

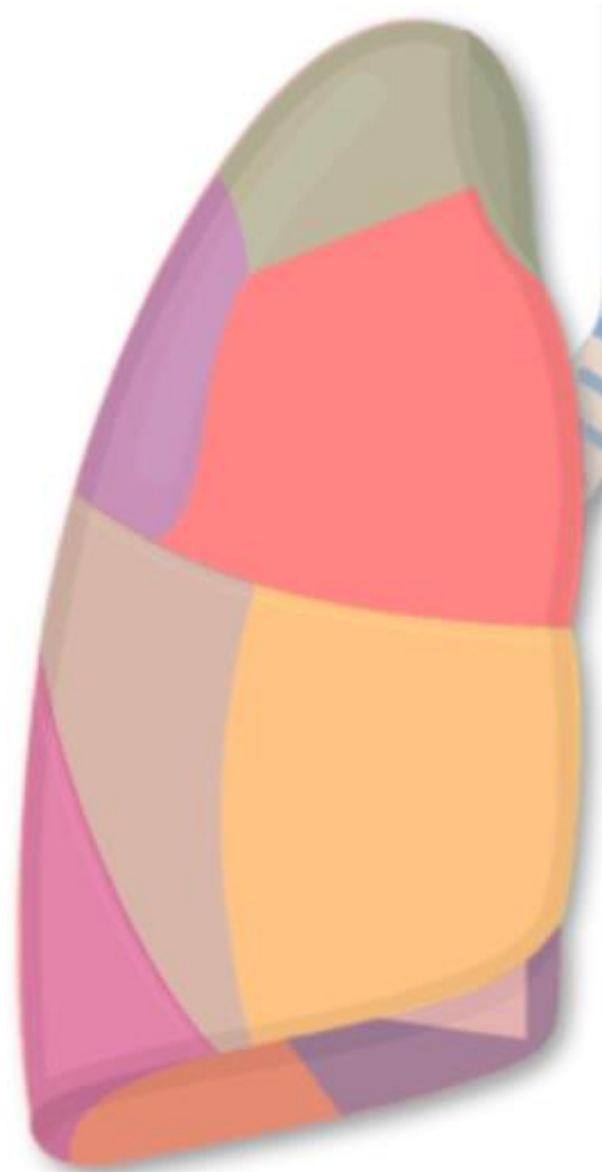
The Right Lower Lobe

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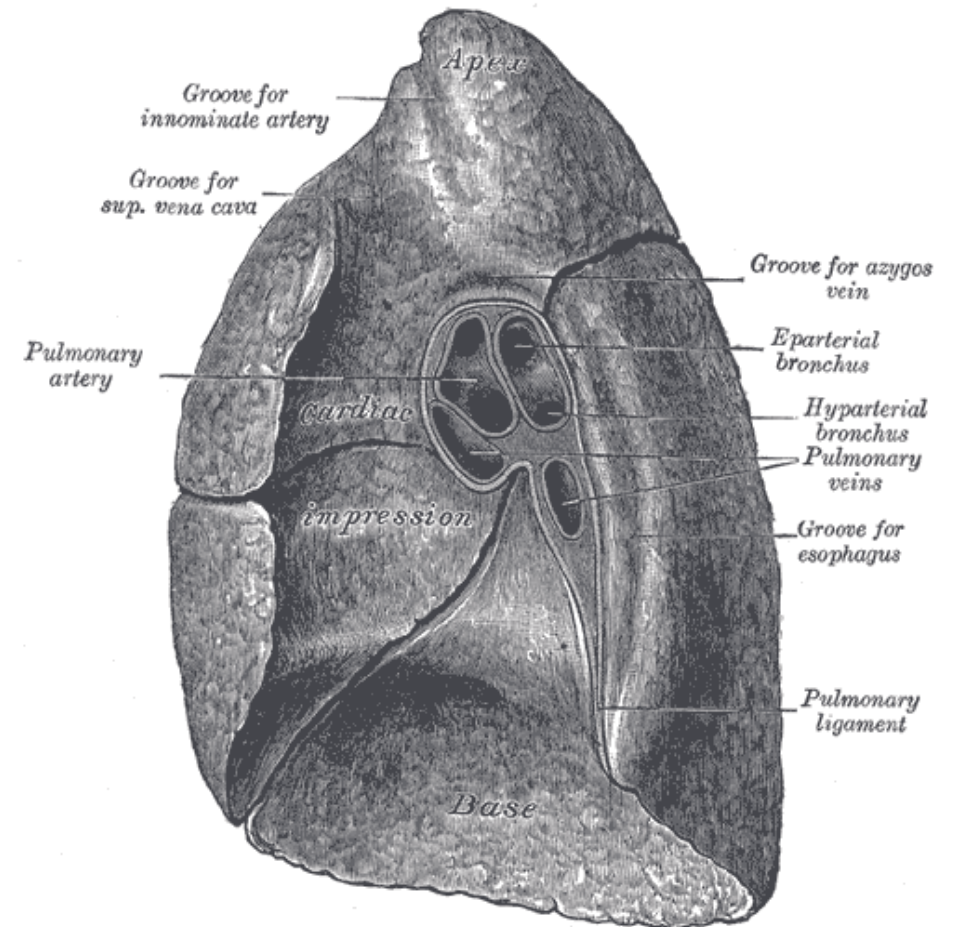
Thoracic Surgery Sub-Internship

