Lung Anatomy

Introduction

If you are learning patterns of collapse and consolidation you must learn the lobar anatomy and fissures of the lung first. One of the difficulties with learning lobar anatomy is that the descriptive terms (upper, middle and lower) are very approximate to the point of being misleading. Consider the size and shape of the right lower lobe shown below. It could have been justifiably named the posterior lobe rather than the lower lobe!

Right Lung

The right lung has 3 lobes and two fissures

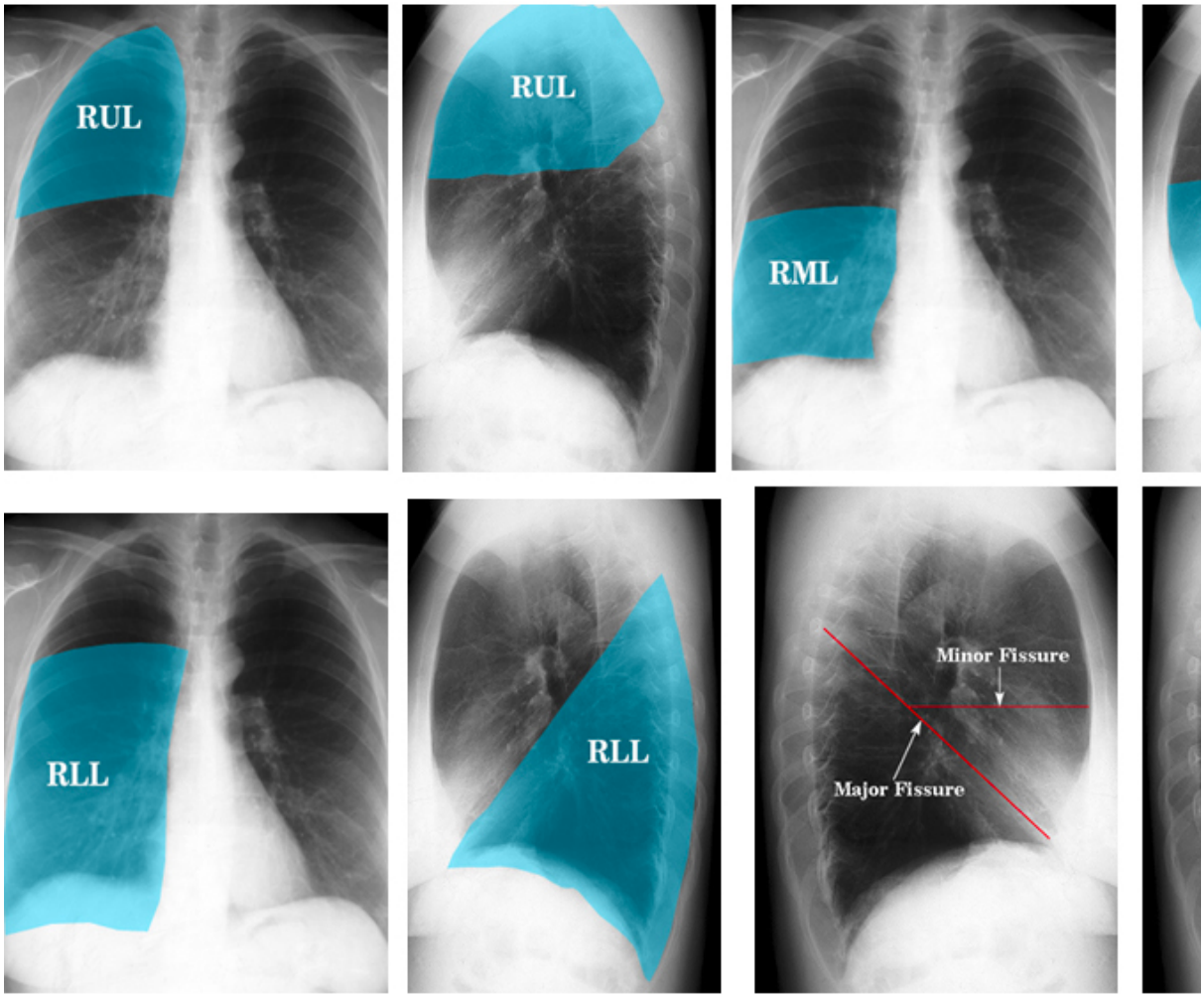
Lobes

- Right Upper Lobe (RUL)
- Right Middle Lobe (RML)
- Right Lower Lobe (RLL)

