



432 Surgery Team

10 Common thoracic diseases



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COLOR GUIDE: • Females' Notes • Males' Notes • Important • Additional

• Not included in exam

Objectives

Not given

Overview: structure and development of the lungs

- **Embryology**

- Bronchial system
- Alveolar system

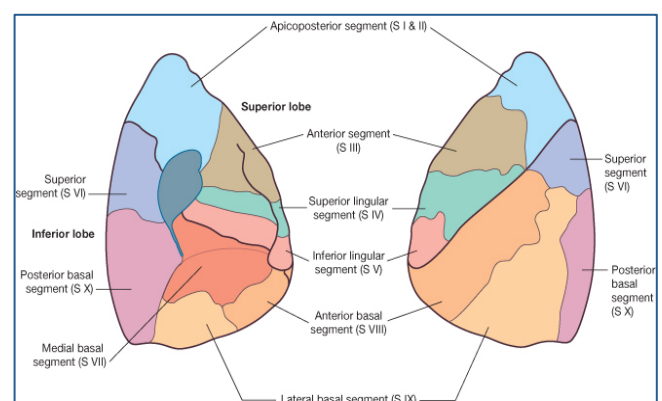
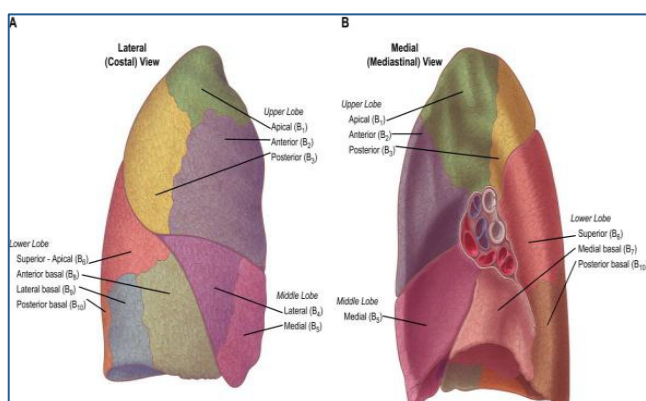
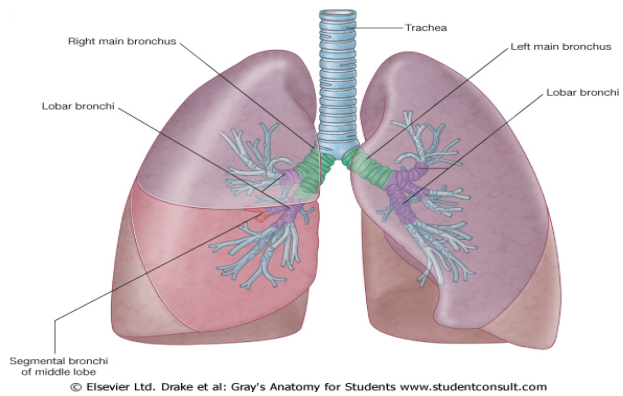
- **Anatomy**

- **Lobes and fissures**

- The right lung is divided into 3 lobes by the oblique and horizontal fissures
- The left lung is divided into 2 lobes by the oblique fissure

- **Segments**

- **Right lung:**
 - **Right upper lobe:** has **apical, anterior** and **posterior** segments
 - **Right Middle Lobe:** has **medial** and **lateral** segments
 - **Right Lower lobe:** has **superior** segment (also called apical lower) and **basal** segment which has all sides (**anterior, posterior, medial and lateral segments**)
 - **Left Lung:**
 - **Left upper lobe:** **Apicoposterior** and **anterior** segments
 - **Lingular part:**(acts as the middle lobe in the left lung, however it's originally part of left upper lobe) has **superior** and **inferior** segments
 - **Left lower lobe:** has **superior** segment (also called apical lower) and **basal** segment which has (**anterior, posterior and lateral segments**)
- *Medial segment usually is not there in the left lower basilar lobe to give space to the left ventricle.

