

Presentation & Management Of Common Thoracic Diseases

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Consultant thoracic surgeon

The Lung

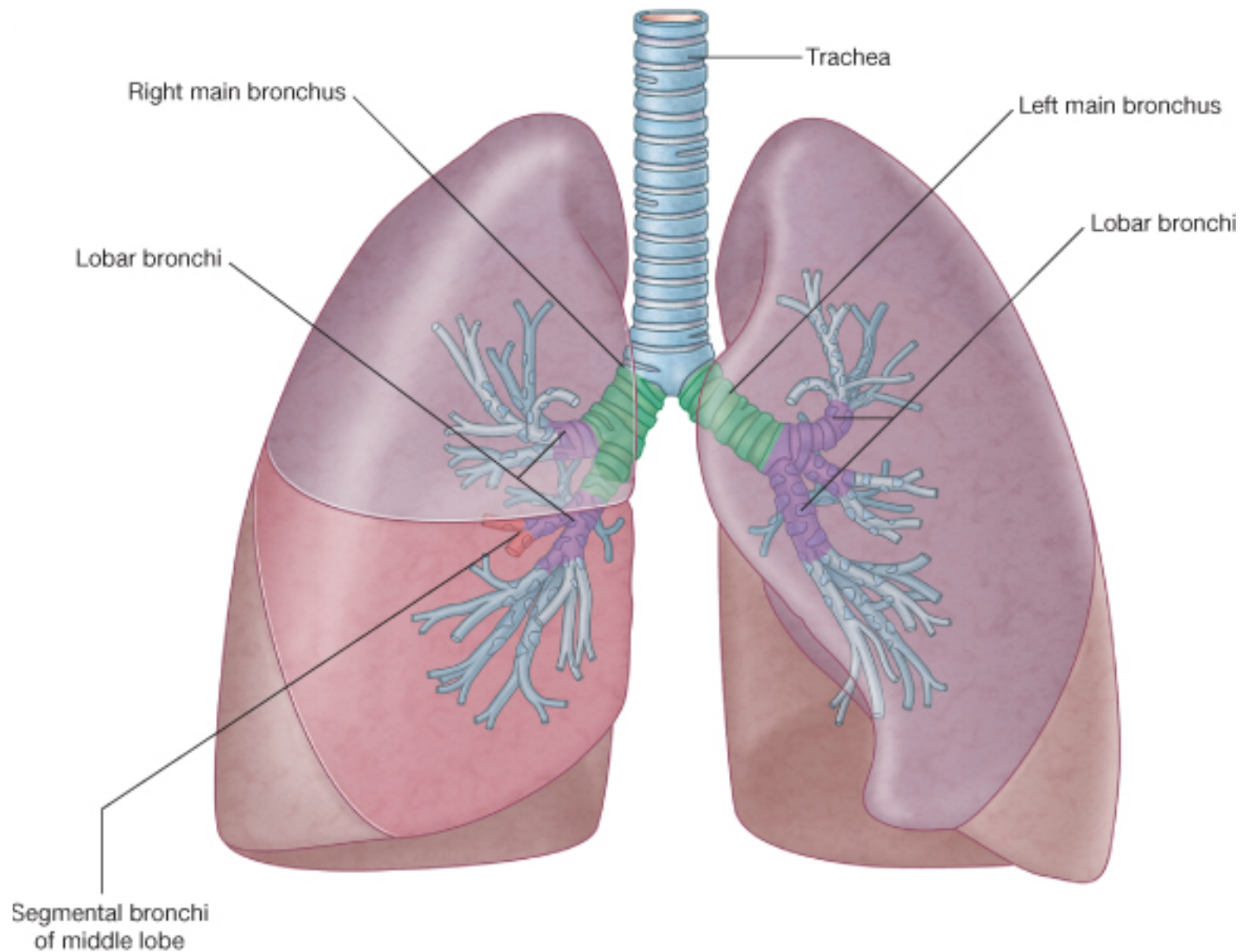
➤ Embryology

- Bronchial system
- Alveolar system

➤ Anatomy

- Lobes
- Fissures
- Segments
- Blood supply

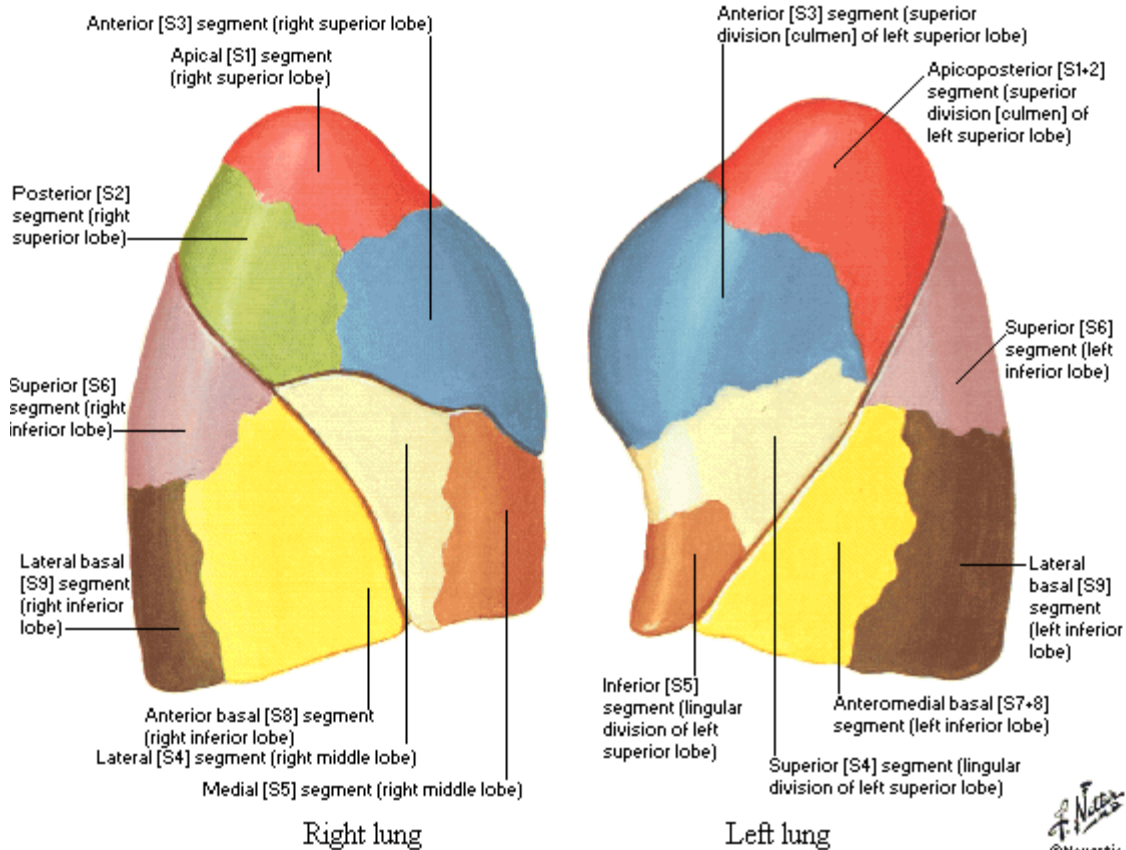
Airways



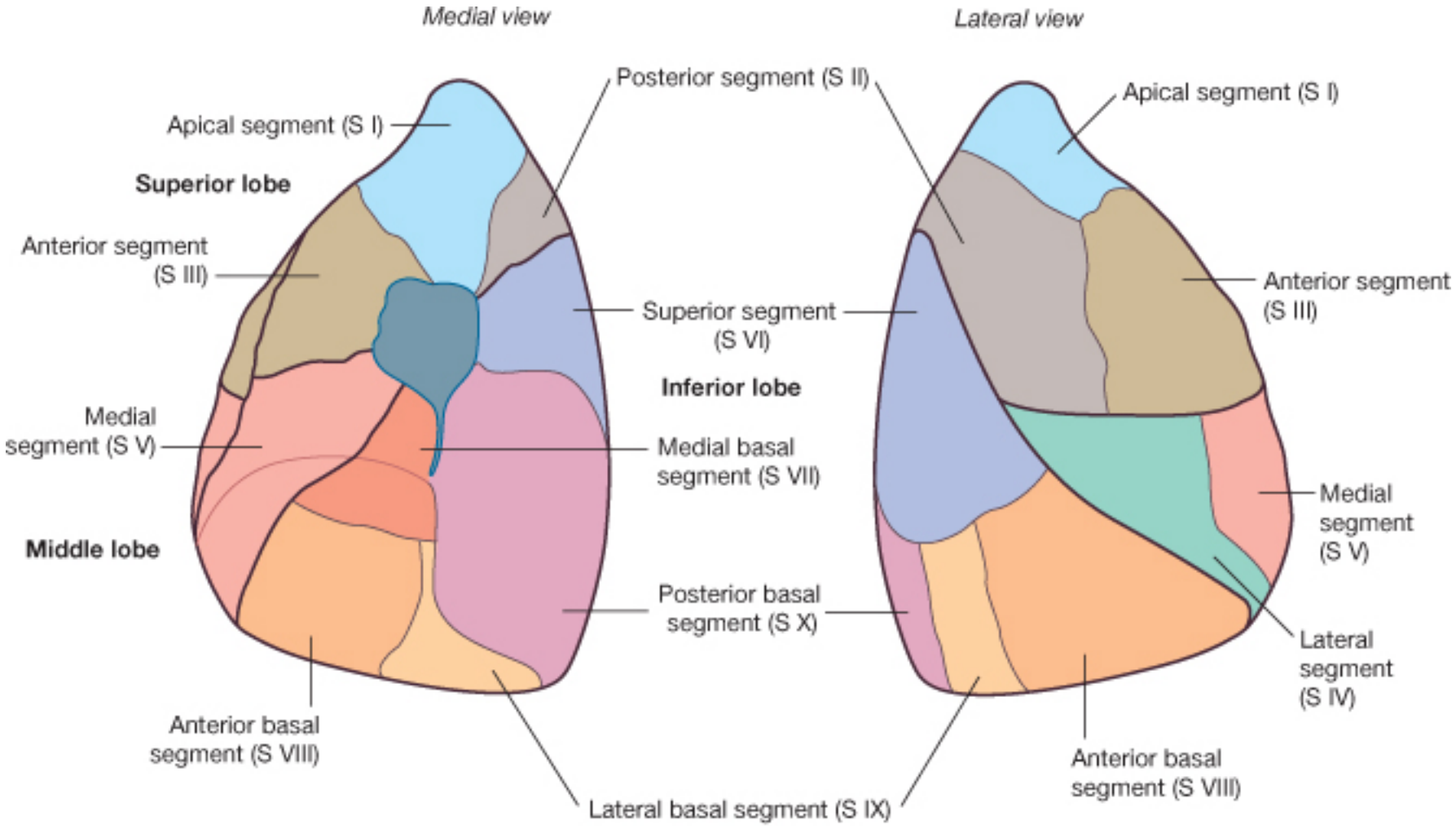
Bronchopulmonary Segments

Bronchopulmonary Segments

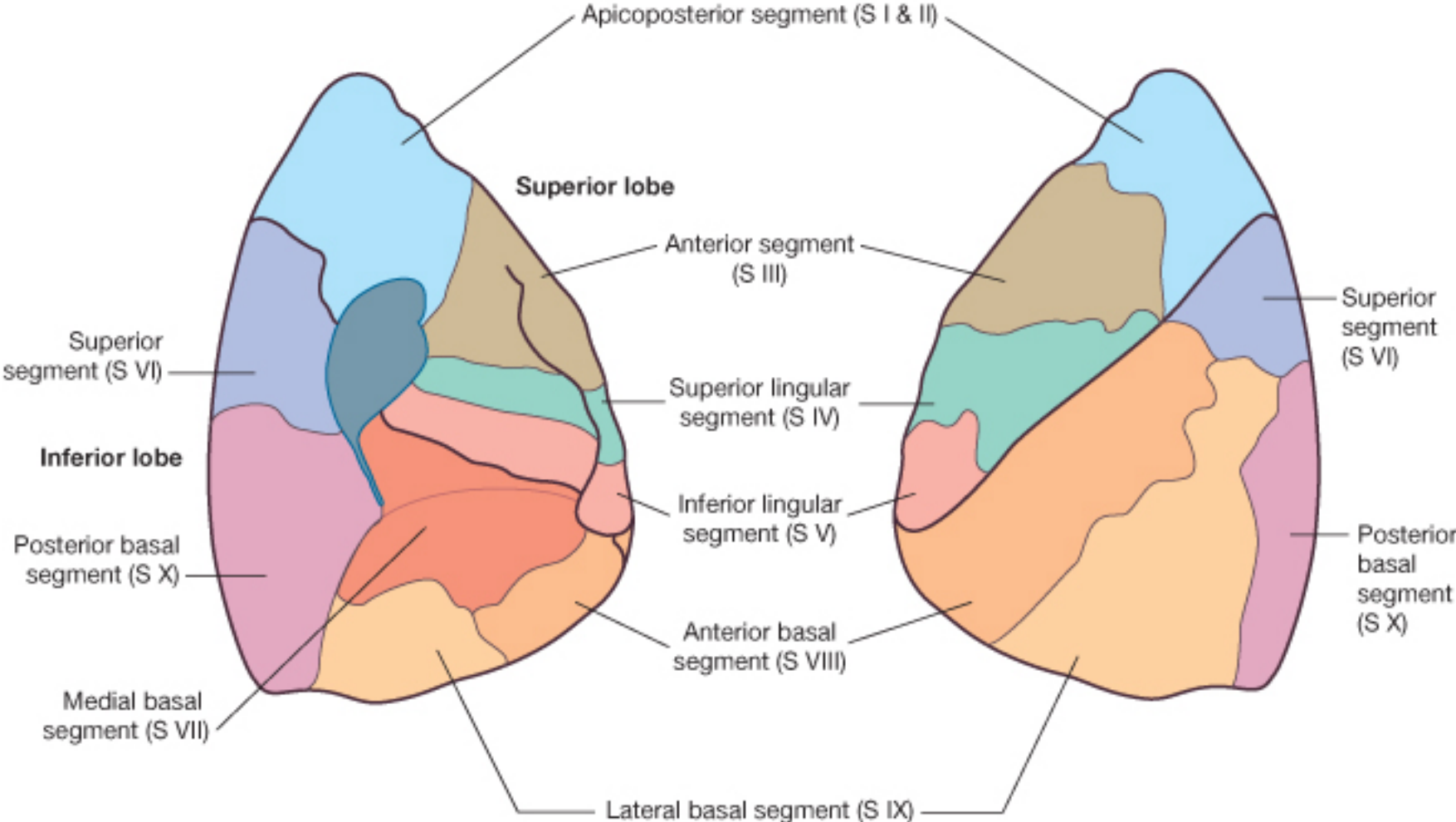
Lateral Views



Bronchopulmonary Segments



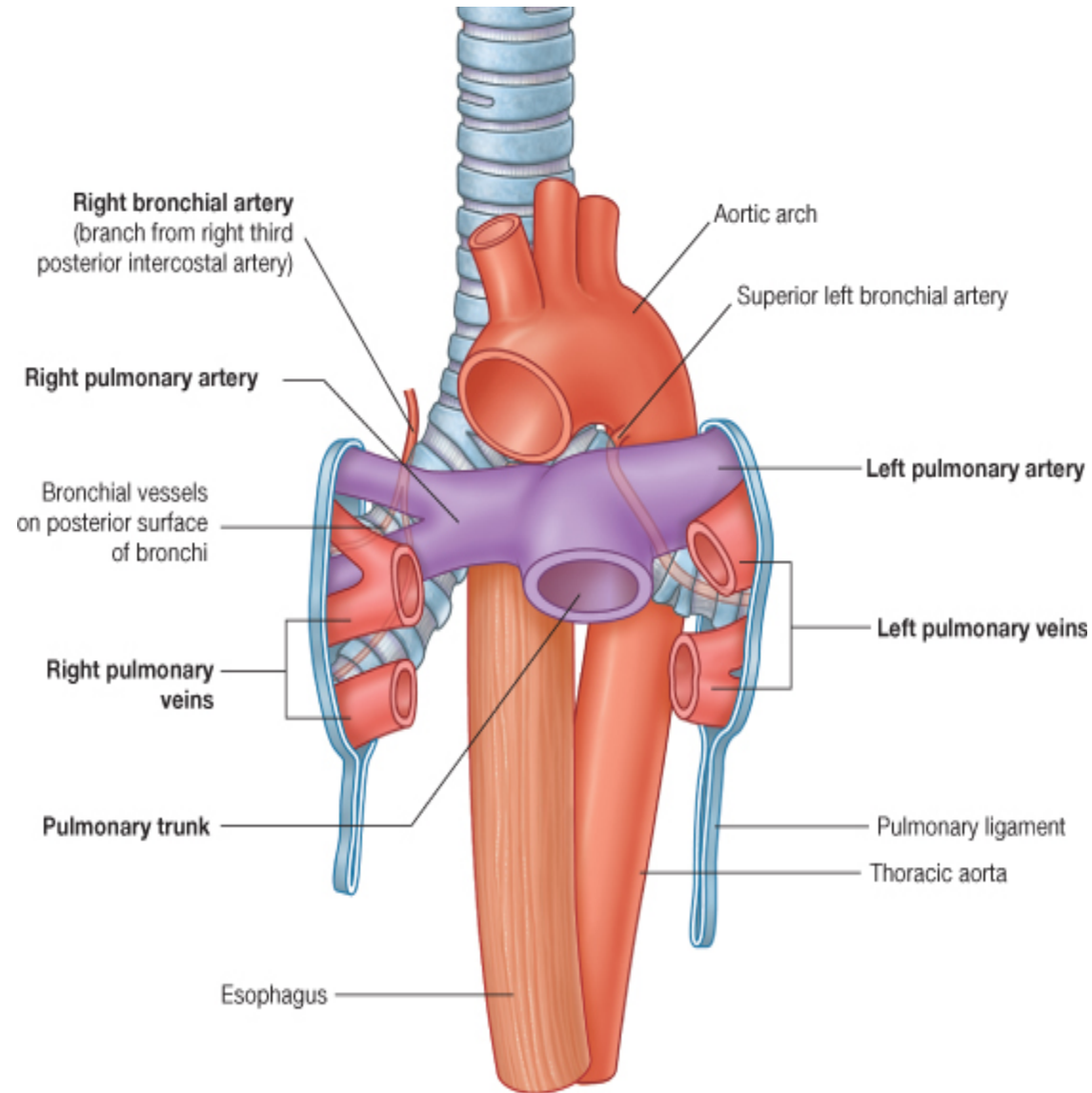
Bronchopulmonary Segments



Blood Supply

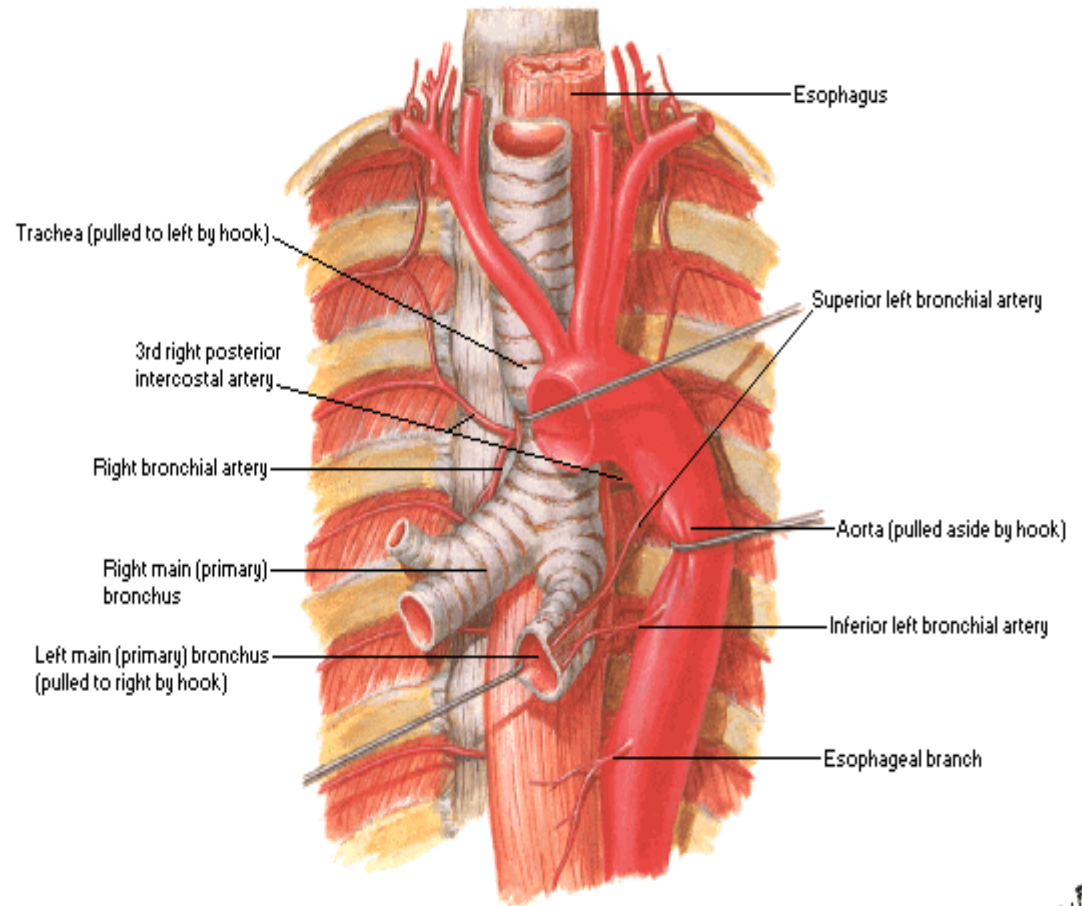
- Lungs do not receive any vascular supply from the pulmonary vessels (pulmonary aa. or veins).
- Blood delivered to lung tissue via the bronchiole arteries.
- Vessels evolve from aortic arch.
- Travel along the bronchial tree.

