



THORAX MUSCLES

- Facial Nerve
- Axillary Nerve
- Lateral & Medial Pectoral Nerve
- Long thoracic Nerve
- Accessory Nerve
- Subclavian Nerve
- Intercostal Nerve

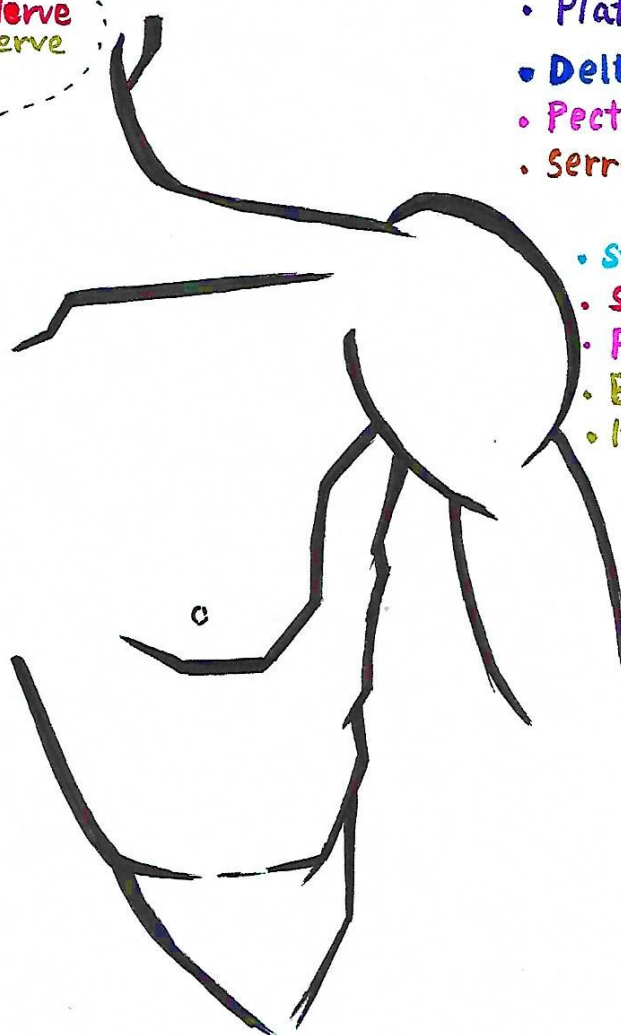
ANTERIOR AXIO-APPENDICULAR

SUPERFICIAL

- Platysma
- Deltoid
- Pectoralis Major
- Serratus Anterior

DEEP

- Sternocleidomastoid
- Subclavius
- Pectoralis Minor
- External intercostal Muscle
- Internal intercostal Muscle