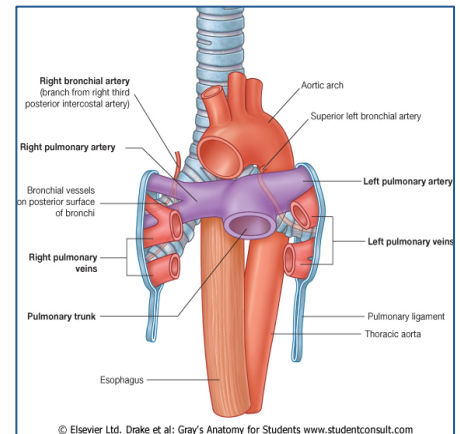


Bronchopulmonary segments

- **Blood supply**

- ✘ Lungs don't receive any vascular supply from the pulmonary vessels (pulmonary artery or vein) **pulmonary vessels function is oxygenation**
- ✘ Blood delivered to lung tissue via the **bronchiole arteries**
- ✘ Vessels evolve from aortic arch
Travel along the bronchial tree

****The blood supply to the lung is not strong but what helps is that the lung is filled with air and little tissue so it doesn't need lots of arterial supply****



- **Airways**

- Trachea, primary bronchi, secondary bronchi, tertiary bronchi **out to 25** generations
- All comprised of hyaline cartilage
- **Trachea**
 - Begins where larynx ends (about C6)
 - 10 cm long, half in neck, half in mediastinum
 - 20 U-Shaped rings of hyaline cartilage – keeps lumen intact but not as brittle as bone
 - Lined with epithelium and cilia which work to keep foreign bodies/irritants away from lungs
- **Bronchioles**
 - First level of airway surrounded by smooth muscle; therefore can change diameter as in broncho-constriction and broncho-dilation
 - Terminal
 - Respiratory
 - 3-8 orders
- **alveoli**

*Right primary bronchus is shorter, wider, and more vertical than the left primary bronchus. Therefore, **when foreign bodies are aspirated, they often lodge in the right main bronchus.***

Bronchopulmonary segments:

*Each of the tertiary bronchi serves a specific **bronchopulmonary segments**. There are 10 segments in the right lung and 8-10 segments on the left and each **have their own artery**. Each segment is a discrete anatomical and functional unit, so a segment can be **surgically removed without affecting the function of the other segments.***

Lung diseases

Congenital	Infectious	tumors
<ul style="list-style-type: none"> • Agenesis • Hypoplasia • Cystic adenomatoid malformation • Pulmonary sequestration • Lobar emphysema • Bronchogenic cyst 	<ul style="list-style-type: none"> • Lung abscess • Bronchiectasis • Tuberculosis • Aspergillosis • Hydatid cyst 	<ul style="list-style-type: none"> • Malignant <ul style="list-style-type: none"> ○ Primary lung carcinoma ○ Secondary lung carcinoma • Benign

1. Congenital

- **Agenesis** : absence of the lungs
- **Hypoplasia** : incomplete development of the lungs

- **Congenital Cystic Adenomatoid Malformation (CCAM):** A cystic area within the lung that stems from abnormal embryogenesis. **Usually an entire lobe of lung is replaced by non-functioning cystic area of abnormal lung tissue.**

- **Pulmonary Sequestration:** It consists of a nonfunctioning mass of normal lung tissue that lacks normal communication with the airways, and often receives its own arterial blood supply from the systemic circulation (esp. thoracic aorta). Most of the time it is located in the left lower lobe. Treated surgically to prevent infections. ***patient presents with cough-pain-abnormal looking x-ray and repetitive chest infections**

- **Lobar Emphysema:** Over-inflation of a pulmonary lobe (replacement of a whole lobe by **bullae**) which may **compress the other remaining normal lobes**. Air enters the lung but cannot leave easily causing respiratory function to decrease. Treated surgically (lobectomy) in serious cases to allow normal lung to inflate.
 - *usually we see lobar emphysema in infants**
 - * It's an emergency**
 - *baby presents with hypoxia, tachypnea, tachycardia**
 - * If a ventilator is used it will worsen the case as it makes the bullae larger "positive pressure ventilation"**

CCAM:
 -Presenting clinical features include: respiratory distress and recurrent respiratory infections.
 -The usual appearance of CCAM on CXR is a mass containing air-filled cysts (Swiss cheese pattern)

Pulmonary Sequestration:
 -Sequestrations are classified anatomically into intralobar and extralobar.
 - Usually presents in adolescence or late childhood as **repetitive chest infections** that fails to respond to medical treatment. It appears on CXR as an opaque mass. Diagnosed by MRI/arteriography.

