



Al-Mustaqbal University

College of Health and Medical Technology

Anesthesia Techniques Department

Practical Lecture

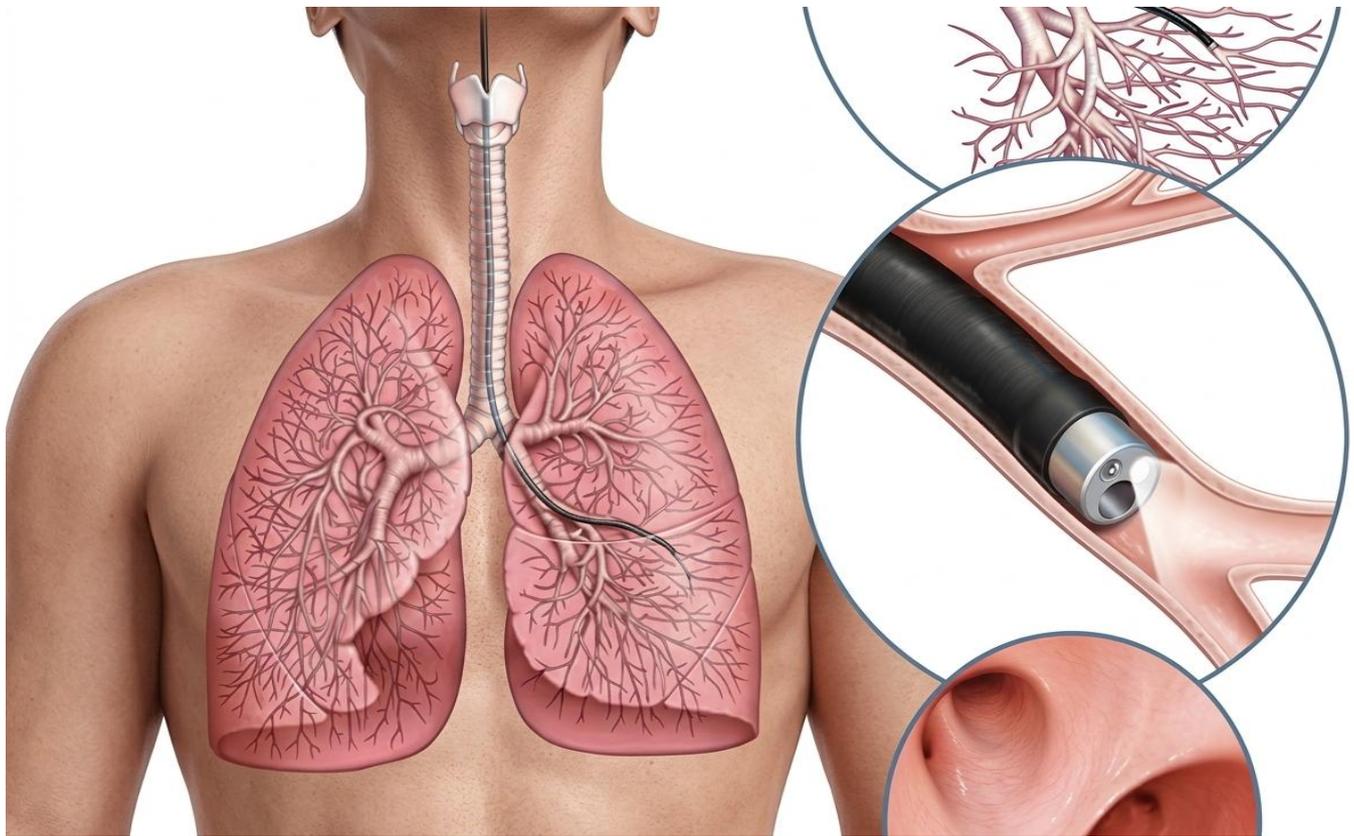
ANAESTHESIA FOR THORACIC SURGERY



BSc. Anesthesia & Intensive Care

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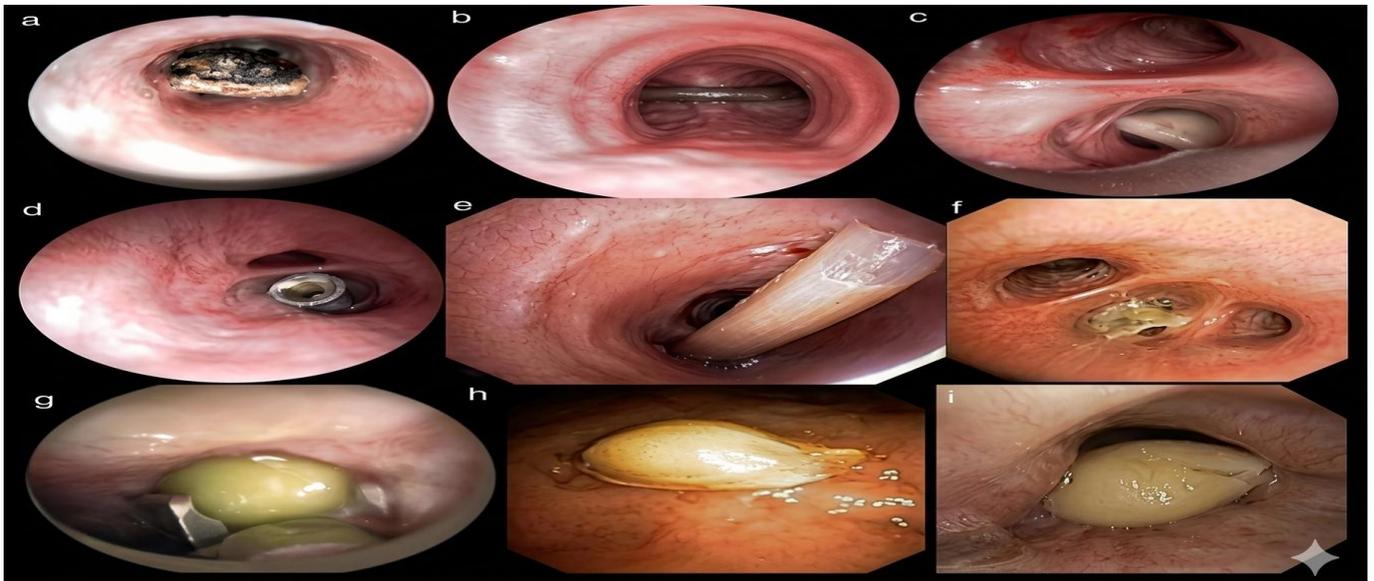
Common indications for thoracic surgery include

- 1- malignancies (mainly of the lungs and esophagus)
- 2- chest trauma.
- 3- esophageal disease .
- 4- mediastinal tumors.

Note : Positioning a **double-lumen tracheal tube** to maintain anesthesia in the lateral position with the chest opened, and **one** lung collapsed.

BRONCHOSCOPY

Rigid bronchoscopy may be for diagnostic or interventional procedures. The latter includes stenting, lasering and removal of foreign bodies.



Preparation, investigation, and examination

- ✓ To a large extent, this will be dictated by the clinical condition of the child. If the child is stable, a chest radiograph may be helpful in localising the FB, although the majority of FBs will not be radio-opaque. In the acute situation, few other investigations are indicated.
- ✓ The patient should be starved according to the recommended guidelines, but this will clearly not be possible with **acute** respiratory distress.
- ☒ **Sedative premedication **should not** be used.**
- ☒ **General anaesthesia will be required to perform **bronchoscopy**.**
- ✚ The anaesthetic machine and other equipment should be checked, especially suction equipment.
- ✚ A range of sizes of endotracheal tubes should be available, in case intubation is urgently required, bearing in mind that the presence of airway oedema reduces the tracheal diameter.
- ❖ **Inhalational induction is **recommended** using either sevoflurane or halothane in **100% oxygen**.**

