

胸腔影像學概論

Chest imaging

【胸部X光片Ⅲ】

台北醫學大學 呼吸治療學系
02-2736-1661#3510、3517
chshih43@tmu.edu.tw
施崇鴻

學習目標：

- 胸部X光的基本判讀
- 瞭解放射線學所產生的sign
- 瞭解各肺點部體積減少所產生的特徵
- 經由這些特徵所表現出來的可能疾病鑑別診斷

Reference

- **Jud W. Gurney ... et al. (2006). *Diagnostic imaging*. Salt Lake City, Utah: Amirsys.**
- **Jannette Collins, Eric J. Stern. (1999). *Chest radiology : the essentials* . Philadelphia : Lippincott Williams & Wilkins.**
- **Alfred P. Fishman; section editors, Jack A. Elias ... et al. (1998). *Fishman's pulmonary diseases and disorders*. New York : McGraw-Hill, Health Professions Division.**
- **江自得 (2003) 。實用胸腔X光診斷學。臺北：力大。**
- **葉育文 (譯) (2005) 。胸部X光臨床判讀 (原作者：Paul F. Jenkins) 。台北：合記。**

肺塌陷 (collapse)

1. 主要現象：

- (1) **density**增加；
- (2) **lung marking**會聚集在一起；
- (3) **fissure**會位移。

2. 次要現象：

- (1) 縱膈 (**trachea**及**heart**) 向病變處移動
- (2) 肺門及橫膈位移
- (3) 代償區之**lung marking**變得較稀疏
- (4) 肋間距離變窄 (指病變區)
- (5) 心臟轉位。

Radiographic Sign of Atelectasis

TABLE 11-1

RADIOGRAPHIC SIGNS OF ATELECTASIS

Crowding of pulmonary vessels
Crowded air bronchograms
Displacement of interlobar fissures
Abnormal pulmonary opacification
Obscured heart or diaphragm borders
Diaphragm elevation
Displacement of mediastinal structures
Hilar displacement
Compensatory hyperexpansion of surrounding lung
Approximation of ribs

Bandlike Shadow (Discoid Atelectasis)

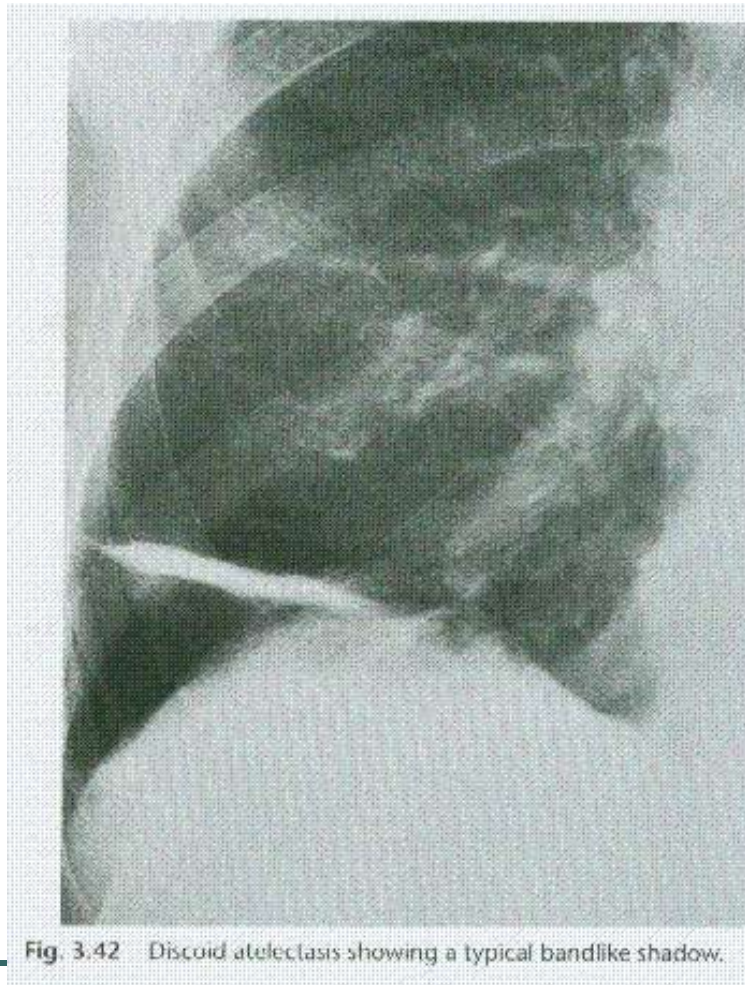
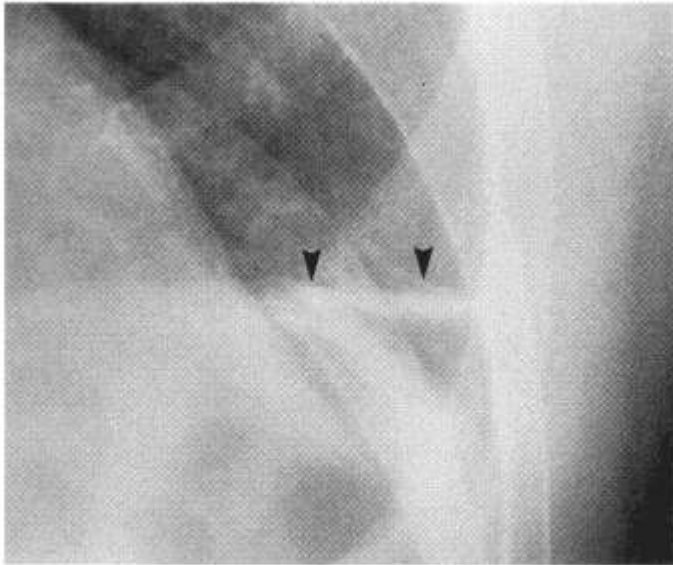
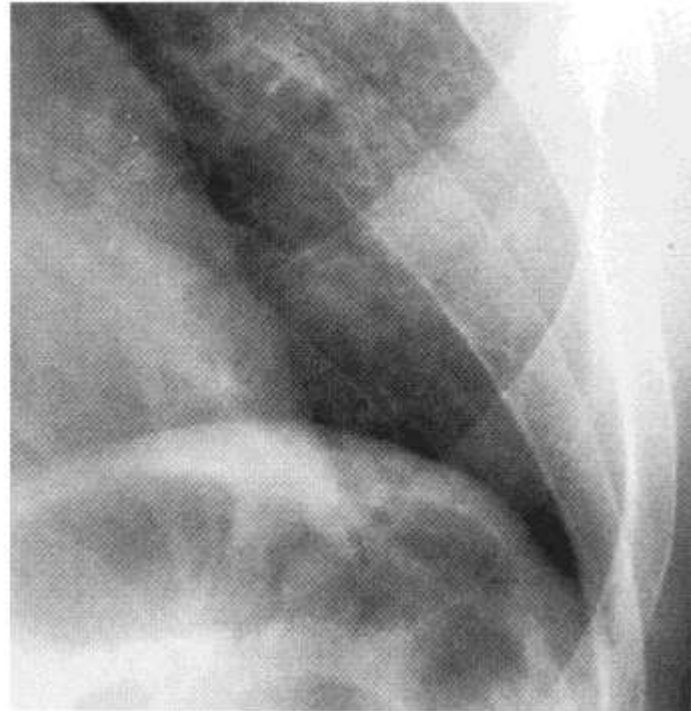