Blood Supply



Blood Supply

Bronchial Arteries

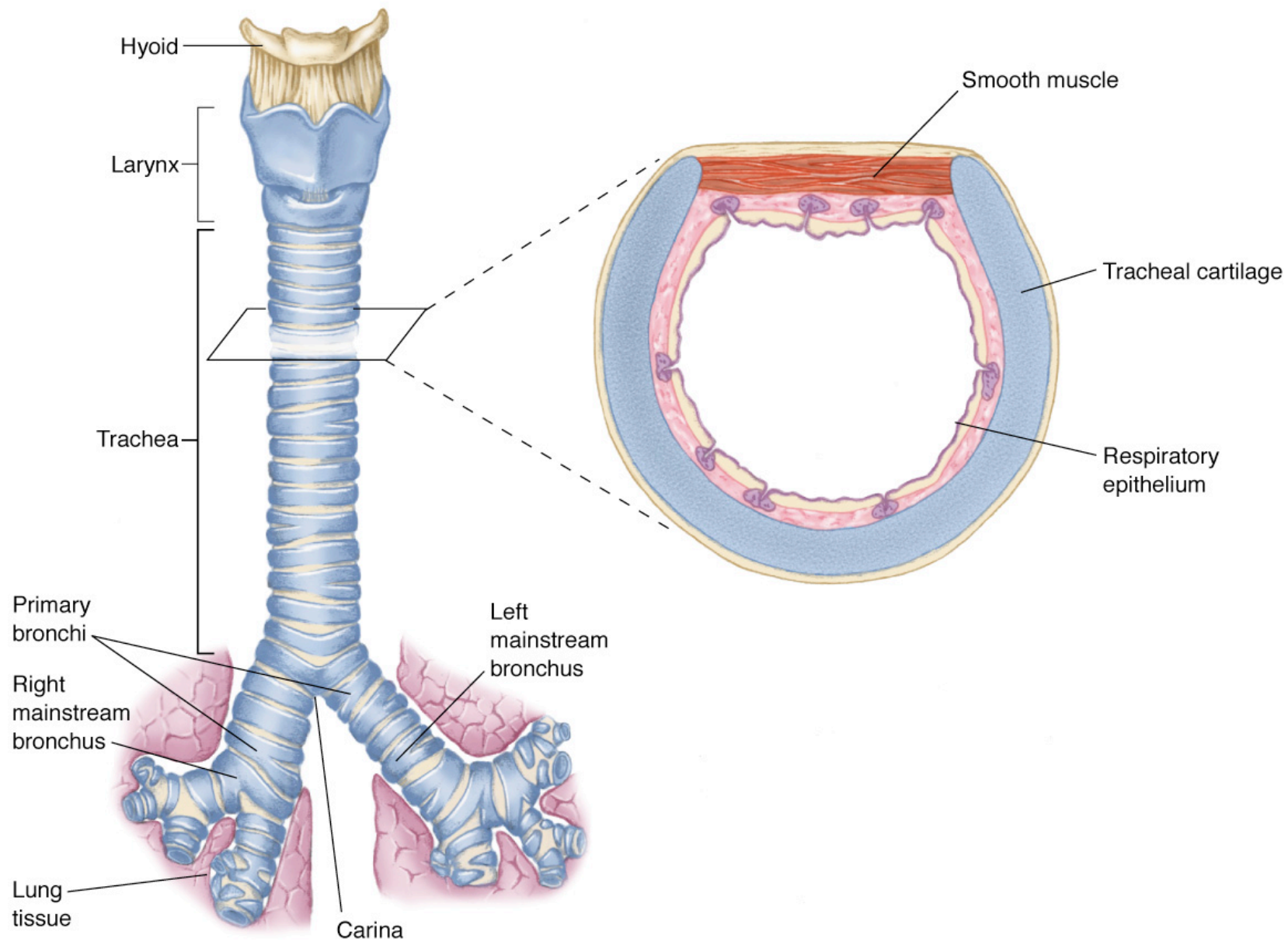


Airways

- 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

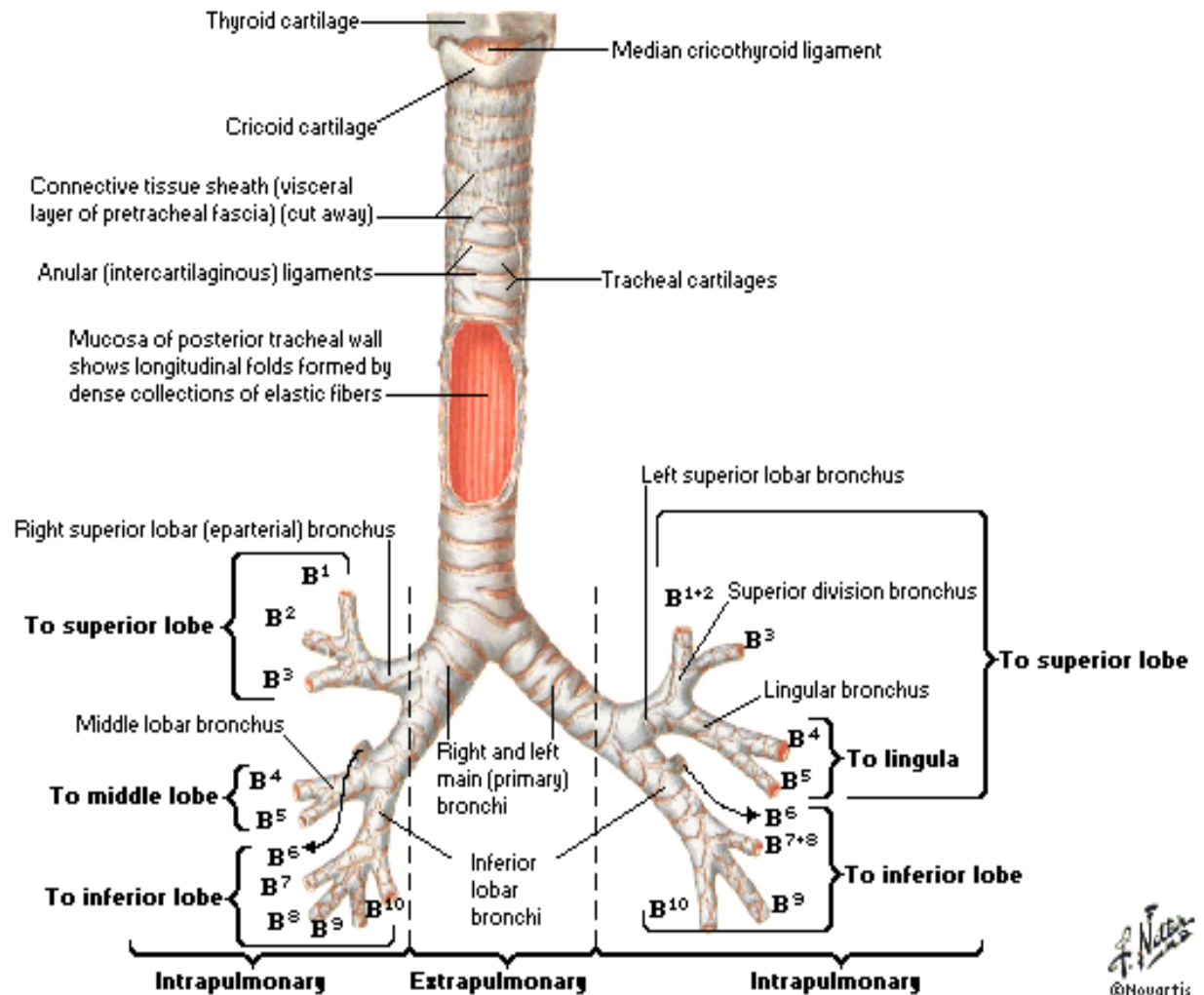
Bronchioles

- 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

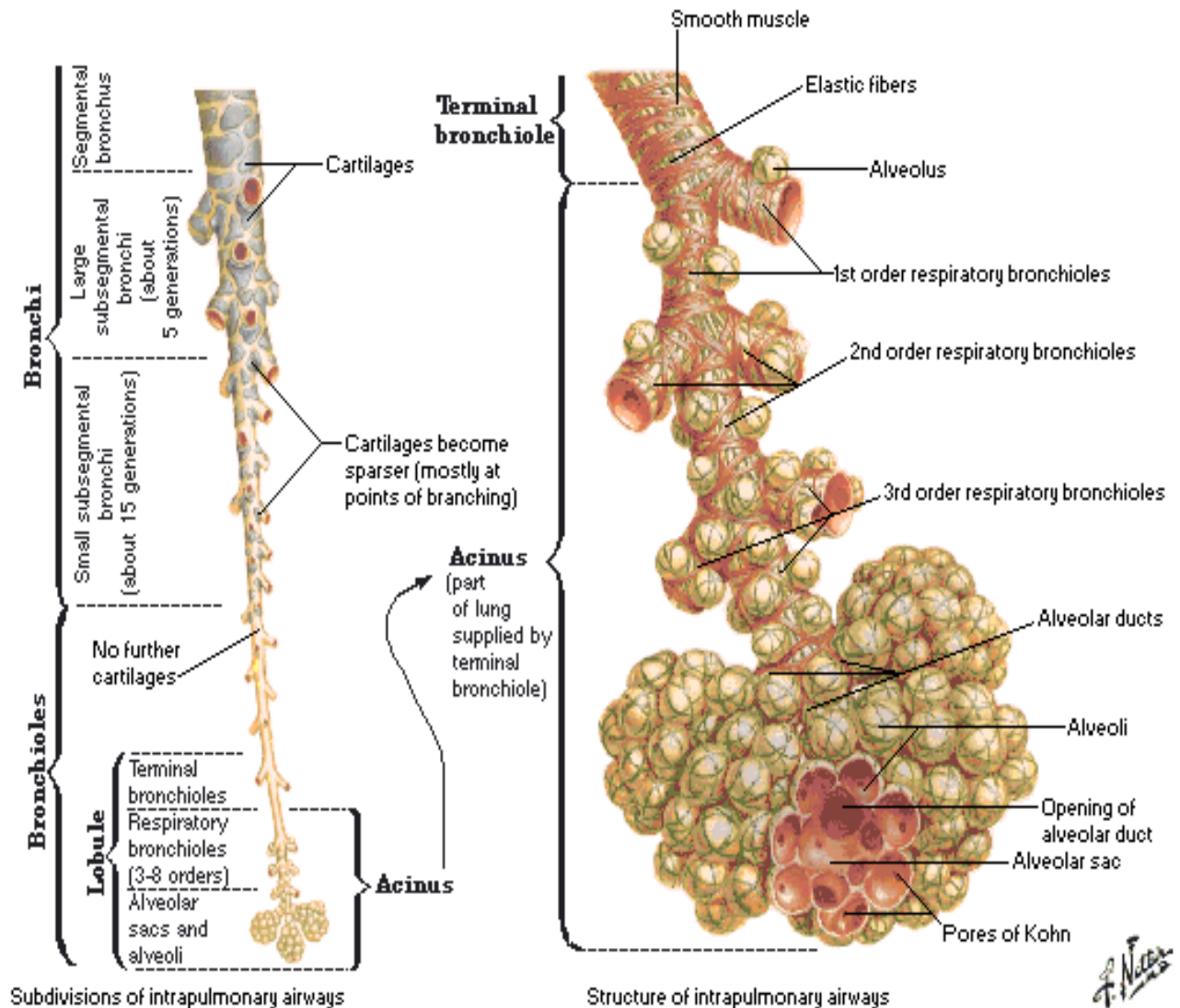


Trachea and Major Bronchi

Anterior View



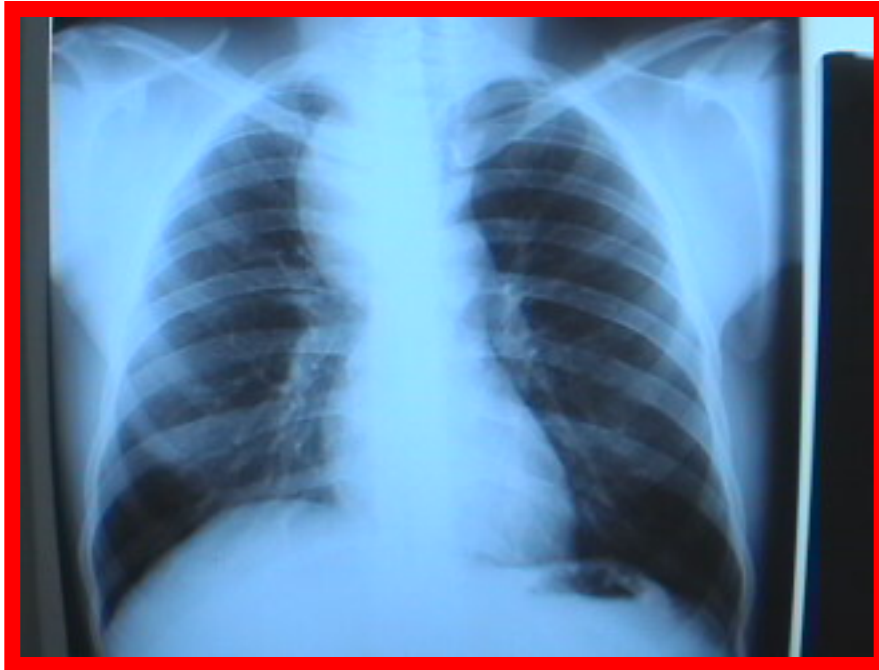
Intrapulmonary Airways Schema

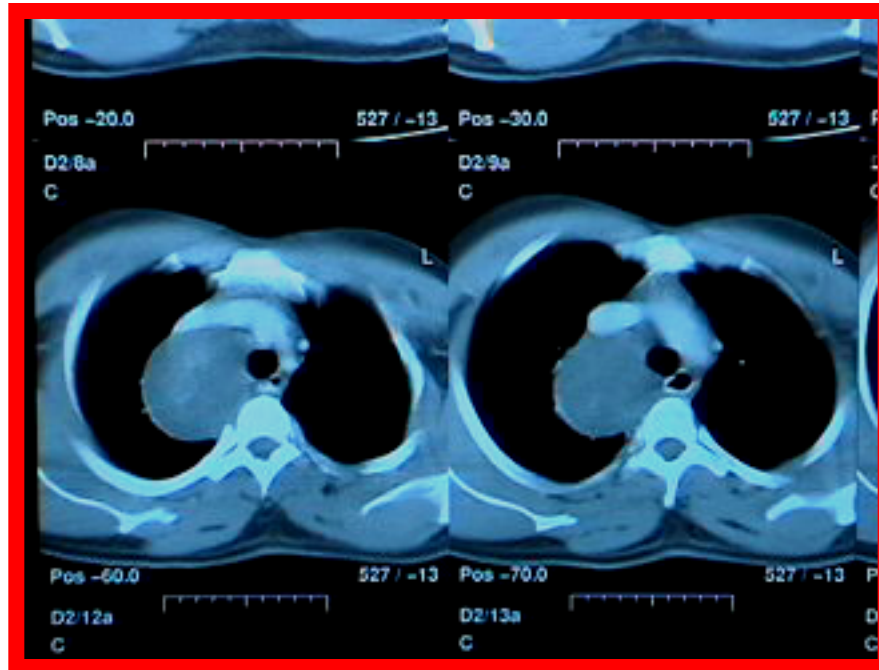


DISEASES OF THE LUNG

➤ **Congenital**

- **Ageneis.**
- **Hypoplasia.**
- **Cystic Adenomatoid Malformation.**
- **Pulmonary Sequestration.**
- **Lobar Emphysema.**
- **Bronchogenic Cyst.**





➤ Infectious

A. Lung Abscess

- Causes
- Clinical Features
 - Copious production of foul smelling sputum
 - Cough
- Investigation
 - C X R
 - CT Scan Chest





Treatment

- Antibiotics.
- Drainage:
 - Internal Drainage
 - External Drainage
- Pulmonary resection.
- **Indications:**
 1. Failure of medical management.
 2. Giant abscess (>5cm).
 3. Hemorrhage.
 4. Inability to Role Out carcinoma.
 5. Rupture with resulting Empyema.
- **Type of Resection**
 - Lobectomy.
 - Segmentectomy.

B. Bronchiectasis

Definition

Bronchial dilatation

Types

Cystic or Cylindrical

Causes

- Congenital
- Infection
- Obstruction, e.g. FB

Clinical Features

- Morning Cough, Productive
- Dyspnea
- Hemoptysis (50%)
- Clubbing

Investigation

- Chest X-ray
- CT Scan chest
- Bronchogram
- Bronchoscopy

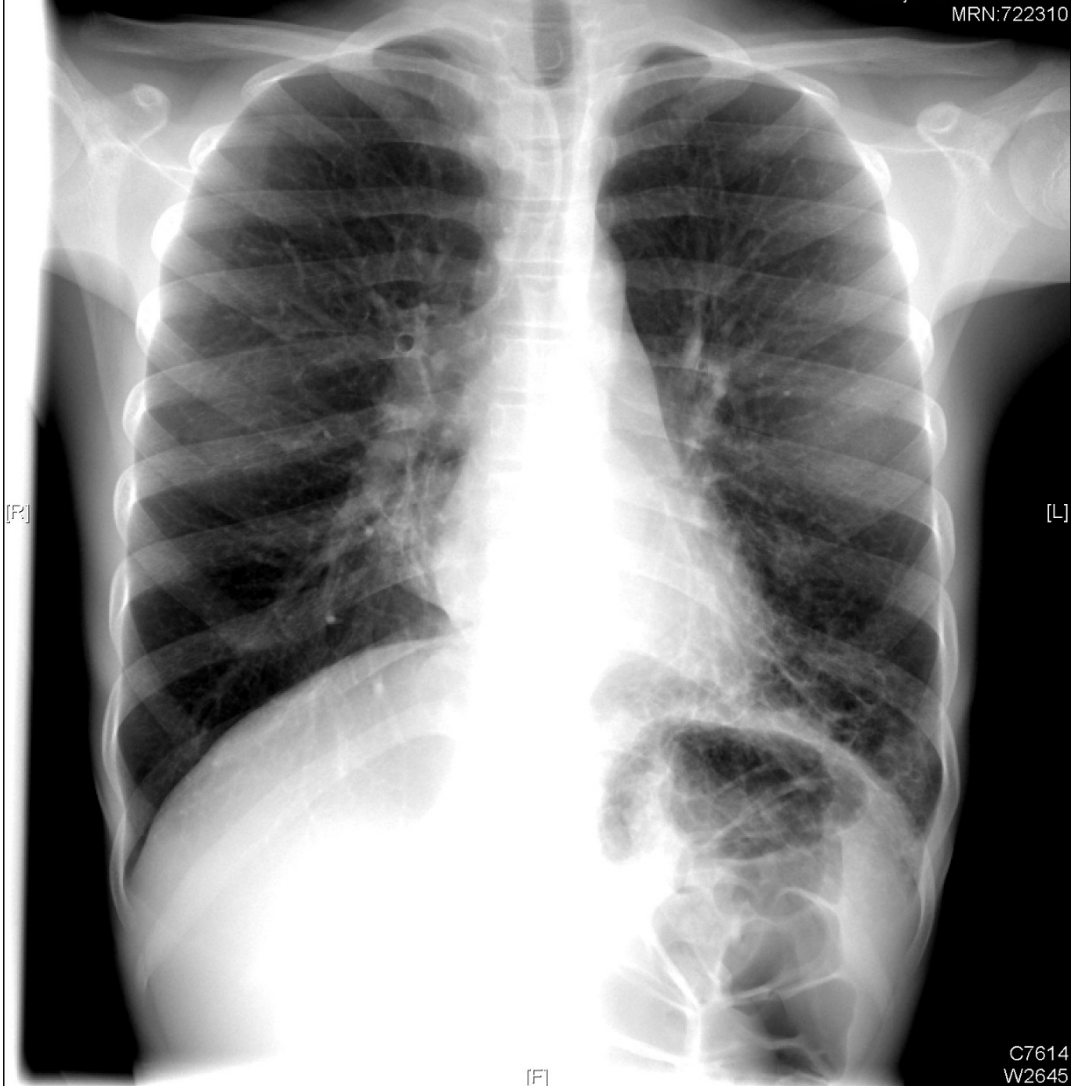
Treatment

- Medical
 - Resolve most of the cases
- Surgical
 - Failure of the Medical treatment
 - Patient with localized disease
 - Cystic type
 - Non Perfused