- ✓ Sevoflurane causes **less airway irritation** and is more cardiovascularly stable than halothane.
- Intubation **should not** be performed **prior** to rigid bronchoscopy, due to the **risk** of **dislodging** or **fragmenting** the **FB**, with a **risk** of **complete airway obstruction**.
- The anaesthetic is discontinued, 100% oxygen is administered, and the patient is observed carefully until awake and extubated.
- **Postoperatively, the child must be monitored** for signs of **stridor** and **airway obstruction** due to oedema.
- **Humidified oxygen is recommended for 24 hours**

Fiber-optic bronchoscopy

- ✓ Commonly, fiber-optic bronchoscopy is performed under **topical anesthesia** and **sedation** with midazolam or diazepam. **Opioids** may be used in addition, but apnea must be avoided.
- ✓ A flexible fiber-optic scope may be passed via an endotracheal tube or laryngeal mask airway under general anesthesia.



One-lung anesthesia:

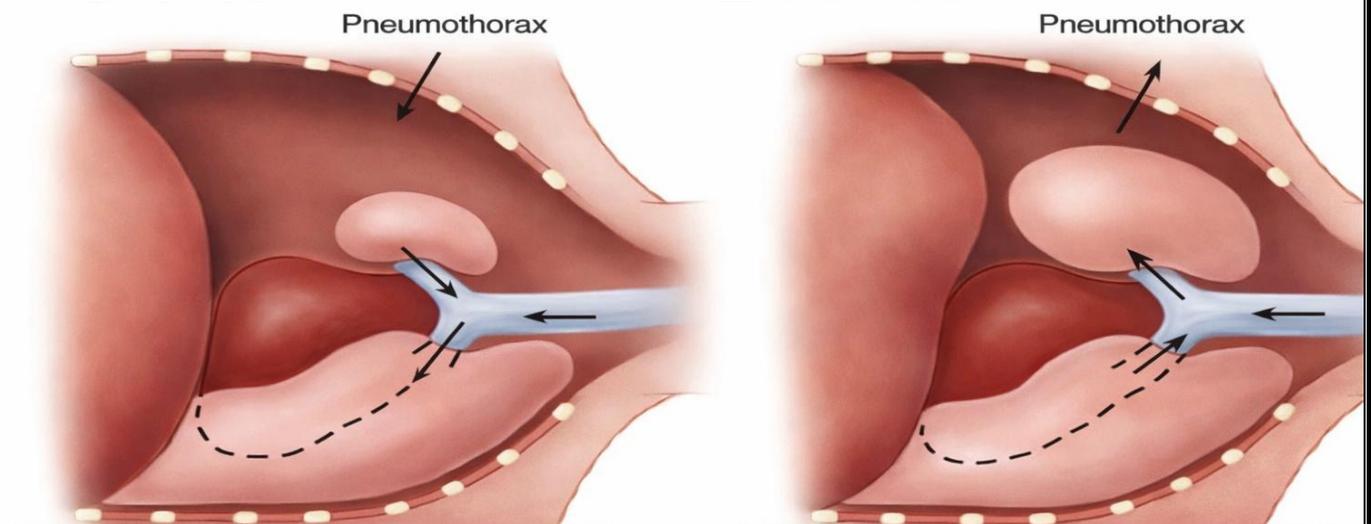
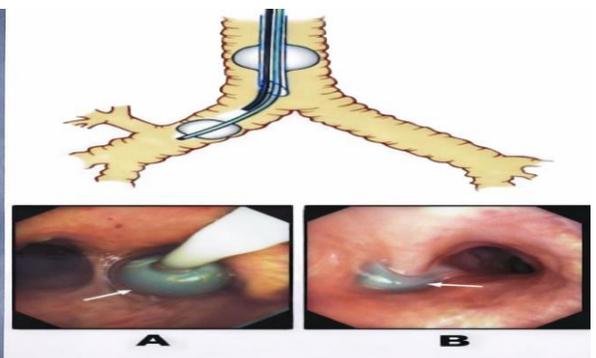
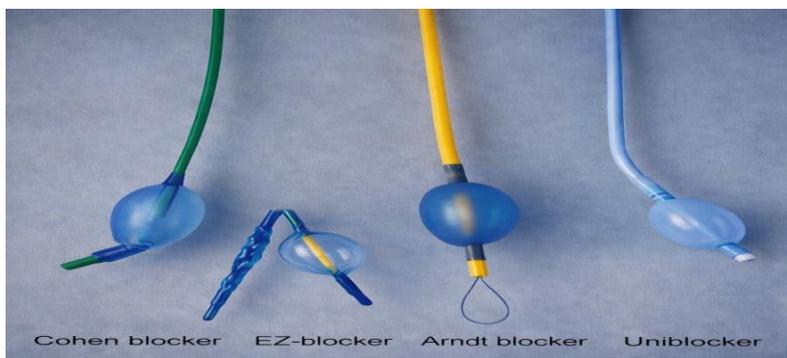
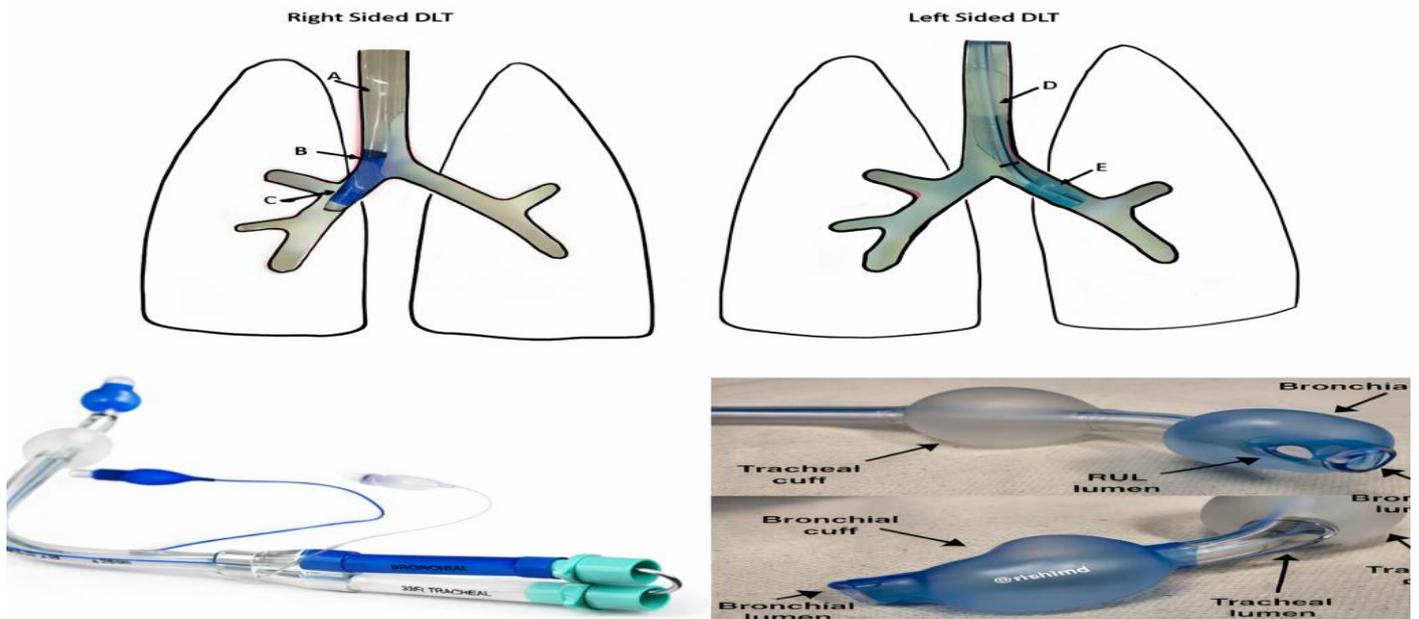
In thoracic anesthesia, **one lung ventilation (OLV)** is the term used in thoracic anaesthesia to describe the ability to ventilate one of a patient's lungs, allowing the other one to collapse.