Plate-like atelectasis & clear

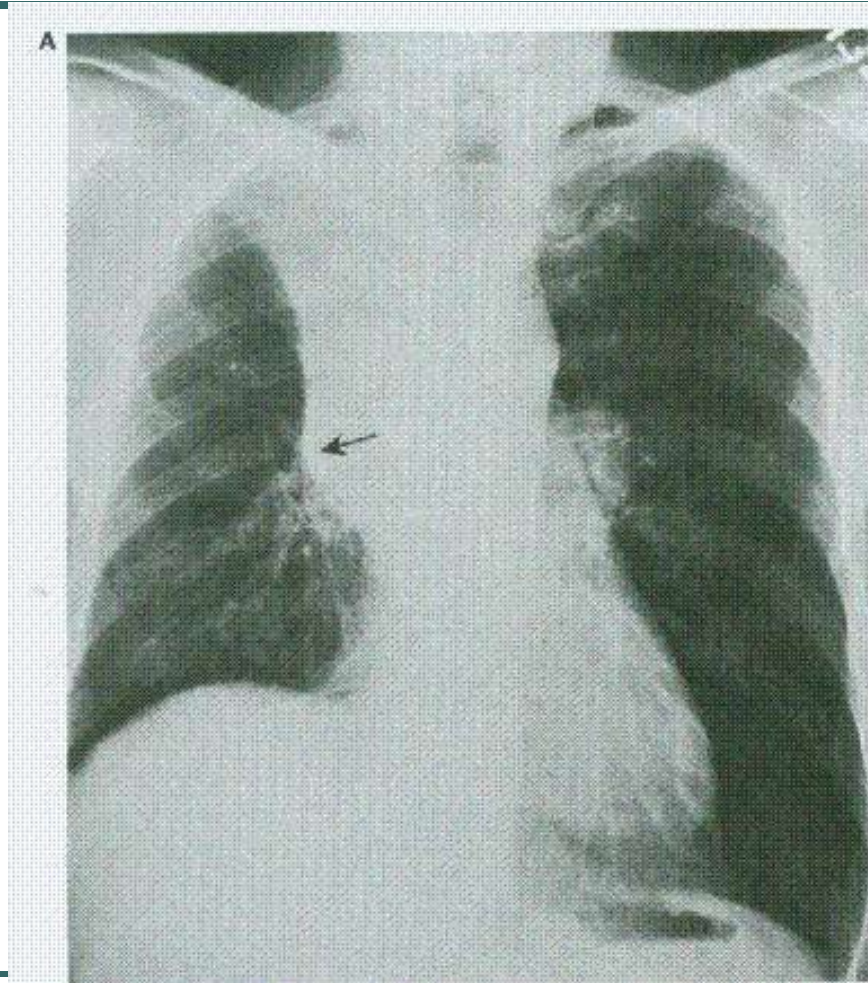


A



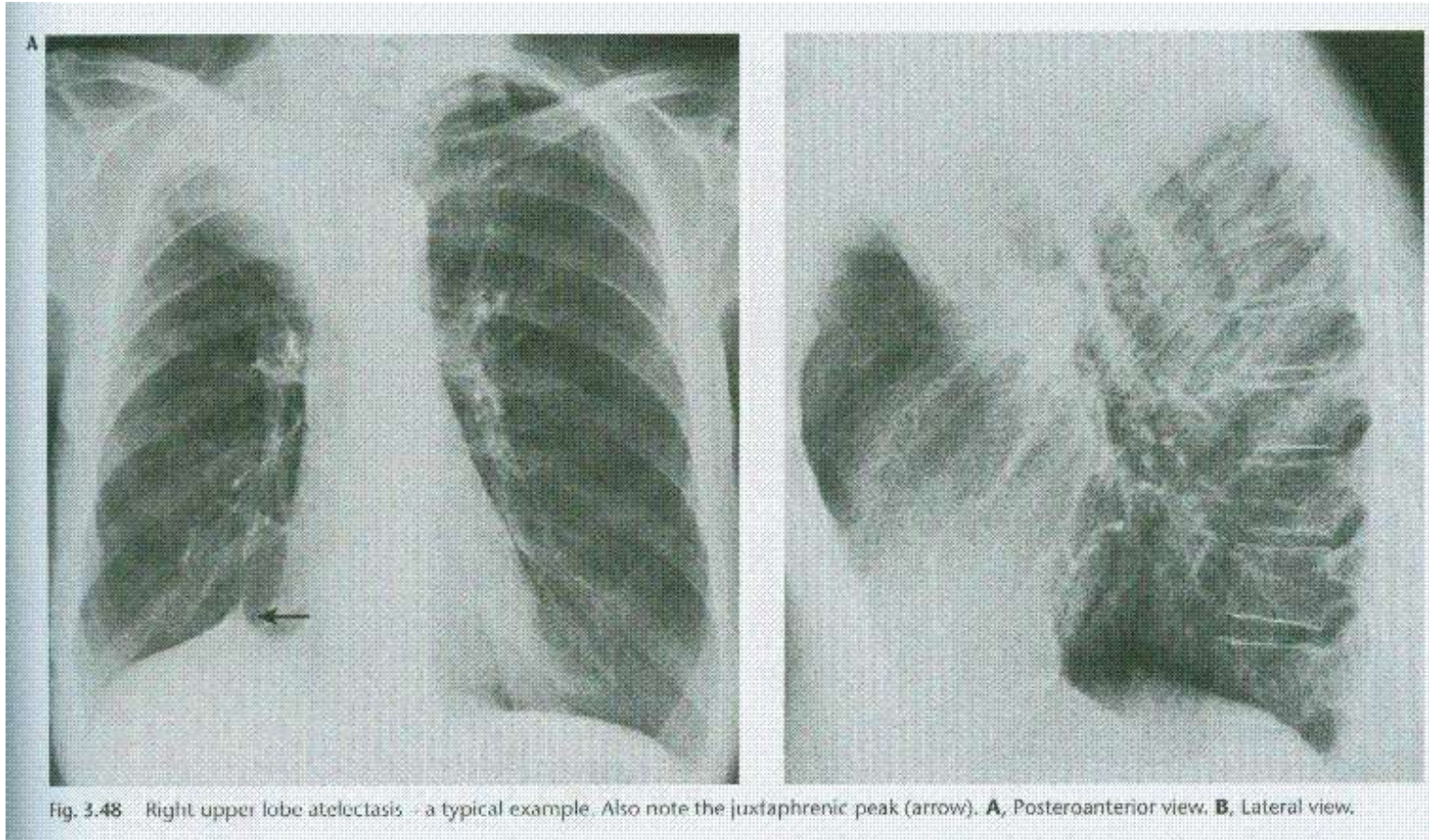
B

Reverse S Sign (Right Upper Lung Collapse)



Juxtaphrenic Peak Sign

Right Upper lung atelectasis



右上肺葉完全塌陷

(右上縱隔膜陰影變模糊，且右肺門上移)

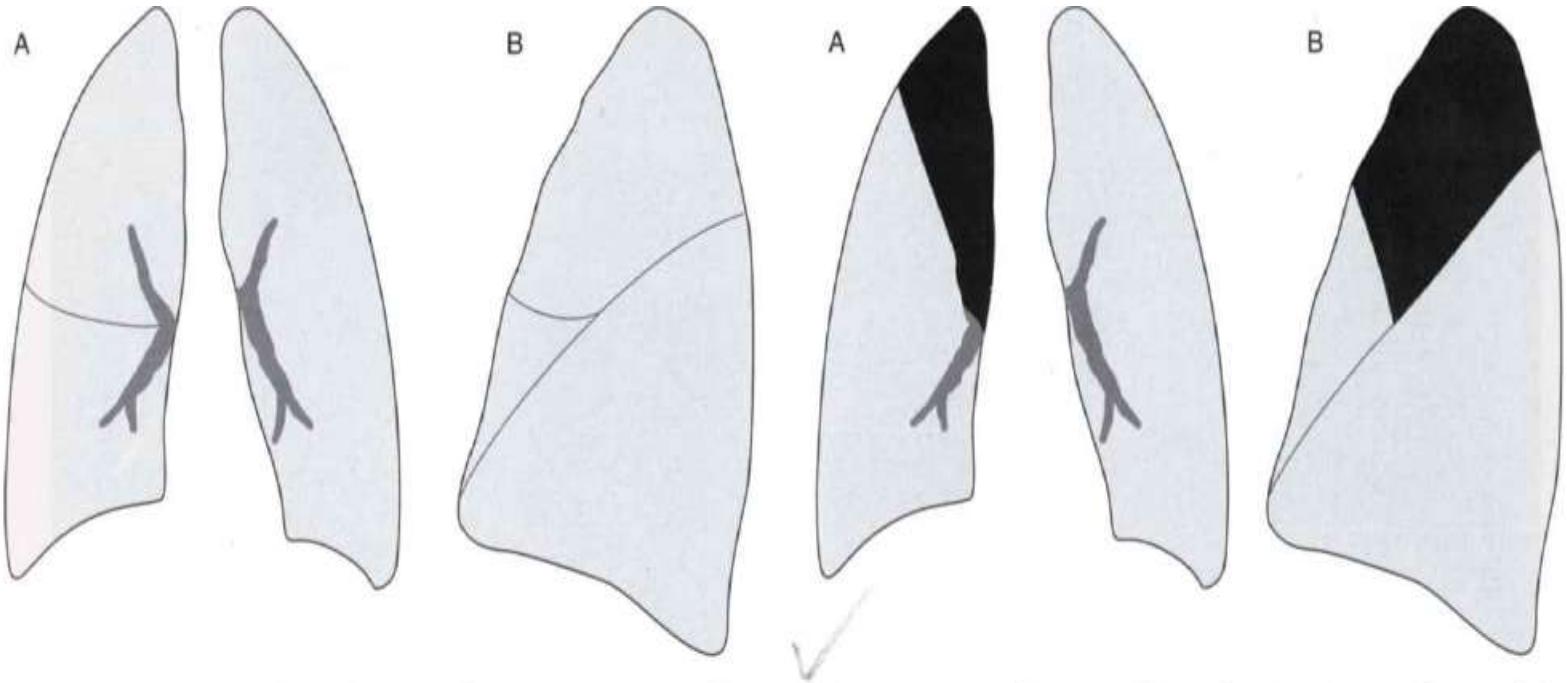


FIGURE 11-3. Normal lung volumes and fissures. Frontal (A) and lateral (B) views of the chest show normal positions of the minor (horizontal, right-sided) and major (oblique, bilateral) fissures. The major fissures are often superimposed on the lateral chest radiograph and are usually not seen on the frontal view.

FIGURE 11-4. Right upper lobe atelectasis. A: Frontal view of the chest shows elevation of the minor fissure and increased opacification of the right upper medial lung (*black area*). B: Lateral view shows elevation of the minor fissure and superior portion of the right major fissure, as well as opacification of the upper lung.

右上肺葉完全塌陷

(右上縱隔膜陰影變模糊，且右肺門上移)

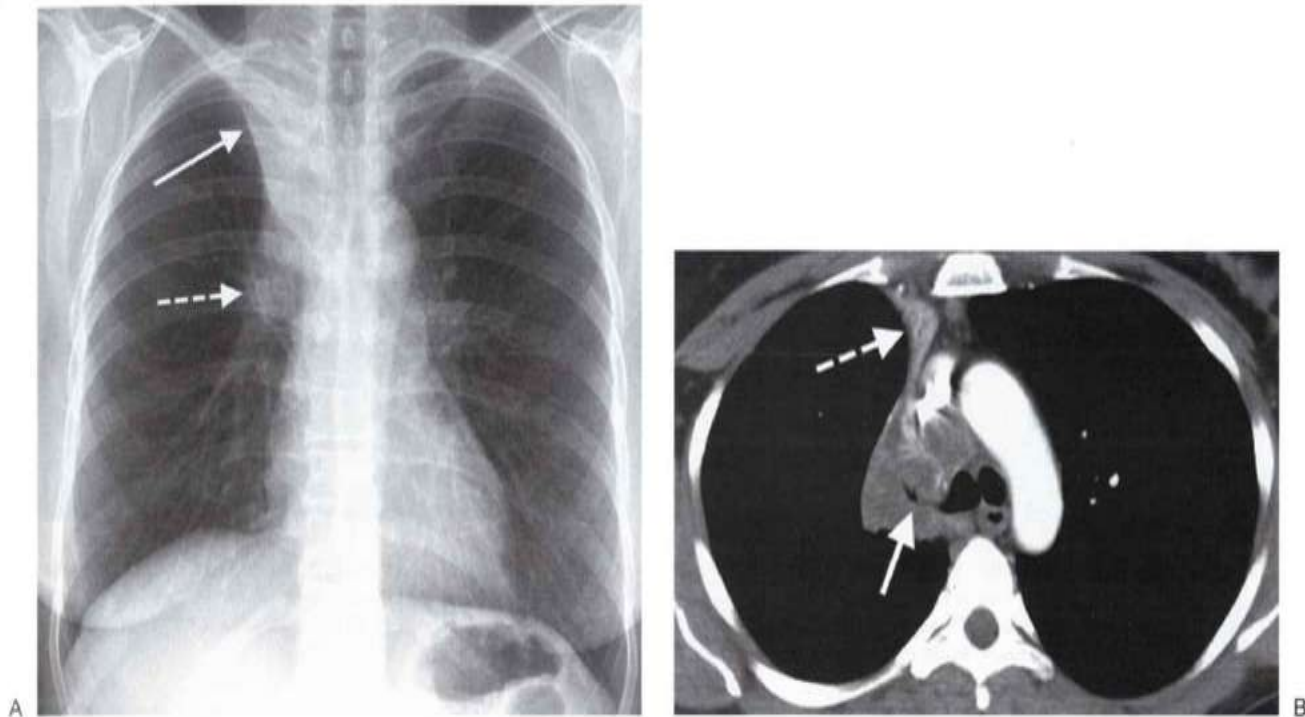


FIGURE 2-11. Golden S sign. A: PA chest radiograph of a man with bronchogenic carcinoma of the right upper lobe. The endobronchial tumor causes collapse of the right upper lobe, and upward displacement of the minor fissure (*solid arrow*). The tumor mass produces a convex margin toward the lung at the right hilum (*dashed arrow*). The contour of the displaced fissure and central mass creates a reverse S shape. Note the elevation of the right hemidiaphragm, another sign of right upper lobe volume loss. B: CT of the chest shows tumor encasing and occluding the right upper lobe bronchus (*solid arrow*) and collapse of the right upper lobe, with superior and medial displacement of the minor fissure (*dashed arrow*).

右上肺葉完全塌陷

(右上縱隔膜陰影變模糊，且右肺門上移)

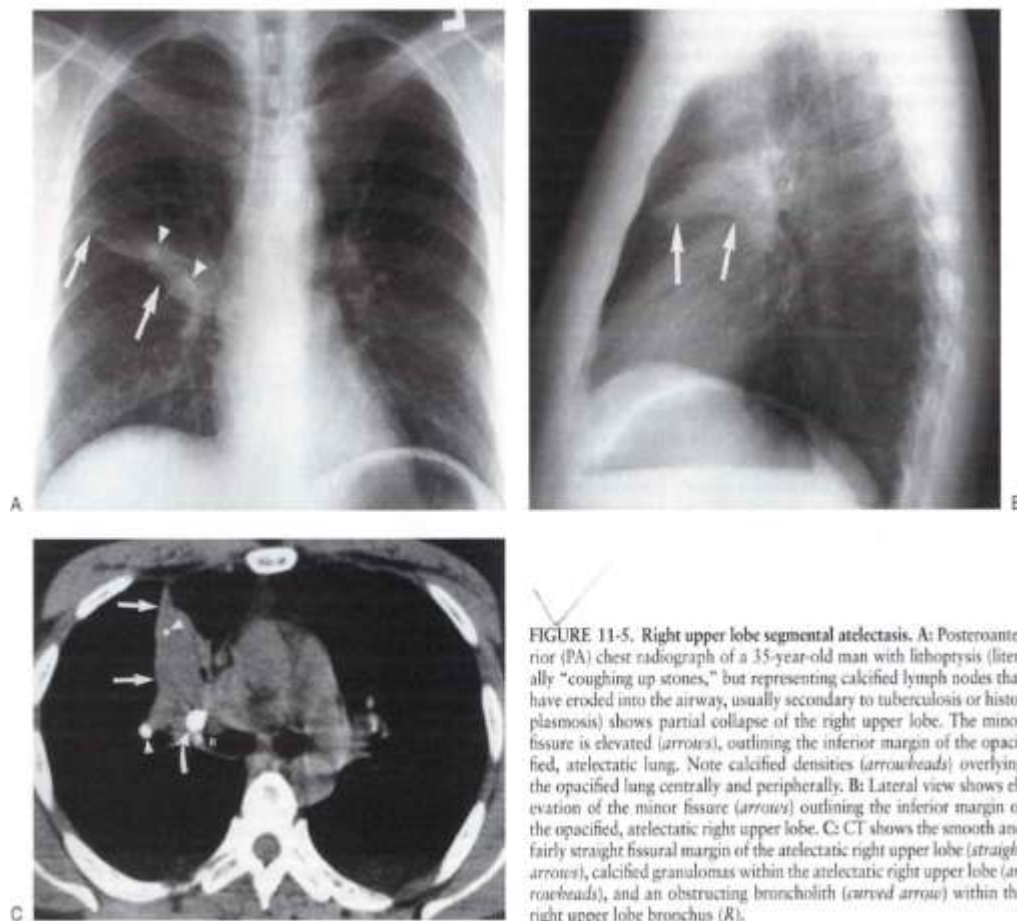


FIGURE 11-5. Right upper lobe segmental atelectasis. A: Posteroanterior (PA) chest radiograph of a 35-year-old man with lithoptysis (literally "coughing up stones," but representing calcified lymph nodes that have eroded into the airway, usually secondary to tuberculosis or histoplasmosis) shows partial collapse of the right upper lobe. The minor fissure is elevated (arrows), outlining the inferior margin of the opacified, atelectatic lung. Note calcified densities (arrowheads) overlying the opacified lung centrally and peripherally. B: Lateral view shows elevation of the minor fissure (arrows) outlining the inferior margin of the opacified, atelectatic right upper lobe. C: CT shows the smooth and fairly straight fissural margin of the atelectatic right upper lobe (straight arrows), calcified granulomas within the atelectatic right upper lobe (arrowheads), and an obstructing broncholith (curved arrow) within the right upper lobe bronchus (R).