POSTERIOR AXIO-APPENDICULAR

SUPERFICIAL

- Deltoid
- Trapezius
- Rhomboid Major
- Rhomboid Minor
- Latissimus dorsi

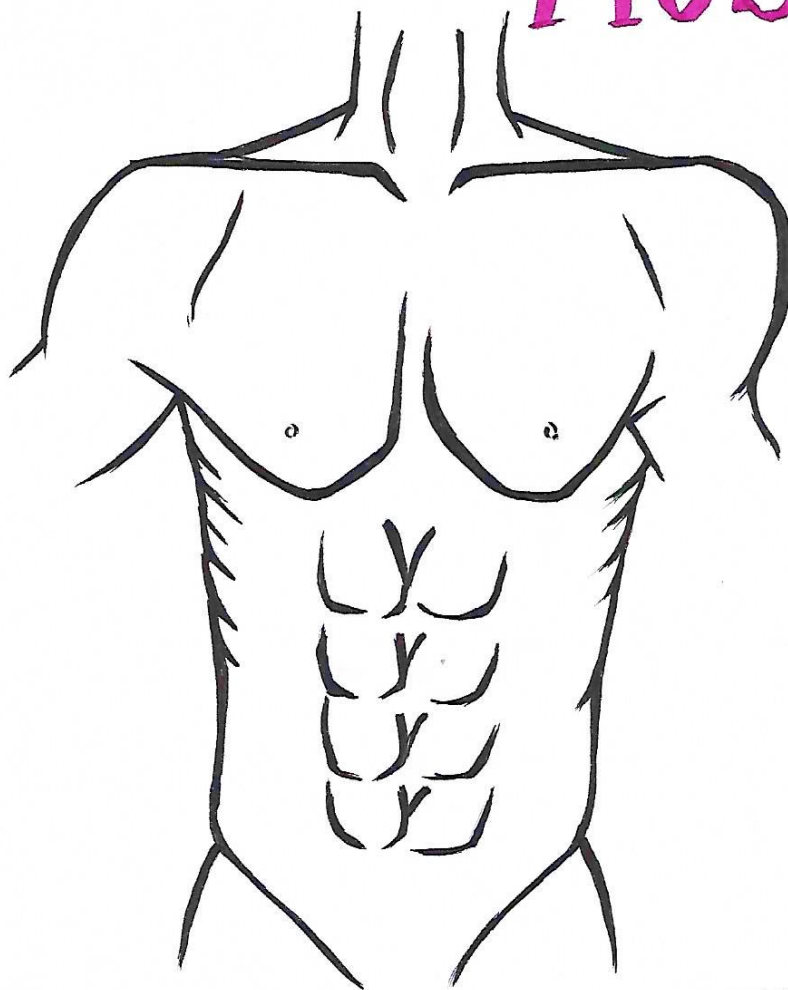
DEEP

- Supraspinatus
- Infraspinatus
- Teres minor
- Teres major
- Levator scapulae

- Dorsal scapular Nerve
- Thoracodorsal Nerve
- Suprascapular Nerve
- Lower subscapular Nerve



ABDOMINAL MUSCLES



ANTERIOR WALL

- External Oblique
- Internal Oblique
- Transverse Abdominis
- Rectus Abdominis

■ Anterior primary rami of lower 6 thoracic nerves (T7-12)

■ Lower 5 intercostal & subcostal nerves (T7-12)

■ Anterior primary rami of lower 6 thoracic nerves (T7-12) & 1st lumbar (L1)

POSTERIOR WALL

- Quadratus lumborum
- Psoas minor
- Psoas major
- Iliacus

■ Ventral rami of T12 & L1-4 lumbar spinal nerves

■ Ventral rami of L1-4 spinal nerves

■ Branch of L1 spinal nerve

■ Femoral nerve (L2-4)



INLET OF THORAX



NARROW UPPER END OF THORAX - CONTINUOUS WITH THE NECK, KIDNEY SHAPED.

BOUNDARIES -> **ANTERIOR** -> **UPPER BORDER OF MANUBRIUM STERNI**

-> **POSTERIOR** -> **SUPERIOR SURFACE OF 1ST THORACIC VERTEBRA**

-> **EACH SIDE ON 1ST RIB**

PLANE OF INLET IS DIRECTED DOWNWARDS AND FORWARD WITH AN OBLIQUITY OF 45 DEGREE.