Lobar Emphysema:
 Diagnosed by respiratory symptoms and CXR, which shows over-inflation of the affected lobe (radiolucency).

* leads to compression of normal parts of the lung and herniation of the affected lobe across the anterior mediastinum into the opposite chest, causing displacement of the mediastinum

- **Bronchogenic Cysts :**

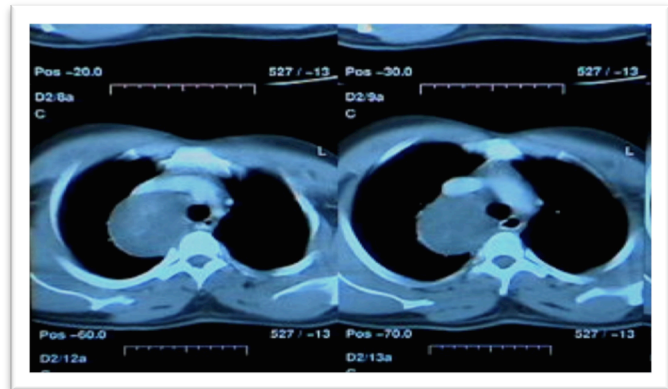
- **They can be located**

- In the mediastinum **most commonly attached to trachea or below the carina (paratracheal or subcarinal)**
- Or within the lung parenchyma (intraparenchymal)

- **Clinical features**

- They consist of semi-solid cartilaginous that **secretes cheese like material**, which is prone to infections. It may also result in **hemorrhage** and **compression of the surrounding structures (i.e. trachea, aorta, and esophagus)** patient then complains of **SOB, stridor, cough and dysphagia.**
- Could be asymptomatic found accidentally on CXR as a smooth opacity.
- They may transform to malignant adenocarcinoma. **Rare**

- **Treatment:** surgical excision is done to confirm diagnosis, avoid complications such as malignancy, rupture, infection, and compression on vital organs.



Bronchogenic cyst: Opacity in the right side which compresses the trachea → trachea is deviated to the left side .
(trachea is a midline organ. When it's deviated it means there's a pathology.
Either pushed or pulled, pushed by space occupying lesion such as thyroid, cyst, pneumothorax, hemothorax, pleural effusion. Pulled if there's loss of space, such as lung collapse, post lobectomy, and postneumonectomy)

Chest CT scan

"mediastinal window; computer will omit lungs and focus only on mediastinum"
Right paratracheal mass with a semi-fluid density. It has to be excised to establish diagnosis and prevent any complications such as hemorrhage, infections or compression of:
- main arteries (aorta & vena cava)
→ superior vena cava obstruction
- esophagus → dysphagia
- trachea → stridor
In rare cases malignancy; adenocarcinoma

2. Infectious

▪ Lung abscess

- **Causes:** As a complication of pneumonia, bronchial obstruction (by tumor or inhaled foreign bodies esp. in children) bacteremia, and septic emboli.
- **Clinical features:** **copious production of foul smelling sputum**
- **Investigations:**

o CXR (air-fluid level)

o CT scan

• **Treatment:**

o Antibiotics **we start with it first with supportive management "IV fluid, admission, observation" if it doesn't work then we go for drainage or surgery**

o Drainage: internal and external

o Pulmonary resection (surgical treatment)

Indications:

1. Failure of medical treatment

2. Giant abscess (>6 cm)

3. Hemorrhage (patient presents with hemoptysis)

4. Inability to rule out carcinoma. e.g. a 65 y/o very ill smoker presented with cough, chest pain, fever and hemoptysis.