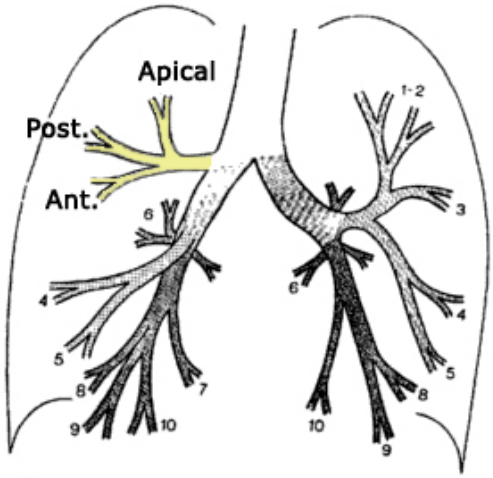
Fissures

- Major Fissure (aka oblique fissure)
- minor fissure (horizontal fissure)

The lobes of the lung are further divided into segments. If you are a high achiever, you could learn the segments of the lobes. This can be useful when interpreting consolidation patterns on plain film chest X-ray images- involvement of different segments of a lobe will produce different patterns of consolidation.



The Right Upper Lobe



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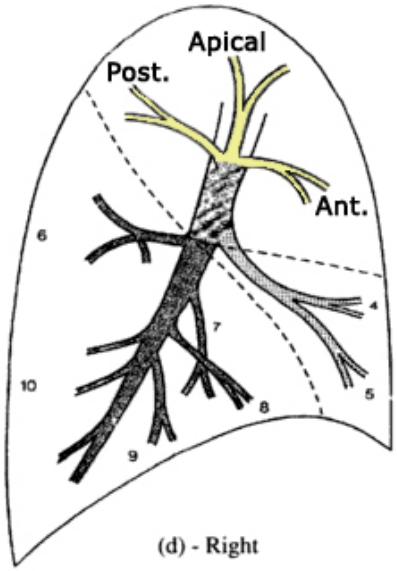
The RUL is comprised of three segments: apical, posterior, and anterior



(d) - Right

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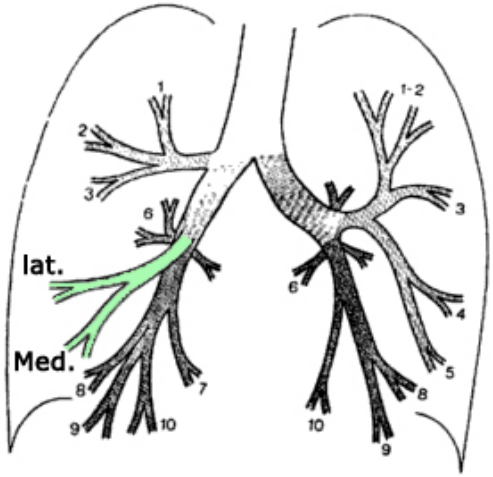
The Right Middle Lobe



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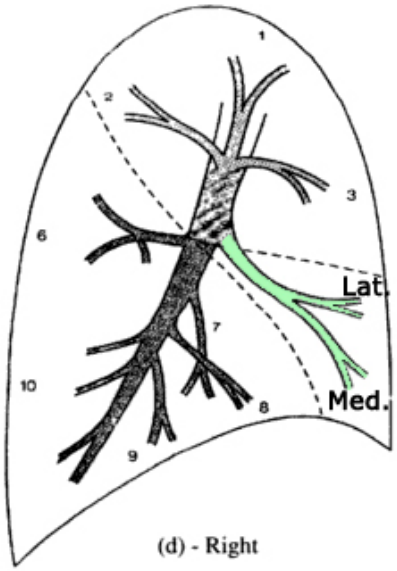
The right middle lobe has two pulmonary segments which are situated side by side; the more lateral segment, approximates the size of its adjacent neighbor (medial segment). The medial segment abuts the right heart border medially , while lateral segment extends to and comprises a portion of the lateral border of the right lung. http://lib.cpums.edu.cn/jiepou/tupu/atlas/www.vh.org/adult/provider/radiology/LungAnatomy/RightLung/RtLungSegAnat.html.

When viewing chest radiographs with pathology involving the right middle lobe, it is important to think about the shape and position of the RML in three dimensions. This may not be easy at first. Note the description of the lobes is very approximate.