PARTITION AT INLET OF THORAX

1. **PARTITION IN 2 HALVES** -> **RIGHT & LEFT** -> **WITH CLEFT BETWEEN**

2. **EACH HALF IS COVERED BY FASCIA** -> **SIBSON FASCIA OR SUPRAPLEURAL MEMBRANE**

3. **MEMBRANE - TRIANGULAR IN SHAPE**

- **APEX** -> **ATTACHED TO TIP OF TRANSVERSE PROCESS OF 7TH CERVICAL VERTEBRA**

- **BASE** -> **INNER BORDER OF 1ST RIB**

4. **SIBSON FASCIA** -> **IS FLATTENED TENDON OF SCALENUS MINIMUS**

STRUCTURE PASSING THROUGH THE INLET OF THORAX

1. **VISCERA** - **TRACHEA**

- **OESOPHAGUS**

- **APICES OF LUNGS WITH PLEURA**

- **THYMUS**

2. **LARGE VESSELS** - **BRACHIOCEPHALIC ARTERY ON RIGHT SIDE**

- **LEFT COMMON CAROTID ARTERY** -> **ON LEFT SIDE**

- **LEFT SUBCLAVIAN ARTERY** -> **ON LEFT SIDE**

- **RIGHT & LEFT BRACHIOCEPHALIC VEIN**

3. **SMALLER VESSELS** - **RIGHT & LEFT INTERNAL THORACIC ARTERY**

- **RIGHT & LEFT SUPERIOR INTERCOSTAL ARTERIES**

- **RIGHT & LEFT FIRST POSTERIOR INTERCOSTAL VEINS**

- **INFERIOR THYROID VEINS**

4. **NERVES** - **RIGHT & LEFT PHRENIC NERVE, VAGUS NERVE, SYMPATHETIC TRUNKS**

5. **MUSCLES** - **STERNOHYOID**

- **STERNOTHYROID**

- **LONGUS COLLI**

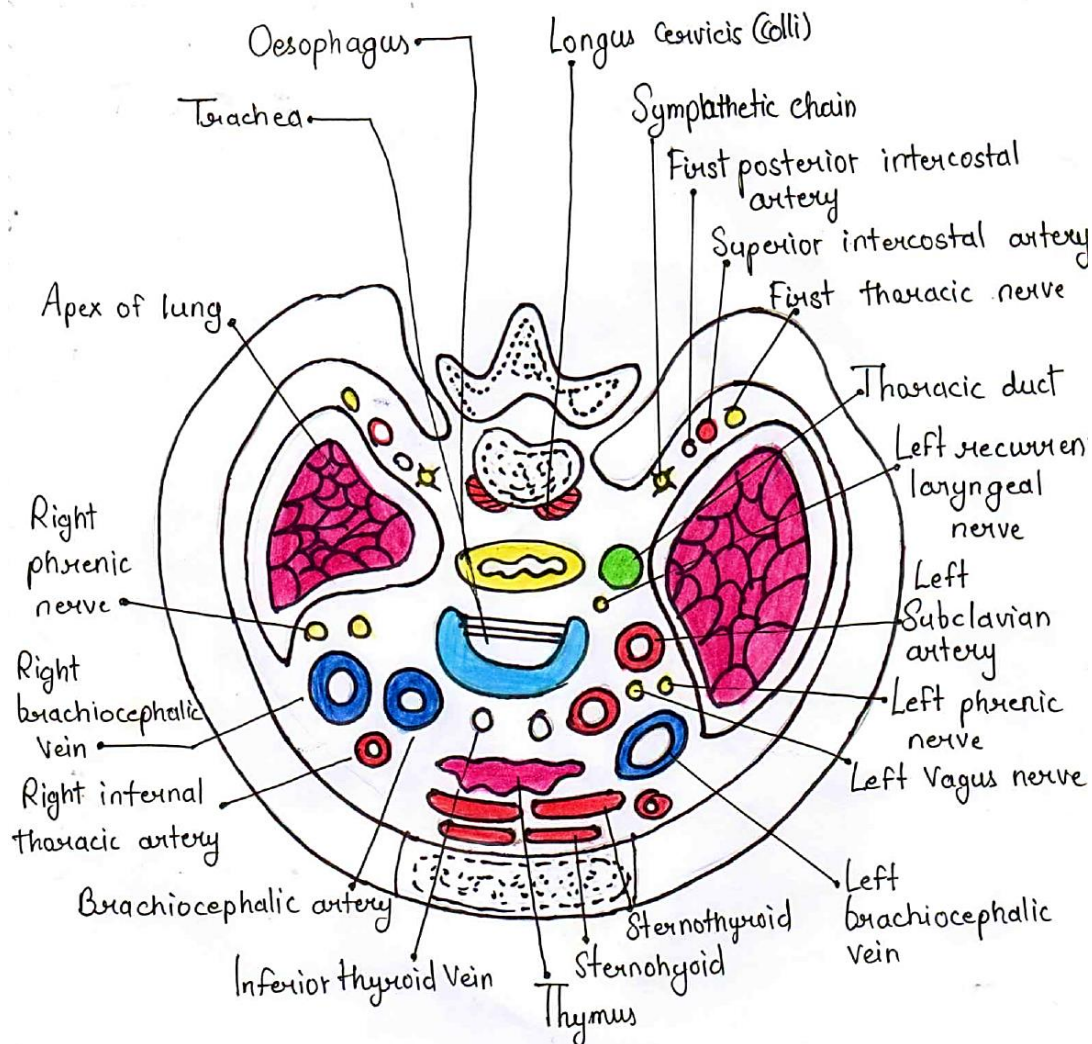
CLINICAL ANATOMY

THORACIC INLET SYNDROME

- **THE SUBCLAVIAN ARTERY & LOWER TRUNK OF BRACHIAL PLEXUS ARCH OVER THE FIRST RIB, HENCE THEY MAY BE STRETCHED AND PUSHED UP BY THE PRESENCE OF A CONGENITALLY HYPERTROPHIED SCALENUS ANTERIOR MUSCLE OR CERVICAL RIB**
- **THIS LEAD TO THORACIC INLET SYNDROME**