Chest x-ray: air-fluid level abscess in right upper lobe. CT

scan: abscess with a very thick wall → can have lung cancer superimposed by abscess

5. Rupture with resulting empyema

• **Type of resections:**

o Lobectomy (main) or bilobectomy (2 lobes)

o Pneumonectomy **very rare**

▪ Bronchiectasis

• **Definition:** Bronchial dilatation, usually affecting the lower lobes

• **Causes:**

o Congenital (i.e. cystic fibrosis and immotile cilia syndrome)

o Infection (repeated pulmonary infections and childhood infections)

o Obstruction (by tumors/ inhalation of foreign bodies)

• **Clinical features:**

o **Cough mostly in morning** with copious amounts of sputum **"due to accumulation of sputum during night"**

o Dyspnea



clinical Features of Lung Abscess:

-Gradual onset

-**Productive cough**

-**High fever "doesn't respond to antipyretic & antibiotic"**

-Night sweats

-Weight loss & lethargy

- Chest pain (pleuritic)

Empyema:

collection of pus in an anatomical cavity (e.g. pleural empyema)

immotile cilia syndrome:

- bilateral

- Lung transplant is needed in old age.

development of childhood vaccinations has reduced the incidence of bronchiectasis due to whooping cough, measles and TB.

- o Hemoptysis (50%)
- o Clubbing (it is a chronic disease)

- **Types:**

- o Cystic **seen in surgery**
- o Cylindrical **seen in medicine**

- **Investigations:**

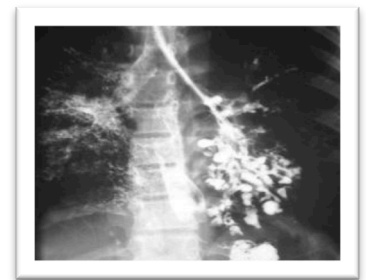
- o Bronchogram (invasive)
- o CT scan (**more accurate**)
- o Bronchoscopy (not commonly used nowadays)
- o CXR (cystic formation)

- **Treatment:**

o **Medical:** Resolve most cases (bronchodilators, antibiotics, and physiotherapy with postural drainage)

- o **Surgical indications:**

1. **Failure of medical treatment**
2. **Cystic dilatation (not cylindrical which is treated medically)**
3. **Localized disease**
4. **Not perfused (assessed by V/Q scan), most of cystic bronchiectasis are not perfused whereas most of cylindrical are perfused.**



E.g. A child inhales a foreign body → bronchial tree obstruction (> right main bronchus) → mom explains her child was ok 6 months ago but now he has been getting repetitive chest infections/SOB Wheezing → suspect foreign body inhalation bronchiectasis

cystic/Localized/ Non-perfused → surgical Cylindrical/Bilateral/ Perfused → medical

- **Tuberculosis**

- **Cause:**

- o Pulmonary
- o Extra-pulmonary (**lymph nodes and pleural cavity**)

- **Investigations:**

- o CXR (**more in apex**)
- o AFB sputum culture (if positive confirms TB)
- o Tuberculin skin test (latent TB)
- o Bronchoscopy
- o Chest CT scan (infiltration, abscess formation, lymph nodes)
- o Mediastinoscopy (caseating granuloma)

- **Treatment:**

o Medical: Effective in most cases

- o **Surgical indications**



Active(open) TB should be managed medically for 4 weeks prior to surgery because of the risk of infection spread

Left lung is completely destroyed & collapsed. Trachea is pulled because there's loss of space, volume and fibrosis. Lung is fully diseased "end sequel of TB". occurs mainly in the left lung and it blocks the trachea causing bronchiectasis. This is called **Left bronchus syndrome** Which is a Chronic condition that leads to unilateral post TB lung destruction as a result of untreated/ resistant TB

1. Failure of medical treatment
2. Destroyed lobe or lung
3. Pulmonary hemorrhage
4. Persistent open cavity with positive sputum
5. Persistent broncho-pulmonary fistula

Cases with advanced TB could also present with abscess formation, bronchiectasis or Empyema → referred to surgery

▪ **Aspergillosis** "doctor said just quickly read through it"

• **Cause**

o **Aspergillus fumigatus, Aspergillus niger**

• **Mode of Transmission**

- o Inhalation of airborne conidia
- o Contaminated water (during showering)
- o Nosocomial infections (hospital fabrics and plastics)