Techniques for OLV

There are **3 devices** that can be inserted to achieve one lung ventilation:

a double lumen tube, a bronchial blocker, or a single lumen tube inserted beyond the carina.

Double lumen tubes (right- and left-sided tubes)



A bronchial blocker: is a device that is inserted into a conventionally placed single-lumen tube.

Overcoming hypoxia during OLV

Because of the above changes in lung physiology, it is not uncommon for a patient to desaturate during OLV.

If this happens:

For sudden or severe desaturation:

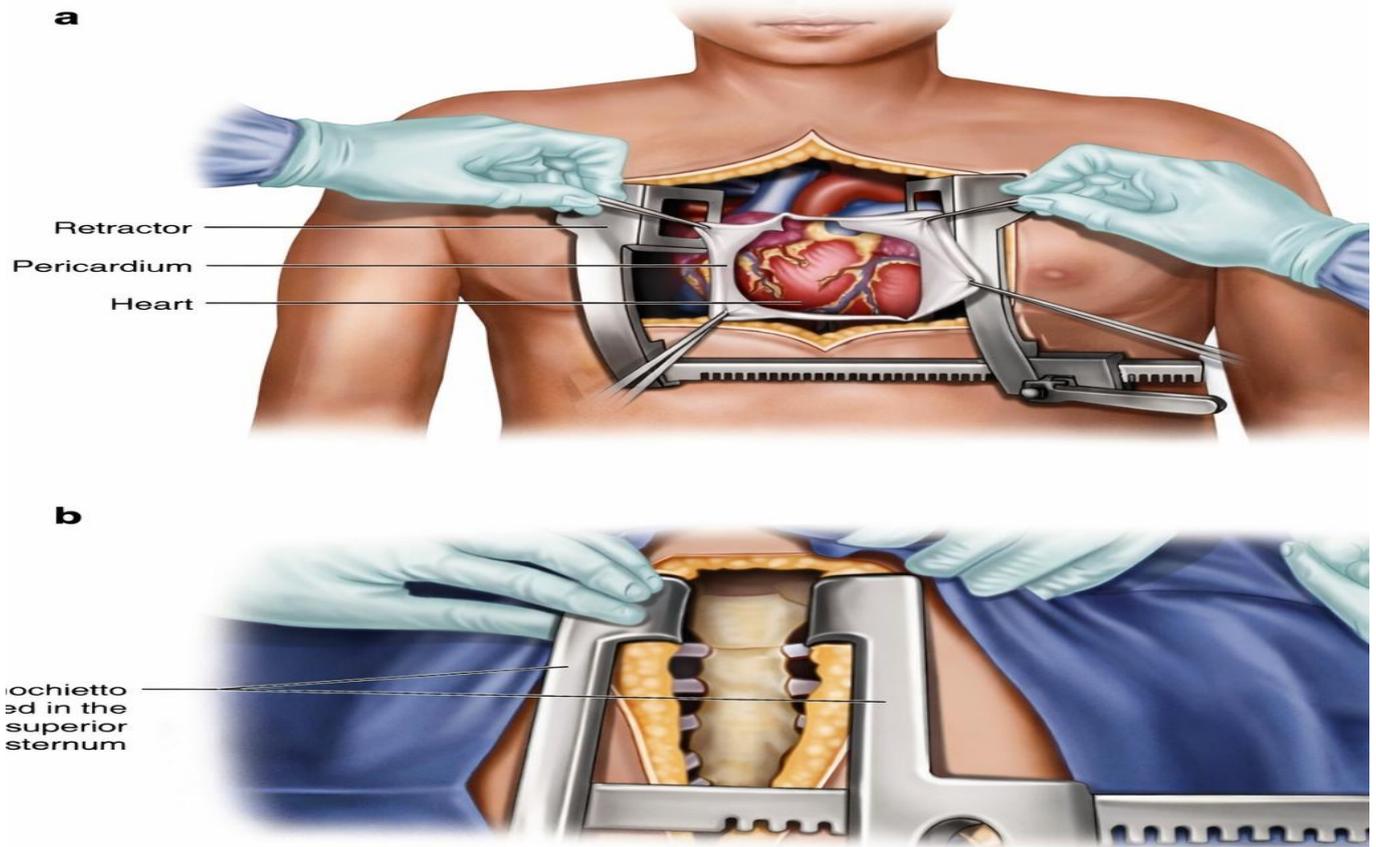
Convert to two-lung ventilation.