右中肺葉完全塌陷 (心臟右緣細微模糊)

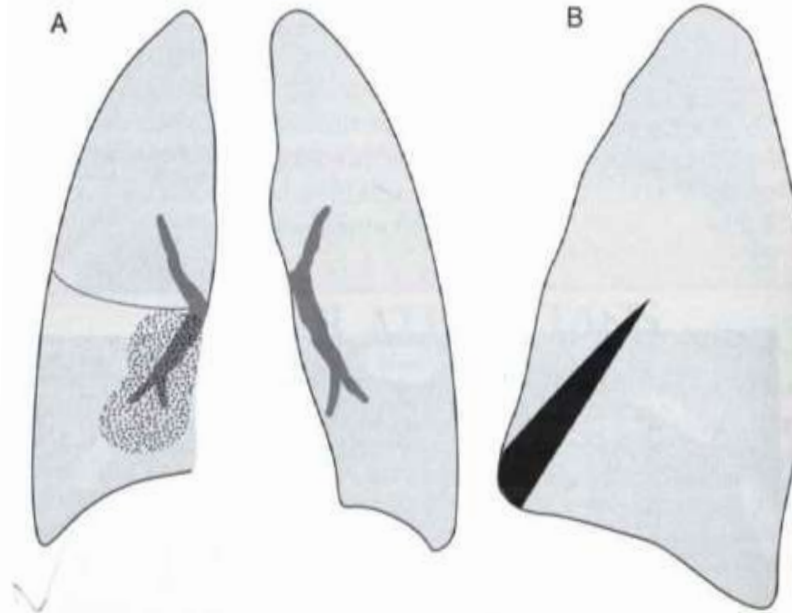


FIGURE 11-7. Right middle lobe atelectasis. A: Frontal view of the chest shows loss of the right heart border and an ill-defined area of increased opacification in the right medial lung (*stippled area*). B: Lateral view shows triangular area of opacification (*black area*) overlying the heart, with approximation of the minor and major fissures. (Reprinted with permission from Collins J. 1996 Joseph E. Whitley, MD, Award. Evaluation of an introductory course in chest radiology. *Acad Radiol.* 1996;3:994-999.)

右中肺葉完全塌陷 (心臟右緣細微模糊)

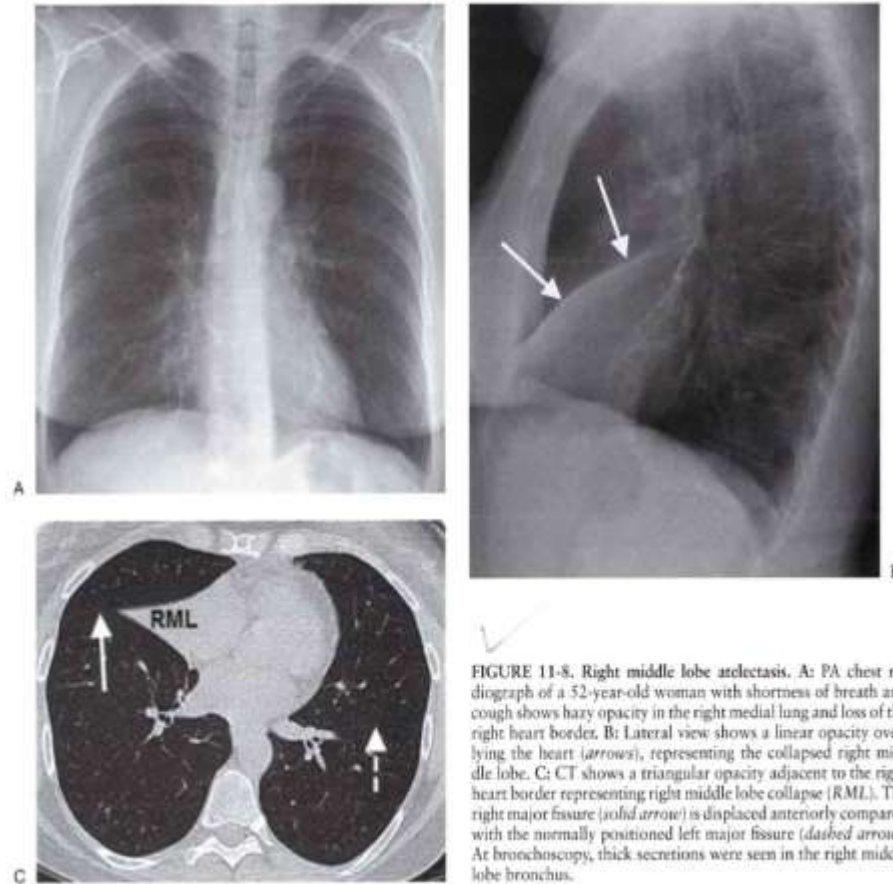


FIGURE 11-8. Right middle lobe atelectasis. A: PA chest radiograph of a 52-year-old woman with shortness of breath and cough shows hazy opacity in the right medial lung and loss of the right heart border. B: Lateral view shows a linear opacity overlying the heart (arrows), representing the collapsed right middle lobe. C: CT shows a triangular opacity adjacent to the right heart border representing right middle lobe collapse (RML). The right major fissure (solid arrow) is displaced anteriorly compared with the normally positioned left major fissure (dashed arrow). At bronchoscopy, thick secretions were seen in the right middle lobe bronchus.

Right Middle Syndrome

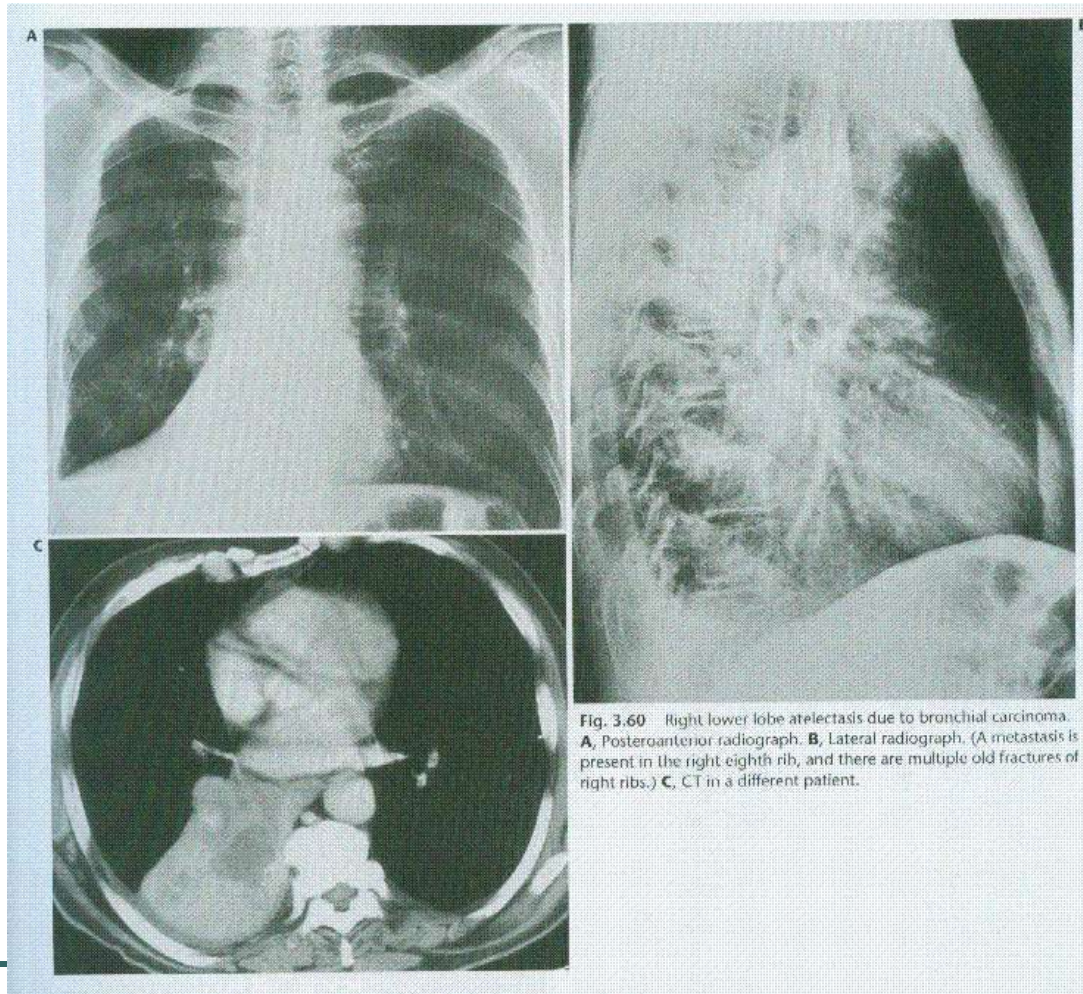


Fig. 3.60 Right lower lobe atelectasis due to bronchial carcinoma. **A**, Posteroanterior radiograph. **B**, Lateral radiograph. (A metastasis is present in the right eighth rib, and there are multiple old fractures of right ribs.) **C**, CT in a different patient.