Preceptors: Dr. Henning Gaissert MD,
Dr. Dean Donahue, MD



Background

- Separated from the right upper lobe superiorly
- Separated from the right middle lobe anteriorly
- Right oblique fissure (and horizontal fissure)
- Accounts for approximately 27% of total lung
 - over 1 L in most adults
- Subdivided into 5 bronchopulmonary segments
 - Defined as a portion of lung supplied by a specific a specific segmental bronchus



1943 at Temple University



1943 at Temple University

Correlated Applied Anatomy of the Bronchial Tree and Lungs With a System of Nomenclature*

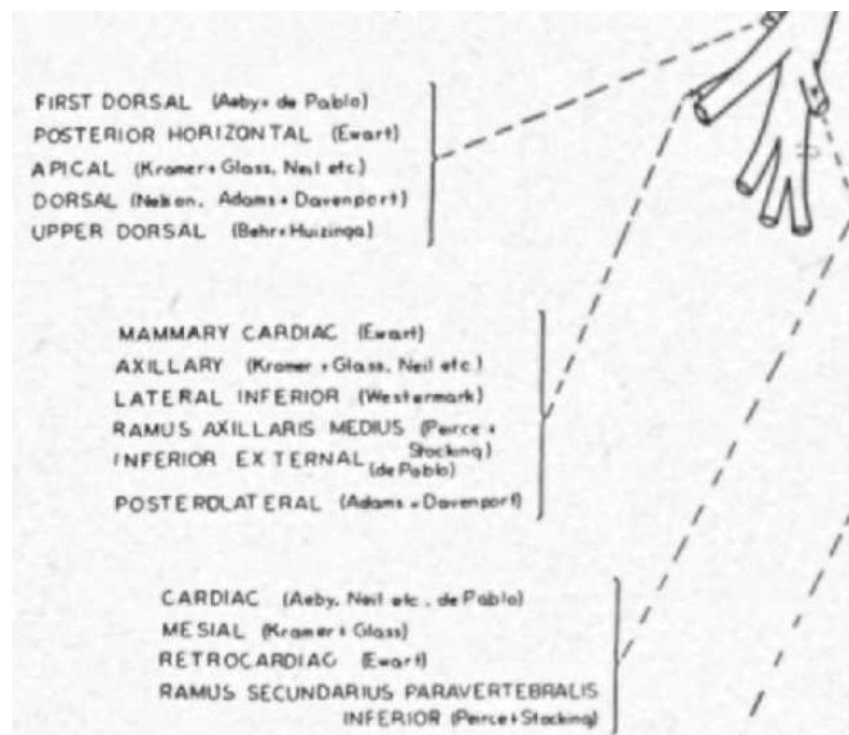
CHEVALIER L. JACKSON, M.D., F.C.C.P., *and*
JOHN FRANKLIN HUBER, M.D., Ph.D.
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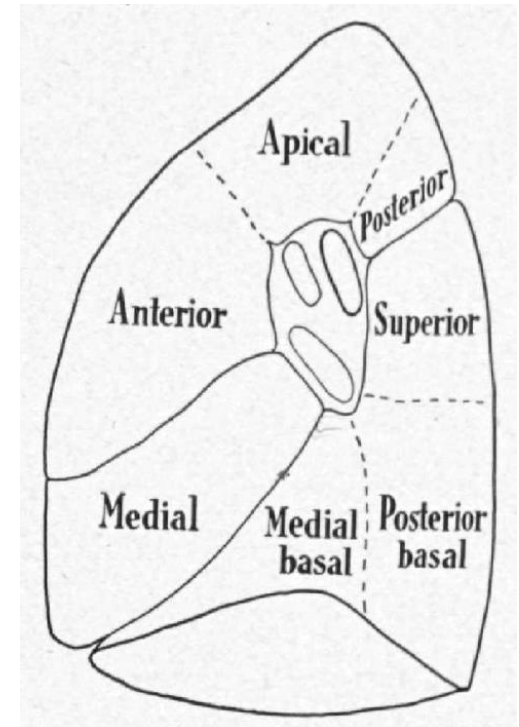
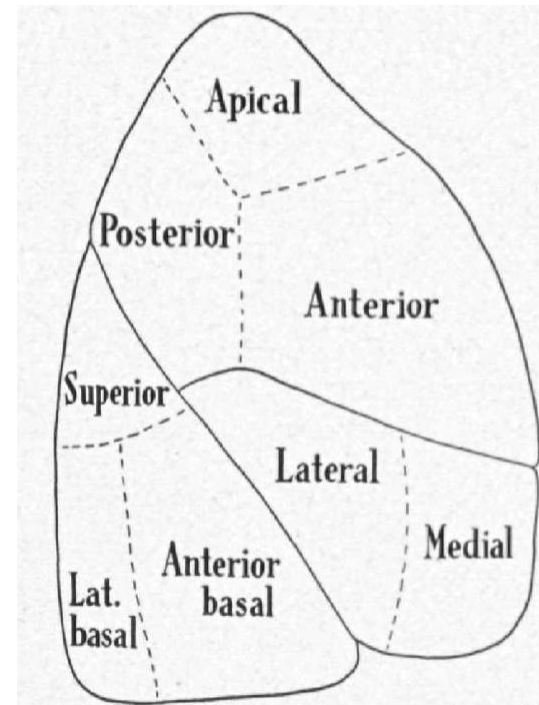
1943 at Temple University

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RIGHT LUNG

LOBES	SEGMENTS
<i>Upper</i>	{ Apical Posterior Anterior
<i>Middle</i>	{ Lateral Medial
<i>Lower</i>	{ Superior Medial Basal Anterior Basal Lateral Basal Posterior Basal



