Advances in Lung Isolation for Thoracic Anesthesia

Peter Slinger MD, FRCPC
University of Toronto
(No Disclosures)

Methods of Lung Isolation:
- Single Lumen Tubes
- Double-lumen Tubes
- Bronchial Blockers

Techniques of Lung Isolation:
- Single Lumen Tubes
- Double-lumen Tubes
- Bronchial Blockers

55 y.o. Female Post-op. Right Pneumonectomy

Post-op. Day 1
Post-op. Day 7

Single Lumen Endobronchial Tubes
The "Arndt" Bronchial Blocker

Bronchial Blockers – Cohen

Fuji "Uni-Blocker"

New Bronchial Blockers

COHEN  FUJI  ARNDT
Bronchial Blockers vs. Left DLTs
Left-Thoracotomy/VATS

Complete Collapse

Lung Collapse Score

Nil (n= 26/group)

Elliptical
Arndt Blockers
Spherical

Elliptical Spherical Arndt Blockers

Slinger, Peter, MD, FRCPC

Advances in Lung Isolation for Thoracic Anesthesia

De-Nitrogenate the lung before collapse (FiO2 1.0)
Prolonged expiration before blocker inflation
Suction blocker lumen
Pressure-control ventilation
Warn Surgeon

EZ Blocker (Teleflex/Rusch)


38% Incidence of major malpositions of Double-lumen Tubes and Blockers

“The most critical factor in successful placement was the Anesthesiologist’s knowledge of endoscopic bronchial anatomy”


The structure seen in the Yellow circle is?

A. Right Bronchus intermedius
B. Left upper lobe bronchus
C. Left mainstem bronchus
D. Right middle lobe bronchus
E. Right upper lobe bronchus

www.thoracicanesthesia.com

Thoracianesthesia.com Bronchoscopy Simulation
Bronchoscopy Quiz Scores

The ABC’s of Lung Isolation:
- Anatomy
- Bronchoscope
- Chest X-ray, CT Scan

Left Upper Lobe Sleeve Resection

What Airway Device?
Left Upper Lobe Sleeve Resection

Right and Left-Sided Mallinckrodt Double-Lumen Tubes Have Identical Clinical Performance


The ABC’s of Lung Isolation:

- Anatomy
- Bronchoscope
- Chest X-ray, CT Scan
CT Measurement of Right Mainstem Bronchus

55 y.o. Female Post-op. Right Pneumonectomy

Anesthesia for Broncho-Pleural Fistula

Goals:
- Protect Healthy Lung
- Avoid Tension Pneumothorax
- Ensure Adequate Ventilation

Lung Isolation Before Pos. Press. Ventilation or Re-Positioning Patient

Anesthesia for Broncho-Pleural Fistula

- Airway Management: Single-, Double-lumen, BB
- Intubation: Awake, Spont. Vent., Rapid Sequence

Slinger, Peter, MD, FRCPC

Advances in Lung Isolation for Thoracic Anesthesia
62 y.o. Male, Left Lower Lobe Lung Cancer
Previous Failed Intubation

Awake Fiberoptic Double-Lumen Intubation

Video-Laryngoscope + Tube Exchanger

69 y.o. Female, R Upper Lobe Ca.
- Severe Rheumatoid arthritis
- Neck pain on Extension
- X-ray Instability C3-C4 in flexion
- GE Reflux

Neck flexion

60 y.o. Female, 2 hr. Post-op.
Mitral Valve Replacement
- Intubated, ventilated in ICU
- Sudden onset massive hemoptysis
- Diagnosis?

PA Catheter Induced Pulmonary Hemorrhage
1. Initially position with bleeding lung dependent
2. ETT, oxygenate, suction
3. Lung isolation: DLT, Bronchial Blocker or single-lumen endobronchial tube?
4. Withdraw PA cath 2-3cm, do not inflate
5. Position with isolated bleeding lung non-dependent + PEEP

60 y.o. Female, 2 hr. Post-op.
Mitral Valve Replacement
- The OR
- Your Mom
- Nobody, the patient is stable
- Radiology

Patient stabilized, now who you gonna call?
Tube Selection for Lung Isolation:

- Double-Lumen Tube
  - Excellent Isolation
  - Independent Lung Access
  - Fixed Anatomical Design
  - Adults

- Bronchial Blocker or Single-Lumen EBTube
  - Adaptability
  - Difficult airways
  - No need to change tube
  - Suctioning

Advances in Lung Isolation for Thoracic Anesthesia

- Anatomy, Bronchoscopy, Chest Imaging
- Improved Double-Lumen Tubes
- New Bronchial Blockers
- Difficult Airways

1. Auscultate
   - Fiberoptic Bronchoscopy
   - Look Again
   - Know What You are Looking At

Slinger, Peter, MD, FRCPC

Advances in Lung Isolation for Thoracic Anesthesia