Right Middle Syndrome

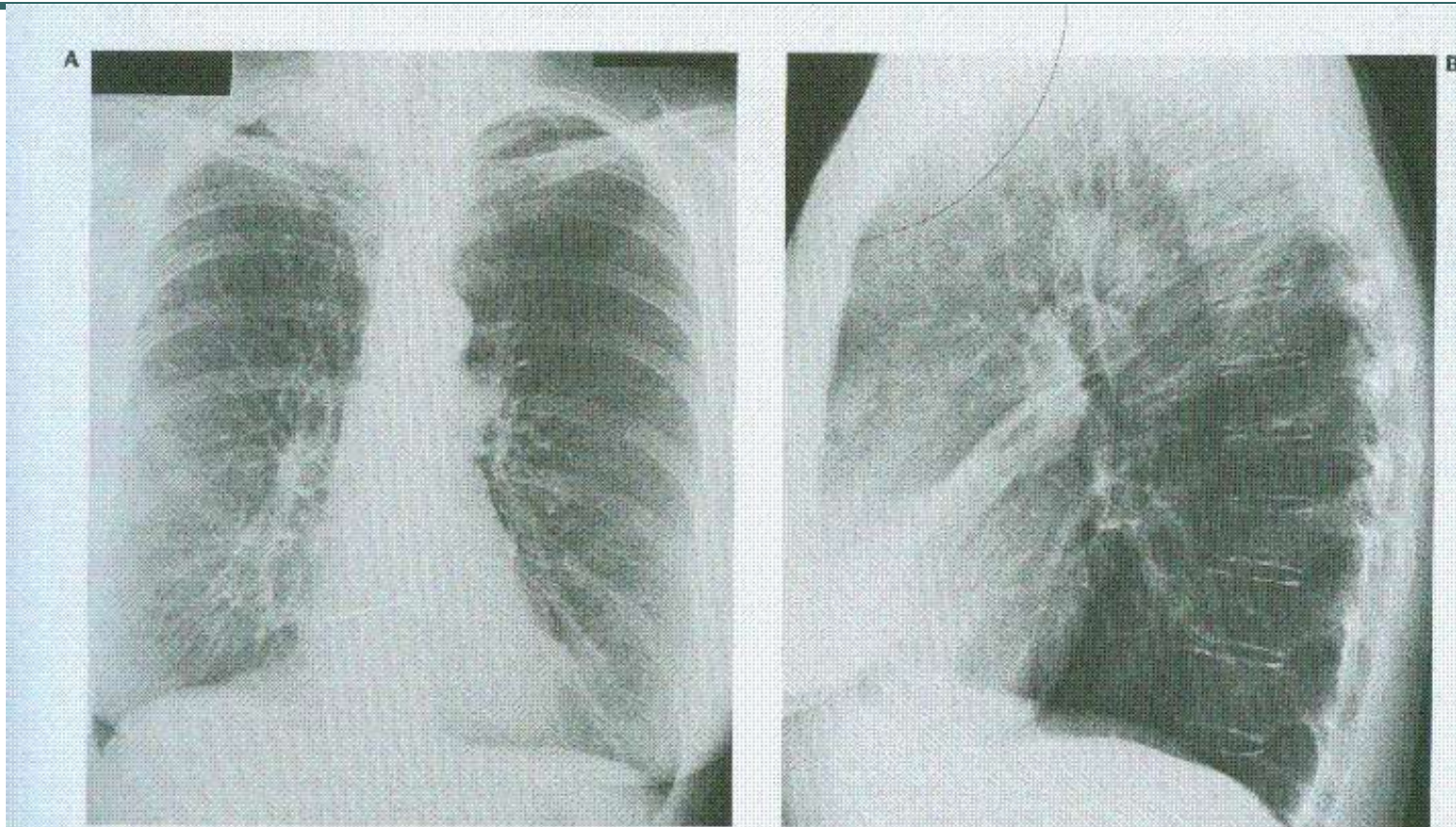


Fig. 3.57 Right middle lobe atelectasis. **A**, The lobe is so severely atelectatic that the opacity is difficult to see in the frontal view. There is, however, loss of the right heart border due to the silhouette sign. **B**, The lateral view shows the atelectatic lobe to advantage. In this case, the atelectasis was chronic and the result of the "middle lobe syndrome".

Rt lower lobe atelectasis

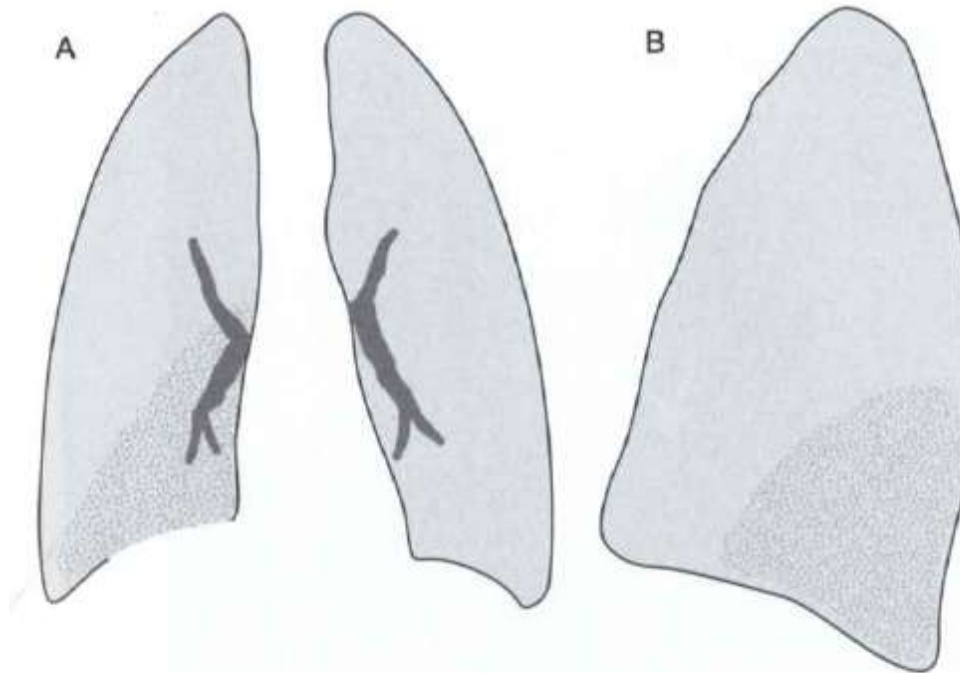


FIGURE 11-11. Right lower lobe atelectasis. A: Frontal view of the chest shows loss of the medial right hemidiaphragm border, elevation of the right hemidiaphragm, and increased opacification of the right medial lower lung (*stippled area*). B: Lateral view shows increased opacification of the posterior inferior lung (*stippled area*).

Right Middle & lower Atelectasis

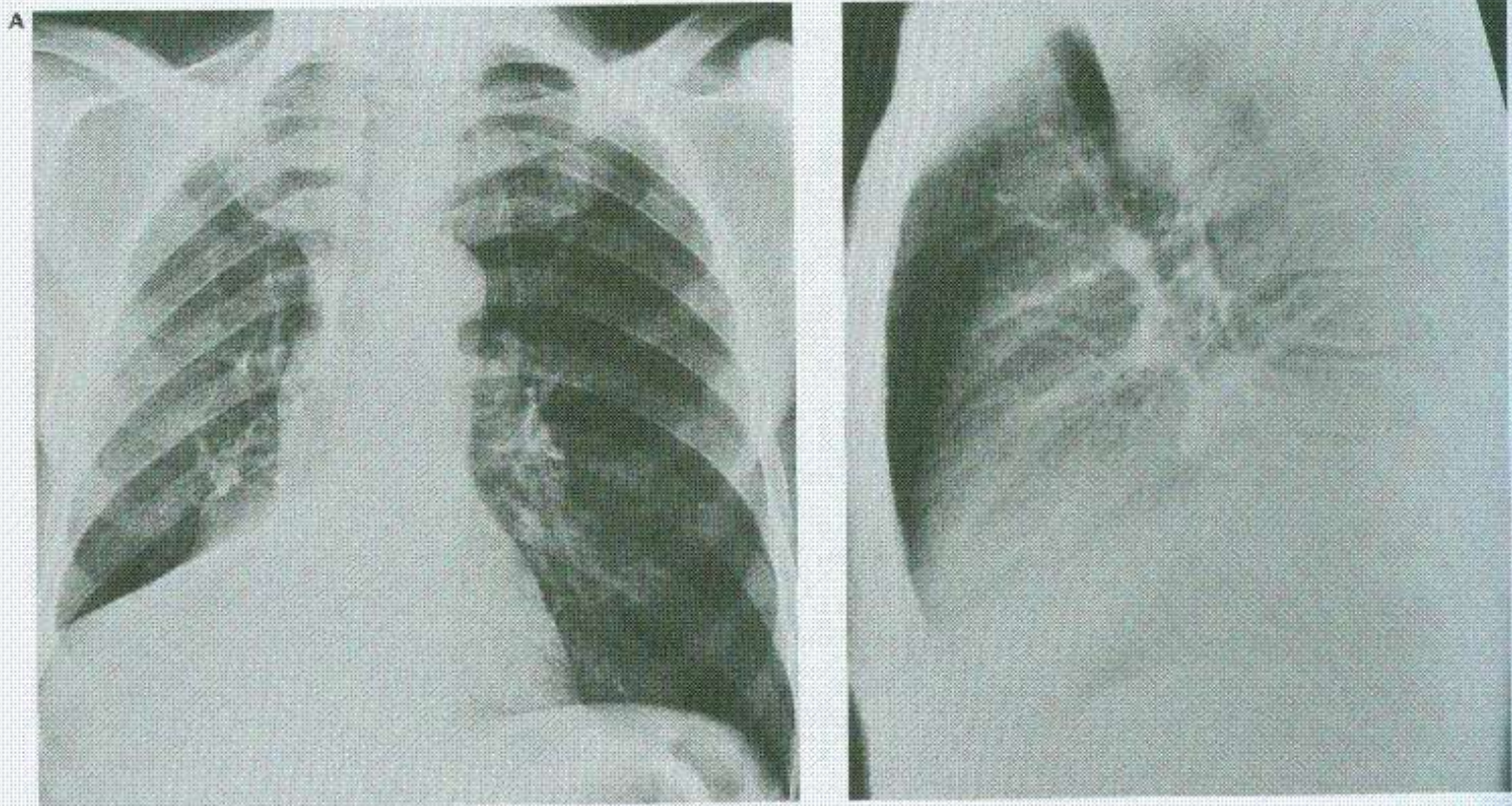


Fig. 3.68 Combined right middle and lower lobe atelectasis. Note the similarity to right lower lobe atelectasis alone, except that the abnormal density extends all the way to the costophrenic angle in the frontal view and from front to back in the lateral view. **A**, Posteroanterior view. **B**, Lateral view.