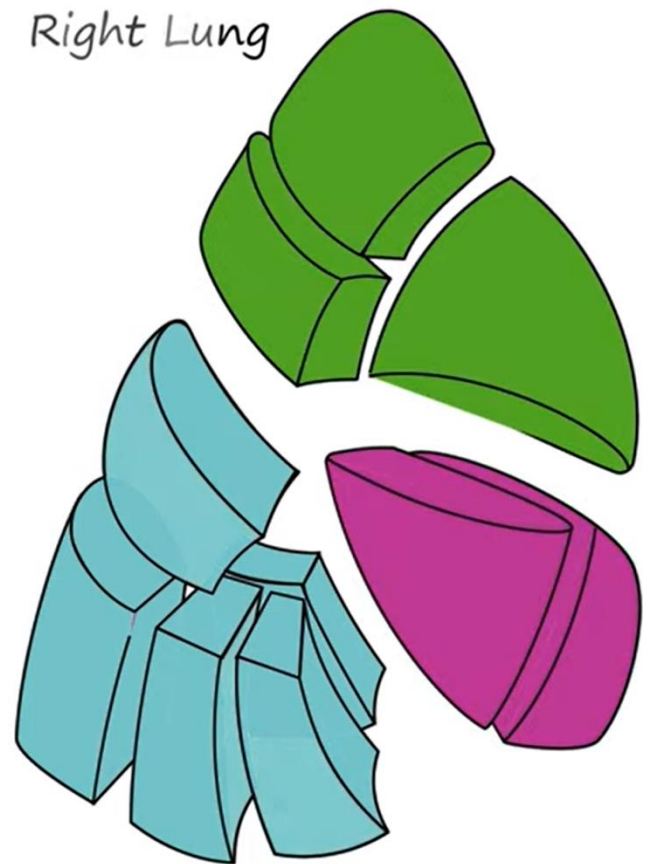
1955 at Temple University



<https://archive.org/details/BronchopulmonarysegmentsPart1-welcome>

Bronchopulmonary segments

- Superior segment (S6)
- Plus four basal segments:
- Medial segment (S7)
 - Anterior segment (S8)
 - Lateral segment (S9)
 - Posterior segment (S10)