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Study Time: 8:33:46 AM
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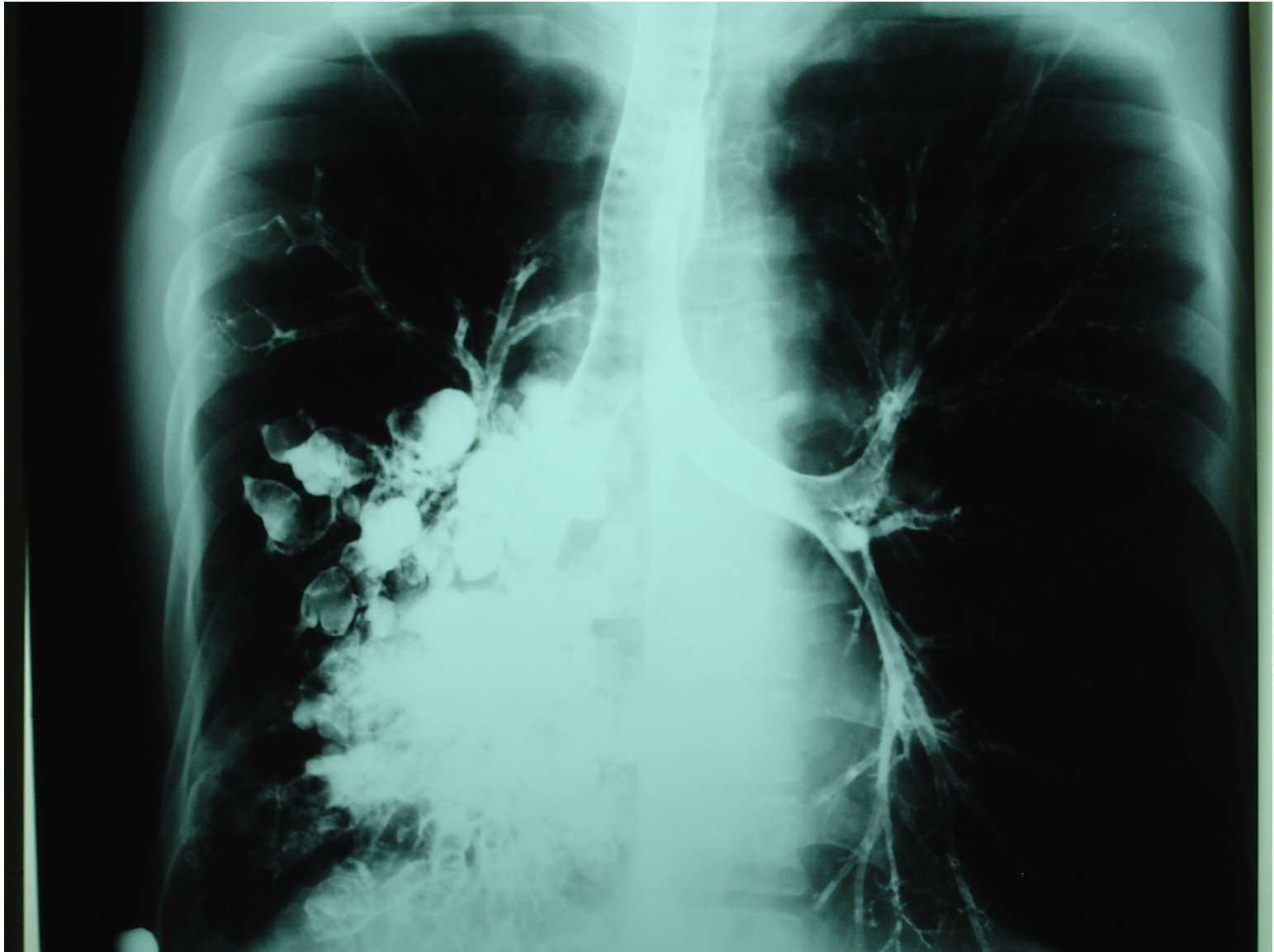
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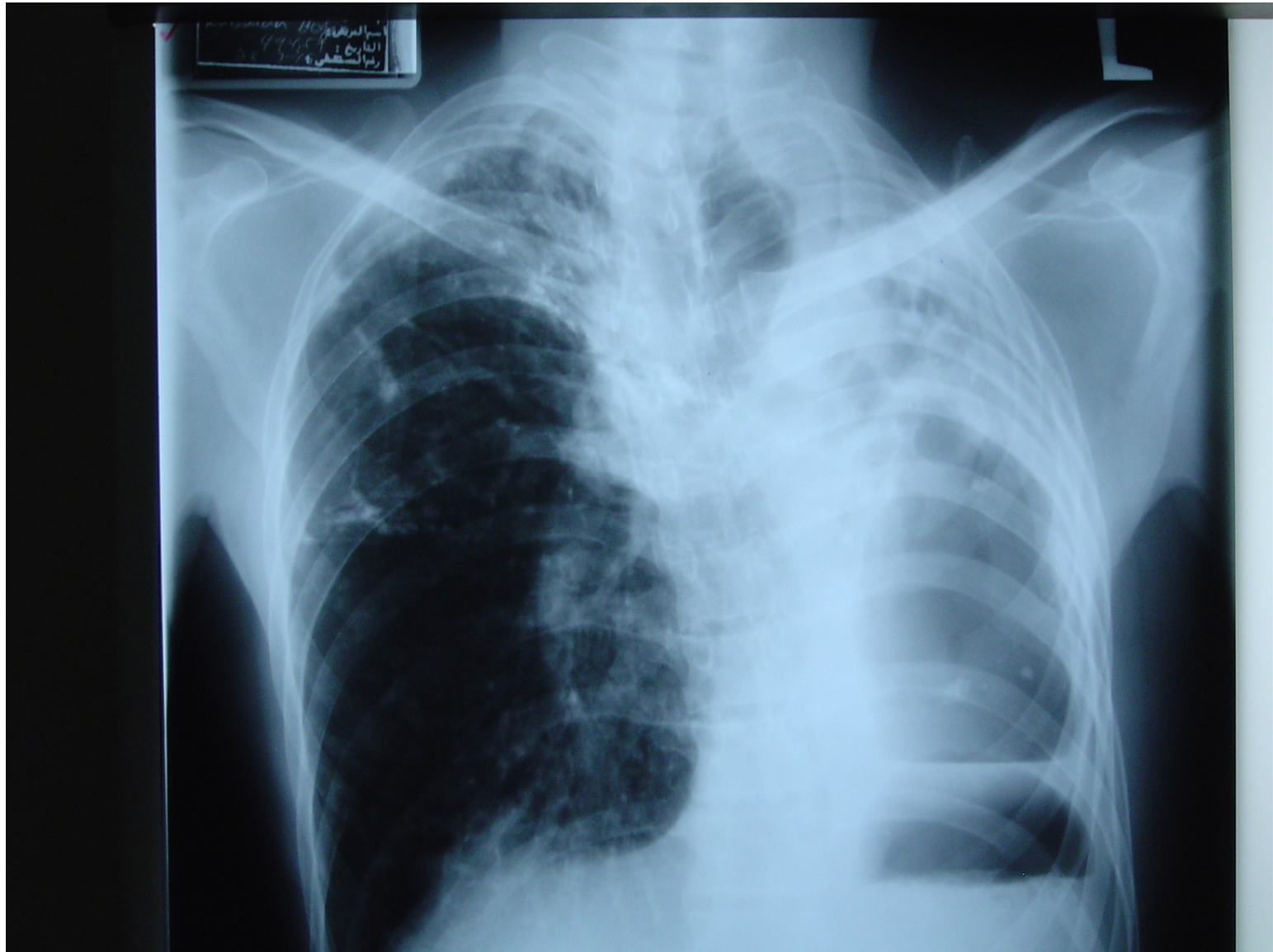






C. Tuberculosis

- * 30,000 new cases occur annually in U.S.A
- **Cause**
 - Pulmonary
 - Extra-pulmonary
e.g. TB Empyema, TB Lymphadenitis,
- **Investigation**
 - C X R
 - CT Scan Chest
 - Bronchoscopy



DFOV 29.0cm
LUNG

R

L

kV 120
mA 230~
Smart mA 216
Large
10.0mm/1.5:1



- **Treatment**

- Medical

- Surgical

- ✓ Failure of medical Rx

- ✓ Destroyed lobe or lung

- ✓ Pulmonary haemorrhage

- ✓ Persistent open cavity with + ve sputum

- ✓ Persistent broncho pulmonary fistula

D. Aspergillosis

- **Cause**
 - **Aspergillus fumigatus, Asp. niger**
- **Mode of Transmission**
- **Forms**
 - **Allergic**
 - **Saprophytic**
 - **Invasive**
- **Saprophytic form**
- **C-F**
 - **Aspergilloma**
 - **Chronic productive cough**
 - **Haemoptysis (patient with preexisting Disease like TB or immune compromised).**

- **Investigations**

- Skin test
- Sputum
- Biopsy (Invasive)
- C X R
- CT Scan Chest

- **Treatment**

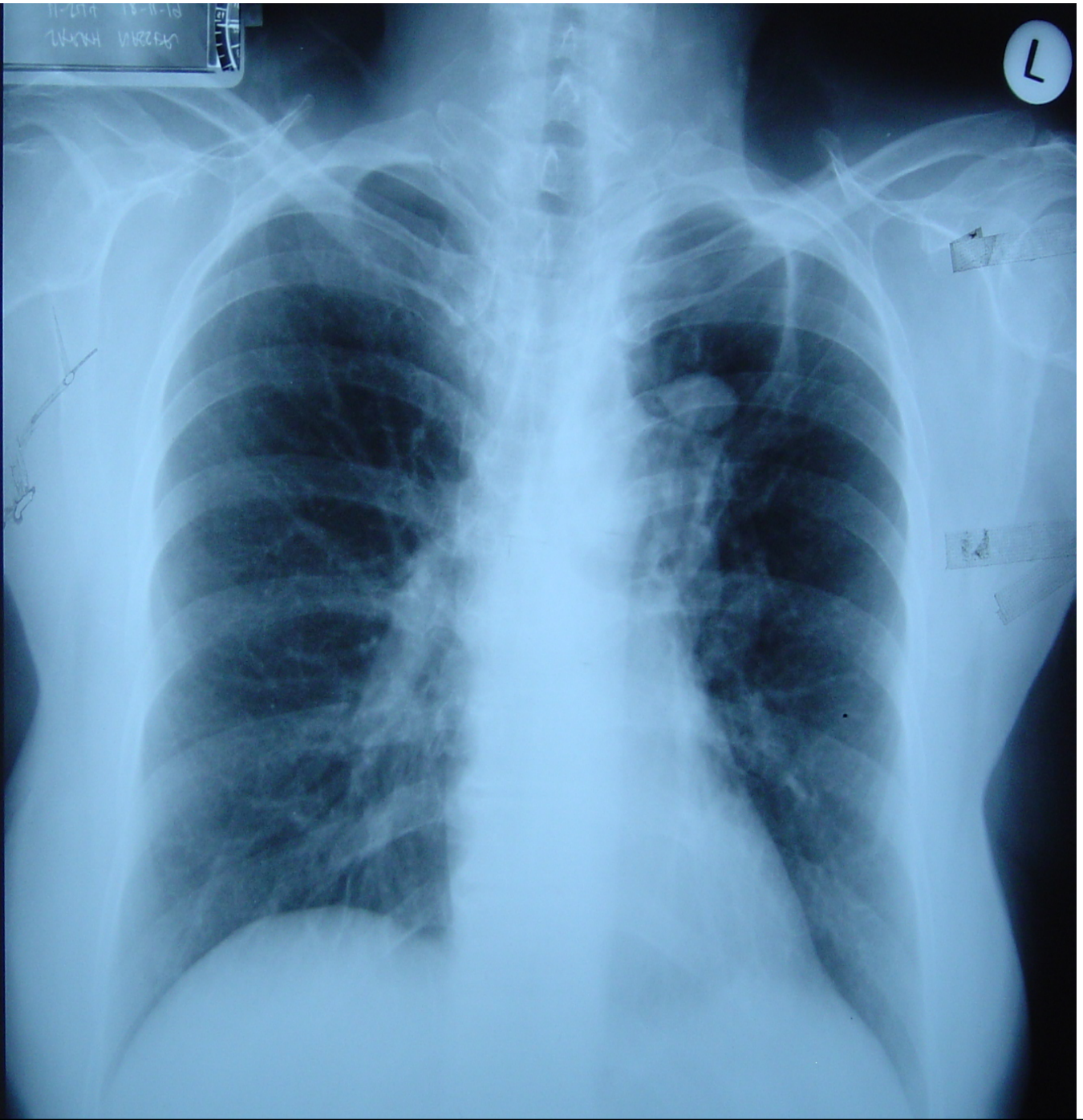
- Medical, Anti fungus medications
- Surgical

- **Indications**

- A significant Aspergilloma
 - Hemoptysis

- **Type of resection**

- Segmentectomy
 - Lobectomy
 - Pneumonectomy



E. Hydatid cyst

Cause

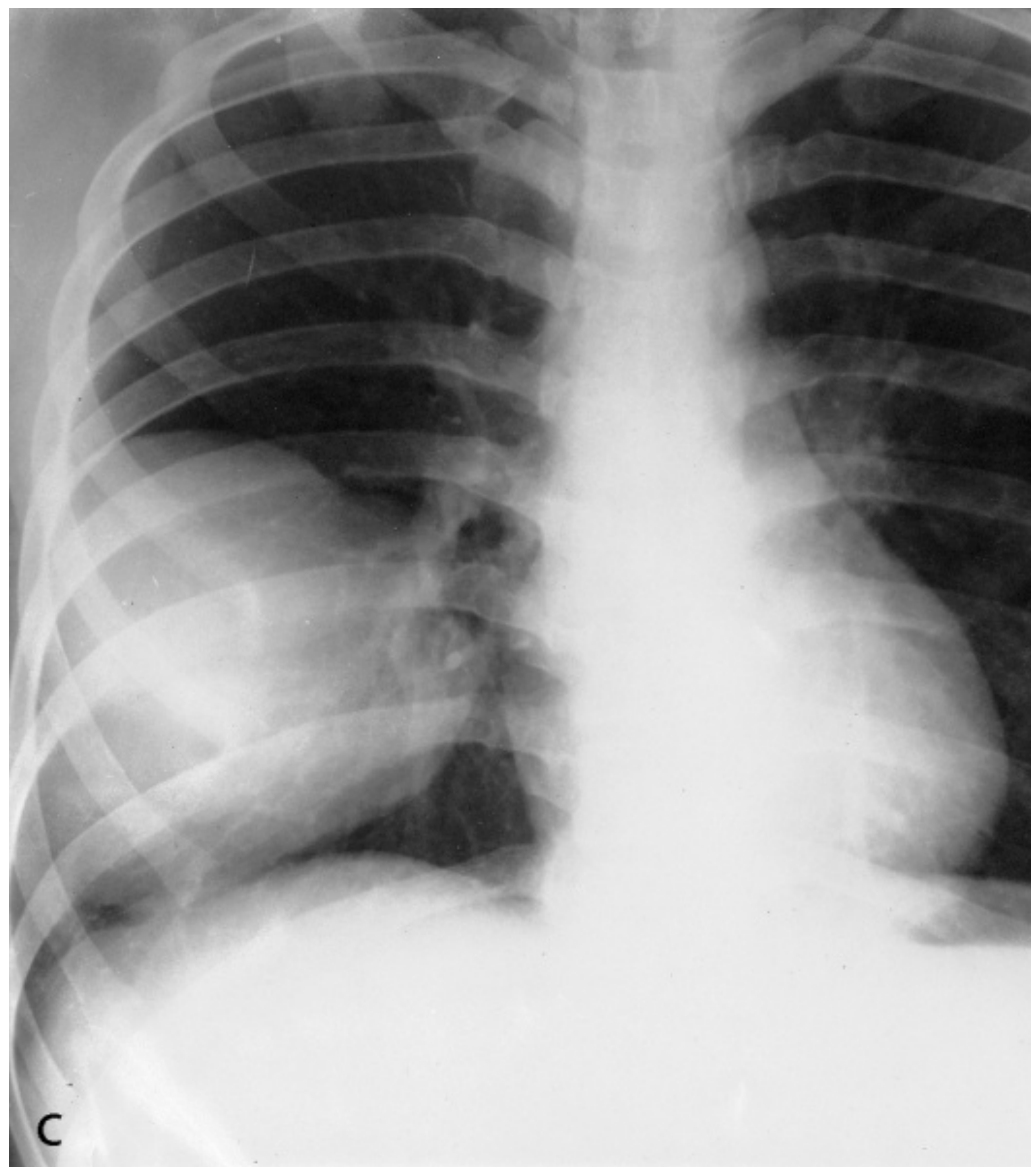
- Echinococcus granulosus

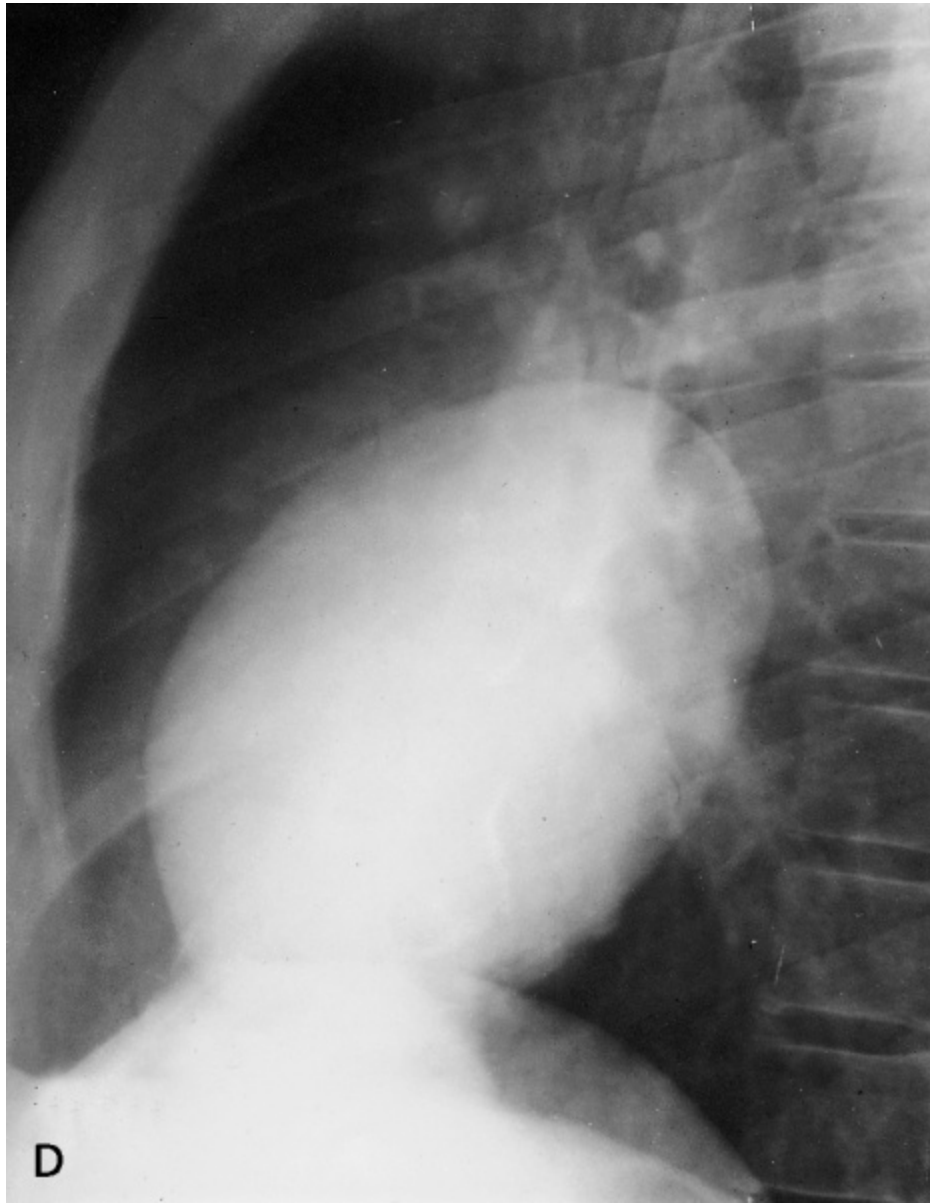
Diagnosis

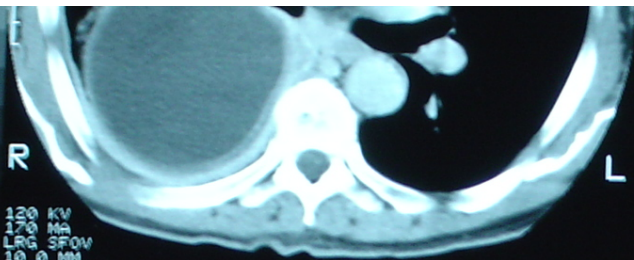
Treatment











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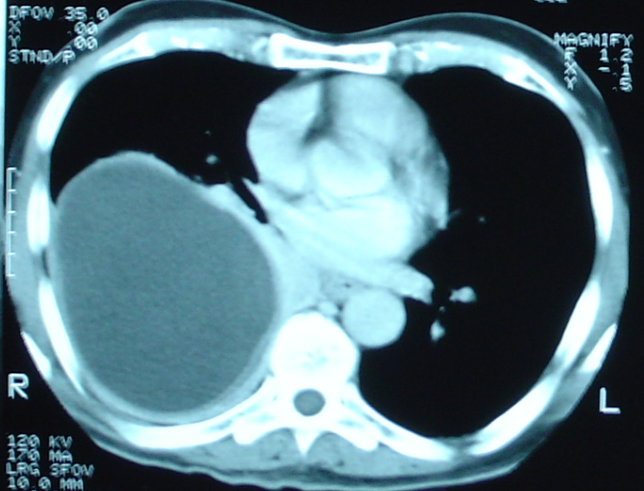
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EXAM 17534
PRS 1
IMAGE 357 5MM
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KING KHALID UNIV. HOSP.
NASER MOUSARANI
40-42-50 MS1
8 JUN 98
S12

