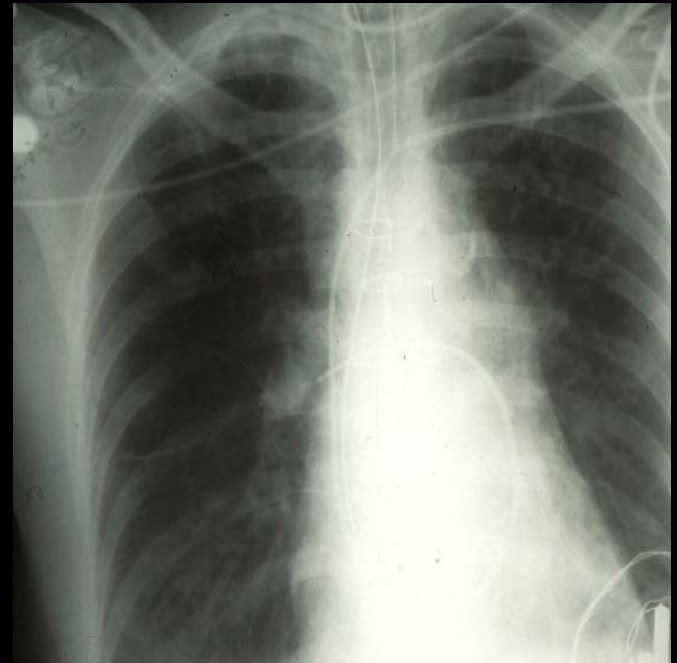
60 y.o. F, Left Nephrectomy

- Renal Cell Ca.
- Previous Mitral valve replacement
- Controlled CHF
- LVEF 20%
- Pulmonary Hypertension



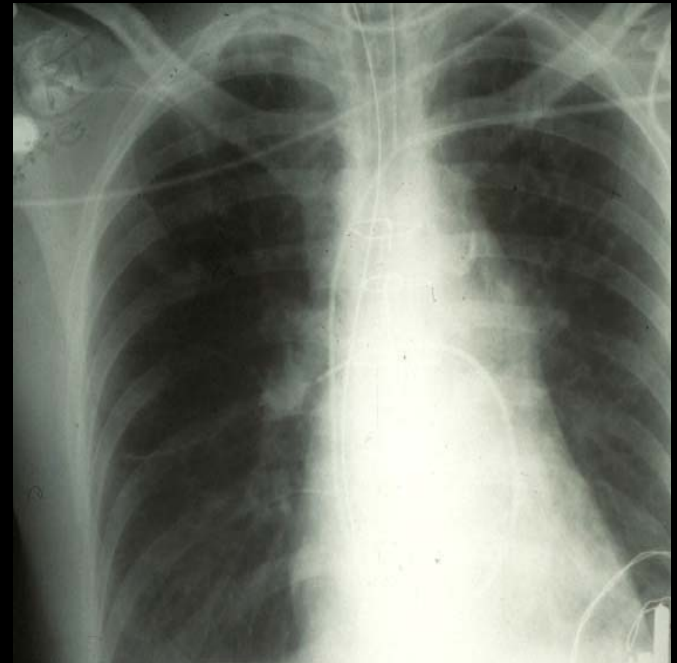
60 y.o. F, Open Left Nephrectomy

- 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



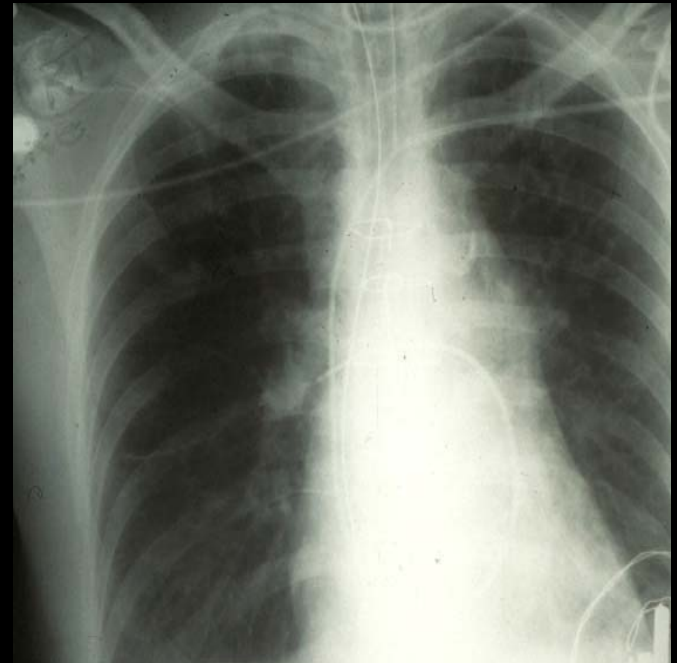
60 y.o. F, Nephrectomy Post-op.