Tracheobronchial Tree

Trachea



Right main bronchus



Bronchus intermedius



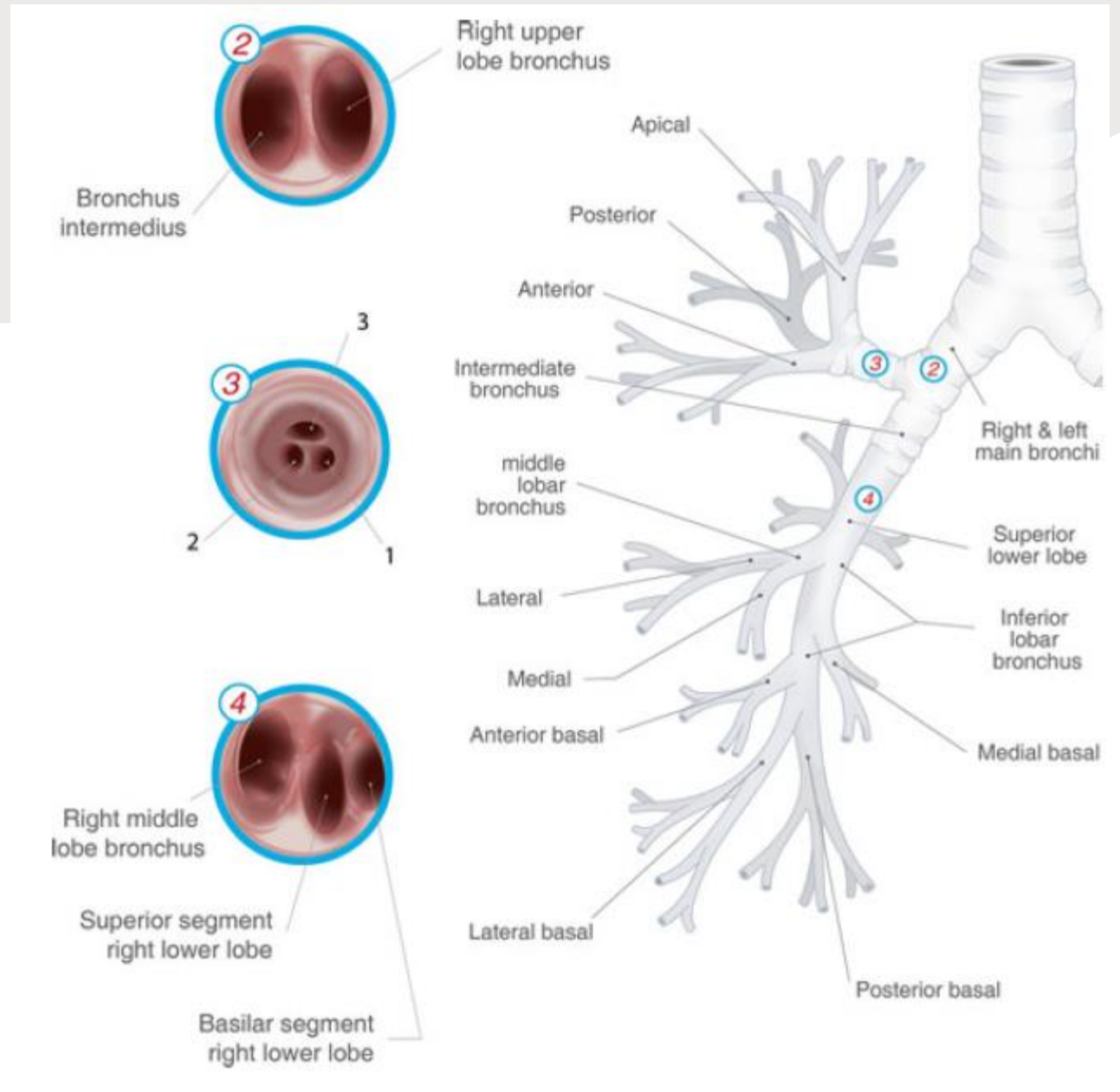
Sup. lower lobe



inferior lobar bronchus



Basilar segments



Physiological Structure of Airway

		Number	Cilia	Smooth Muscle	Cartilage
CONDUCTING ZONE	Trachea	1	Yes	Yes	Yes
	Bronchi	2	Yes	Yes	Patchy
		4			
		8			
Bronchioles	-	Yes	Yes	No	
RESPIRATORY ZONE	Respiratory bronchioles	-	Some	Some	No
	Alveolar ducts	-	No	Some	No
	Alveolar sacs	6×10^8	No	No	No