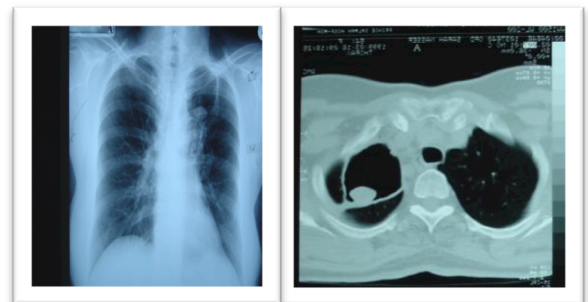
o **Esp. in immunocompromised individuals & can be associated with TB**

• **Forms:**

- o Allergic (allergic bronchopulmonary aspergillosis)
- o Saprophytic (aspergilloma/mycetoma) → **characterized by Asp infection without invasion. The most common underlying causes are TB and sarcoidosis**
- o Invasive

• **Clinical features**

- o Aspergilloma/mycetoma
 - Comes with a warning sign of **hemoptysis**
 - At this stage, the doctor must act quickly because morbidity and mortality are very high in these patients
 - Hemoptysis (patient with preexisting disease)
 - Chronic productive cough
 - Sometimes found accidentally on CXR



The mass is usually movable when the patient is in supine position

• **Investigations:**

- o Skin test
- o Sputum (fungal culture)
- o Biopsy (invasive)
- o CXR (**radiolucent**)
- o CT scan (cavity with aspergilloma complex and **air crescent sign**, DDx TB)

• **Treatment:**

- o Medical (anti-fungal)
- o Surgical indications:

- A significant aspergilloma (with serious clinical features)
- Hemoptysis "**massive**"
- **Types of resection:** depends on the affected side
 - Segmentectomy
 - Lobectomy (mainly)
 - Pneumonectomy

▪ Hydatid cyst

• **Definition:**

- o Parasitic infestation by **Echinococcus granulosus (tapeworm)**
- o Hosts: dogs, cats, and sheep (e.g. **by eating raw contaminated sheep liver**)

• **Clinical presentation:**

- o Asymptomatic (accidentally found)
- o Symptoms are the result of compression by the cyst (e.g. dyspnea)

• **Diagnosis**

- o Skin test (Casoni's reaction)
- o CXR
- o CT scan (a chronic cyst will appear calcified on CT)
- o High echinococcus titers and other serologic tests
- o Routine blood work (nonspecific)

• **Treatment**

- o **Radical surgical excision** (cyst resection or partial affected organ resection) coupled with chemotherapy using albendazole and/or mebendazole before and after surgery.
- o If multiple cysts are present in multiple organs **surgery becomes impractical and chemotherapy is indicated.**

* **Transmission:**

Dog (definitive host) → sheep (intermediate host) → **scolex** is transmitted to human by eating **raw sheep liver** → intestine → portal system → liver → IVC → heart & lungs → systemic...

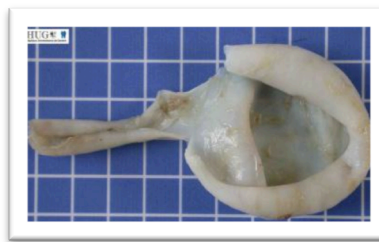
****The liver is the most common organ involved followed by the lungs. Brain, bones, kidneys can also be involved**

* **Hydatid cyst layers:**
 1- adventitia "outer pericyst" false layer composed of host cells that are formed as a reaction to the parasite.

2- the middle laminated membrane (external layer of cyst)
 3- the inner germinal layer of cyst where the scolices are produced and contained.
2+3 are true layers

Surgeon must be careful during this procedure, each cyst contains millions of highly infective scolex. Rupture will lead to scolex being spilled into surrounding cavities leading to formation of new cysts..