Juxtaphrenic Peak Sign

Left Upper lung atelectasis

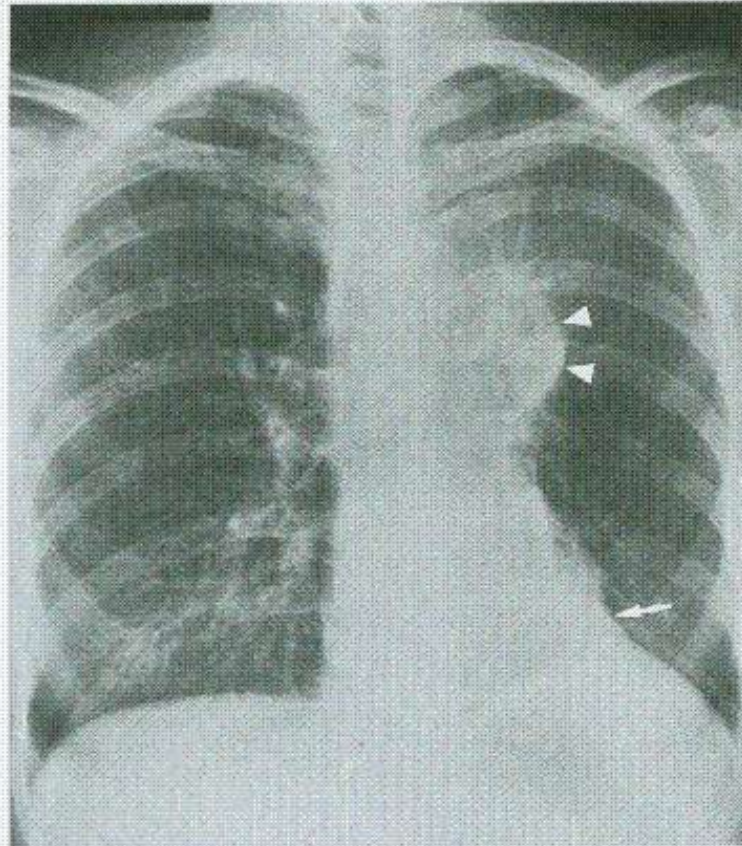
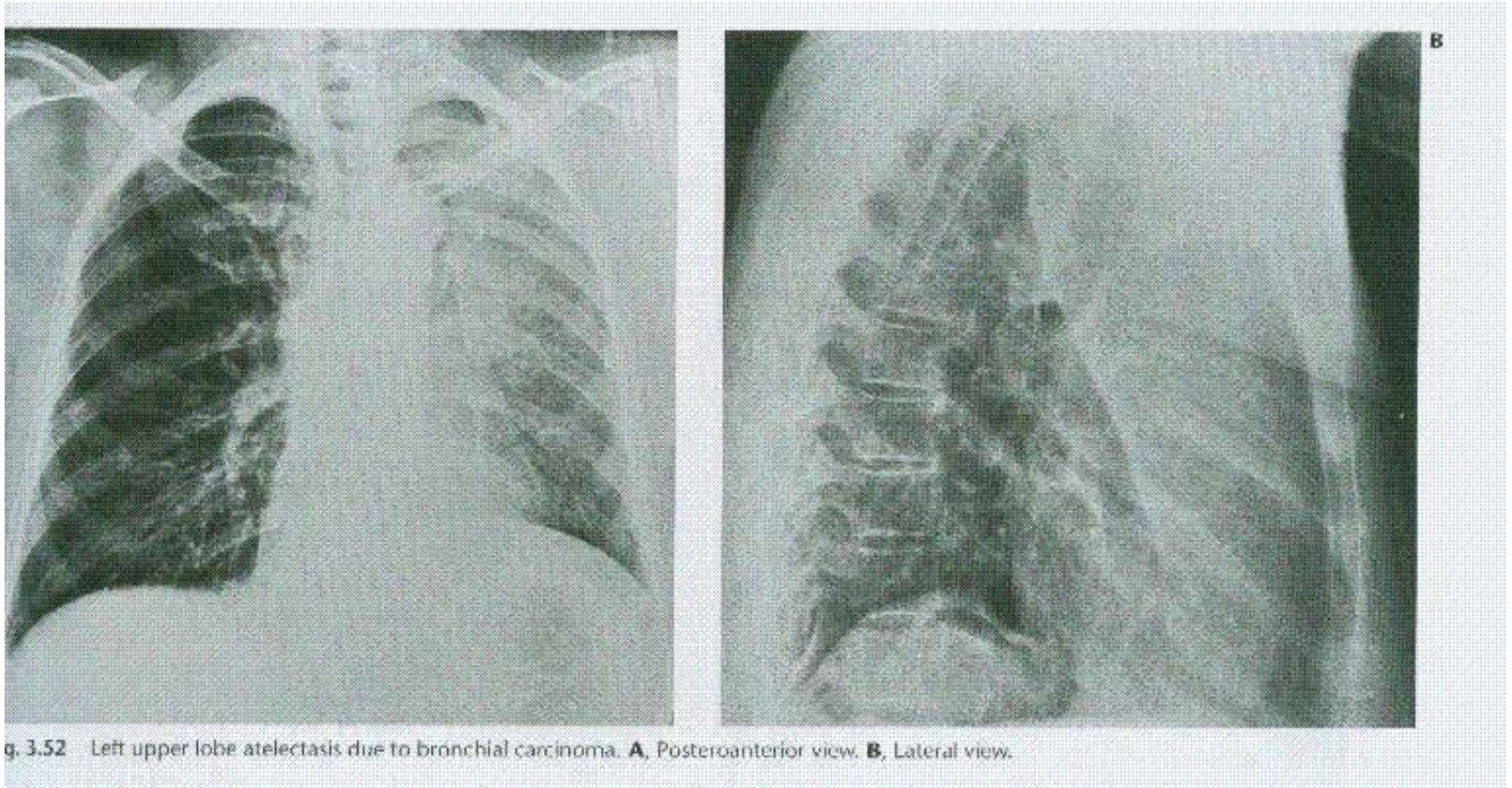


Fig. 3.55 Left upper lobe atelectasis showing a juxtaphrenic peak (arrow) and a Golden S sign (arrowheads). The atelectasis was caused by a centrally obstructing bronchial carcinoma.

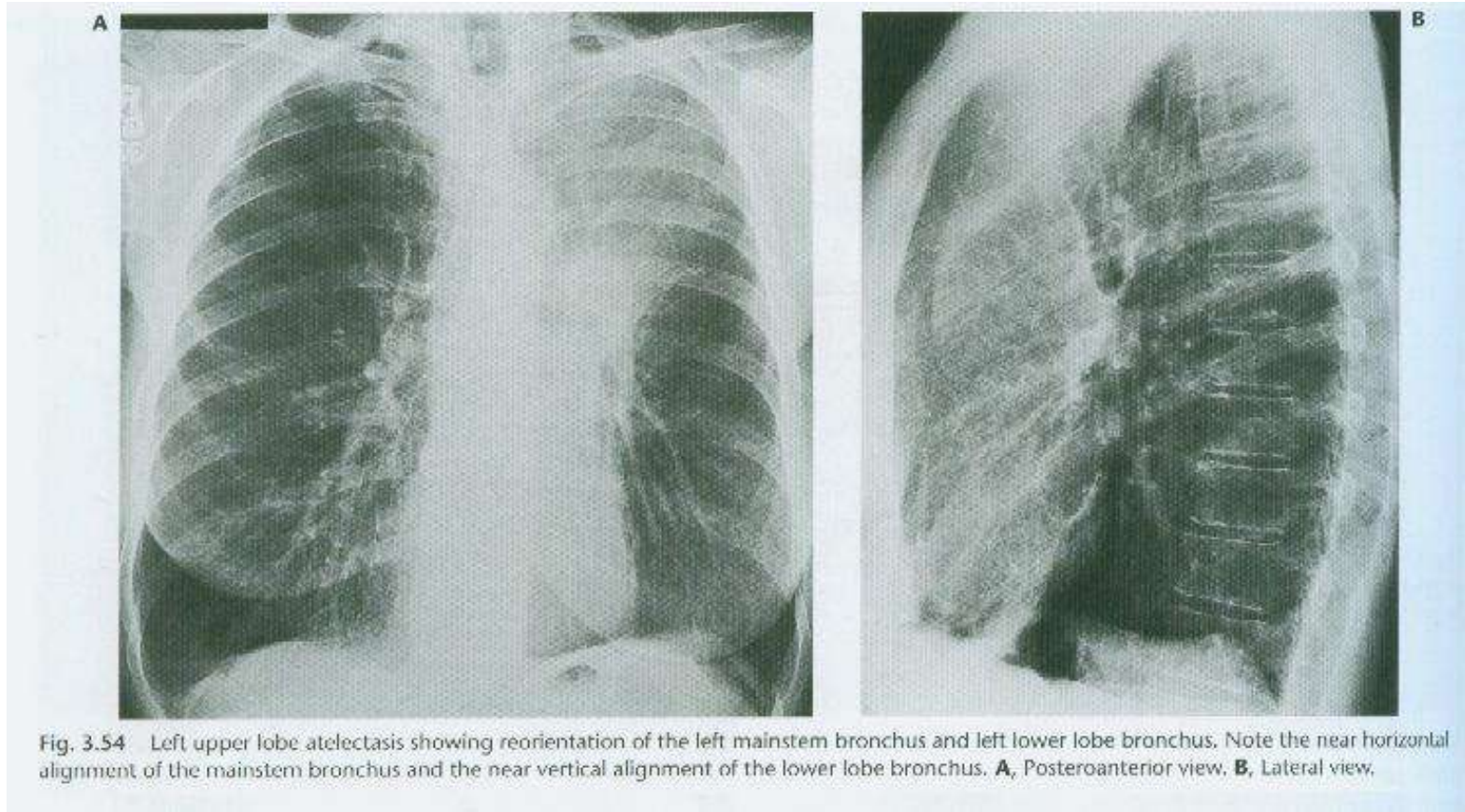
Left Upper Collapse

- **Lt diaphragm : elevation. (juxtaphrenic peak sign)**
- **Lt heart border : clear**
- **Lt upper : Radiopacity,muffled density increase**
- **Trachea deviation to left**
- **Golden S sign**

Left Upper Collapse



Left Upper Collapse



Left upper lobe collapse

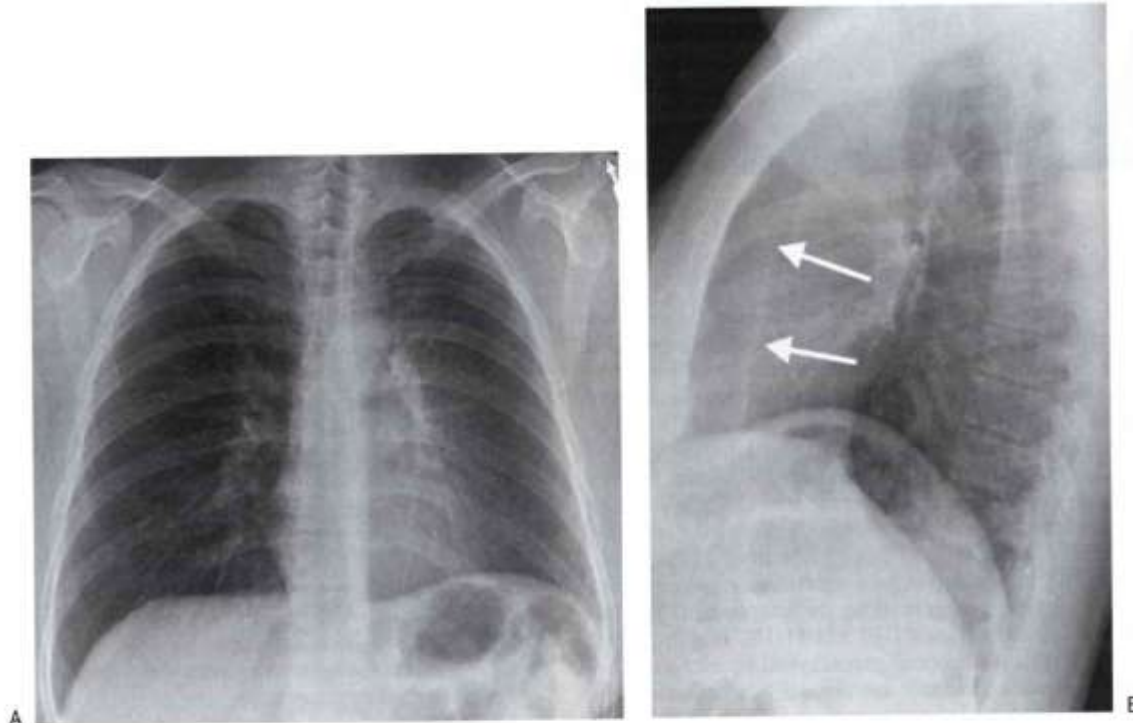


FIGURE 11-17. Left upper lobe collapse. A: PA chest radiograph of a 44-year-old man with a 6-month history of recurrent pneumonia shows elevation of the left hemidiaphragm, hazy opacity of the left hemithorax, and loss of the left heart border. B: Lateral view shows anterior displacement of the left major fissure (*arrows*) and increased retrosternal opacity. Bronchoscopic biopsy of a left upper lobe endobronchial mass confirmed the diagnosis of a bronchial carcinoid tumor as the cause of the left upper lobe collapse.