For gradual desaturation:

1. Tell the surgeon early rather than waiting for the saturations to plummet. It may be that you have to reinflate the lung temporarily.
2. Turn the inspired **oxygen up to 100%**.
3. Make sure that the patient's **blood pressure** has not dropped, as this may be the cause of desaturation.
4. **Tube** patency and position should be checked.
5. **Secretions** may be blocking the tube lumen.
6. Look at the **capnograph** trace. If it has changed, as a general rule, the tube has moved.
7. Applying positive end expiratory pressure (**PEEP**) to the ventilated lung
8. Application of continuous positive pressure (**CPAP**) to the non-ventilated lung may help
9. Intermittent **two-lung ventilation**.
10. If these methods **all fail**, the collapsed lung must be **reinflated** and the patient **ventilated** with **100%** oxygen.

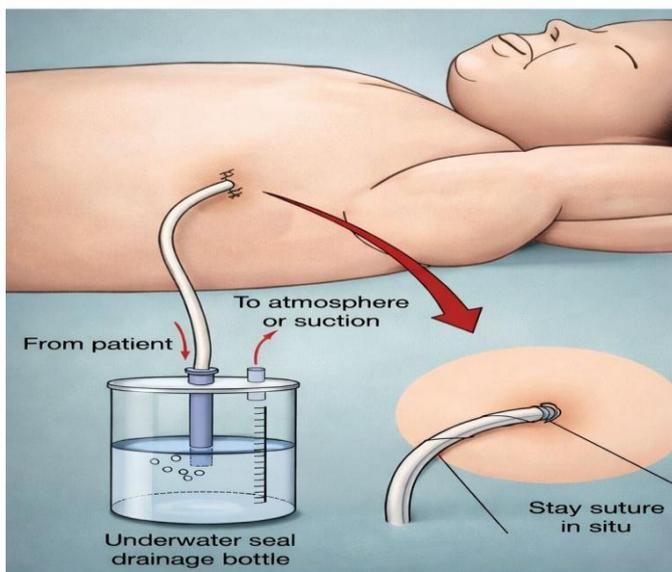
Thoracotomy

Median sternotomy in the supine position is used for access to the thymus, **retrosternal goiters** and [anterior mediastinum](#).



Lateral thoracotomy is used for most other thoracic operations. Accidental **pneumothorax** during thoracotomy can be caused; it is a **risk** during any operation near the pleura or where local blocks are performed in the region of the thorax.

It may be a cause of cardiovascular **collapse** and be **difficult to diagnose**. Puncture of the lung itself will **usually close spontaneously**, but **chest drains** are usually required as a precaution.



Underwater seal drain



Heimlich flutter valve

Postoperative considerations:

1. **Postoperative hypoxemia:** Patients who have undergone a thoracotomy will require oxygen in the immediate postoperative period **for 24 hours** and chest **physiotherapy**, factor may contribute to postoperative hypoxemia are:
 - A. **Pneumothorax:** which it should be excluded by a routine postoperative chest radiograph.
 - B. **Atelectasis.**
 - C. **Sputum retention.**
 - D. **Poor pain relief.**
 - E. **Fluid overload.**
2. **Cardiac arrhythmia:** The most common one after thoracotomy is atrial fibrillation.
3. **Torsion of the remaining lobe:** It may occur after lobectomy. The presentation may be **up to 2 weeks** postoperatively. Chest radiology shows engorgement and increased density of the affected lobe. Resection of the affected lobe is usual.
4. **Herniation of the heart:** Removal of the pericardium together with lung resection may allow the heart to be displaced from the mediastinum. Cardiovascular **collapse** is usually profound. Emergency reexploration is required.

Thank you
for listening