Injection of scolicidal agents such as **hypertonic 20% saline** is used during surgery to **kill scolex** "**hypertonic saline is poured into the cyst before opening; to protect the surrounding areas before doing anything → then open & excise**"



3. Tumors

- Benign
- Malignant
 - Primary
 - Secondary

Primary lung carcinoma:

- **Incidence:** worldwide, lung cancer is the most common cause of cancer death
- **Risk factors:** smoking "most important"
Others/ radiation, industrial chemicals, diet, genetic factors, asbestos and radon
- **Pathology**
 - **Non-small cell carcinoma (NSCLC)**
Adenocarcinoma - squamous cell carcinoma - large cell carcinoma
 - **Small cell carcinoma (SCLC)**
- **Classification:** must differentiate between NSCLC & SCLC because treatment approach is completely different

NSCLC	SCLC
<ul style="list-style-type: none"> • Epithelial origin • 75-80% 1. Adenocarcinoma (40%) "<u>most common</u>" Peripherally located 2. Squamous cell carcinoma (30%) Centrally located 3. Large cell carcinoma (9%) "<u>least common</u>" Peripherally located • Treatment <ul style="list-style-type: none"> ▪ Early → surgery (+/- adjuvant chemotherapy) ▪ Intermediate → Neoadjuvant chemotherapy + surgery ▪ Late/metastasis → Non-surgical (chemo/radiotherapy + palliative management) 	<ul style="list-style-type: none"> • Neuroendocrine origin • 20%-80% • Centrally located • Poor prognosis • Patient usually present with systemic disease (e.g. Large mediastinal LAD) • Mostly discovered late when tumor has already metastasized • Treatment Non-surgical (chemotherapy only +/- radiotherapy) because tumor is usually discovered late when metastasis is extensive and the patient develops <u>systemic symptoms with massive mediastinal lymphadenopathy</u>

* **Neoadjuvant chemotherapy** → chemotherapy before the surgery (to downsize the tumor)

* **Adjuvant chemotherapy** → chemotherapy after the surgery

- **Clinical Features:**
 - Asymptomatic → accidentally on CXR
 - Symptomatic
 - **Lung manifestations** (most commonly cough, hemoptysis, SOB...)
 - **General manifestations** (loss of appetite, fever, weight loss, fatigue)

Horner's syndrome:
Characterized by special triad of miosis, partial ptosis and loss of hemifacial sweating "anhidrosis"

Pancoast tumor:
Superior sulcus tumor injury of C8 & T1 causing shoulder pain that radiates to arm

- **Surrounding structures:**
 - Recurrent laryngeal nerve (e.g. hoarseness)
 - Esophagus (dysphagia)
 - C8, T1 nerve (arm pain/numbness)
 - Sympathetic (esp. 1st sympathetic ganglion: Horner's syndrome)
 - Pleural pain
 - **SVC obstruction syndrome** → SOB is the most common symptom and facial/arm swelling

- **Distal Para-neoplastic syndrome:**
 - PTH (hypercalcemia)
 - ADH (hyponatremia)
 - ACTH (Cushing's syndrome)
 - **Hypertrophic pulmonary osteoarthropathy (Pain and swelling "unknowing cause" of joints that doesn't respond to medical treatment and improves once tumor is resected)**

- **Investigations:**
 - o CXR (find a previous CXR for comparison, if lesion is stable for more than 2 years, it is most likely benign)
 - o Bronchoscopy (for central lesions as with squamous lung CA and SCLC)
 - o Transthoracic needle aspiration (for peripheral masses, CT guided)
 - o **CT scan (best modality for staging extent of metastasis)**
 - what's the best modality for diagnosis? → exam question
 - o MRI (poor modality in staging, it's helpful to rule out involvement of major structures in the apex: brachial plexus, vertebral column, and spinal cord e.g. superior sulcus tumor)

- **Staging:**

NEW INTERNATIONAL REVISED STAGE GROUPING

Stage 0	TIS
Stage IA	T1,NO,MO
Stage IB	T2,NO,MO
Stage IIA	T1,N1,MO
Stage IIB	T2,N1,MO
Stage IIIA	T1-3,N2,MO
	T3,N1,MO
Stage IIIB	T4,Any N,MO
	Any T,N3,MO
Stage IV	Any T, Any N, M1

N1 → inside the lung N2 → outside the lung towards mediastinum hilum
 N3 → supraclavicular or to the other side