- Ventilated 2h in ICU, FiO_2 0.4
- HR 82, BP 110/68, , PA 40/22, PCWP 17
- ABG: PaO_2 190, pH 7.38, PaCO_2 42
- Extubated



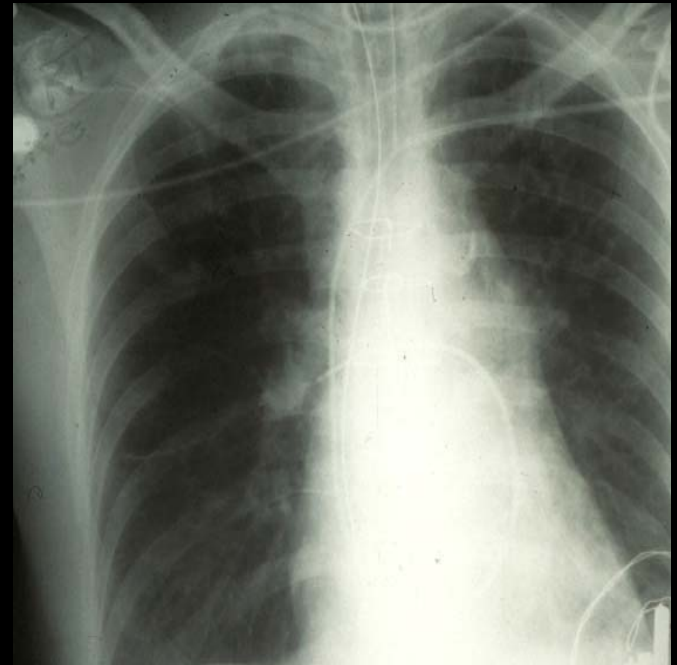
60 y.o. F, Nephrectomy Post-op.

- Post-extubation:
Massive Hemoptysis
- Severe Dyspnea,
SpO2 80%, HR 110,
BP 150/100, PA 45/28
- ? Diagnosis



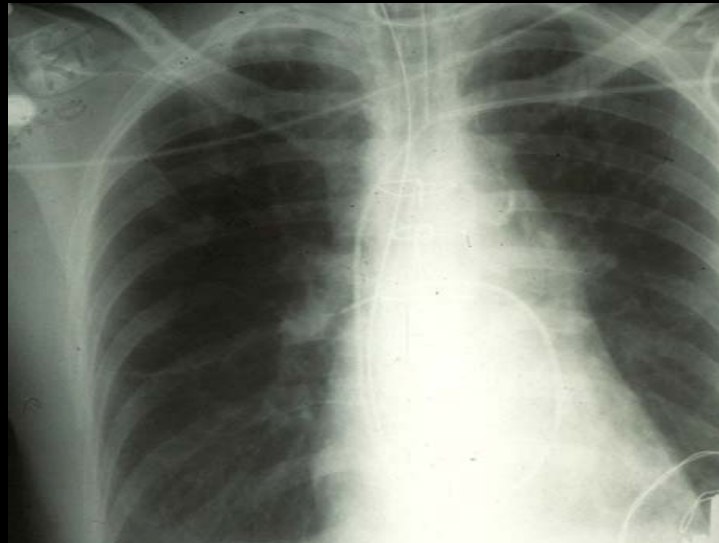
60 y.o. F, Nephrectomy Post-op.

- 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?**



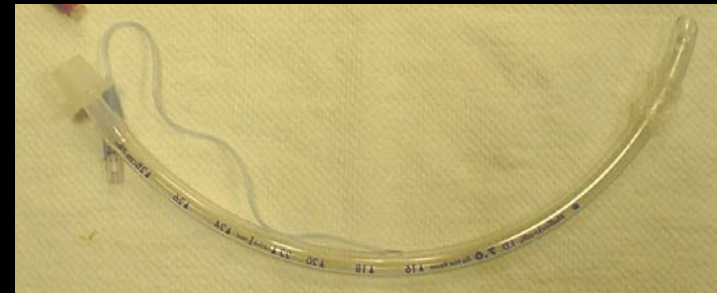
Management of the Patient with PA Catheter Induced Pulmonary Hemorrhage

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

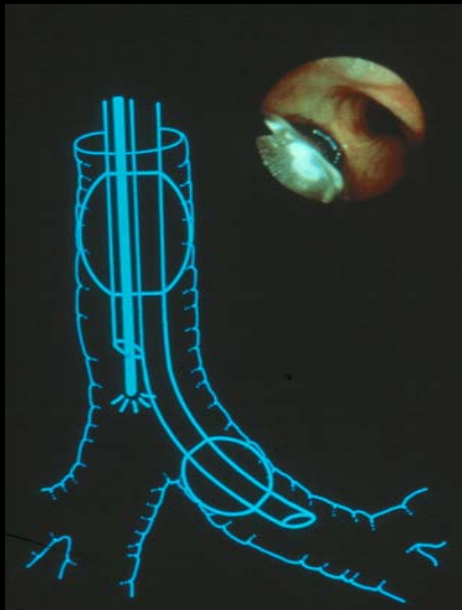
Techniques of Lung Isolation:

