Thoracic Surface Anatomy

**Thorax - Surface Markings**

- **T4/S**
  - Angle of Louis
  - Bifurcation of trachea
  - Start of aortic arch
  - Azygos arch enters SVC

**Surface Markings of Pleura and Lungs**

- **Pleura**
  - 2-4:6-8, 10-12
  - Continuous red line, starting 1" (2.5cm) above mid point of medial 1/3 of cavicle. Meet in midline at rib 2, left side then diverges at rib 4 to make room for the heart, whilst right continues parasternally to rib 6. Both cross rib 8 in the mid-clavicular line, then rib 10 in the mid-axillary line. Both reach posterior chest just below rib 12.

- **Lungs**
  - 2 less than pleura
  - Blue-dotted lines indicate lower extension of lungs in expiration. Below ribs 6, the lungs extend to 2 rib spaces less than the pleura.

- **Fissures 3/6/4/9**
  - Oblique: spine of T3 vertebra to rib 6 anteriorly along medial border scapula
  - Horizontal (on R only): rib/costal cartilage 4 to rib 5 in mid-axillary line.

**Heart**

- **Borders:**
  - 2CC - 3CC - 6CC - 3 1/2

- **Valves:**
  - P - A - M - T

- **Auscultation:**
  - P - 2L (parasternal space)
  - A - 2R (parasternal space)
  - M - 3L (mid clavicular line)
  - T - Lower left sternal border

As the valves open and close they produce sounds that appear to be transmitted in the direction of the flow of blood. Thus, by picturing the heart and the positions of the four valves it is easy to work out the likely points for maximal auscultability of the sounds.
DIVISIONS OF THE MEDIASTINUM

Superior mediastinum
From 1st rib to a line joining the sternomaneubrial junction to the disc between T4 and T5

Inferior mediastinum
Divided into 3
Ant: Thymus
Mid: Heart
Post: Oesophagus & vessels

MEDIASTINUM
The area in the thorax that lies between the lungs. Note that although the lungs reach up above the front of the 1st rib, the mediastinum does not.
The great vessels lie in the superior mediastinum, the thymus and fat in the anterior part of the inferior, the heart in the middle and the oesophagus & aorta in the posterior parts of the inferior mediastinum
RELATIONS OF TRACHEA & BRONCHI

Right bronchus
- Wider
- Shorter
- Steeper
- 2cm

Left bronchus
- Narrower
- Longer
- More horizontal
- 5cm

Inhaled foreign bodies are more likely to enter the right main bronchus and then pass into the apical bronchus of the right lower lobe - the first one that points posteriorly.

BRONCHOPULMONARY SEGMENTS

Mnemonic: Starting on right at upper lobe, working down right lobe then down left lobe the segments are as follows: **APALM APALM APAIS APAL**

PARASYMPATHETIC (vagus)
- Vasodilatation
- Bronchoconstriction
- Increase glandular secretions
- Sensation

SYMPATHETIC (chain)
- Vasoconstriction
- Bronchodilatation (beta 2)
- Suppress glandular secretion (alpha)

**BRONCHI**

Blood supply: Bronchial arteries from aorta (2 on left, 1 on right)

Venous drainage: On right -azygos, left - hemiazygos. Also a little via bronchial veins and pulmonary veins

Nerve Supply: Pulmonary plexus at hilum

Lymph: Hila nodes then carina then tracheobronchial then thoracic duct and right lymphatic duct