Arterial Blood Supply

Right pulmonary artery



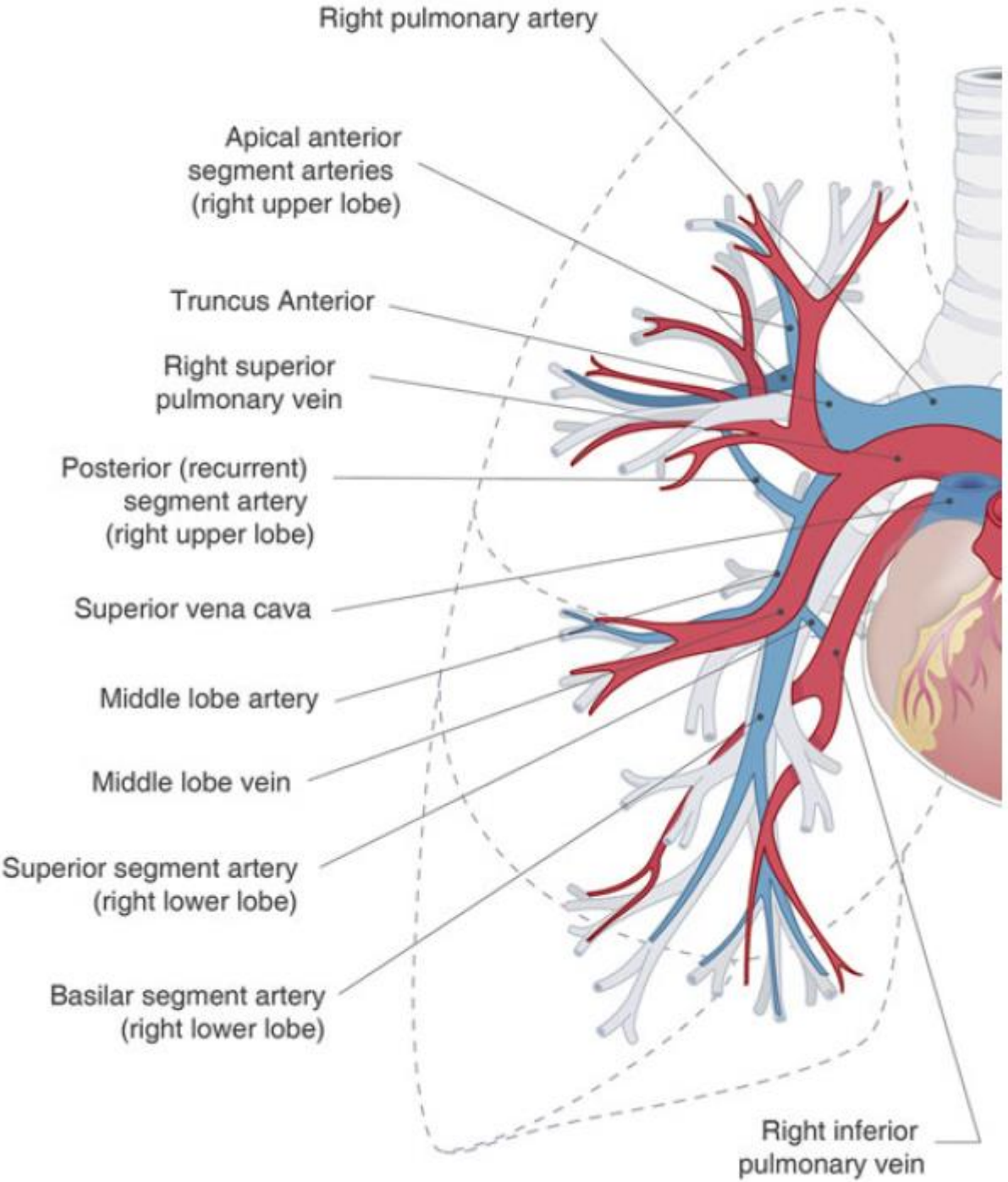
Middle lobe artery



Sup. Seg. artery



Basilar seg. artery

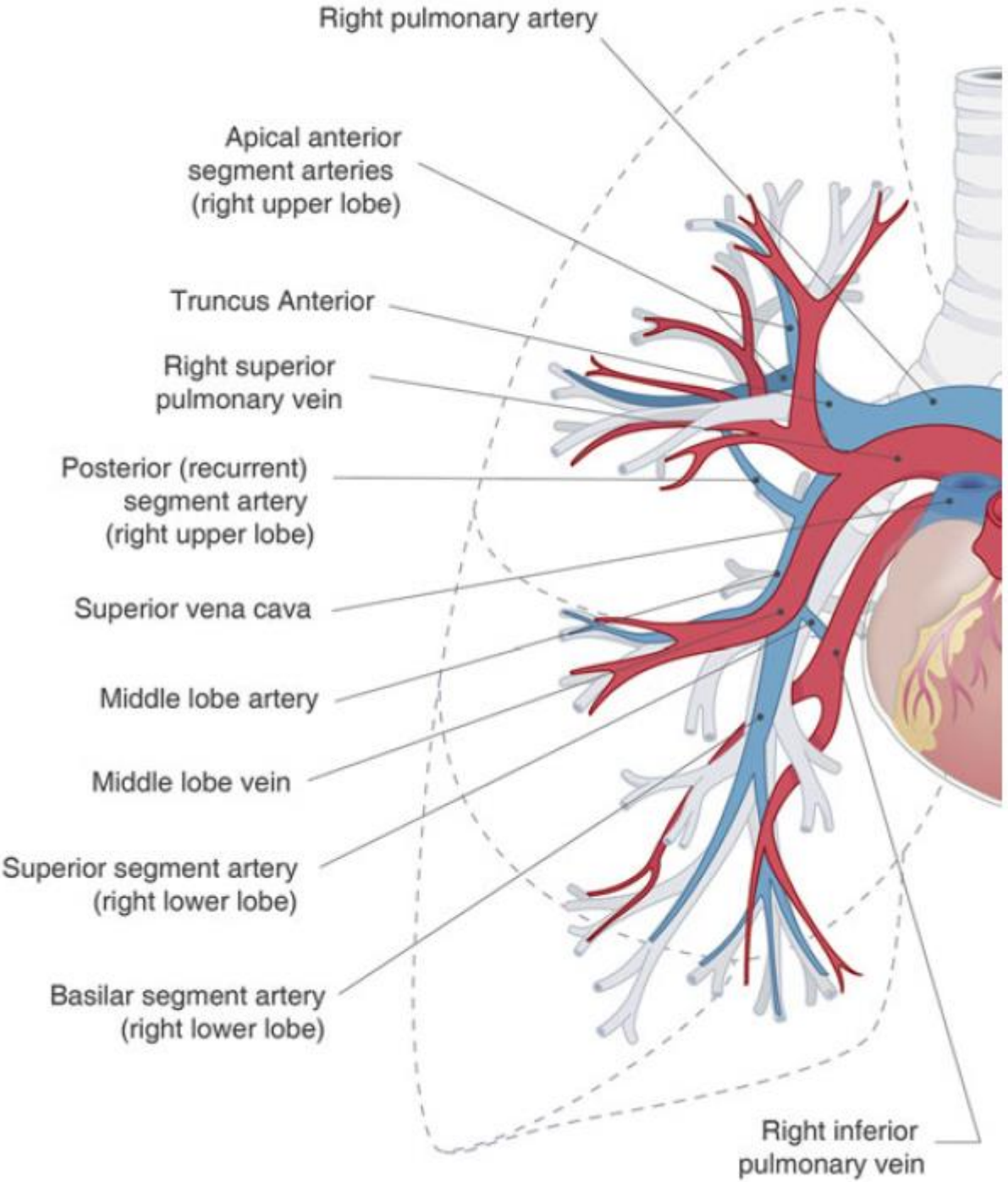


Venous Blood Return

Right inferior pulmonary vein



Left atrium



Anatomical Variations of 65 Right Lungs

Right lung (n=65)	
Feature	No. (%)
Incomplete oblique fissure	2 (3.07)
Incomplete horizontal fissure	23 (35.38)
Absence of horizontal fissure	2 (23.07)
Absence of oblique fissure	0 (0)
Two arteries in the hilum	44 (67.69)
Three arteries in the hilum	2 (3.07)
One artery in hilum	19 (29.23)
Two veins in the hilum	41 (63.07)
Three veins in the hilum	21 (32.30)
More than 3 veins in the hilum	3 (4.61)
Accessory fissure	3 (4.61)
Four lobes	3 (4.61)
Two bronchi in hilum	64 (98.46)
Three bronchi in the hilum	1 (1.53)
