Lung separation techniques for thoracic surgery

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TECHNIQUES OF LUNG ISOLATION:

- Single lumen tubes
- Double-lumen tubes
- Bronchial blockers
- Video-laryngoscopy
- Tracheo-bronchial anatomy

SINGLE LUMEN ENDOBRONCHIAL TUBES

CARLENS DOUBLE-LUMEN ENDOBRONCHIAL TUBE
8 FR. FOGARTY VENOUS EMBOLICITY
CATHETER, 10 CC BALLOON

Bronchial Blockers vs. Left DLTs
Left-Thoracotomy/VATS

Complete Collapse

Lung collapse score

Nil 0 1 2 3 4 5 6 7 8 9 10
0 Min. 10 Min. 20 Min.


Elliptical
Arndt Blockers
Spherical

New Bronchial Blockers
COHEN
FUJI
ARNDT

INDICATIONS FOR LUNG ISOLATION

Absolute:
- Blood
- Pus
- Air

Relative:
- Surgical Exposure

Surgical Exposure
- Lung Protection
- Blood
- Pus
- Fluid
- Ventilation
- BPF
- ILV

THE ABC’S OF LUNG ISOLATION

- Anatomy
- Bronchoscope
- Chest X-ray, CT Scan

Devices for lung isolation used by anesthesiologists with limited thoracic experience.


«…the most critical factor in successful placement was the anesthesiologists knowledge of endoscopic bronchial anatomy»
LEFT DOUBLE-LUMEN TUBES
Clinical experience with 1,170 patients

- Positioning of DLTs with auscultation and observation of chest wall movement
- «The authors find bronchoscopy unnecessary in the majority of patients and do not use it routinely»


SUGGESTED SIZES FOR DOUBLE-LUMEN TUBES

<table>
<thead>
<tr>
<th>Sex</th>
<th>Height</th>
<th>Size of tube (Fr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>&lt; 160 cm (63 in)</td>
<td>35</td>
</tr>
<tr>
<td>Female</td>
<td>≥ 160 cm</td>
<td>37</td>
</tr>
<tr>
<td>Male</td>
<td>&lt; 170 cm (67 in)</td>
<td>39</td>
</tr>
<tr>
<td>Male</td>
<td>≥ 170 cm</td>
<td>41</td>
</tr>
</tbody>
</table>

SINGLE - VS. DOUBLE-LUMEN TUBES IN CROSS-SECTION

8.0  35 Fr  10.0  41 Fr
ANESTHESIA FOR ACUTE BRONCHO-PLEURAL FISTULA

70 y.o. female, day 7, post right pneumonectomy

- **Goals:**
  - Protect healthy lung
  - Avoid tension pneumothorax
  - Ensure adequate ventilation

- **Airway management:**
  - Single-, double-lumen, BB

- **Intubation:**
  - Awake, spont. vent., rapid sequence
62 Y.O. MALE, LEFT LOWER LOBE LUNG CANCER, PREVIOUS FAILED INTUBATION

AWAKE FIBEROPTIC DOUBLE-LUMEN INTUBATION
THE STRUCTURE SEEN IN THE 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