Left lower lobe atelectasis

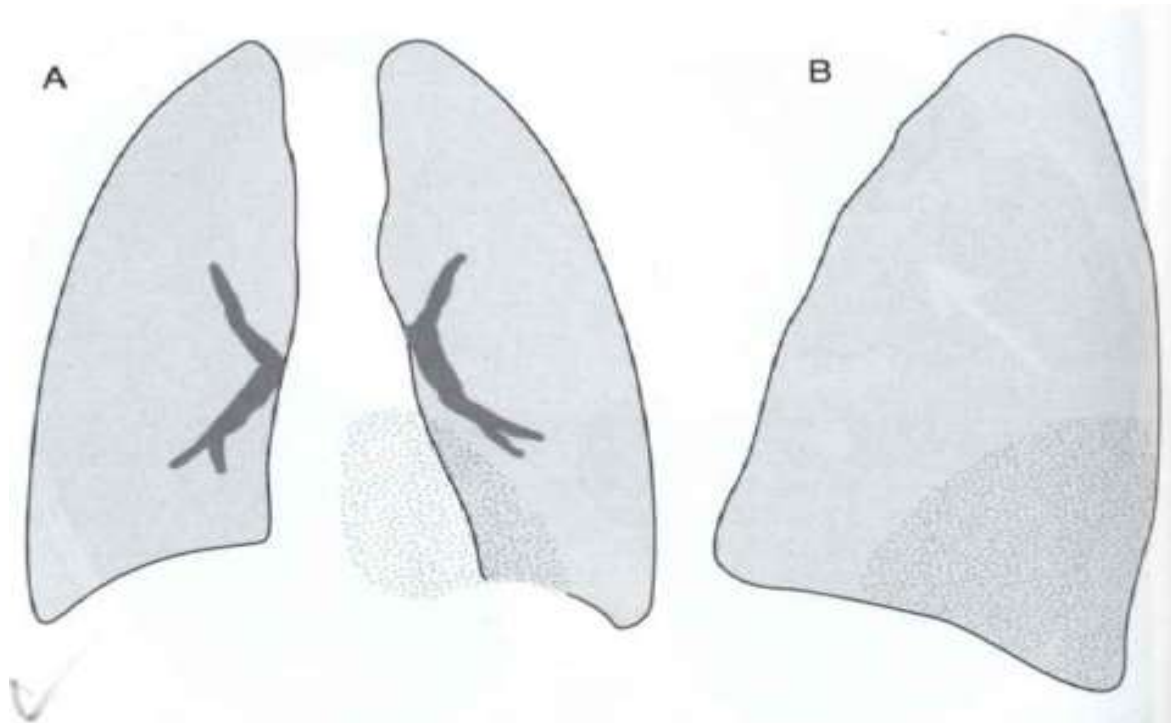
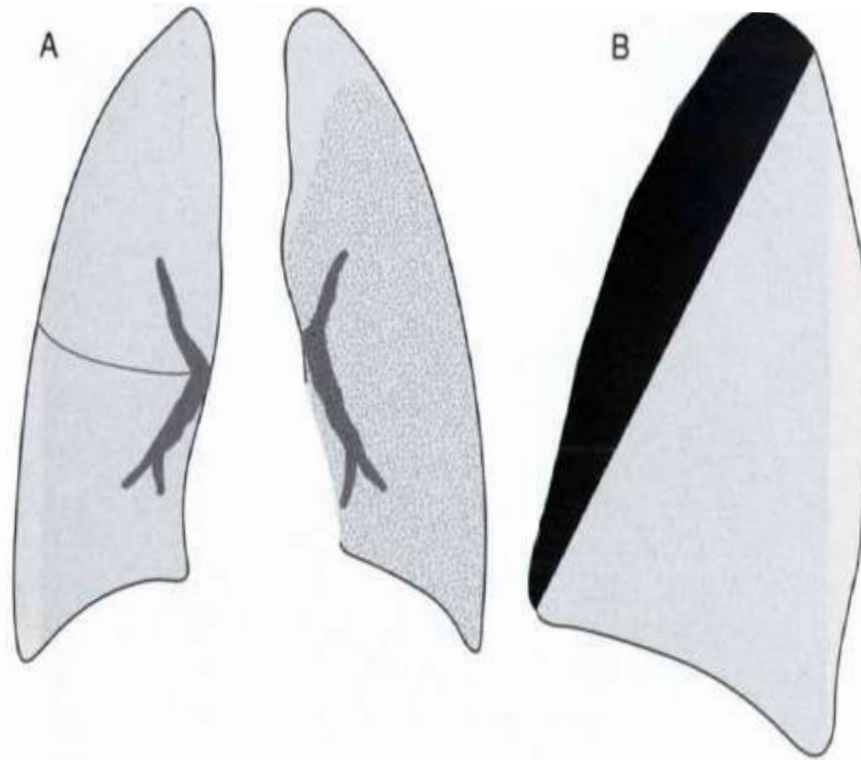


FIGURE 11-14. Left lower lobe atelectasis. **A:** Frontal view of the chest shows loss of the medial left hemidiaphragm border, elevation of the left hemidiaphragm, and increased opacification of the left medial lower lung (*stippled area*). **B:** Lateral view shows increased opacification of the posterior inferior lung (*stippled area*).

Left lower lobe atelectasis



✓
FIGURE 11-16. Left upper lobe atelectasis. A: Frontal view of the chest shows loss of the left heart border, elevation of the left hemidiaphragm, and increased opacification of the left lung (*stippled area*). B: Lateral view shows anterior displacement of the major fissure and increased retrosternal opacification (*black area*). (Reprinted with permission from Collins J. Joseph E. Whitley, MD, Award. Evaluation of an introductory course in chest radiology. *Acad Radiol.* 1996;3:994-999.)

Left Lower Lobe Atelectasis (Retrocardiac double shadow)

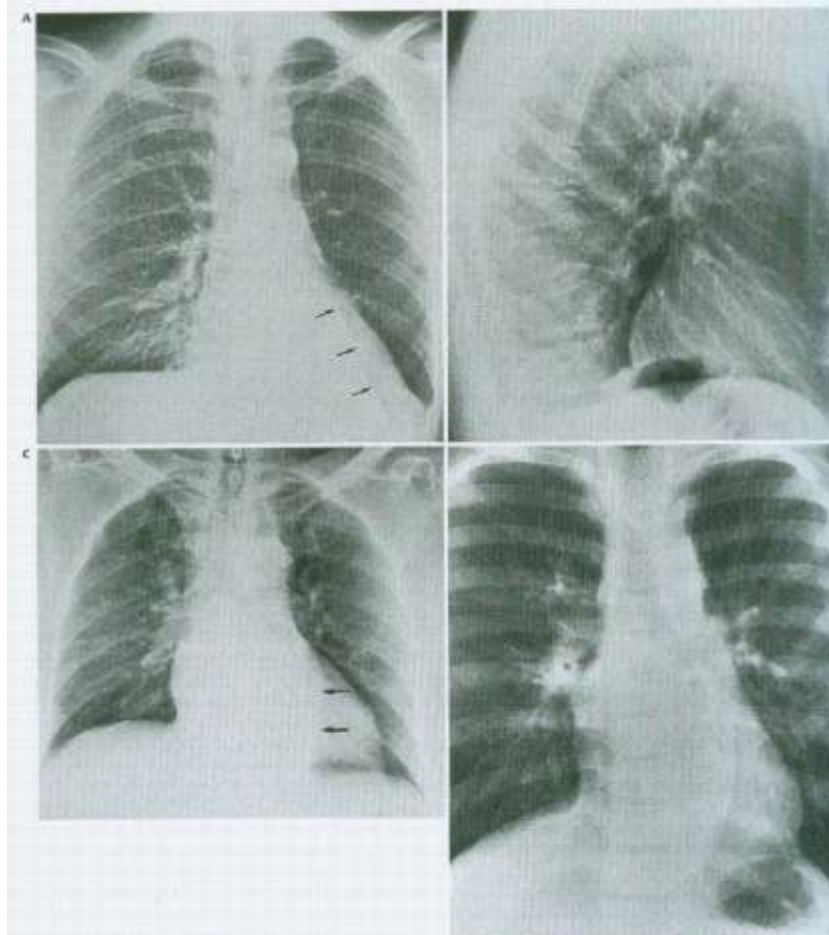


Fig. 3.41 Left lower lobe atelectasis. **A** and **B**, Atelectasis due to bronchial carcinoma. In this example, the displacement of the left hilar vessels is particularly well demonstrated. The left lower lobe artery is invisible because it is within the atelectatic lobe. Note also the upstaging of the blood vessels to the over-expanded left upper lobe and the flat waist sign. (Arrows point to the displaced major fissure.) **C**, Very severe atelectasis in which the lobe is no more than a sheet against the mediastinum. The almost verticalism of the left hilum is perhaps the most obvious sign. **D**, Atelectasis in a patient with an underdeveloped pectoroscopy ligament with resultant lack of tethering of the lower lobe to the diaphragm. The collapsed lobe mimics a mediastinal mass. The disposition of the left main bronchus, lack of visibility of left lower lobe artery, and air bronchograms within the opacity indicate the correct diagnosis.

Left lower lobe collapse

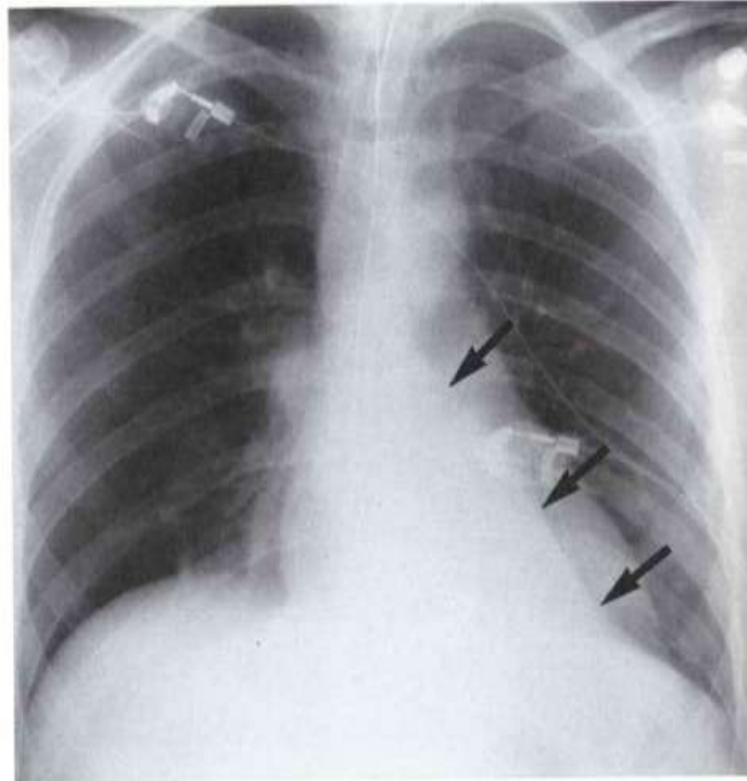


FIGURE 11-13. Left lower lobe collapse. AP upright chest radiograph of a 17-year-old boy shows downward and medial displacement of the left major fissure (*arrows*), a triangular area of increased opacification over the left heart, and loss of the left medial diaphragmatic contour.