Management depends on :

- **Stage** (tumor size, LN involvement, metastasis to liver, bone and brain) done by CT scan
- **Cell type**
- **Patient physical fitness** (tumor might be of an early stage but the patient has other comorbidities)
 e.g. old cardiac patient with metastasis → not able to tolerate surgery → we have to consider other management

Secondary lung carcinoma

- Neoplasm that have spread from a primary lesion in another organ
- Secondary lung tumors appear as **solitary lung nodules** (well-marginated, single mass <3cm, intraparenchymal opacity)
- **Solitary lung nodule DDX:** (coin lesions)
 - Primary carcinoma
 - Tuberculous granuloma
 - Mixed tumor
 - ° 2 Carcinoma (metastatic)
 - Miscellaneous
- **Hamartoma – carcinoid**
 - Age : > 50y/o
 - Sex: males 3 times more likely than females
 - x-ray (usually peripherally located)
 - size: small <4cm in diameter, rounded
 - Time: grows slowly
 - Most common type of benign lung tumors

~~~~~  
*Benign Vs. malignant solitary pulmonary nodules:*  
**- Benign**  
Age <50 , non-smoker  
Size <2cm, no growth over 2 year period.  
Circular and regular shaped. Central laminated/concentric calcification.  
**- Malignant**  
Age > 50, smoker, size >3cm  
Steady growth, irregular nodule. Stippled/eccentric calcification  
~~~~~

Trauma

- RTA (road traffic accidents)
- Fracture ribs (simple/complicated)
Most common blunt thoracic injuries
- Haemothorax:
 - o Accumulation of blood in pleural cavity
 - o Appears as **radio-opacity** on CXR.
 - o Cause is mostly traumatic
- Pneumothorax → **traumatic pneumothorax can result from either penetrating or non-penetrating chest trauma. Iatrogenic pneumothorax is one of the most common causes (e.g. during transthoracic needle aspiration procedure)**
**** it's an emergency & if large/symptomatic treated with chest tube**
- **Flail chest:** Fractures of several adjacent ribs in two or more places producing a free unstable segment of chest wall that results in **paradoxical movement**. There is usually associated lung contusion.
- **Lung contusion and ARDS (no surgery needed unless massive bleeding)**
ARDS = acute respiratory distress syndrome

Mediastinum (doctor didn't cover this part during lecture)

- **Anatomy:**
 - o Mediastinum is the space in the thoracic cavity between the lungs
 - o Boundaries:
 - Superior → thoracic inlet
 - Inferior → diaphragm
 - Anterior → sternum & costal cartilages
 - Posterior → thoracic spine
 - Lateral → mediastinal pleura

- Divisions:
 - Superior mediastinum (above the sternal angle)
 - Inferior mediastinum (below the sternal angle) subdivided into: anterior, middle, posterior
- Access:
 - Mediastenscopy
 - Mediastenotomy
 -
- **Mediastinal mass lesions:**

Anterior mediastinum	Middle mediastinum	Posterior mediastinum
STS 1. Teratoma 2. Thyroid (retrosternal goiter) 3. TB lymphadenitis 4. T cell lymphoma 5. Thymoma	Cysts 1. <u>Pericardia cyst</u> 2. <u>Bronchogenic cyst</u>	Neurogenic tumors <u>(E.g. dumbbell tumor of neurofibroma, paravertebral mass..)</u>

- **Thymoma**
 - **Incidence: The commonest tumor of anterior mediastinum**
 - **Pathology:**
classification → Epithelial - Lymphocytic - Lymphoepithelial - Spindle cell
 benign Vs. malignant
 stages I, II, III, IV
 - **Clinical features**
 Asymptomatic
 Symptomatic
 - Mass effect → SVC syndrome, dysphagia, and cough
 - Systemic effect → associated autoimmune disorders, most commonly **myasthenia gravis** 40%-50%
 - **Investigations**
 - For all cases → CXR, CT Scan (can be indicative of malignancy), biopsy
 - For selected cases → Bronchoscopy, Esophagoscopy, Angiogram
 - **Treatment**
 - Benign → **complete excision**
 - Malignant → **complete excision if possible**
 If non-resectable (invasive and large) **neoadjuvant** chemotherapy and/or radiotherapy to decrease the size and improve resectability or incomplete excision

