The silhouette sign (Felson)
And its derivatives

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The silhouette sign

- When 2 opacities of the same density are in contact with each other, their contours disappear.
- When they are separated by any tissue of a different density (air), their respective contours are visible.
Normal chest radiography
Anterior or posterior opacity?
Anterior opacity: medium lobe, in contact with heart (and small pleural effusion in posterior cul-de-sac)
Anterior or posterior opacity?
Anterior opacity: middle lobe. The right heart contour disappears.
Anterior or posterior opacity?
Posterior opacity: the right contour of the heart is visible. On the lateral view, the posterior part of the diaphragm in contact with the opacity has disappeared.

Anterior or posterior opacity?
Anterior or posterior opacity?
Anterior or posterior opacity?

Posterior opacity: the left contour of the heart is visible
Anterior or posterior opacity?
Anterior or posterior opacity?

The left contour of the heart is visible: posterior opacity
Anterior or posterior opacity
Superior or inferior lobe?
Remember in left lung:
Forward the fissure = upper lobe
Behind the fissure = lower lobe

Positive silhouette sign with cardiac edge
Anterior or posterior opacity?
Right posterior opacity (right lower lobe)

Right posterior alveolar opacity. Notice the positive silhouette sign on the lateral view. With the posterior part of the right diaphragm...
Application of the silhouette sign to the diaphragm

Right hemi diaphragm: no silhouette sign with the heart

Left hemi diaphragm: Positive silhouette sign with the heart
Male, heavy smoker, weight loss, hemoptisis
AFB sputum negative
Male, heavy smoker, weight loss, hemoptisis
AFB sputum negative

Round left opacity. Negative silhouette sign. The opacity is visible behind the heart, in the posterior cul de sac (bronchial cancer)
Male, one episode of hemoptysis, AFB sputum negative
Male, one episode of hemoptysis, AFB sputum negative

Alveolar opacity visible behind heart silhouette: posterior opacity (possible cancer)
Application of the silhouette sign: Iceberg sign

The opacity is above the diaphragm: the inferior edge is well visible because air density surrounding

The opacity is above and under the diaphragm: the inferior limit is lost in the abdominal opacities
What is abnormal on this CXR
The opacity is completely intra-thoracic, behind the right diaphragm.

Caution to the hidden zones
Male, 38 years old, increasing pain in the dorsal and lumbar area for 3 months.

1998

1999
Pott's disease: the opacity is above and under the diaphragm
Pott’s disease
Iceberg sign

The opacity is above and under the diaphragm: the inferior limit is lost in the abdominal opacities.

- Descending aortic pathology
- Oesophagus pathology
- Spinal column pathology
Spinal column pathology
(Pott disease)
oesophageus pathology (mega-esophagus)
Descending aortic pathology (aneurysm)
Female, no symptoms except sometimes regurgitations
Female, no symptoms except sometimes regurgitations

The opacity is posterior
Hiatal hernia
Application of the silhouette sign: The cervico-thoracic pass sign

1. The external and superior edges of the mediastinal opacity disappear above the clavicles. This sign means that the opacity is anterior in the superior mediastinum.

2. The superior edge of the opacity is visible in the pulmonary air: the opacity is posterior.
Anterior intrathoracic goitre
Anterior intrathoracic goitre. This goitre is compressive: notice the compression of the trachea
Posterior goitre (courtesy of Dr Bellamy)
Posterior or anterior opacity?
Posterior or anterior opacity?

Posterior: bronchial cancer of the left lung apex
+++ notice the destruction of the posterior arch of the third rib
Posterior (bronchial cancer of the left lung apex)
Young woman. Asthenia, weight loss and nocturnal sweet.
Silhouette sign applied to the mediastinum: disappearance of the aorta arch: contact with a tissular mass (Hodgkin’s adenopathy)
Application of the silhouette sign: Filling of the aorto-pulmonary space
Filling of aorto pulmonary window
Filling of aorto pulmonary window

Normal hilus
Filling of the aorto-pulmonary space (adenopathy)
How to make diagnosis of a « big hilus »
(silhouette sign application)
Hilus enlargement

- Vascular enlargement?
- Adenopathies?

Overlap by anterior or posterior opacity?
Convergence sign of the hilus

The ramifications of the pulmonary artery loose their silhouette on the edge of the opacity: this opacity is the pulmonary artery.
Convergence sign of the hilus (vascular opacity, pulmonary hypertension)
Convergence sign of the hilus (vascular opacity, pulmonary hypertension)
Hilar adenopathies:

- Opacities with convex external edge
- Opacities overlapping normal vascular opacities
Hilar adenopathies:

- Opacities with convex external edge
- Opacities overlapping normal vascular opacities
Bilateral TB adenopathies
Bilateral TB adenopathies
Bilateral adenopathies
Hilar adenopathy

Normal hilus
Lateral view is useful to analyse the involvement of the hilar and mediastinum lymph nodes.
Lateral view is useful to analyse the involvement of the hilar and mediastinum lymph node. Especially in young children for TB adenopathies diagnosis.
TB adenopathies

Normal lateral view

From Dr Pavas Andronikou MBBCh, FCRad, FRCR, PhD
Normal lateral view
Overlap by anterior or posterior opacity

- Normal vessels are visible through the opacity.
- The opacity overlaps the hilus.
- The hilus is overlapped by:
  - a posterior mass
  - or an anterior mass

Lateral view is helpful for diagnosis.
Right hilar adenopathy?
Posterior overlap sign: right hilar opacity. The pulmonary artery is visible through the opacity, which does not erase the heart contour: This opacity is posterior. On front view this opacity could also suggest adenopathy. Lateral view make correct diagnosis: posterior mass (cancer)

When you doubt about hilar opacity
Ask for the lateral view
Left hilar opacity.
Adenopathy or not?
Posterior overlap sign: left hilar opacity. The pulmonary artery is visible through the opacity, which does not erase heart contour: This opacity is posterior.

When you doubt about hilar opacity
Ask for the lateral view
Left hilar opacity,
Adenopathy? Anterior mass?
Posterior mass?
Anterior overlap: Pulmonary artery is visible through the opacity. Cardiac edge is erased: anterior opacity, with filling of the retro sternal space on lateral view.
Posterior overlap

Anterior overlap

When you doubt about hilar opacity
Ask for the lateral view