(d) - Right

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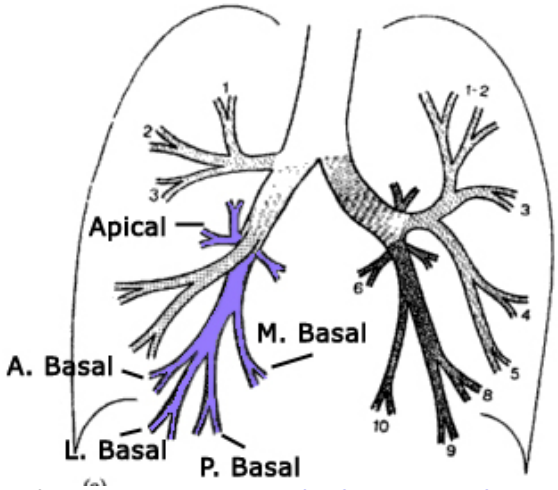
The Right Lower Lobe



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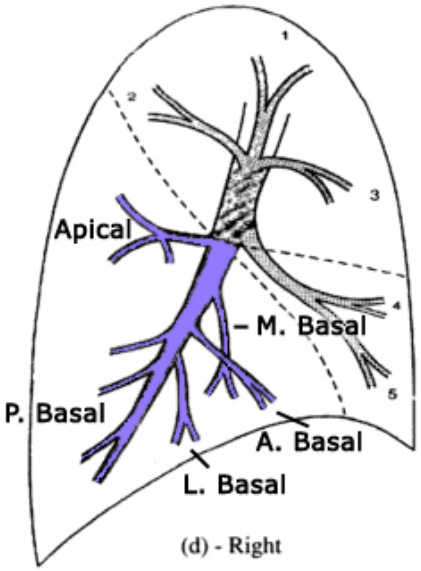
The right lower lobe is comprised of five pulmonary segments. It is a large lobe and will provide varying patterns of consolidation depending on which segments are involved



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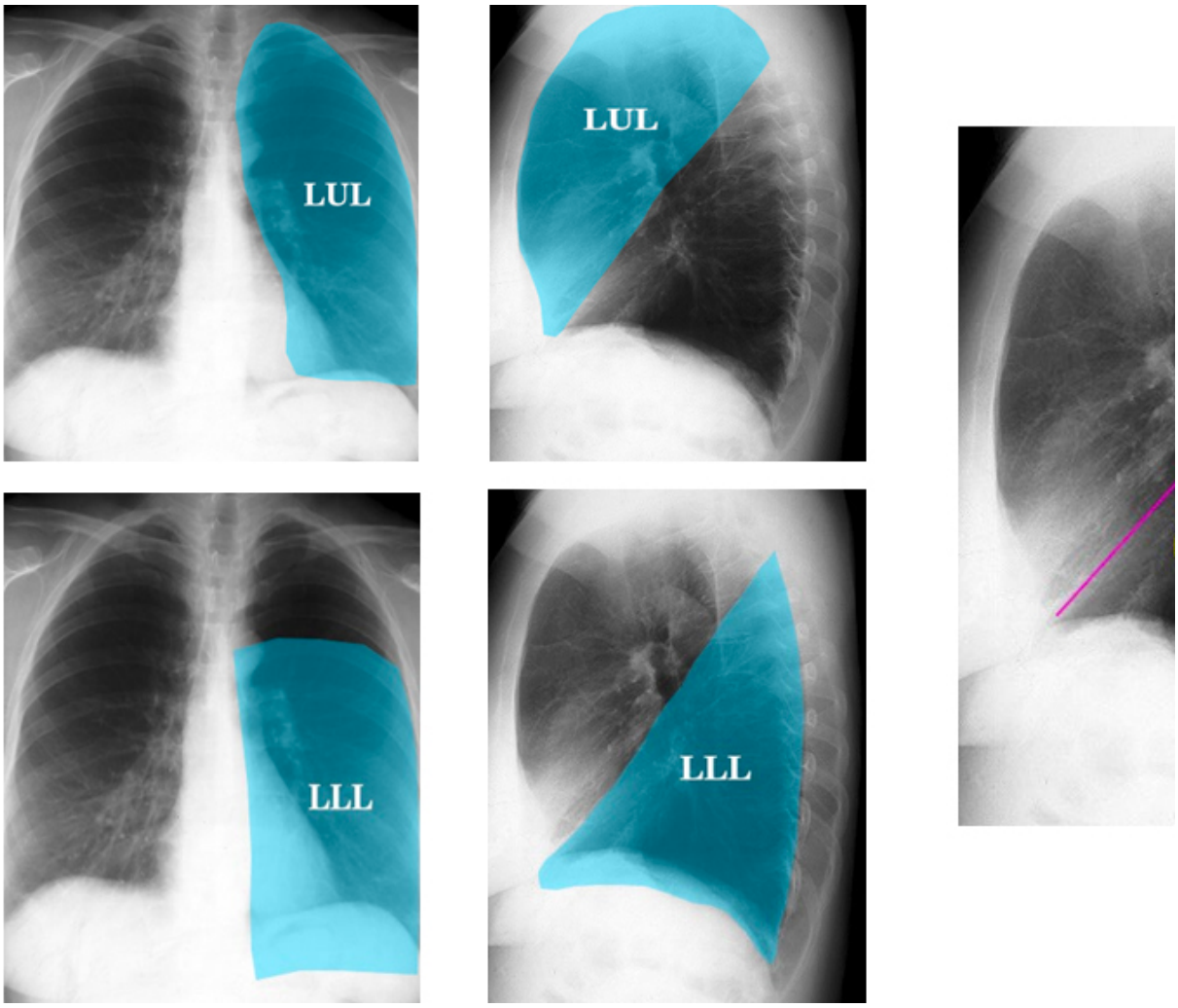
Note that consolidation of the apical segment will not result in loss of the diaphragmatic outline.