DFOV 35.0
X 00
Y 00
STND/P 00

MAGNIFY
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0 0



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LRG 3FOV
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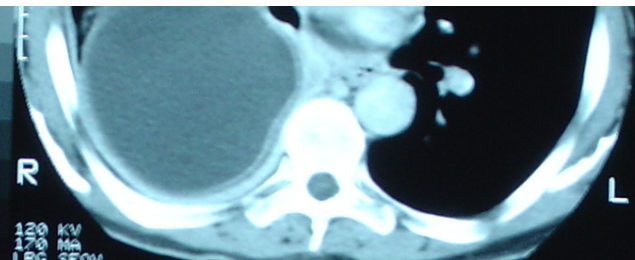
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IMAGE 327 5MM
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KING KHALID UNIV. HOSP.
NASER MOUSARANI
40-42-50 MS1
8 JUN 98
S12

DFOV 35.0
X 00
Y 00
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MAGNIFY
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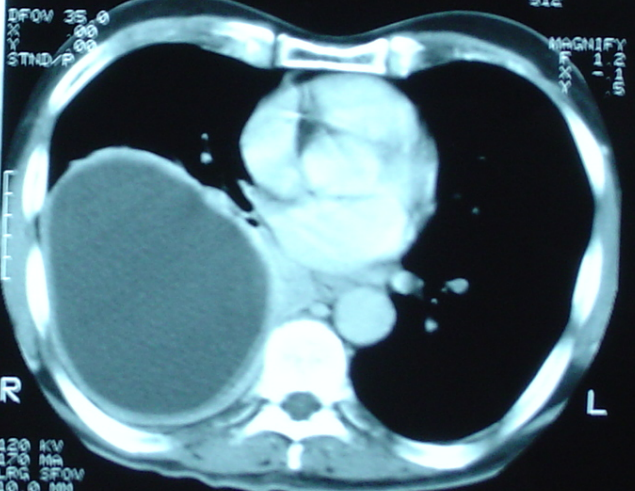
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NASER MOUSARANI
40-42-50 MS1
8 JUN 98
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Y 00
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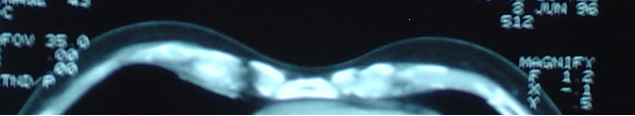
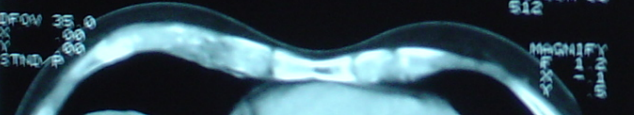
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NASER MOUSARANI
40-42-50 MS1
8 JUN 98
S12

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STND/P 00

MAGNIFY
1 1
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Tumor

➤ Benign

➤ Malignant

- Primary
- Secondary

A. Primary lung carcinoma

Incidence

Risk Factor

- Smoking
- Others

Pathology

1. Adenocarcinoma
 2. Squamous cell carcinoma
 3. Large cell carcinoma
 4. Small cell carcinoma
- **NSCLC vs. SCLC**

Clinical Features

- **Asymptomatic**
- **Symptomatic**
 - **Lung**
 - **Surrounding structures**
 - **Rec. L. nerve**
 - **Oesophagus**
 - **C₈, T₁ nerve**
 - **Sympathetic**
 - **Pleura**
 - **SVC**

- distal (para-neoplastic syndrome)
 - PTH
 - ADH
 - ACTH
 - Hypertrophic pulmonary osteoarthropathy

Investigations

- C X R
- Bronchoscopy
- Trans-thoracic needle aspiration FNA, True cut biopsy
- CT Scan
- MRI

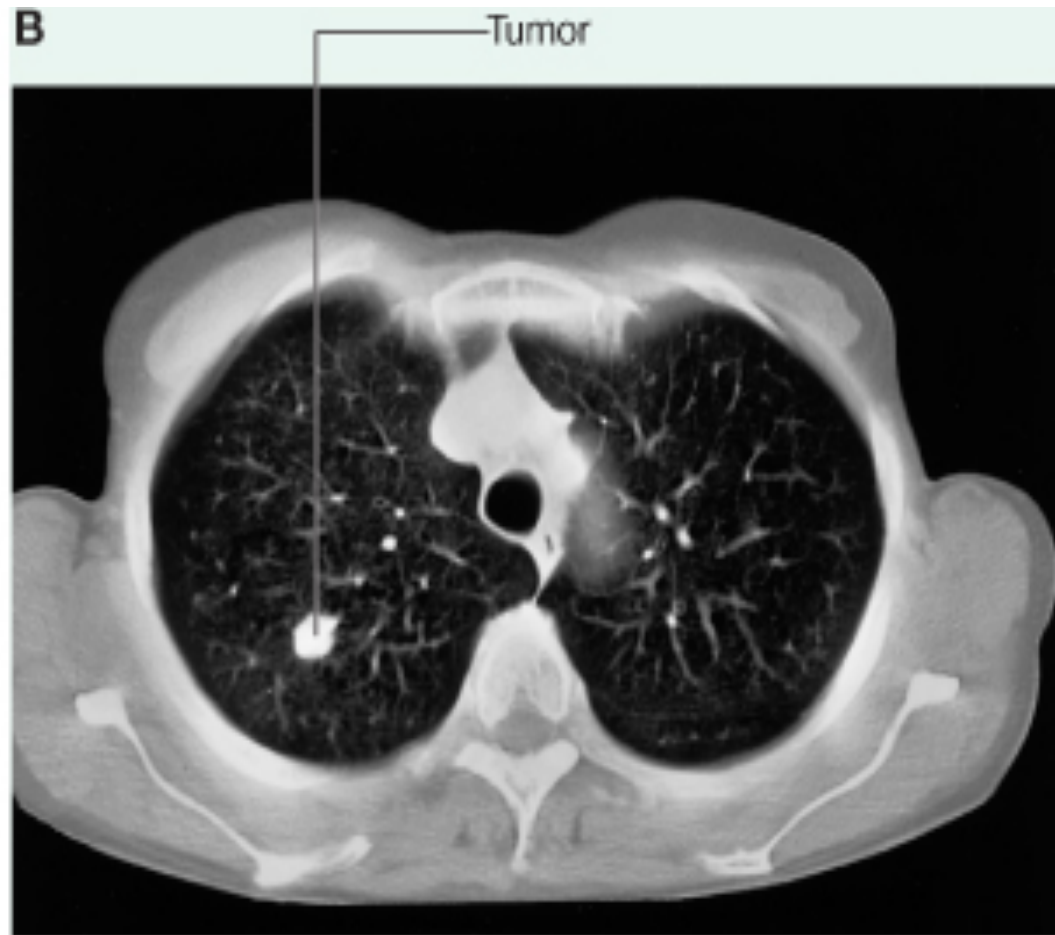
Staging

(see table)

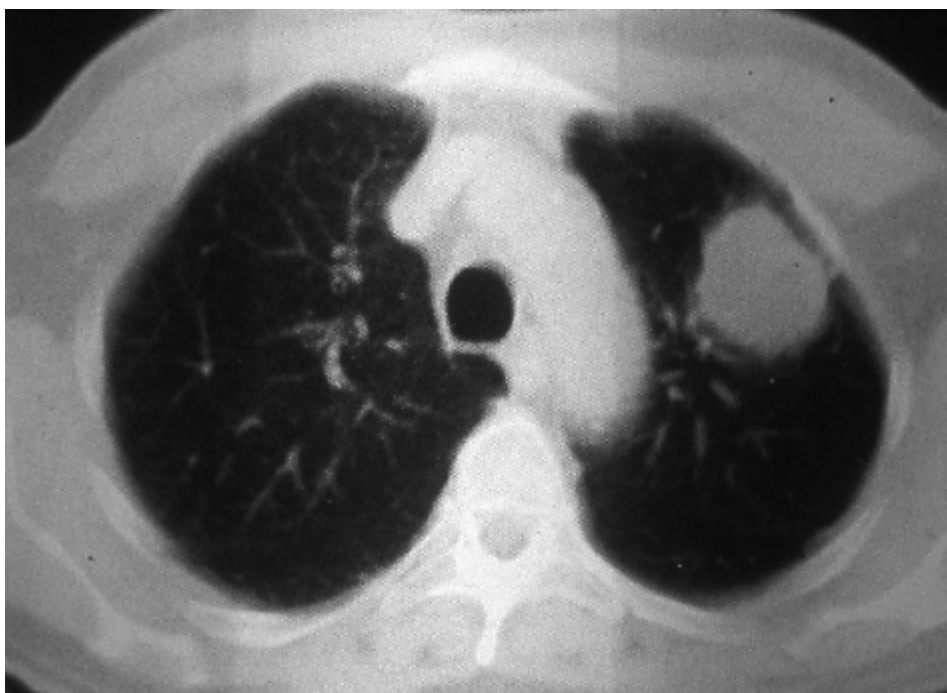
Tumor

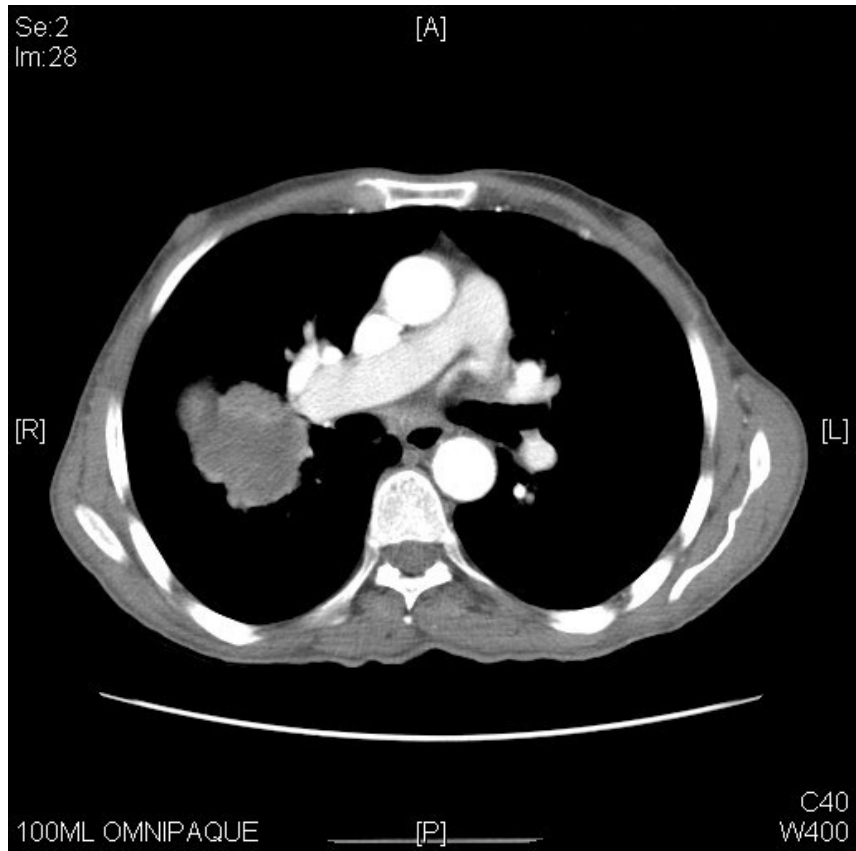


Tumor

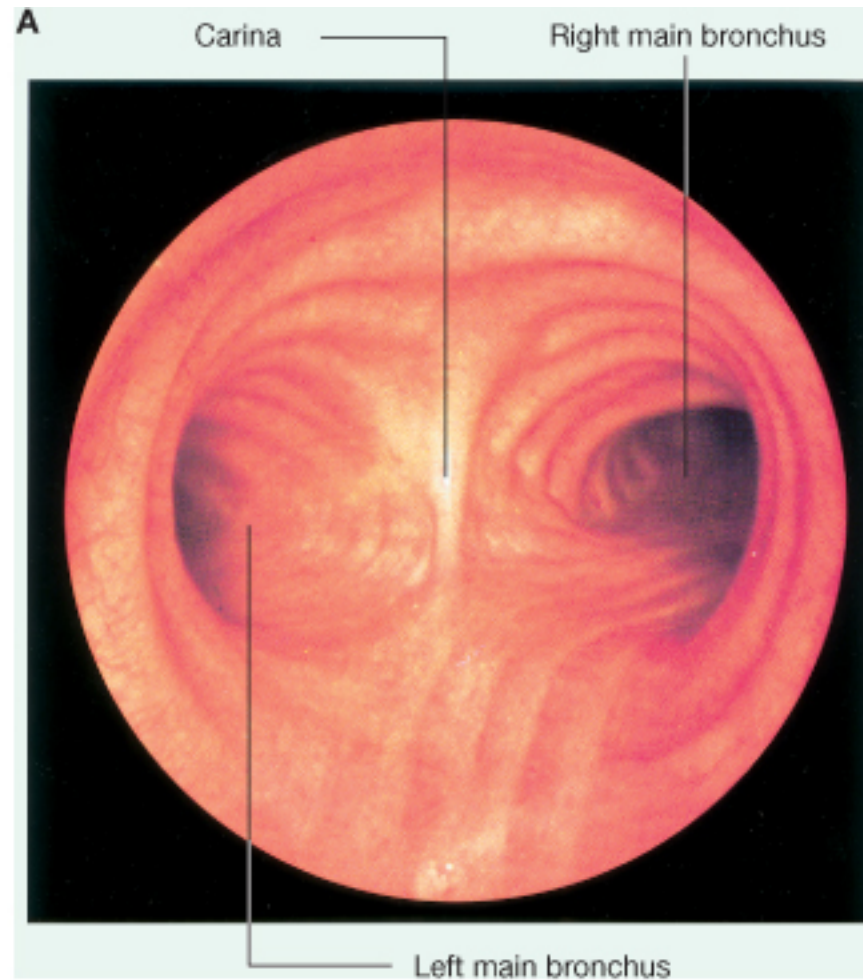






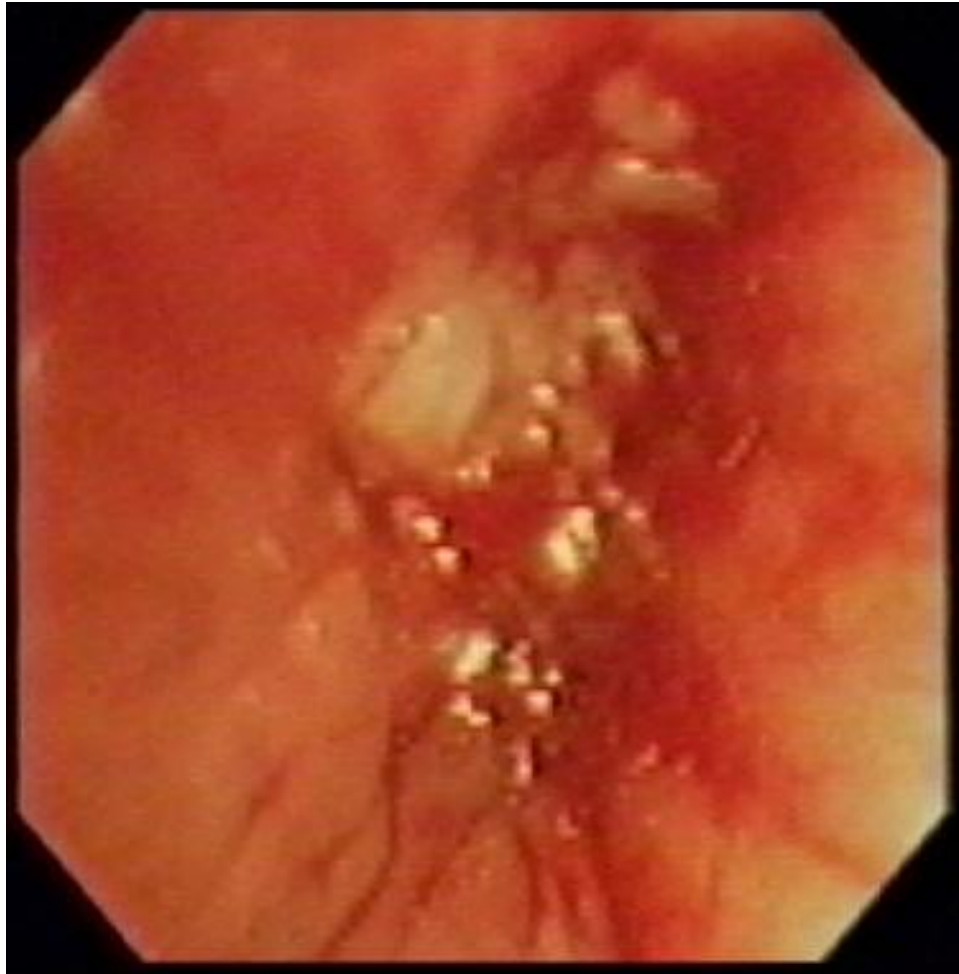


Bronchoscope



Tumor





lung-cancer-upper-lobe

Management

Depends on:

- Stage
- Cell Type
- Patient Physical fitness

NSCLC

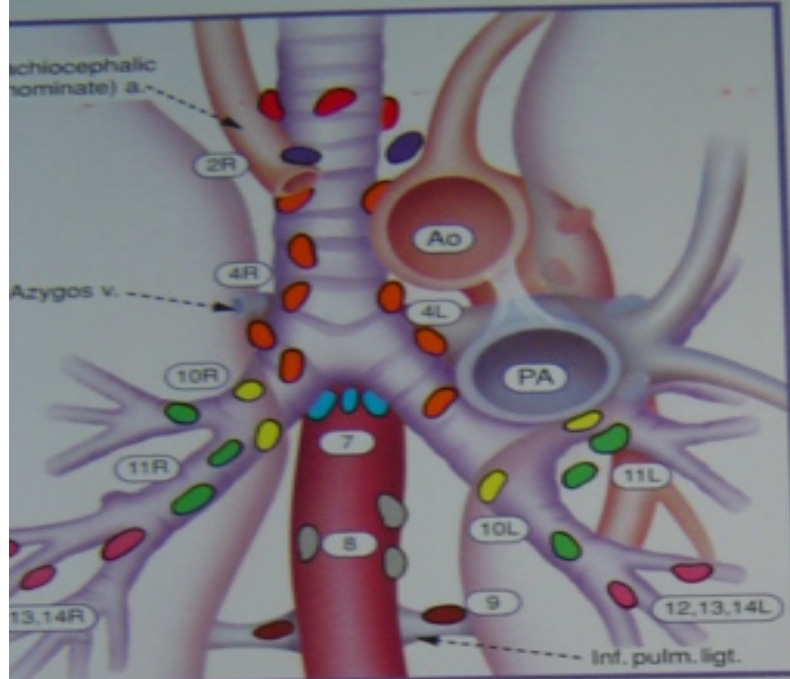
- Surgical
- Radiotherapy
- Chemotherapy

SCLC

- Chemotherapy
- Radiotherapy

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
	T3, NO, 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



Superior Mediastinal Nodes

- 1 Highest Mediastinal
- 2 Upper Paratracheal
- 3 Pre-vascular and Retrotracheal
- 4 Lower Paratracheal (including Azygos Nodes)

N₂ = single digit, ipsilateral

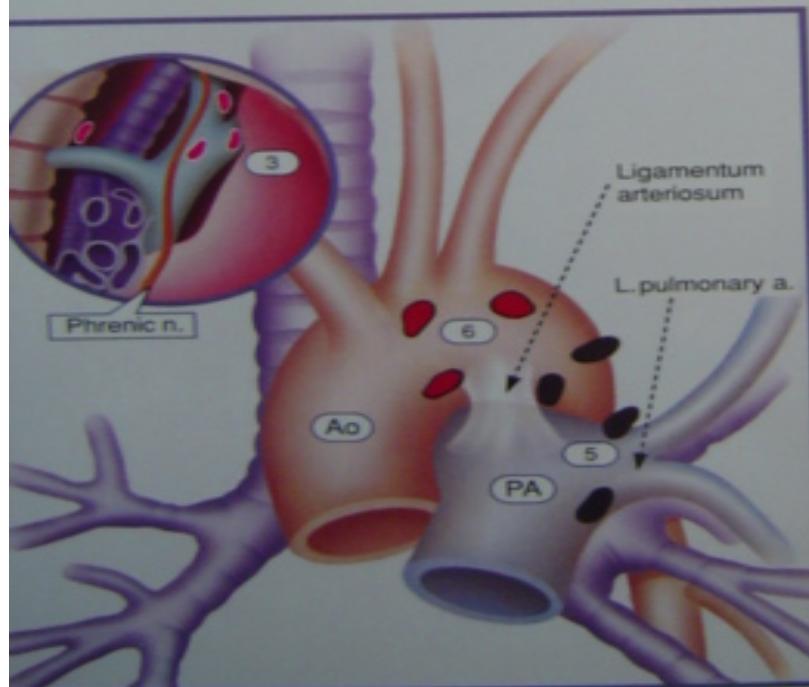
N₃ = single digit, contralateral or supraclavicular