- Single Lumen Tubes
- Double-lumen Tubes
- Bronchial Blockers

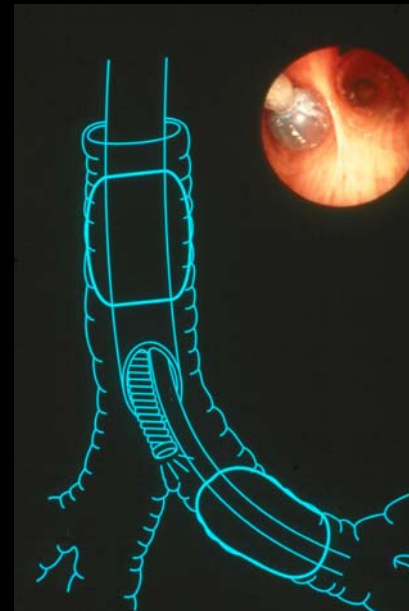
SLT



DLT

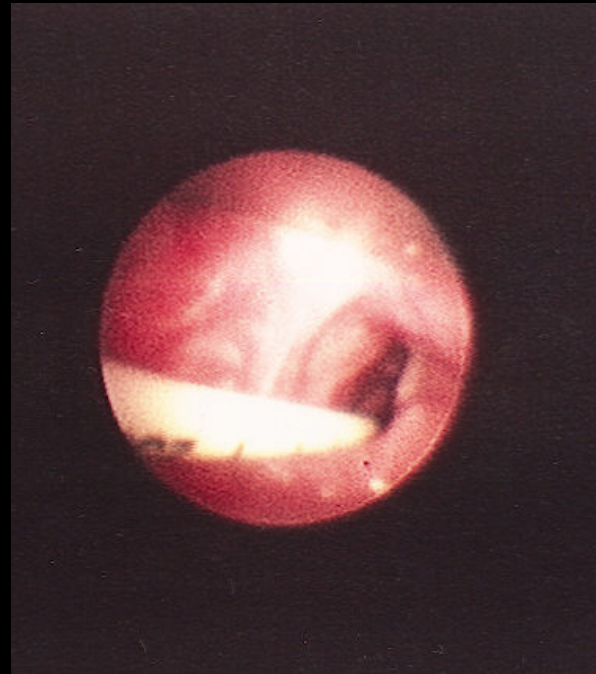


BB



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

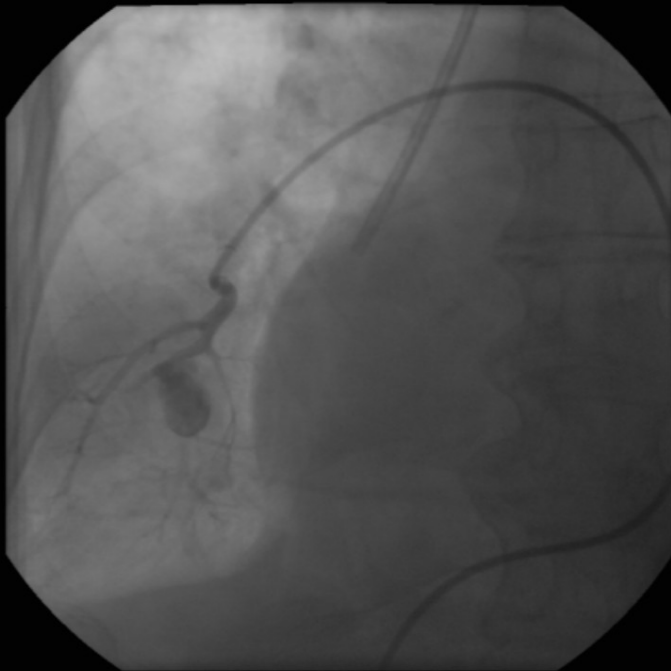
Management of the Patient with PA Catheter Induced Pulmonary Hemorrhage

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?

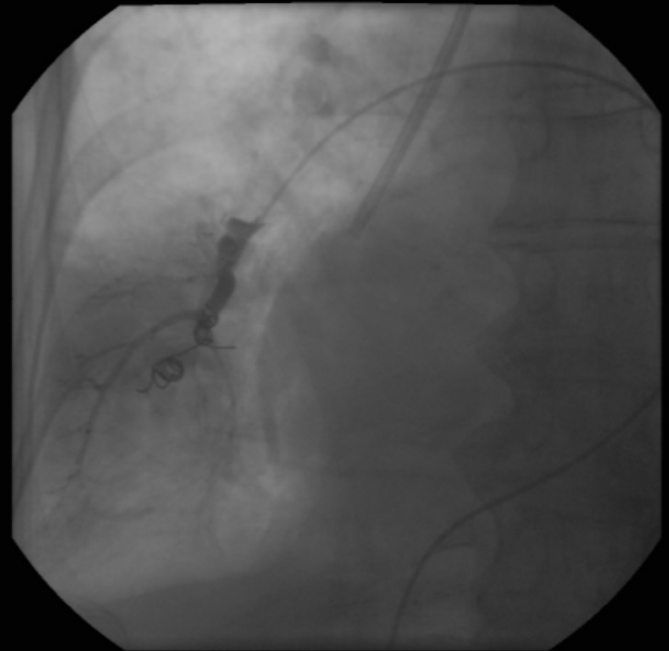
Management of the Patient with PA Catheter Induced Pulmonary Hemorrhage

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)