Artery in the oblique fissure	2 (3.07)

Surgical treatment

- Right lower lobectomy (open)
- Right lower lobectomy (VATS)
- Right superior segmentectomy
- Right basilar segmentectomy

Right Lower Lobectomy (open and VATS)

Indications:

- Clinical stage I nonsmall cell lung cancer (NSCLC)
- Uncharacterized but suspicious pulmonary nodules which are not amenable to wedge resection
- Mycetoma contained in the lung parenchyma
- Atypical mycobacterial infections causing destruction of the majority of the parenchyma of the lobe intended for resection
- Pulmonary sequestration

Relative Contraindications:

- NSCLC higher than stage I
- Tumors invading the chest wall
- Tumors invading the hilum
- NSCLC with macroscopic lymph node involvement
- Failure to progress after a reasonable time with the VATS approach
- Aberrant vascular or bronchial anatomy
- Complete pleural symphysis

Right Lower Lobectomy (open and VATS)

Preop Workup:

Always:

- Spirometry
- Diffusion capacity
- Myocardial stress test
- Echocardiogram

Occasional:

- Quantitative perfusion scanning
- Six-minute walk
- Stair climb

Right Superior and Basilar Segmentectomy

Indications:

- Benign disease: Pathology within segment
- Metastatic disease: Pathology inadequately resected with a wedge resection
- Primary lung cancer: Early stage disease following sound oncologic principles
 - Absence of lymph node metastases
 - Adequate parenchymal margins
 - Unable to tolerate a lobectomy

Relative Contraindications:

- Pathology not adequately treated with a segmental margin
- Lymph node metastases
- Adhesions (relative)

References

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