Aortic Nodes

- 5 Subaortic (A-P window)
- 6 Para-aortic (ascending aorta or phrenic)

Inferior Mediastinal Nodes

- 7 Subcarinal
- 8 Paraesophageal (below carina)
- 9 Pulmonary Ligament



N₁ Nodes

- 10 Hilar
- 11 Interlobar
- 12 Lobar
- 13 Segmental
- 14 Subsegmental

B. Secondary Lung Carcinoma e.g. Metastatic.

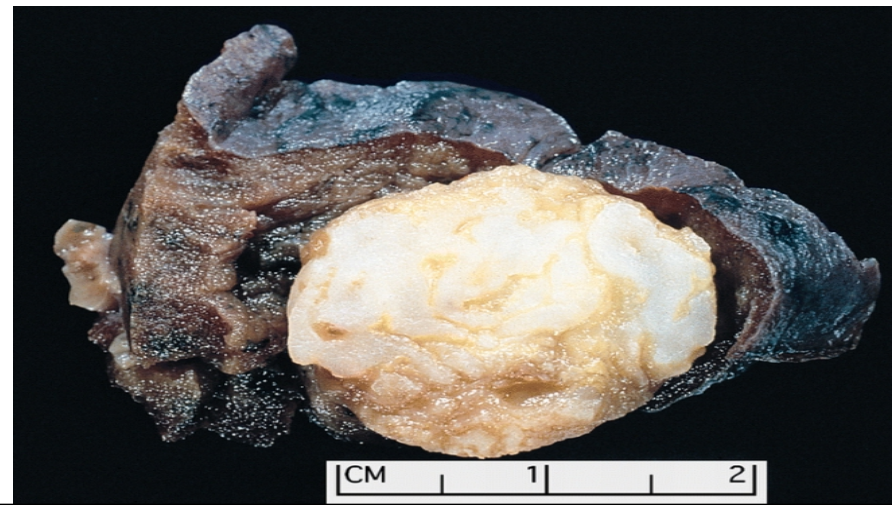
Solitary Lung Nodule

- Primary Lung Carcinoma
- Tuberculous Granuloma
- Mixed tumor
- Secondary Lung Carcinoma
- Miscellaneous, e.g. disk pneumonia

Benign Vs. Malignant

Hamartoma-Carcinoid

- Age
- Sex
- X-ray
 - Size
 - Time
 - Calcification



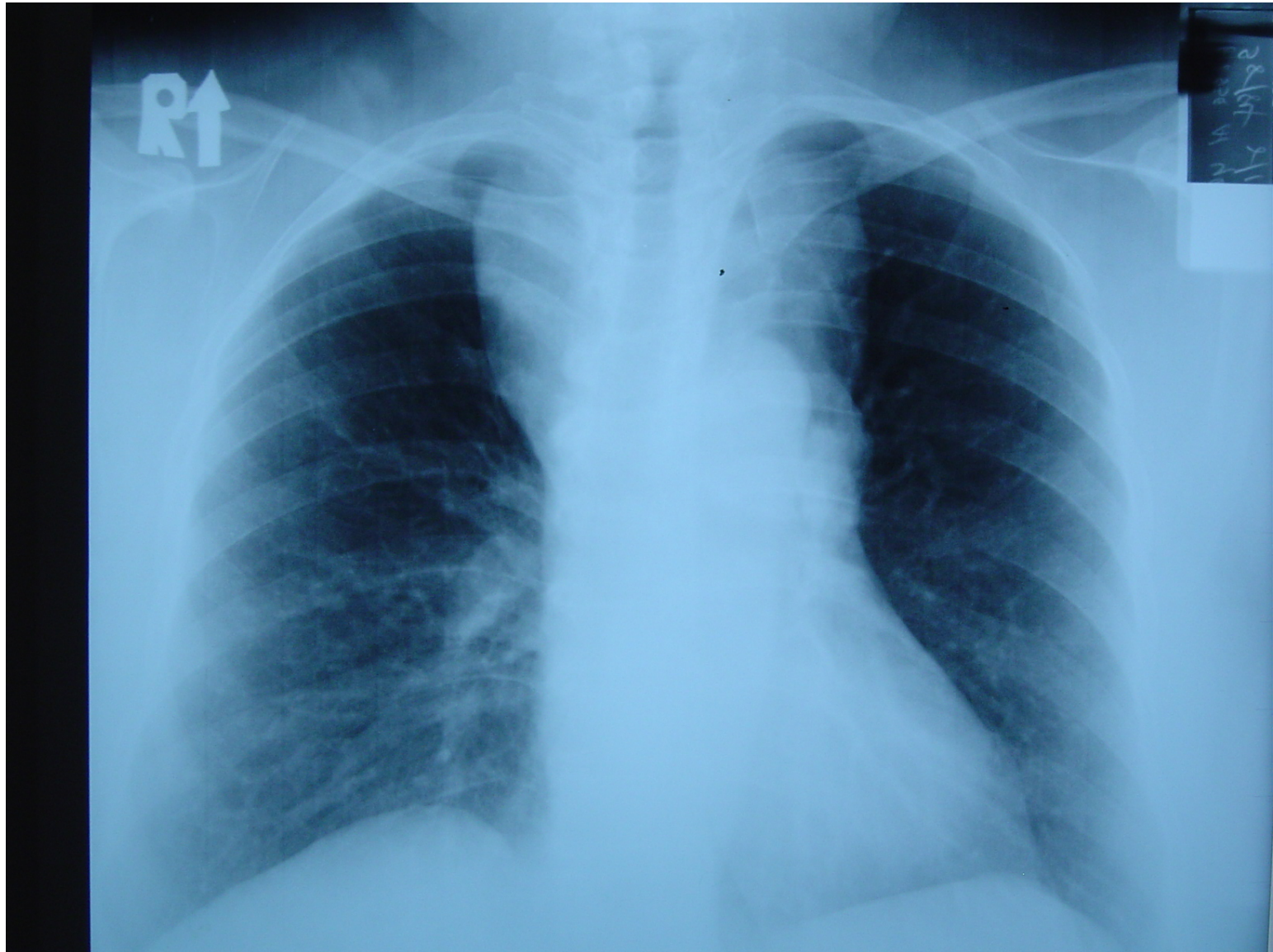
THE MEDIASTINUM

➤ Anatomy

- Boundaries
- Divisions
 - Traditional
 - Clinical
- Access: Mediastinoscopy, Mediastinotomy.

➤ Mediastinal mass lesions

- A. Anterior Mediastinum(5 T's)
- B. Middle Mediastinum(Cyst)
- C. Posterior Mediastinum (Neurogenic tumors)

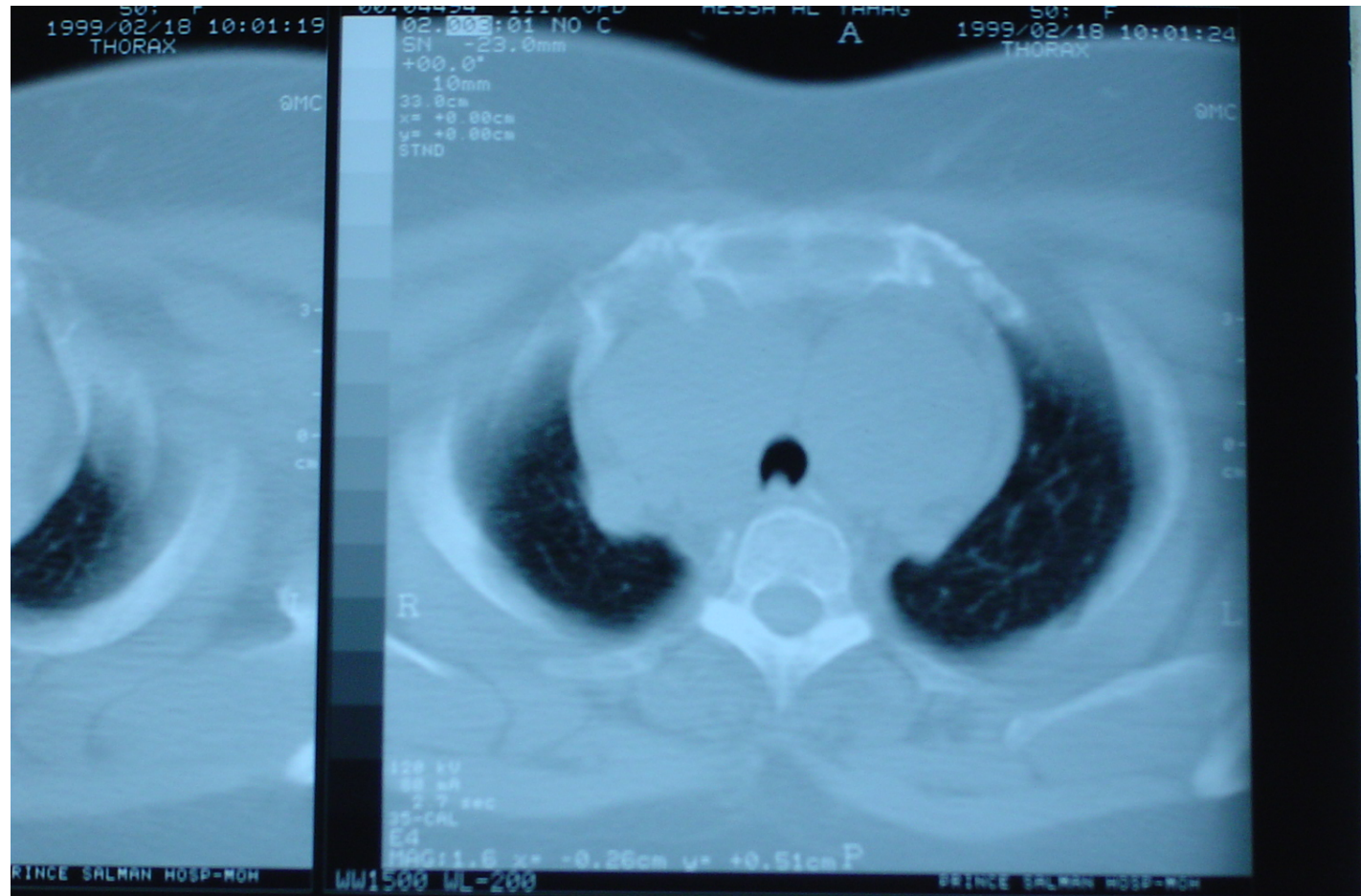


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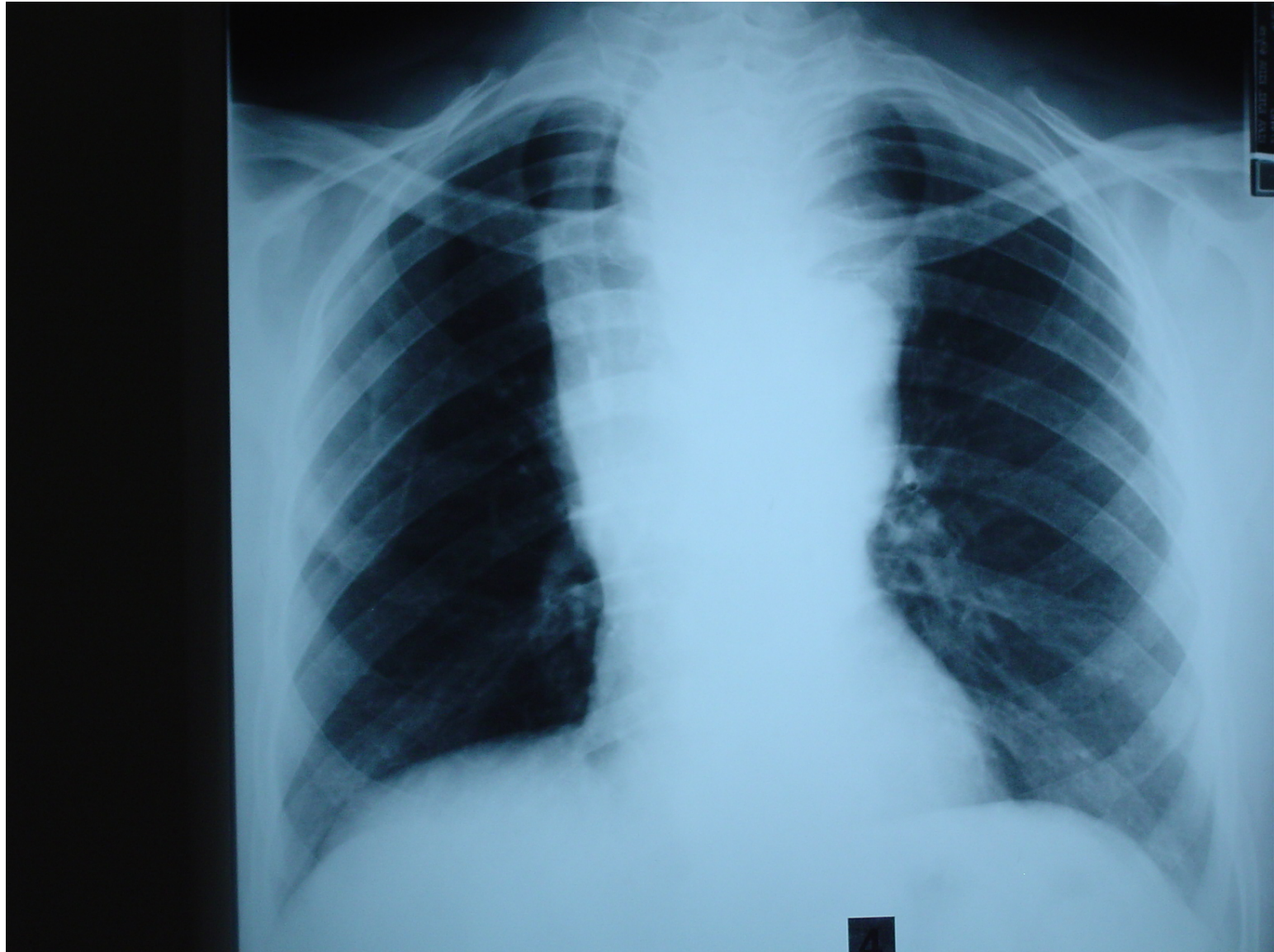
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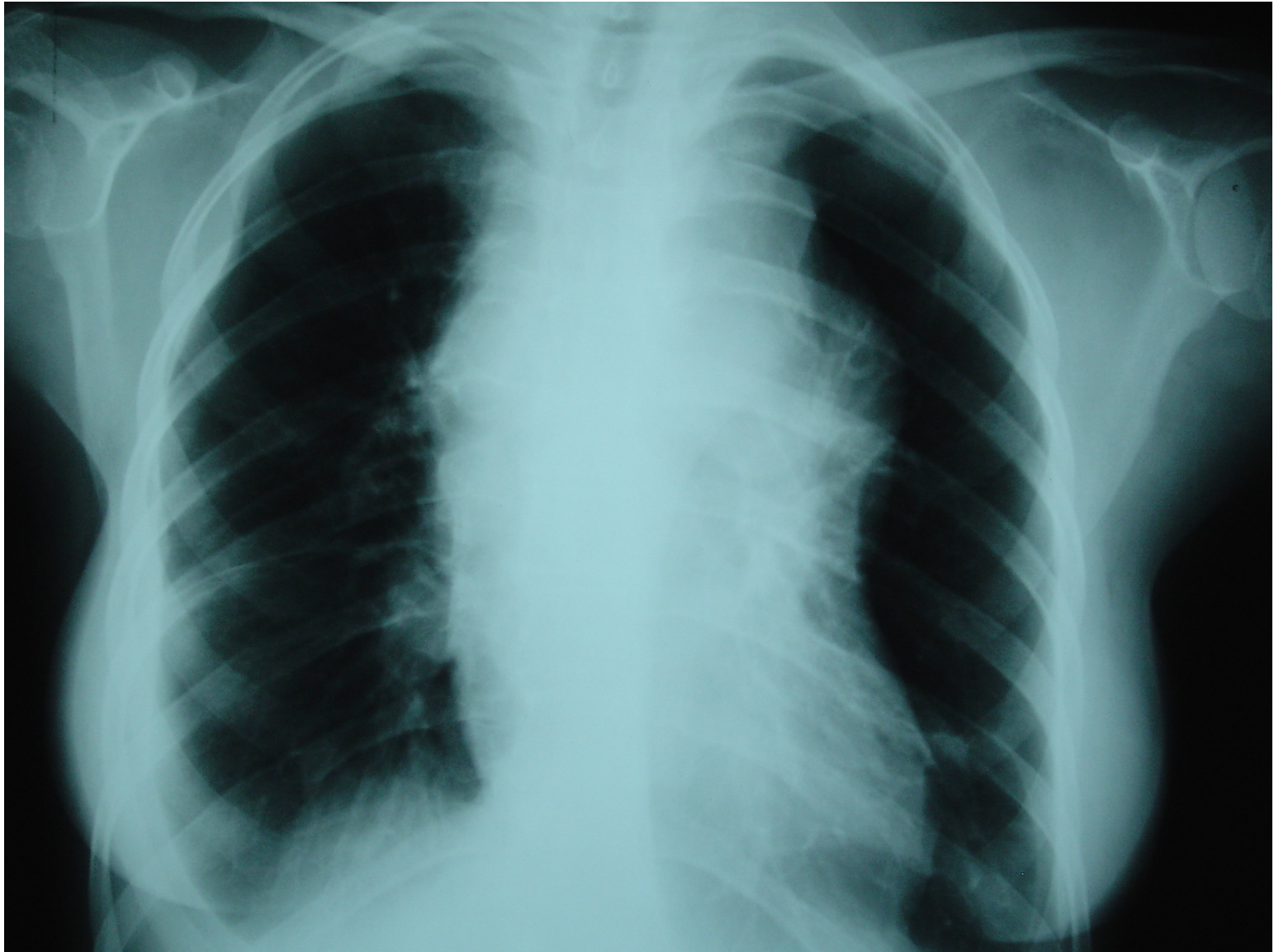
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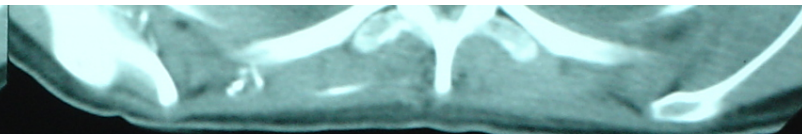
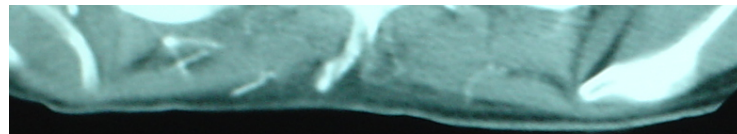
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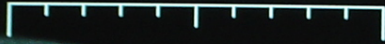
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F

THYMOMA

➤ Incidence

- The commonest tumor of Ant. Mediastinum.
- Peak 40-60 y.
- M : F (1 : 1)

➤ Pathology

- **Classification**
 - **Epithelial**
 - **Lymphocystic**
 - **Lymphoepithelial**
 - **Spindle cell**
- **Benign vs. malignant**
- **Stages**
 - I, II, III, IV**