Left Lung Collapse

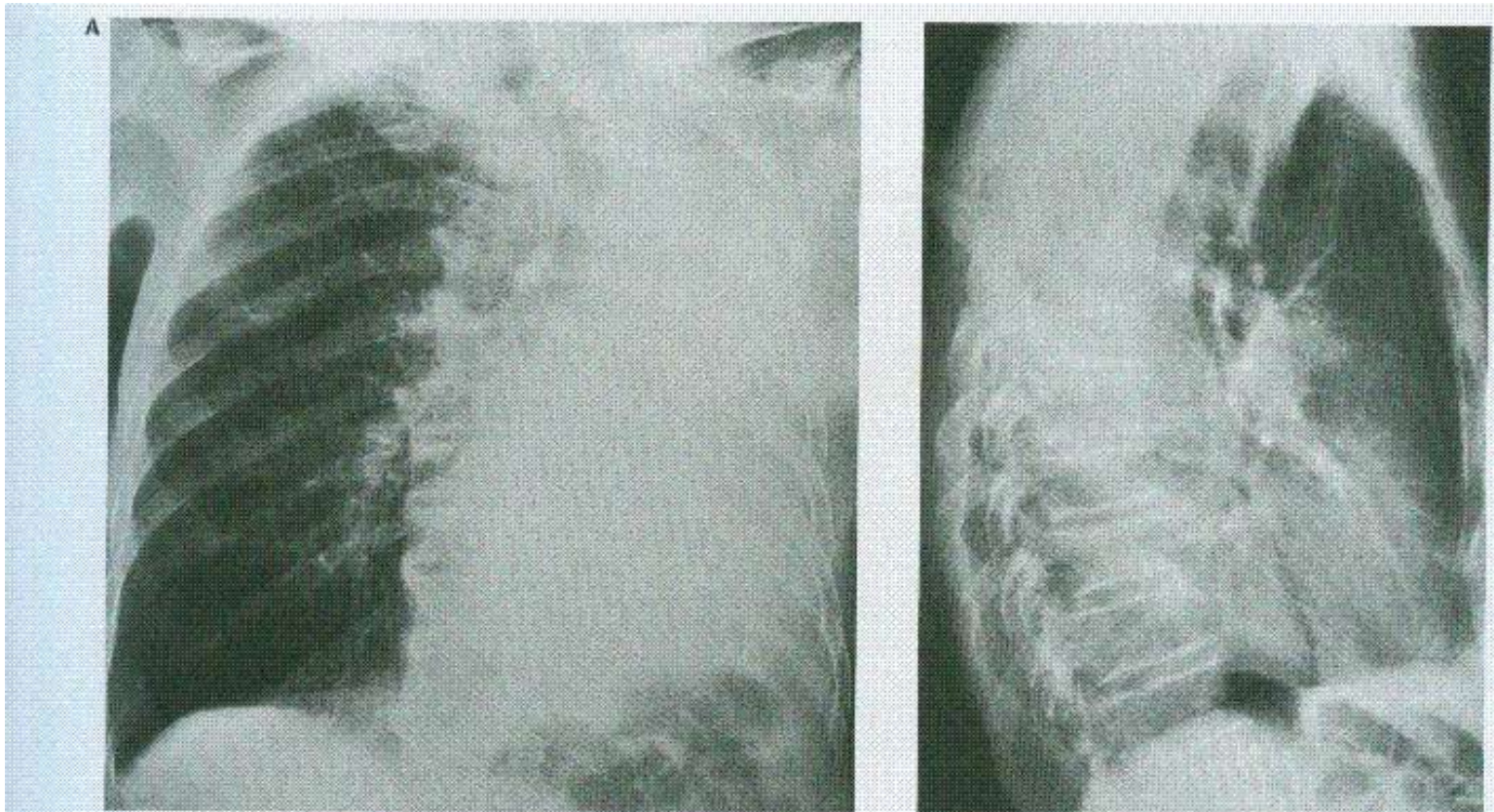
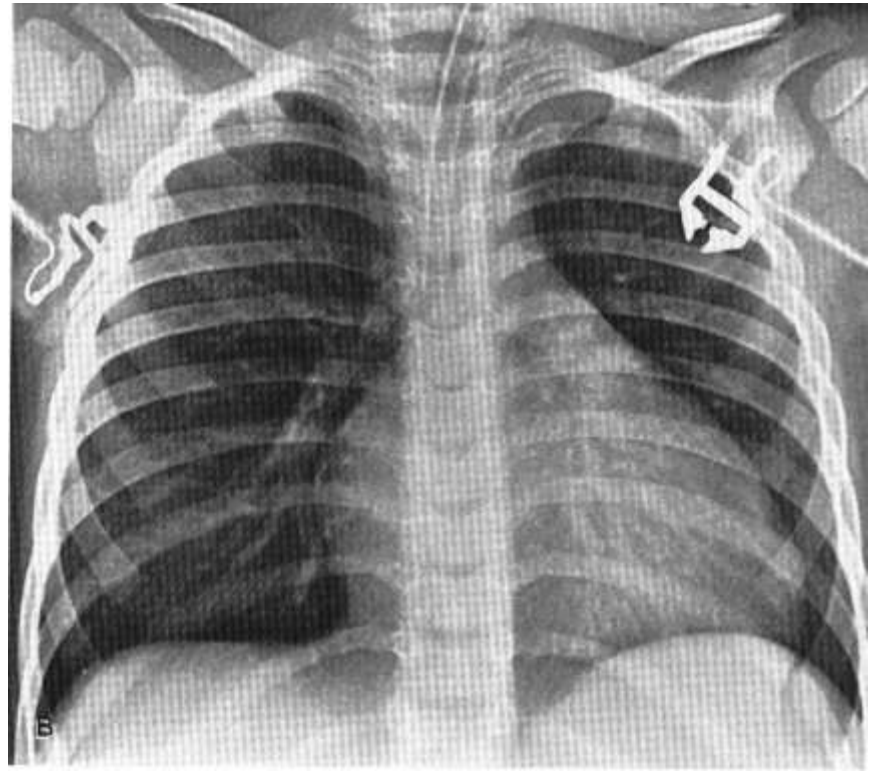
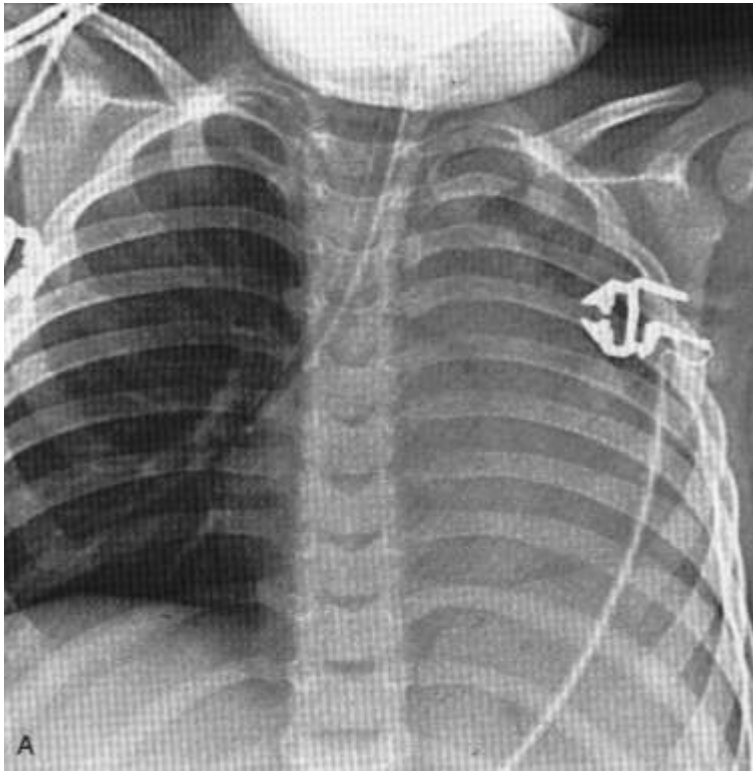


Fig. 3.66 Atelectasis of the left lung. The left lung is opaque, and there is striking shift of the mediastinum. **A**, Posteroanterior view. **B**, Lateral view.

Lt Lung Atelectasis



Bilateral lower lobe

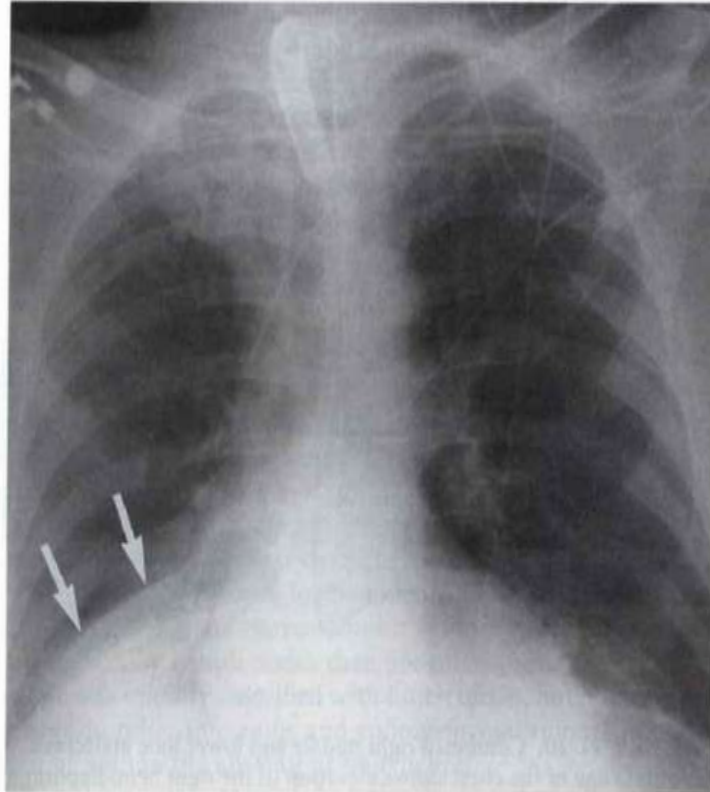


FIGURE 11-12. Bilateral lower lobe atelectasis. AP supine chest radiograph of a 61-year-old man shows partial loss of the contours of the hemidiaphragms bilaterally, abnormal opacification of the lung bases, and inferior displacement of the minor fissure (*arrows*).

Air bronchogram sign

- 肺實變或塌陷後
支氣管氣柱仍為通暢，
並未完全堵塞，
大多數為良性過程

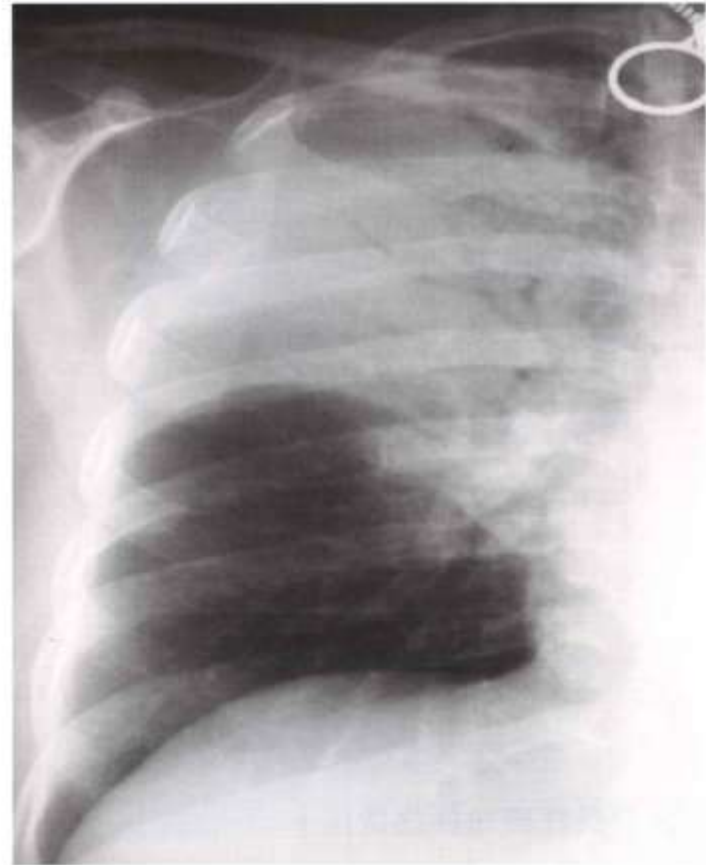


Fig 8-3b Pneumonia 右上肺可見分支且充氣的支氣管影像

Air bronchogram sign

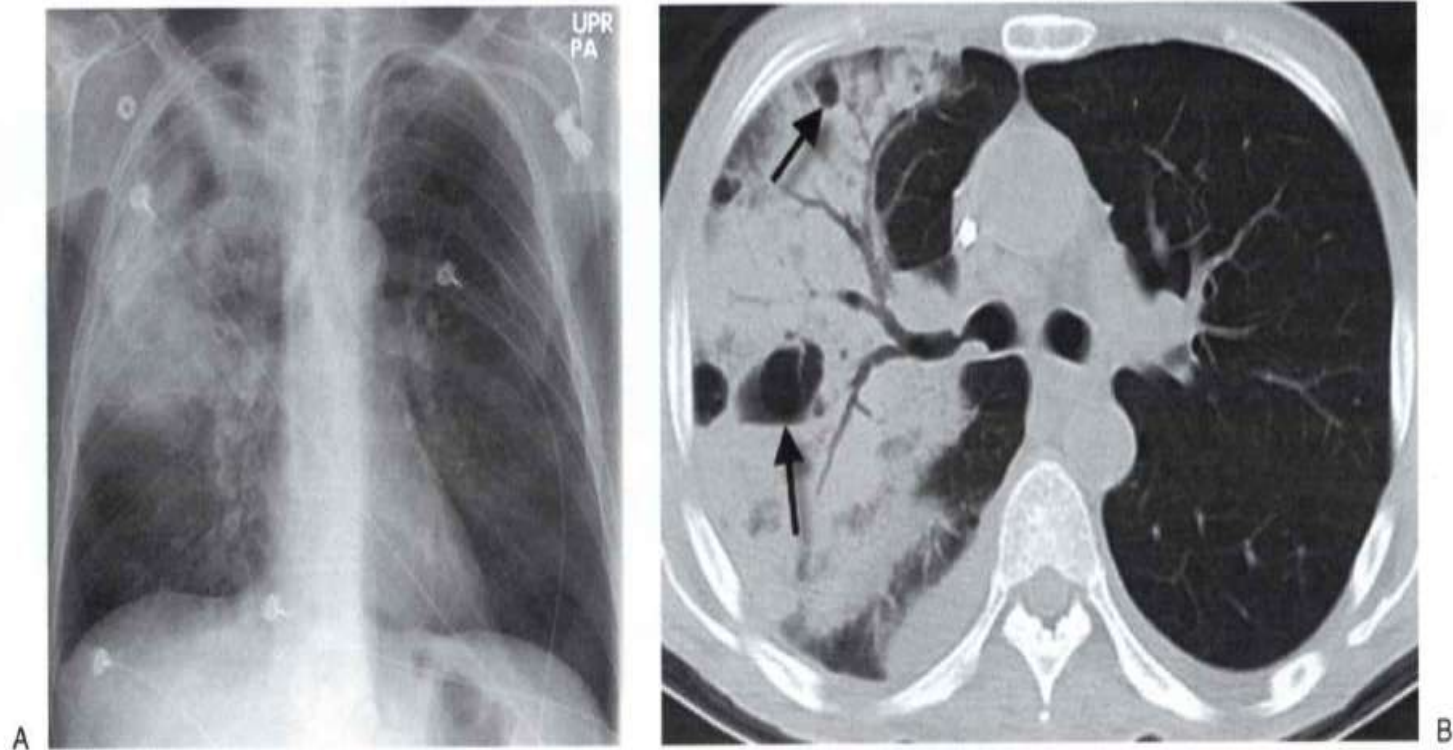


FIGURE 4-13. Necrotizing *Pseudomonas* pneumonia. A: PA chest radiograph shows ALD in the right upper and middle lung. B: CT shows numerous lucent areas with air-fluid levels (arrows) within the densely opacified lung, consistent with lung necrosis. Also shown are prominent air bronchograms.