Chest wall "doctor didn't mention it in lecture"

- **Deformities:**
 - Pectus excavatum → caved in or sunken appearance of the chest
 - Pectus carniatum → protrusion of the sternum and ribs "pigeon chest"
- **Infections**
- **Chest wall tumor > benign**
- **Thoracic outlet syndrome**



Pleura

- **Spontaneous pneumothorax**
- **Pleural effusion:** collection of fluid in the pleural cavity
- **Empyema:** collection of pus in the pleural cavity
- **Mesothelioma:** rare cancer, usually caused by asbestos exposure

SUMMARY

1. **Lung structure & blood supply** → Blood delivered to lung tissue via the bronchiole arteries. When foreign bodies are aspirated they often lodge in **right main bronchus**. Each bronchopulmonary segment has its **own blood supply** so it can be surgically removed without affecting other segments.

2. **Lung diseases** → congenital: Agenesis, Hypoplasia, Cystic adenomatoid malformation, Pulmonary sequestration, Lobar emphysema, Bronchogenic cyst → **location: mediastinum/paratracheal or subcarinal. Lung/ intraparenchymal**

Complications: (SOB - stridor - cough - dysphagia - infection - hemorrhage)

Infectious :

Lung abscess → **copious production of foul smelling sputum. CXR: air fluid level.**

Indications of surgical treatment

Bronchiectasis → **cough mostly in the morning. Hemoptysis. Surgical indications**

Tuberculosis → **indications of surgery**

Aspergillosis → **esp. immunocompromised individuals. CT: Air-crescent sign.**

Hemoptysis.

Hydatid cyst → **Echinococcus granulosus. Liver is the most common organ affected followed by the lungs.**

Tumors :

- Benign
- Malignant → primary & secondary lung carcinoma

Primary lung carcinoma → **most important risk factor is smoking**

→ **NSCLC (Adenocarcinoma - squamous cell carcinoma - large cell carcinoma) & SCLC**

→ Differentiation between the two types is very important because the treatment approach is completely different for each type

→ **Management depends on 1- stage 2-cell type 3-patient physical fitness**

→ **Treatment for each type & stage**

→ **Clinical features : asymptomatic → accidentally on CXR**

Symptomatic → lung & general manifestations, surrounding structures, distal Para-neoplastic syndrome

Secondary lung carcinoma → appear as **solitary lung nodules**

3. **Trauma** →

- RTA,
- Fracture ribs
- Hemothorax (**radio-opacity on CXR**),
- Pneumothorax → **iatrogenic pneumothorax is one of the most common causes, it's an emergency & if large/symptomatic treated with chest tube**
- Flail chest → Fractures of several adjacent ribs in **two or more** places producing a free unstable segment of chest wall that results in **paradoxical movement**
- lung contusion and ARDS

4. **Mediastinum** → anatomy & Mass lesions

Mass lesions: Anterior mediastinum → **5TS**

Middle mediastinum → **cysts**

Posterior mediastinum → **Neurogenic tumors**

Thymoma: **the commonest tumor of anterior mediastinum**

Questions

- 1) Which one of the following thoracic diseases is treated by chest tube insertion?
 - a. Cavitating malignant lung mass
 - b. Cystic bronchiectasis
 - c. Large pneumothorax
 - d. Lung abscess

- 2) A 22 y/o female is referred for evaluation of 2cm posterior mediastinal mass discovered in routine chest radiograph. What is the most likely diagnosis?
 - a. Bronchogenic cyst
 - b. Lymphoma
 - c. Neurogenic tumor
 - d. Thymoma
 - e. Adenocarcinoma

- 3) Which one of the following is the most common blunt chest injury?
 - a. Pneumothorax
 - b. Hemothorax
 - c. Sternal fracture
 - d. Rib fracture
 - e. Pulmonary contusion



Answers:

1st Questions: **C**

2nd Questions: **C**

3rd Questions: **D**