The Left Lung



The left Lung is Comprised of two lobes which are divided by one fissure

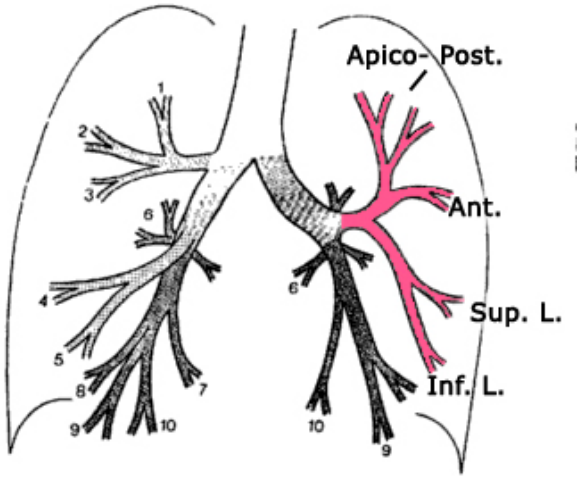
Lobes

Left Upper Lobe (LUL)
Left Lower Lobe (LLL)

Fissures

Major Fissure

The Left Upper Lobe (LUL)



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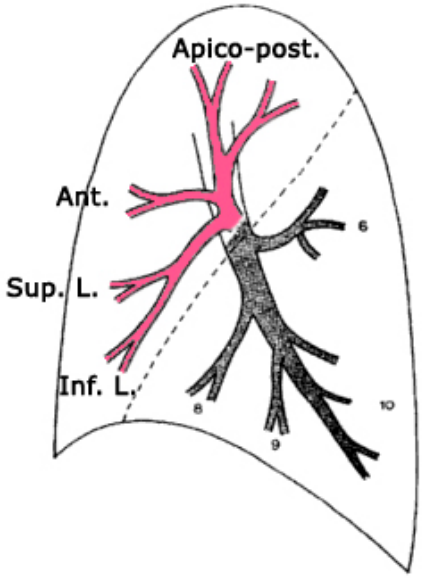
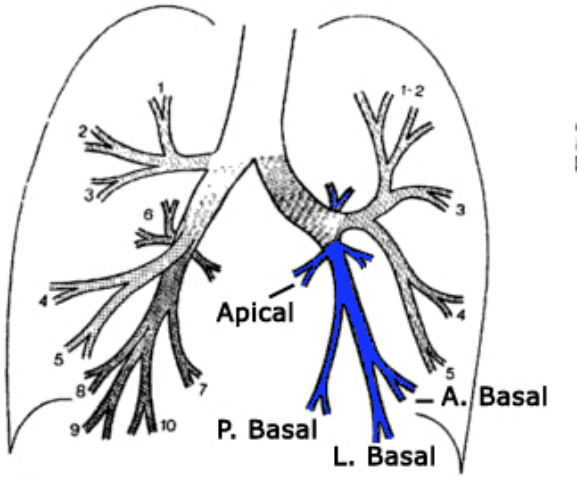
On the left there is no middle lobe; the anatomical equivalent region corresponding to the right middle lobe is known as the lingula, and like the RML, is also composed of two segments. Unlike their counterparts on the right however, the segments are stacked one on top of another, rather than side.