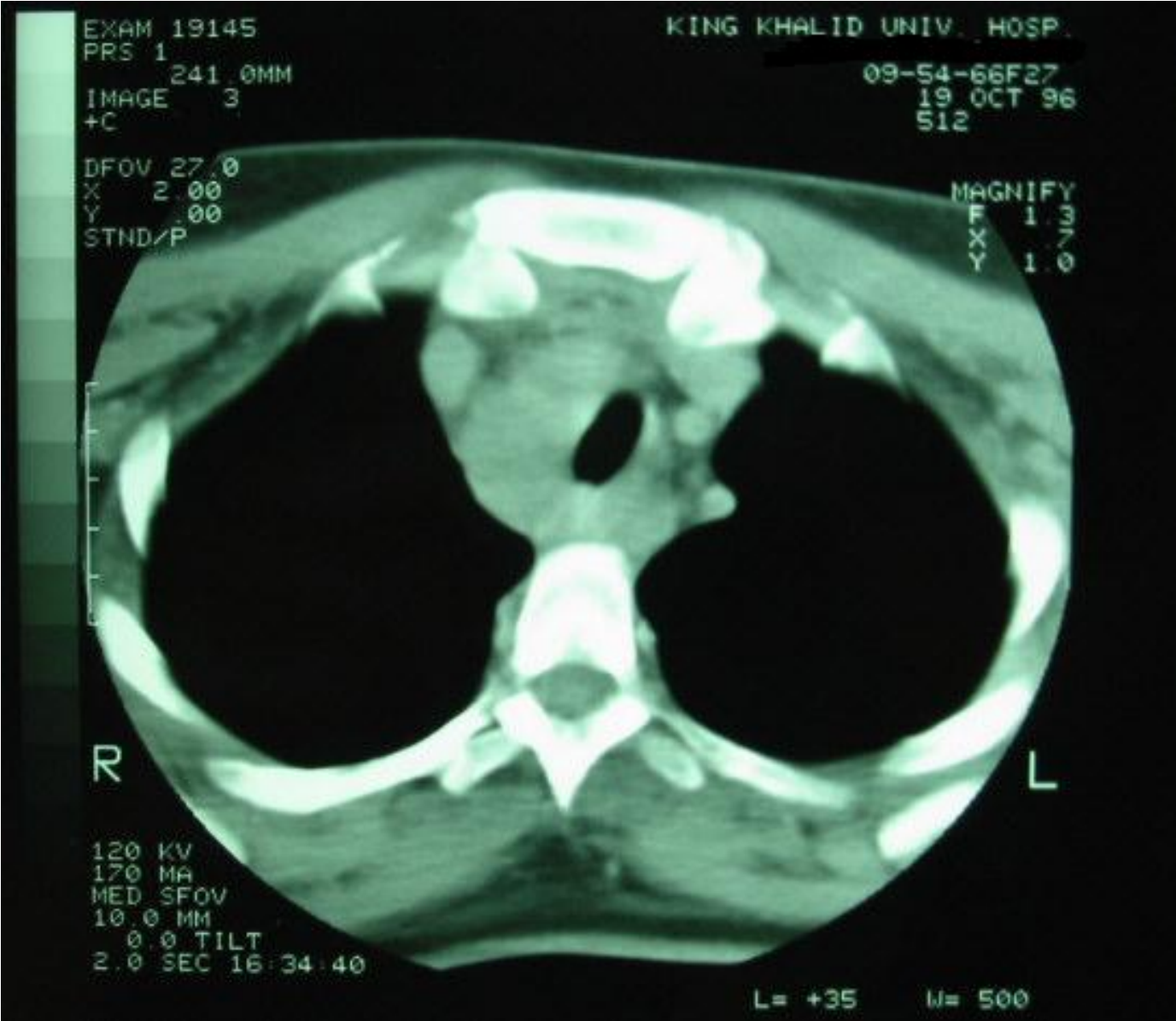
Clinical Features

- Asymptomatic
- Symptomatic
 - Mass effect
 - Systemic effect
 - M.G. is the commonest 40-50%

Investigation

- C X R
 - CT Scan
 - Biopsy
 - Bronchoscopy }
 - Esophagoscopy }
 - Angiogram }
- Selected cases









➤ Treatment

- **Benign** → complete excision
- **Malignant** → complete excision if possible

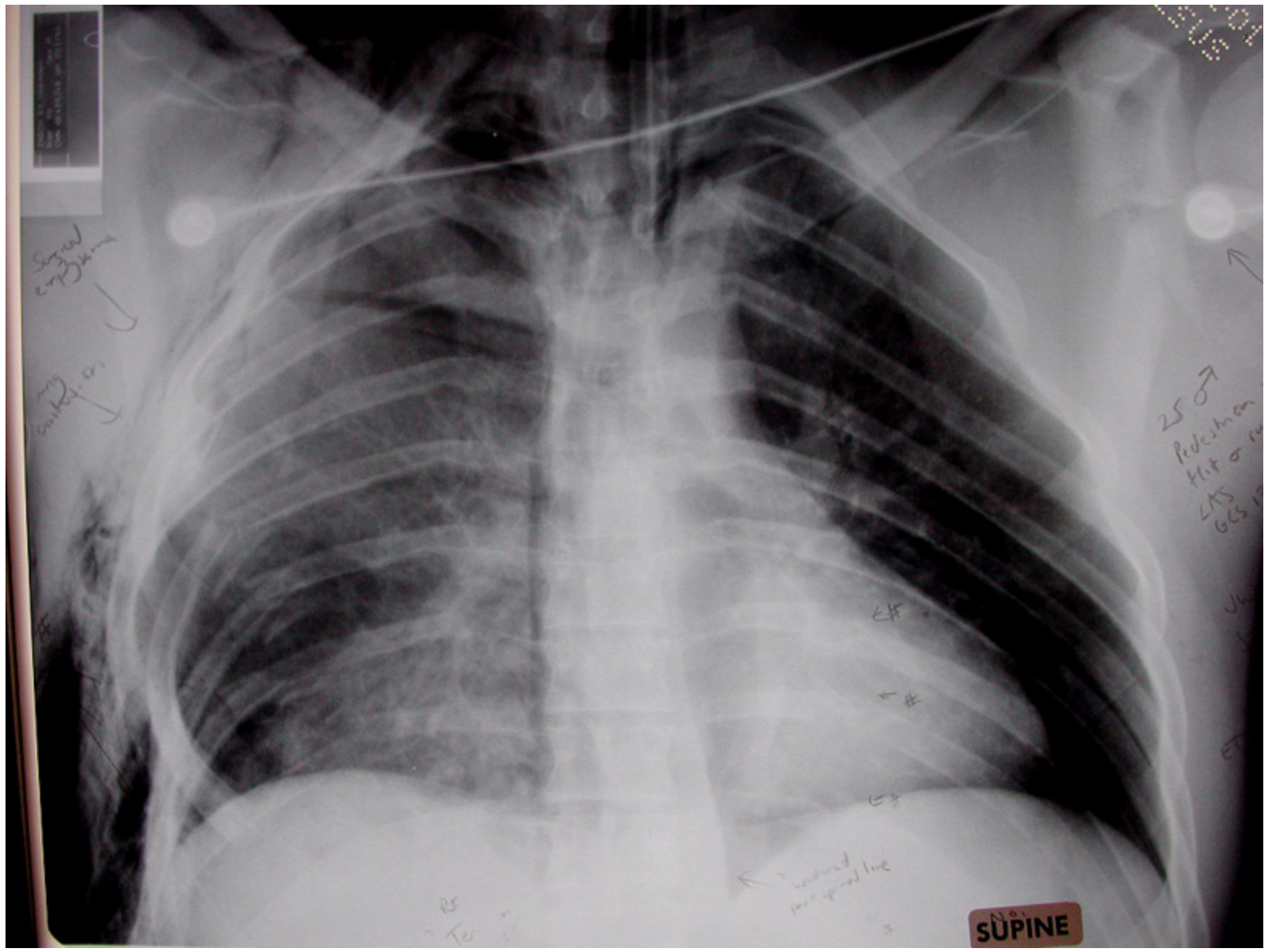
If non-resectable } post-op

Or } Radiotherapy

Resection incomplete }

Trauma

- RTA
- Fracture Ribs Simple – Complicated
- Haemothorax
- Pneumothorax
- Flail chest
- Lung Contusion and ARDS



INSTITUTION
DATE
TIME

25 07

Sigmoid
containing air
↓
↓

25 07
Pedestrian
Hit or car
LKS
GCS

← R

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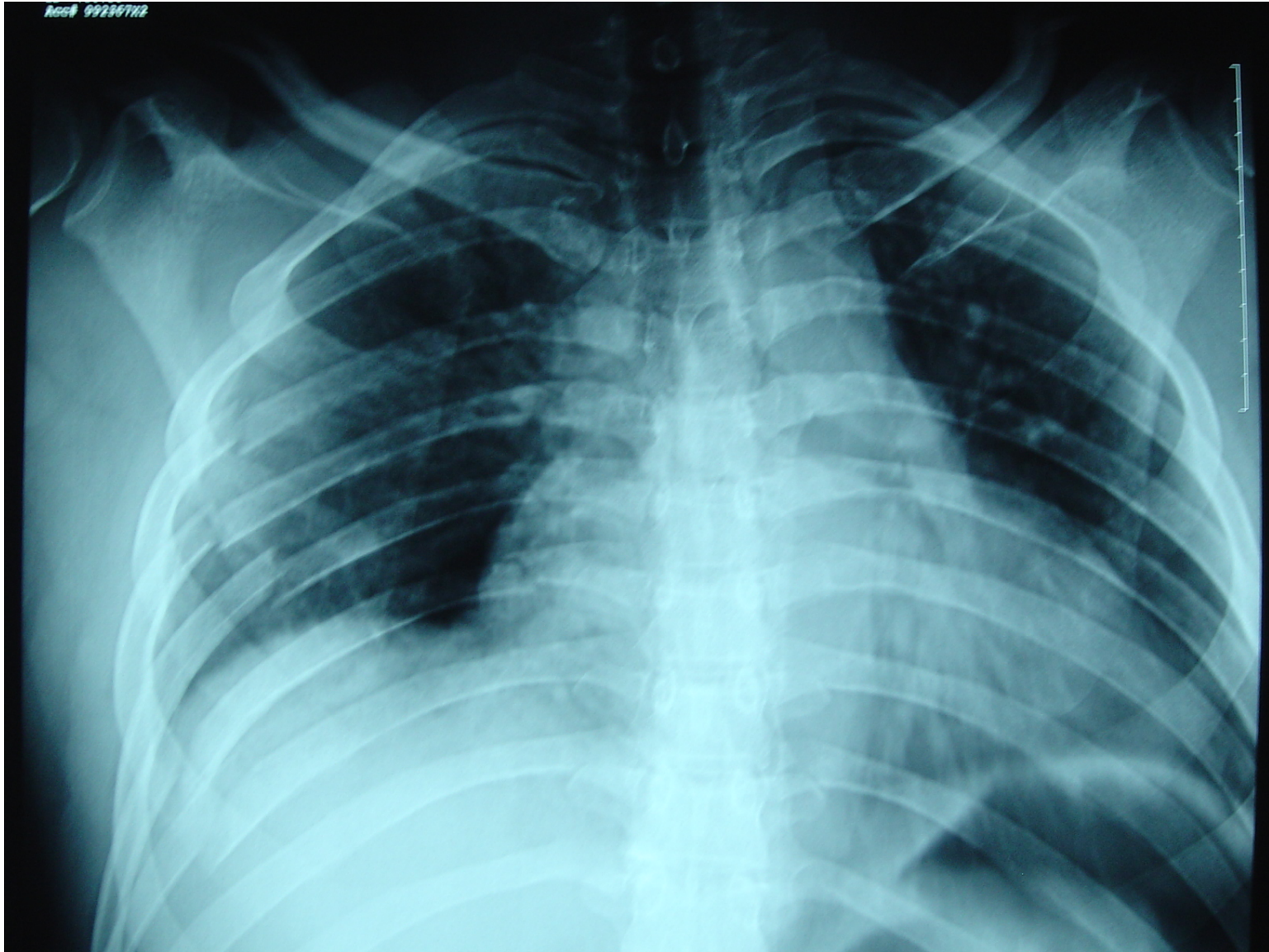
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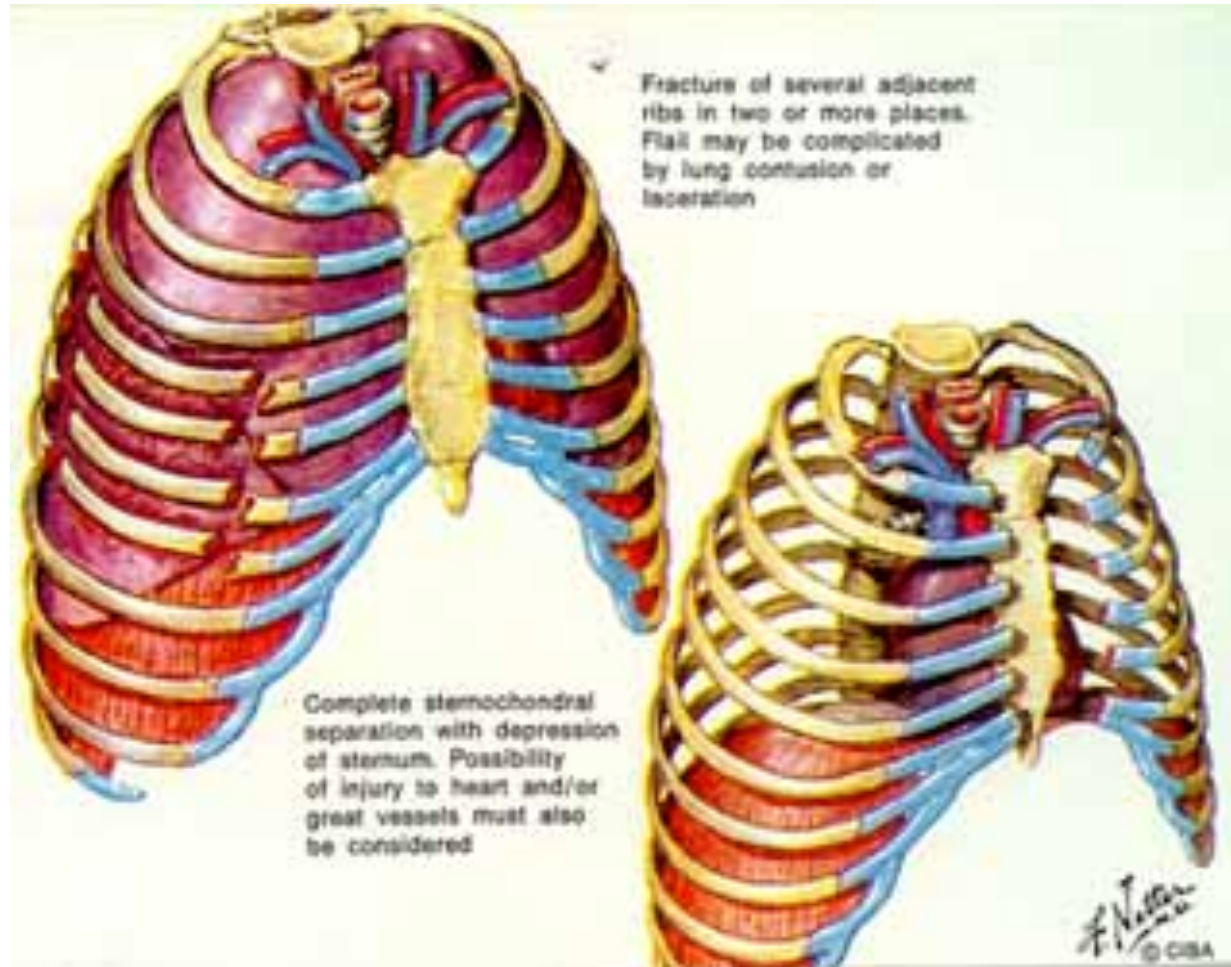
Not
SUPINE

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Flail Chest



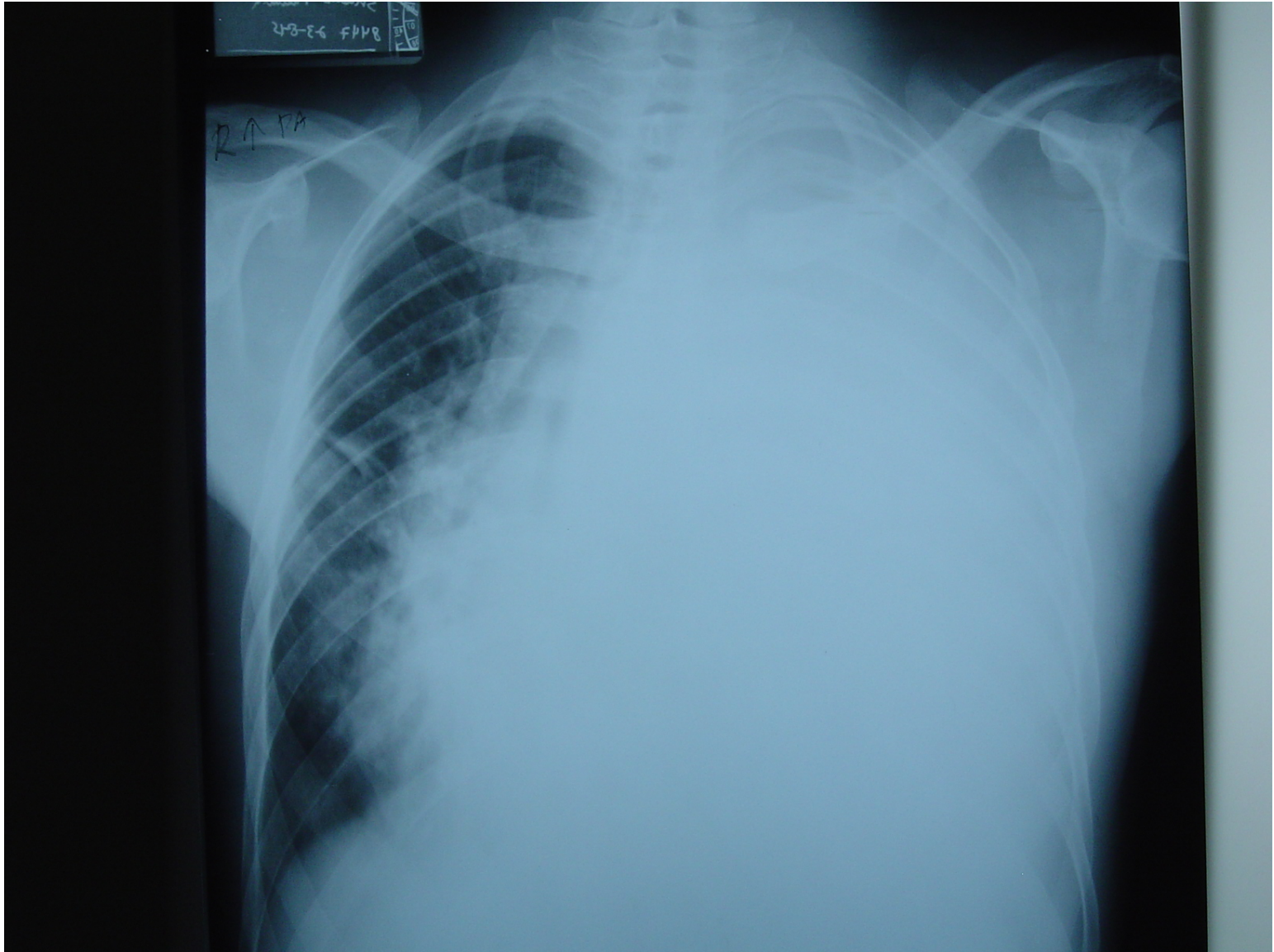
Haemothorax



Accumulation
of blood in
pleural space

Hemothorax.