Continuous diaphragmatic sign

- 縱膈腔內之空氣
使得兩橫膈有若相連-氣縱膈
- **Pneumomediastinum**徵象。

Continuous diaphragmatic sign

Pneumomediastinum

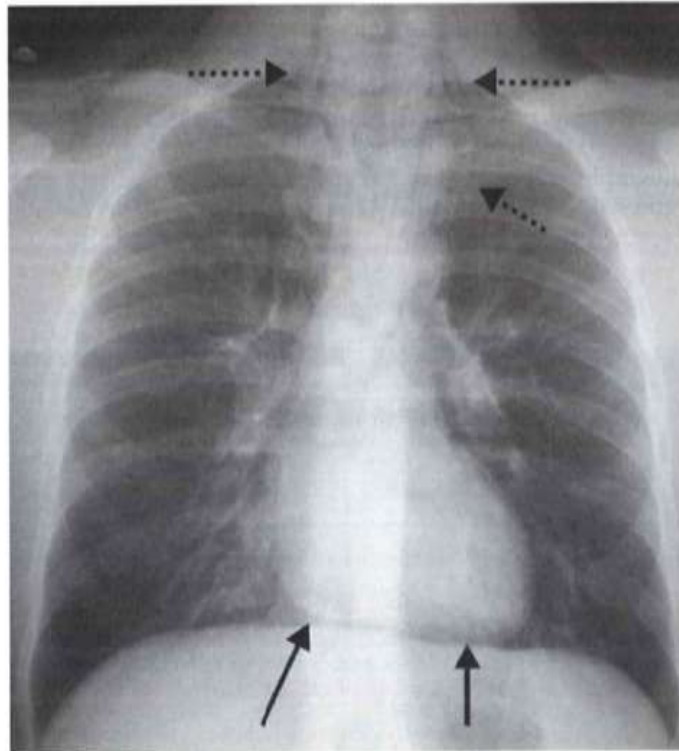
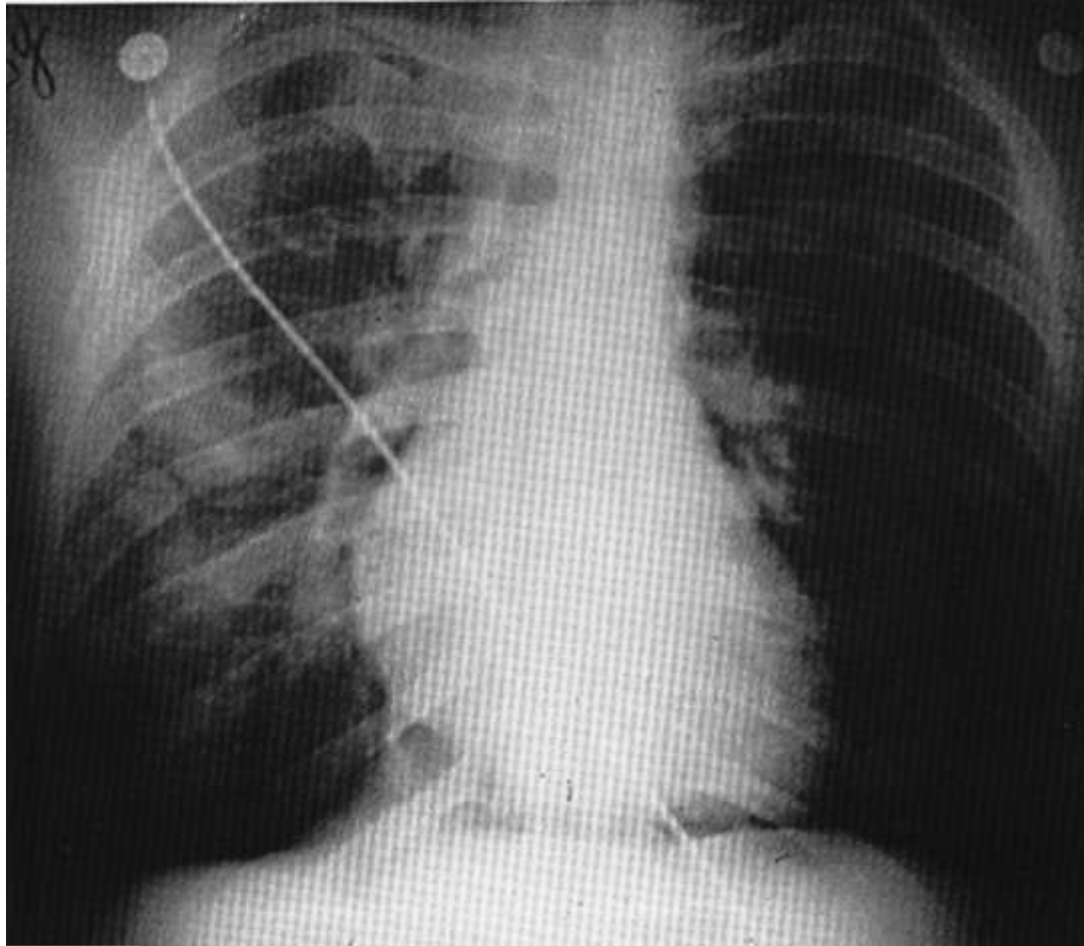


FIGURE 2-4. Continuous diaphragm sign. In this patient with pneumomediastinum, a continuous lucency is seen between the heart and the diaphragm (*solid arrows*). Air in the mediastinum is also seen tracking into the neck bilaterally (*dashed arrows*).

Pneumomediastinum

Continuous diaphragmatic sign



Tail Sign (Usually malignancy)



Fig 8-8a (參考 Fig 8-6 左肺圖)

Tail Sign (Usually malignancy)

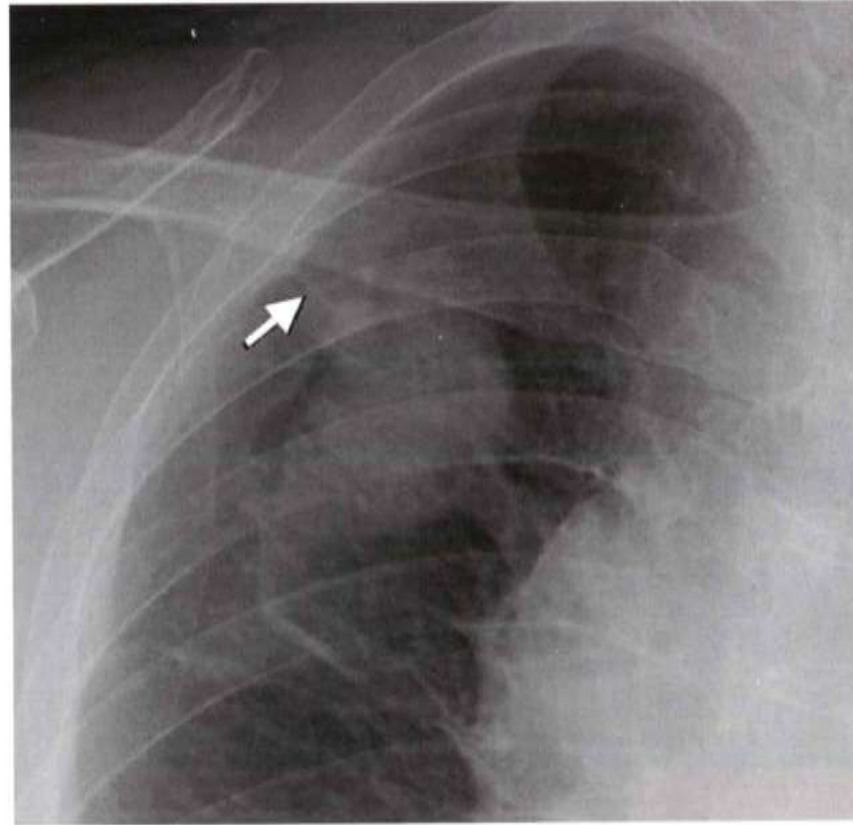


Fig 8-7 Tail sign , tail(→)連到 pleura

Triangular Shadow Sign (Usually malignancy)

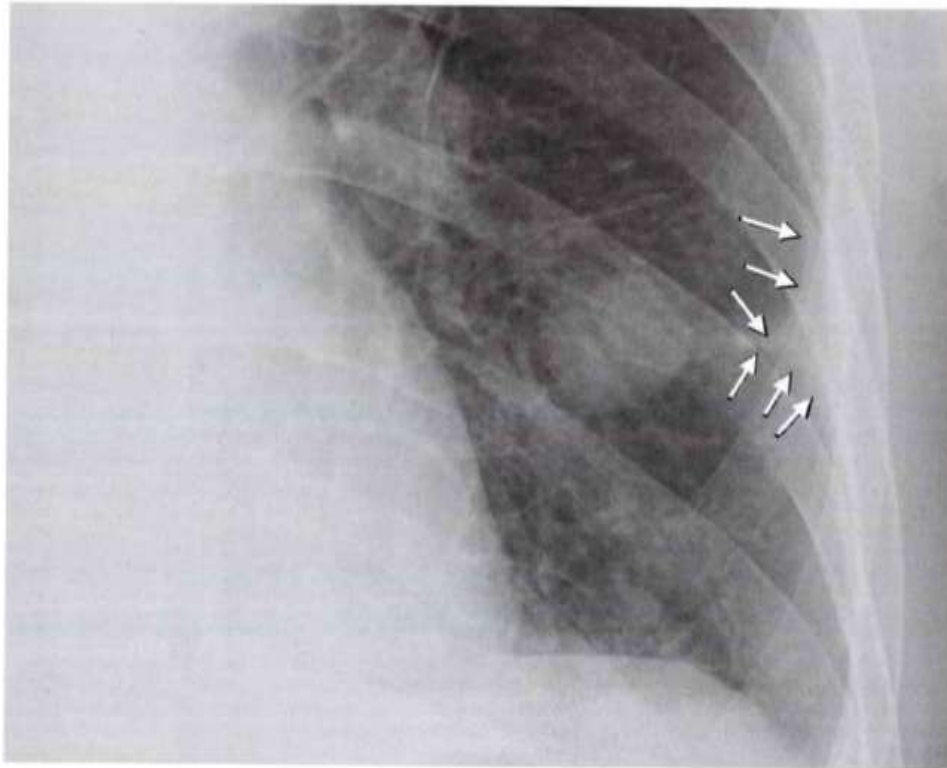


Fig 8-8b Lung ca 腫瘤的外側有一條線狀陰影連結至肋膜與肋膜間形成一三角形陰影
(Triangular shadow sign)(→)pleural-based triangular shadow

Summary

- 肺葉塌陷產生的特殊sign