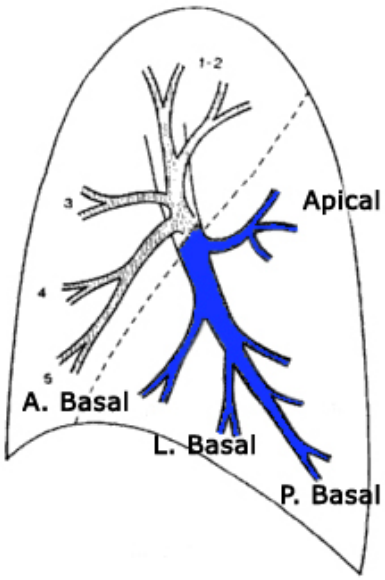
http://lib.cpums.edu.cn/jiepou/tupu/atlas/www.vh.org/adult/provider/radiology/LungAnatomy/RightLung/RtLungSegAnat.html.

Note that upper lobe pathology could appear very low on a chest X-ray

with an Extensive Illustrative Collection of Radiographs CRC Press, 2002	image. The upper lobe is the anterior lobe as much as it is the upper lobe.
 adapted from By Fred W. Wright Radiology of the Chest and Related Conditions: Together with an Extensive Illustrative Collection of Radiographs CRC Press, 2002	

The Left Lower Lobe

 adapted from By Fred W. Wright Radiology of the Chest and Related Conditions: Together with an Extensive Illustrative Collection of Radiographs CRC Press, 2002	



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Why is the Horizontal Fissure not always Seen on PA/AP Chest Images?

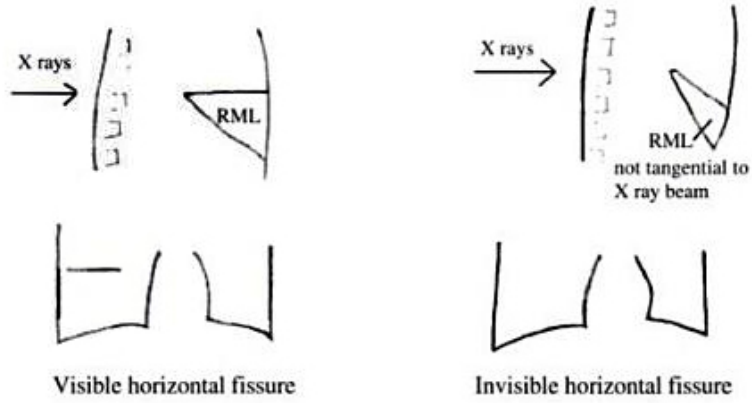

Fig. 1.2 The visibility of the horizontal (or lesser) fissure on frontal radiographs depends on how tangential the fissure is to the x-ray beam.

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There are probably three commmon relevant factors. The first is that there is variability in the orientation of the horizontal fissure between individuals. Of particular relevance is the variability of the hporizontal fissures *horizontalness*. Secondly, and possibly more importantly, patients are not always perfectly erect for PA/AP chest radiography. For example, apart from

normal random variation in the way patients stand, patients with large protruding stomachs will tend to lean forward for erect PA chest radiography. A third factor is the presence of disease which either pushes or pulls the fissure.

How do you distinguish between the right and Left Oblique Fissures on a Lateral Chest Image?

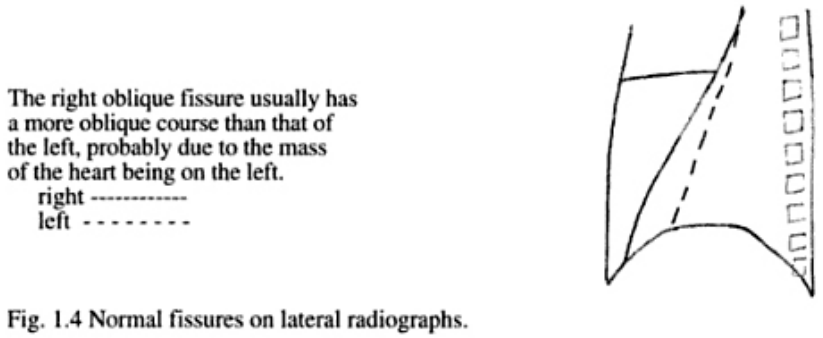

Fig. 1.4 Normal fissures on lateral radiographs.

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This graphic is self explanatory

AndyC

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