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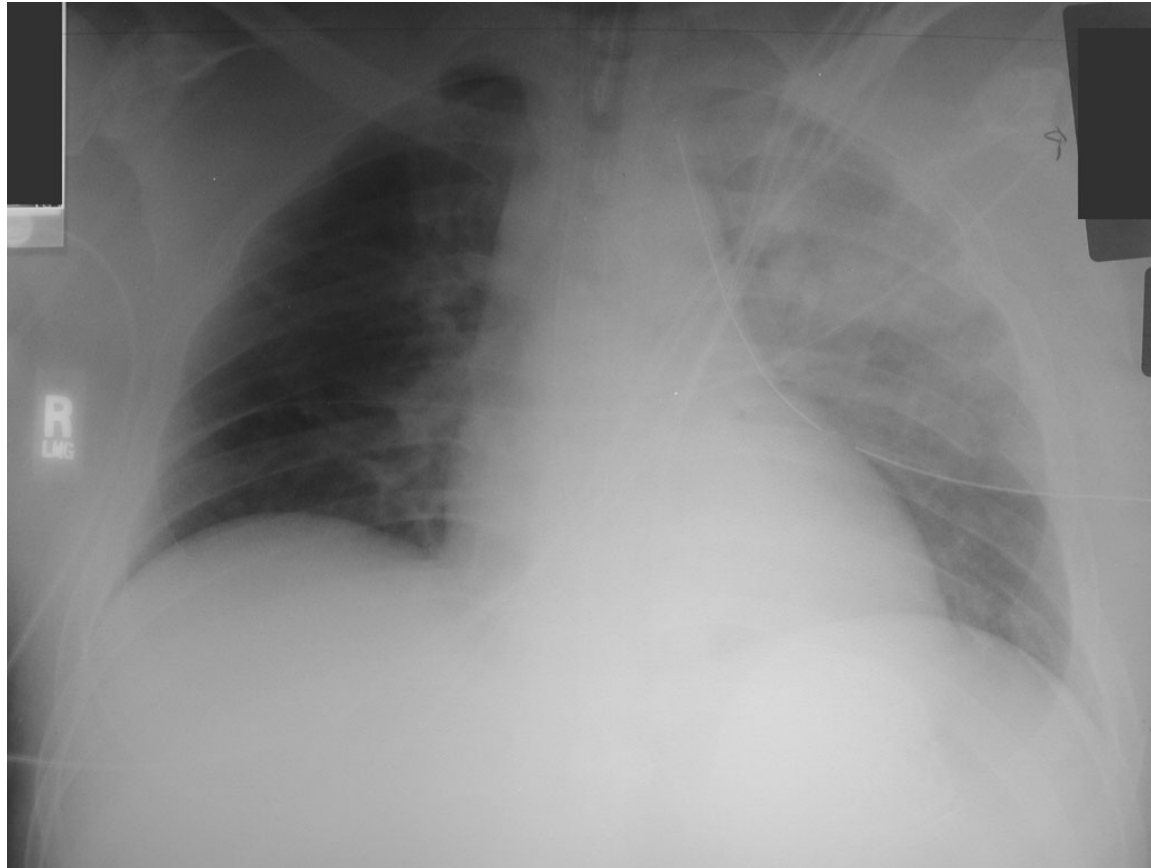
+C

kV 120
mA 130
TI 0.75
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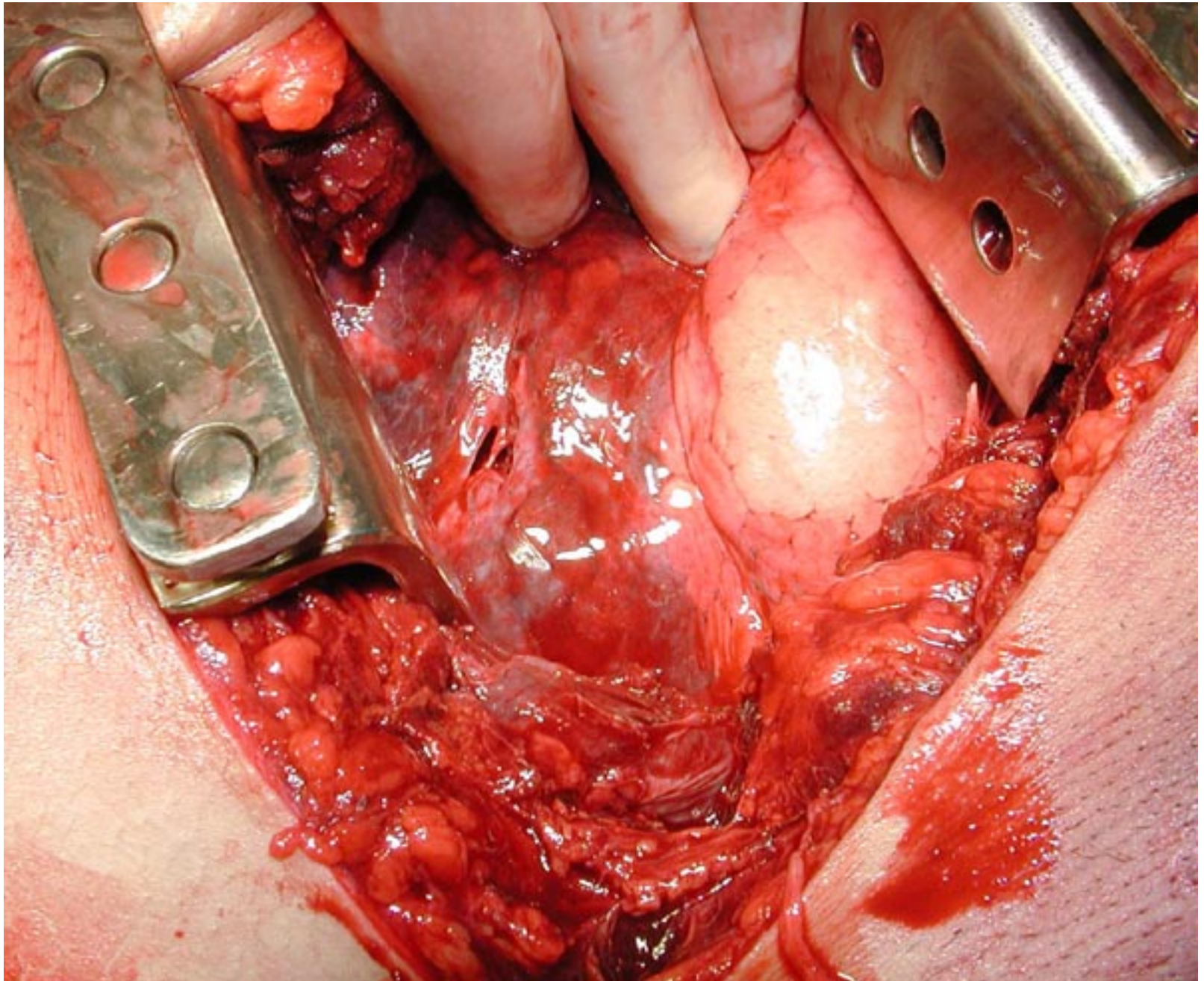


Lung Contusion and ARDS









Chest Wall

- Deformity:
 - Pectus excavatum
 - Pectus Carniatum

Pleural Cavity

- Infection e.g. Empyema

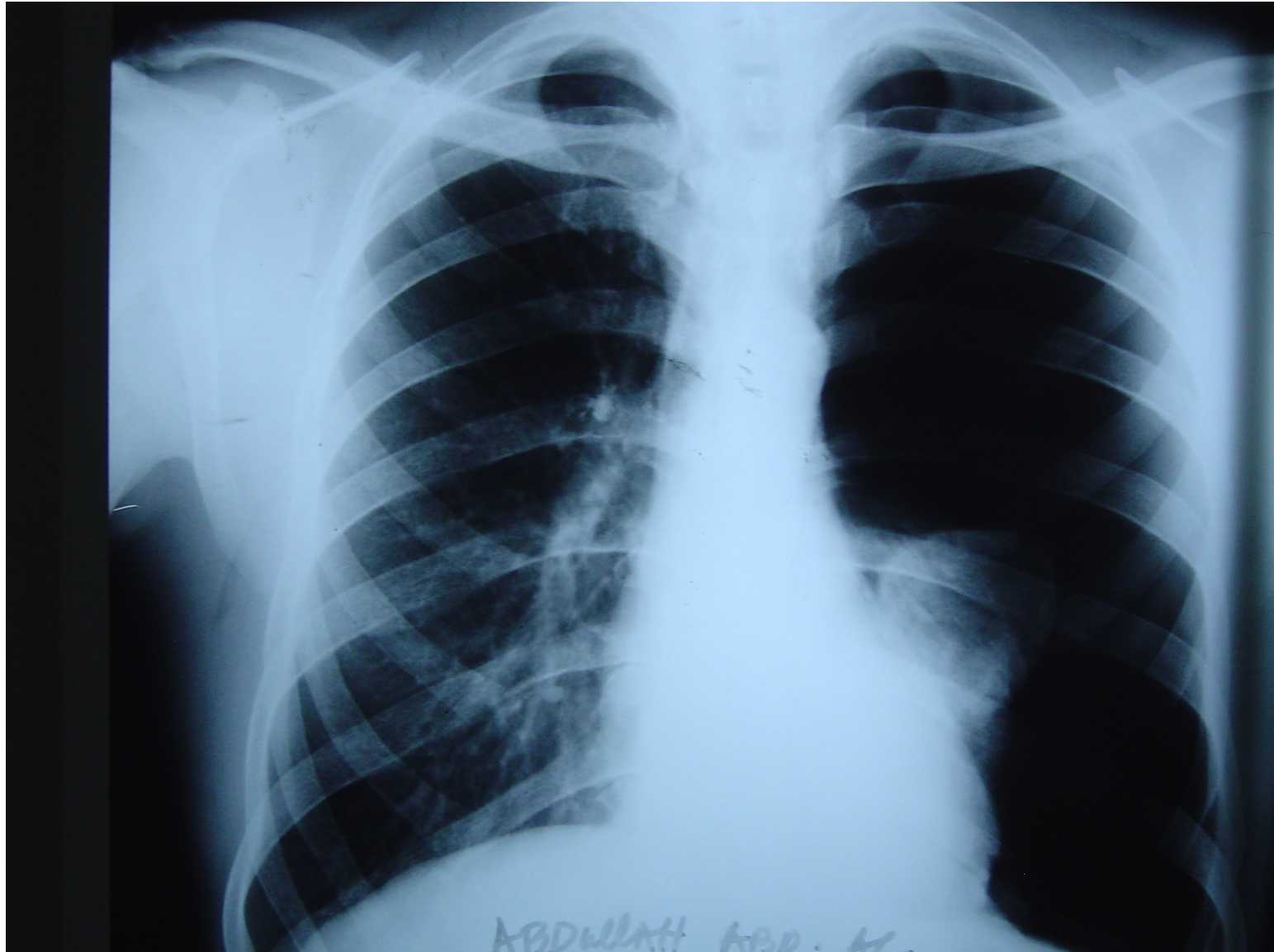


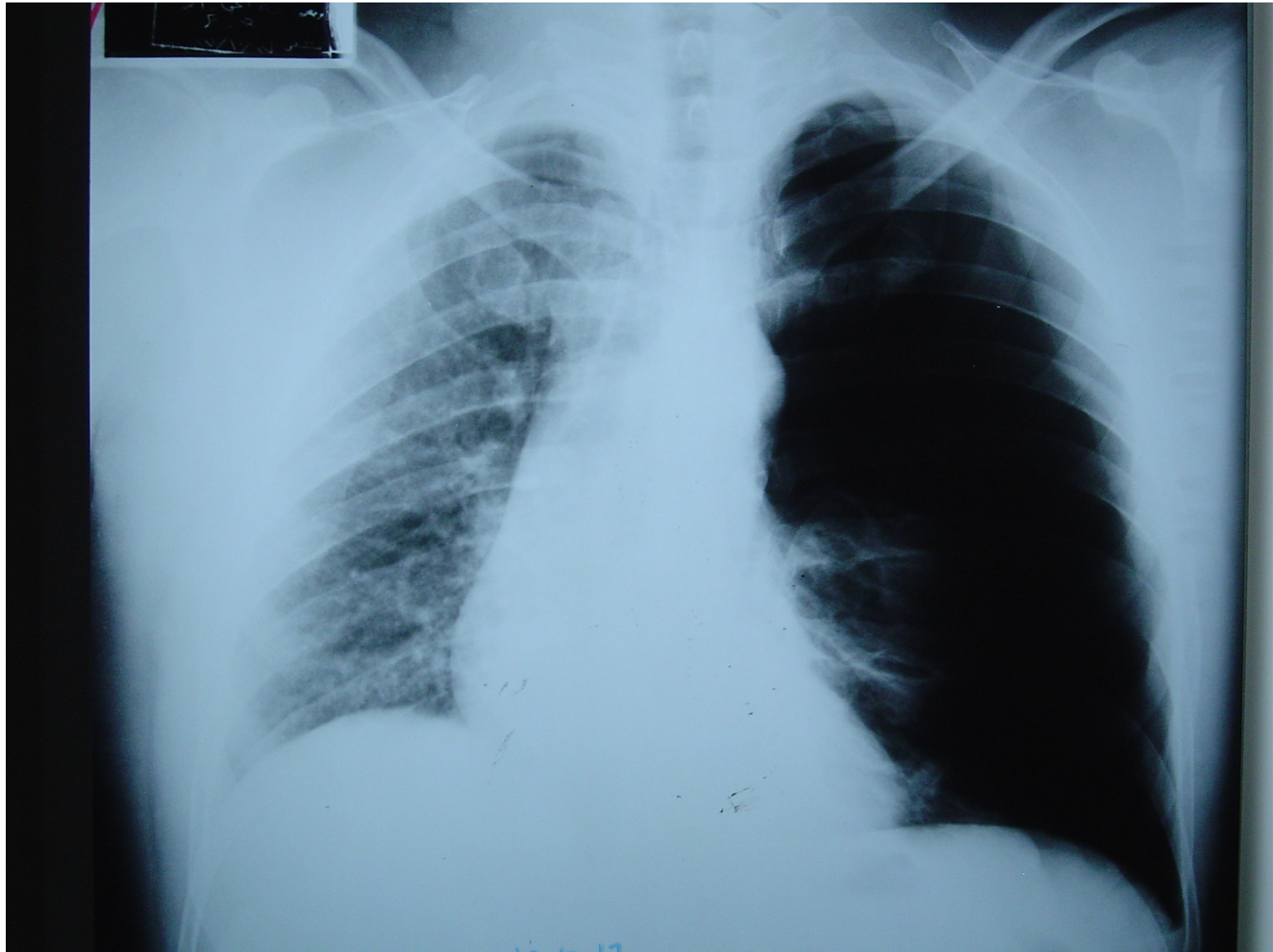


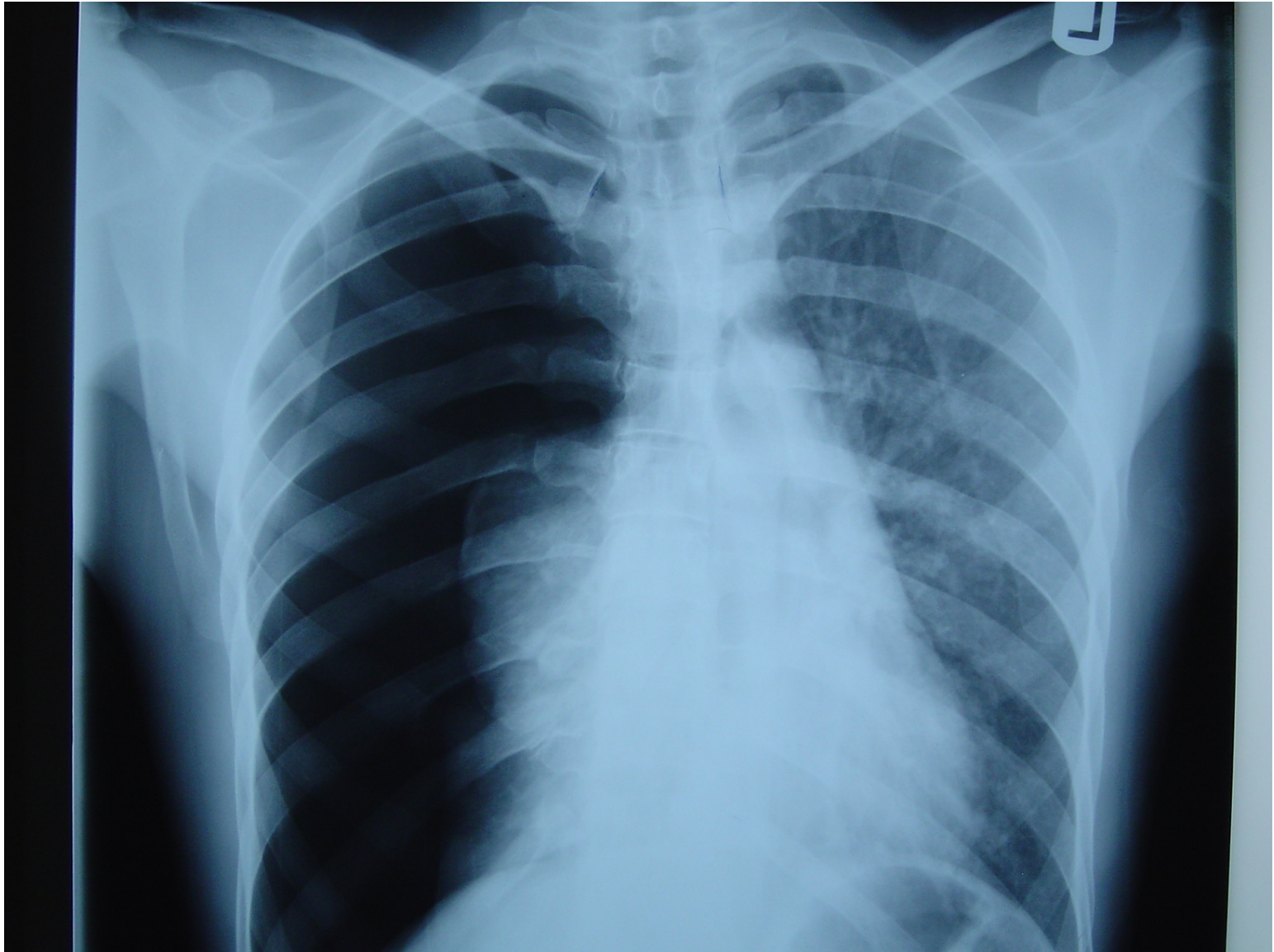


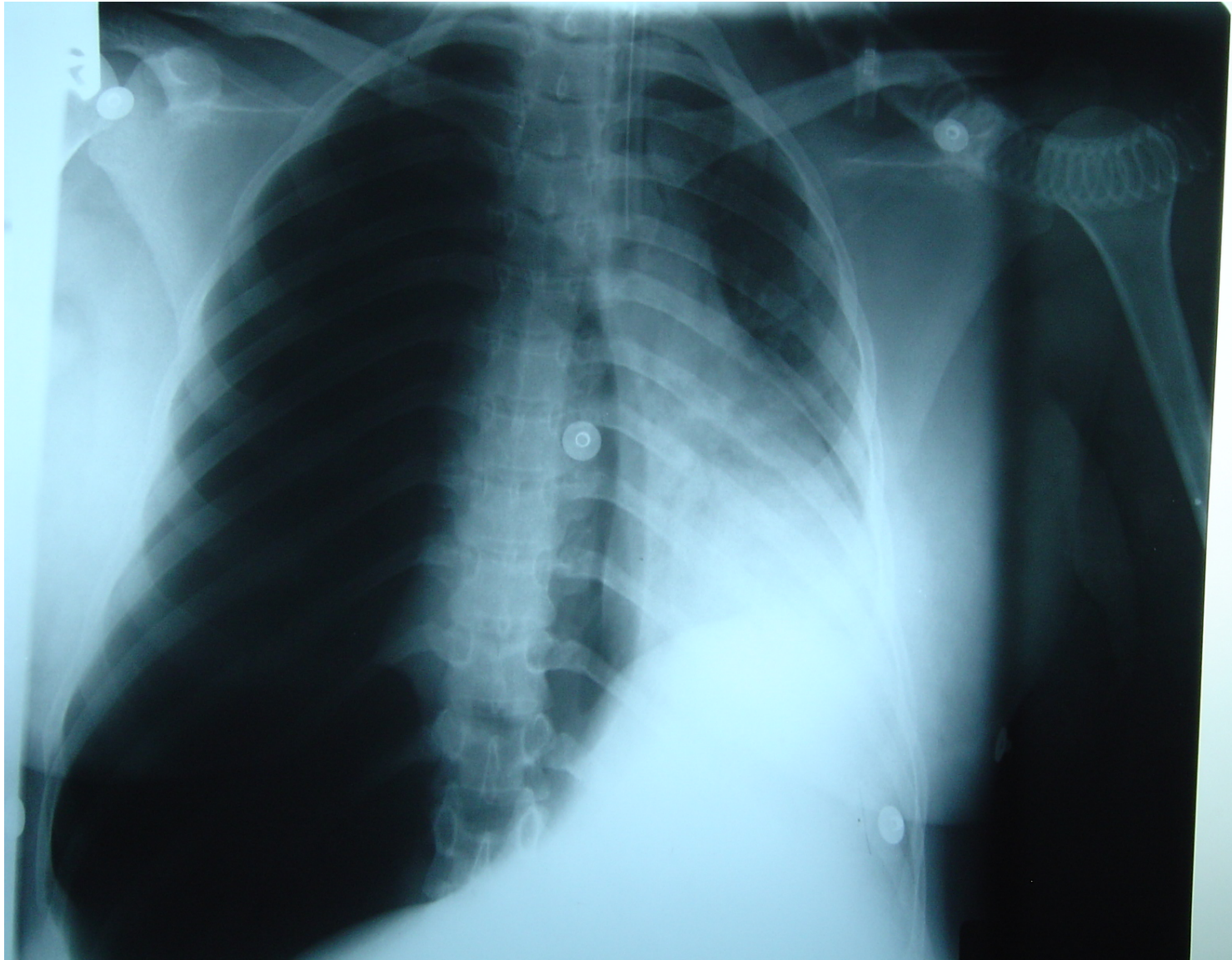
Pleura Cavity

- Spontaneous pneumothorax
- Pleural effusion
- Empyema
- Mesothelioma.









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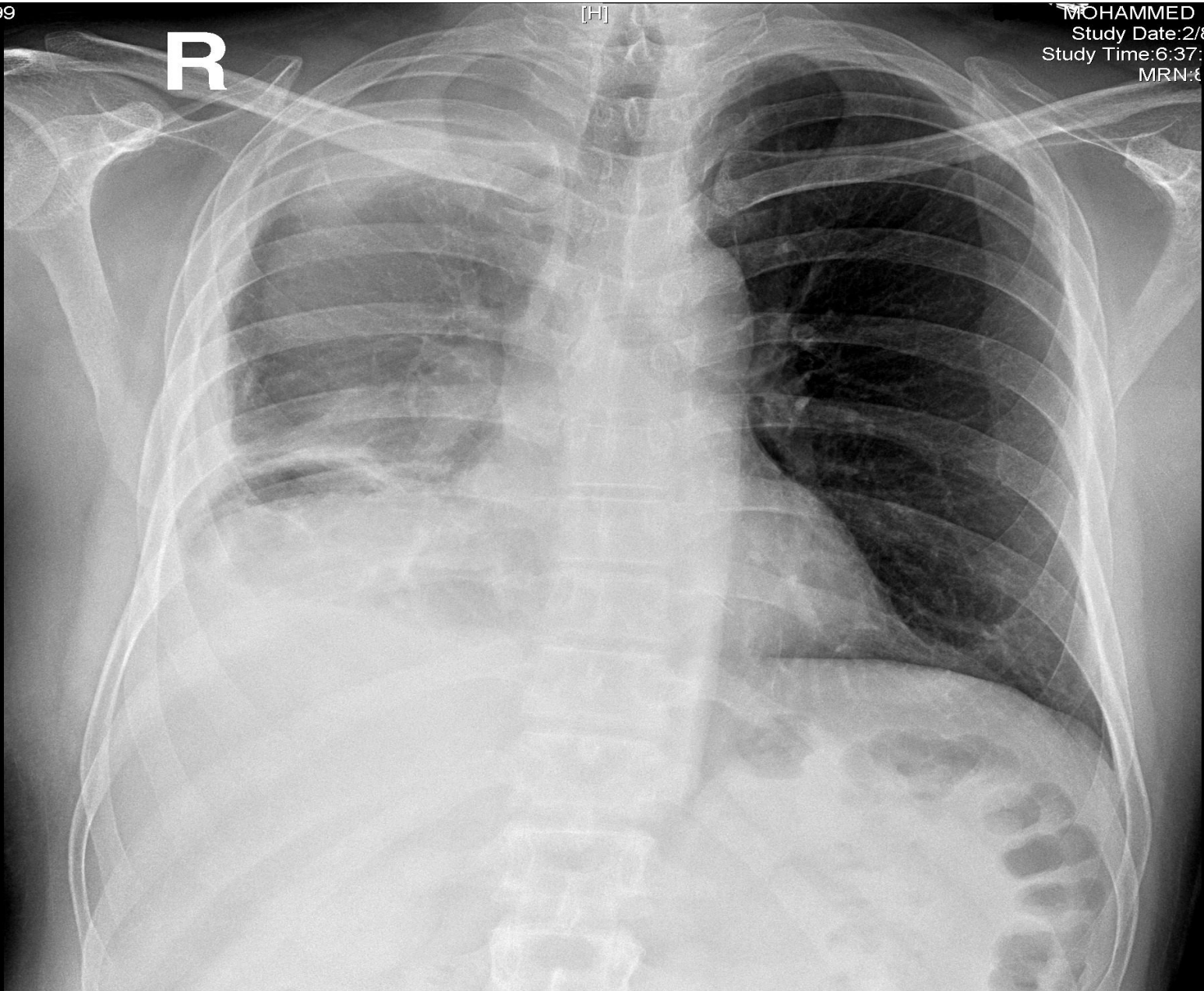
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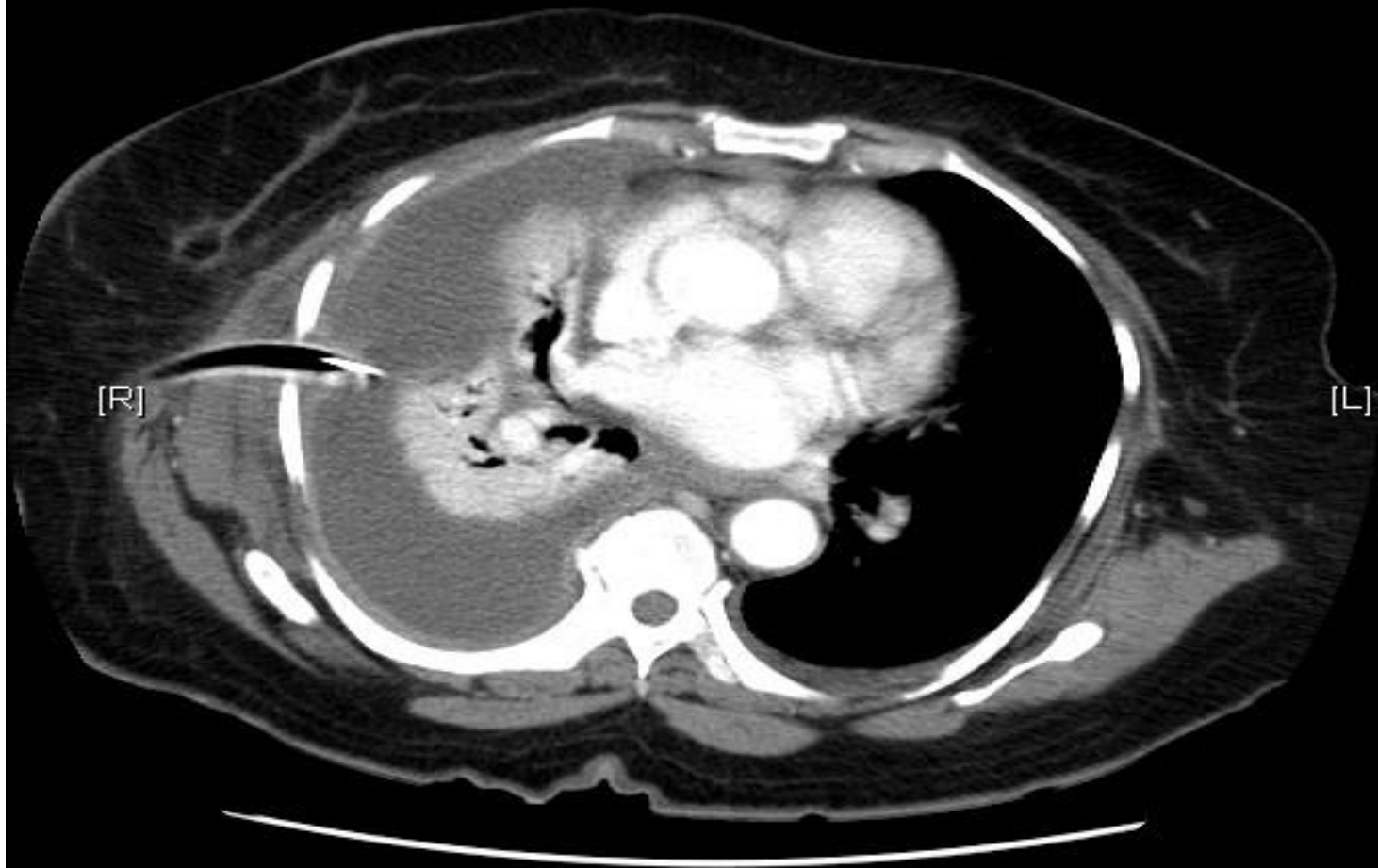




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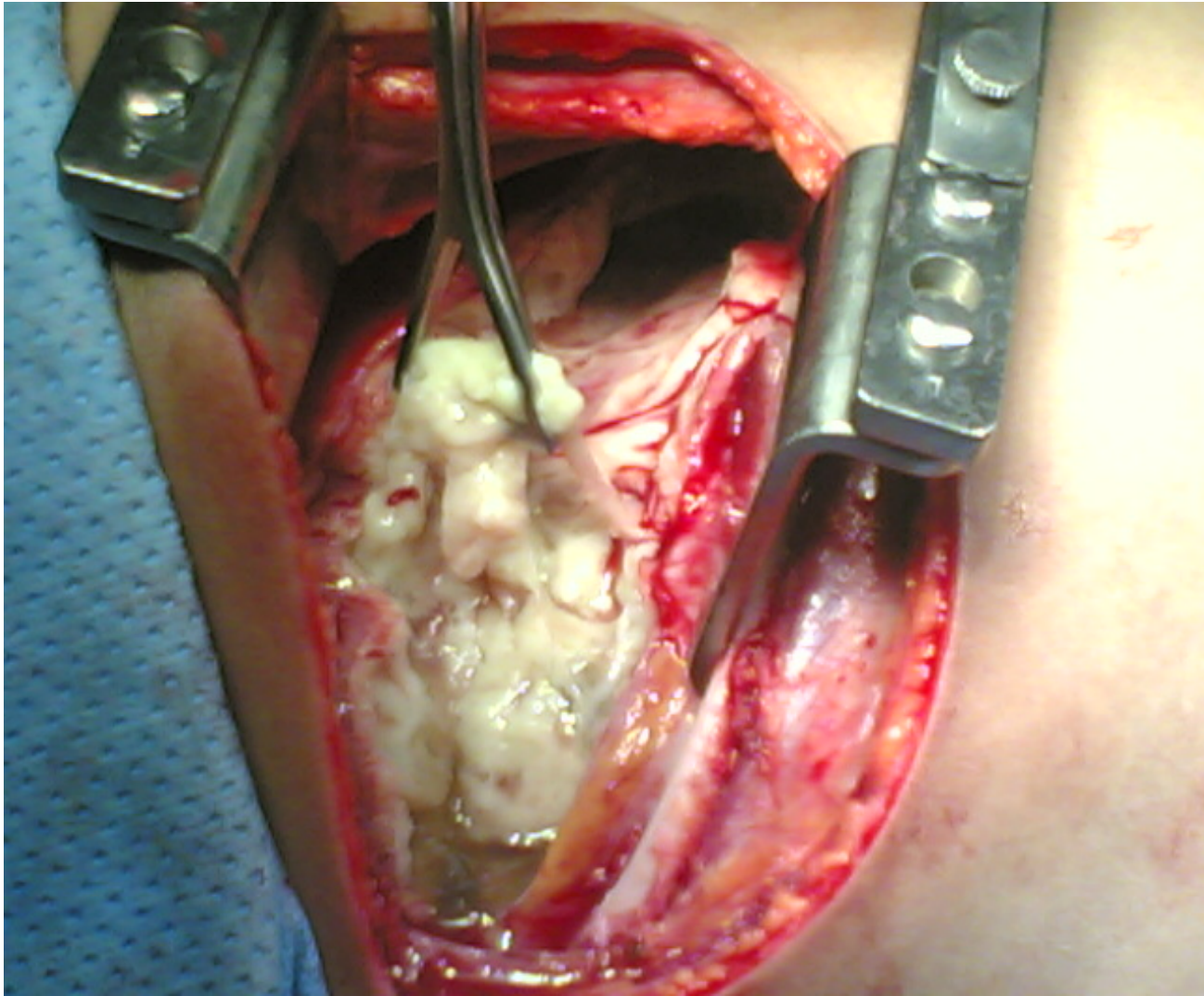
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Study Time: 10:35:08 AM
MRN:

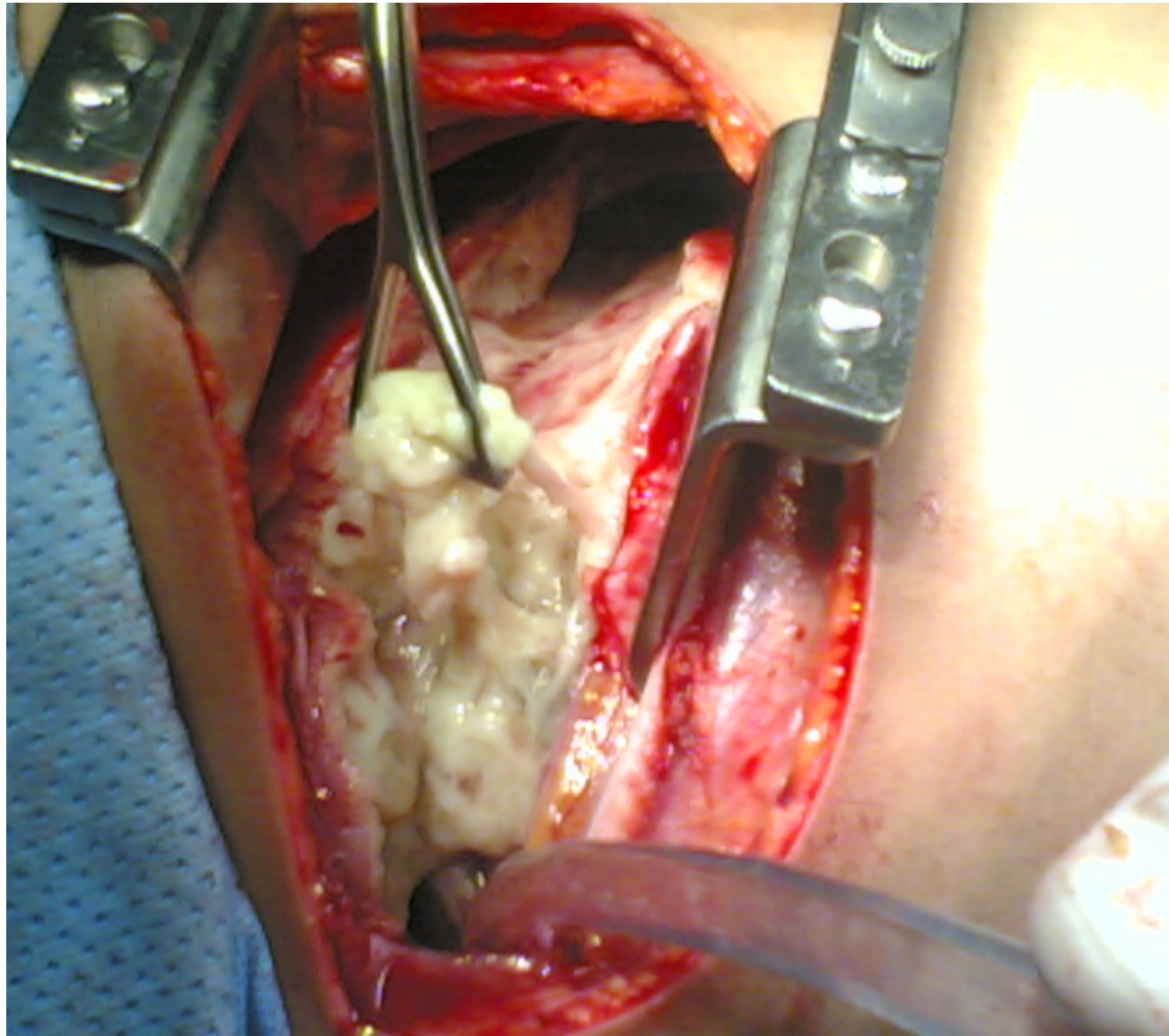


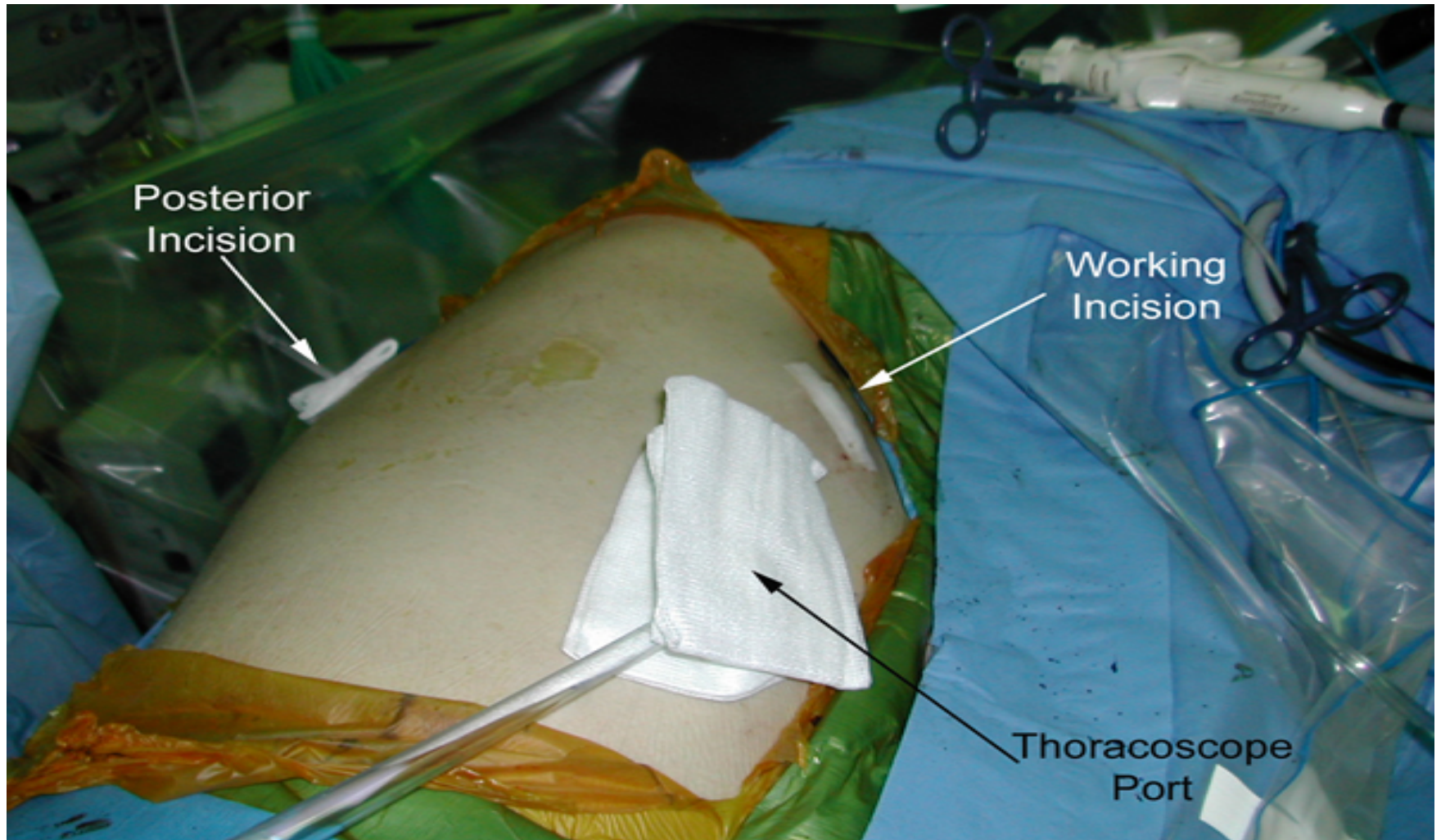
ROUTIN CHEST 5X5
100ML OMNIP 300

[P]

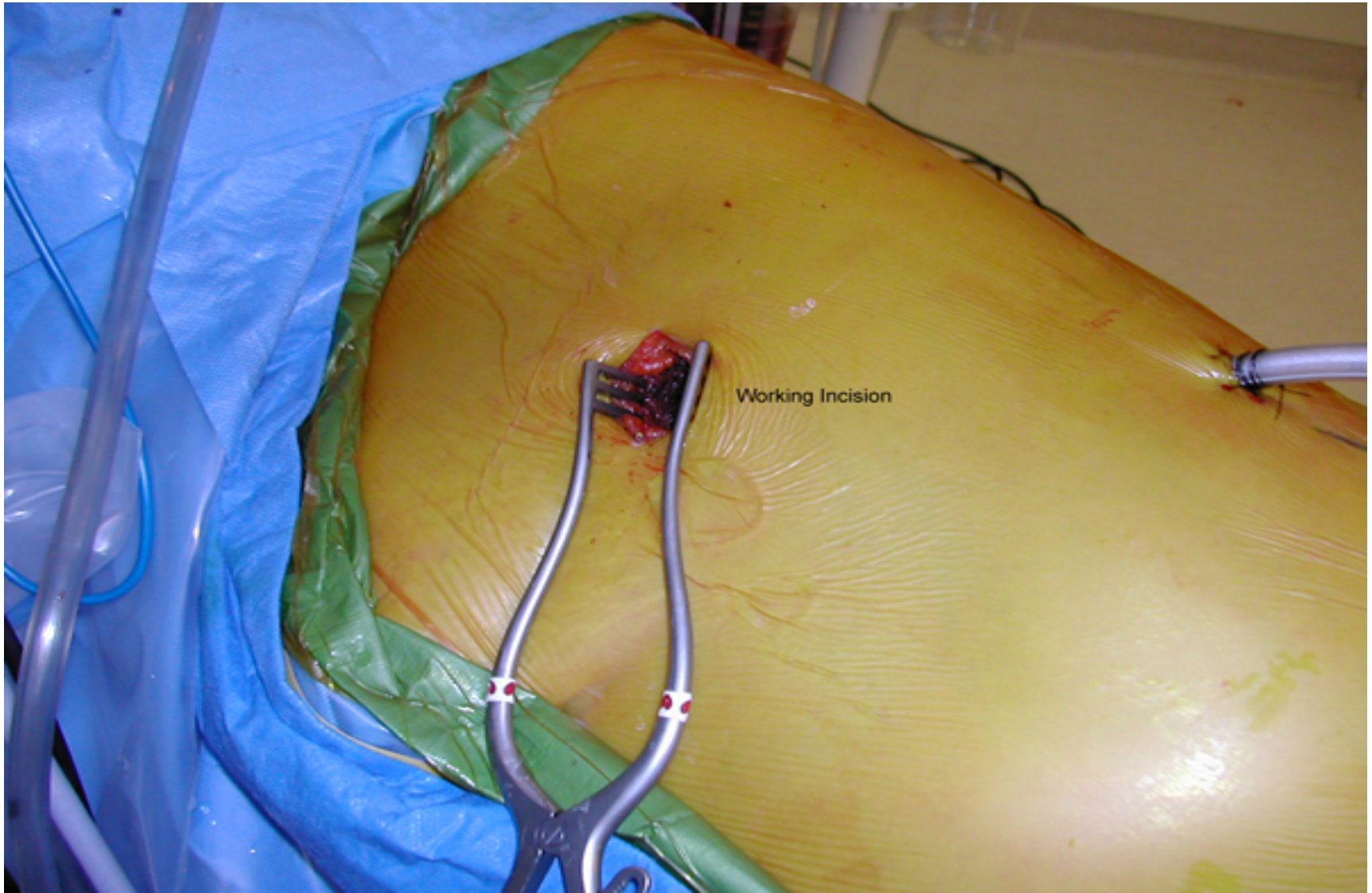
C52
W354







Position of skin incisions, showing camera port and working port anteriorly



Use of a retractor to hold open the working port.