- CLINICAL FEATURES :-

- 1) **NUMBNESS, TINGLING AND PAIN ALONG MEDIAL SIDE OF FOREARM AND HAND**
- 2) **WASTING OF SMALL MUSCLE OF HAND DUE TO THE INVOLVEMENT OF LOWER TRUNK OF BRACHIAL PLEXUS (T1)**
- 3) **THERE MAY BE ISCHAEMIC SYMPTOMS IN UPPER LIMB SUCH AS PALLOR AND COLDNESS OF UPPER LIMB AND WEAK RADIAL PULSE DUE TO COMPRESSION OF SUBCLAVIAN ARTERY**



THORACIC OUTLET

INFERIOR THORACIC APERTURE (THORACIC OUTLET) IS BROAD AND SURROUNDS THE UPPER PART OF ABDOMINAL CAVITY

LARGE **MUSCULOAPONEUROTIC DIAPHRAGM** ATTACHED TO MARGINS OF THORACIC OUTLET SEPARATES THE THORACIC CAVITY FROM ABDOMINAL CAVITY

BOUNDARIES -> **ANTERIOR** -> **XIPHISTERNAL POINT**

-> **POSTERIOR** -> **BODY OF 12TH THORACIC VERTEBRA**

-> **LATERALLY** -> **COSTAL MARGIN (FORMED BY COSTAL CARTILAGE OF 7TH TO 10TH RIBS) AND 11TH AND 12TH RIB**

DIAPHRAGM OF INFERIOR THORACIC APERTURE

THORACIC OUTLET -> CLOSED BY LARGE DOME SHAPED FLAT MUSCLE CALLED DIAPHRAGM
DIAPHRAGM -> PRINCIPAL MUSCLE OF RESPIRATION

ORIGIN -

STERNAL PART - TWO FLESHY SLIPS -> **ARISE** -> **POSTERIOR SURFACE OF XIPHOID PROCESS**

COSTAL PART - ON EACH SIDE - 6 FLESHY SLIPS -> **ARISE** -> **INNER SURFACE OF LOWER SIX RIBS**

VERTEBRAL PART - **ARISE BY** -> **RIGHT & LEFT CRURA OF DIAPHRAGM**
-> **FIVE ARCUATE LIGAMENTS**



CRURA- RIGHT CRURA -> ARISE FROM RIGHT SIDE OF ANTERIOR ASPECT OF UPPER THREE LUMBER VERTEBRA

LEFT CRURA -> ARISE FROM LEFT SIDE OF UPPER TWO LUMBER VERTEBRA

ARCUTAE LIAGMENT - MEDIAN ARCUATE LIGAMENTS
- MEDIAL ARCUATE LIGAMENTS
- LATERAL ARCUATE LIGAMENT

INSERTION -

FROM CIRCUMFERENTIAL ORIGIN, THE MUSCLE FIBRES CONVERGE TOWARD THE CENTRAL TENDON AND INSERT INTO ITS MARGIN

OPENING OF DIAPHRAGM -> (A) MAJOR OPENING (B) MINOR OPENING

MAJOR OPENING AND STRUCTURE PASSING THROUGH

1) VENA CAVAL OPENING -> INFERIOR VENA CAVA
-> RIGHT PHRENIC NERVE

2) OESOPHAGEAL OPENING -> OESOPHAGUS
-> RIGHT AND LEFT PHRENIC NERVE

3) AORTIC OPENING -> AZYGOS VEIN
-> THORACIC DUCT
-> AORTA

MINOR OPENING AND STRUCTURE PASSING THROUGH

THESE ARE UNNAMED, STRUCTURE PASSIN THROUGH THESE OPEING ARE AS FOLLOWS :-

- 1) SUPERIOR EPIGASTRIC VESSELS
- 2) MUSCULOPHRENIC ARTERY
- 3) LOWER FIVE INTERCOASTAL NERVE AND VESSEL
- 4) SUBCOSTAL NERVE AND VESSEL
- 5) SYMPATHETIC CHAIN
- 6) GREATER AND LEAST SPLANCHNIC NERVE
- 7) HEMIAZYGOS VEIN

NERVE SUPPLY - RIGHT & LEFT PHRENIC NERVE
- LOWER FIVE INTERCOSTAL AND SUBCOSTAL NERVES

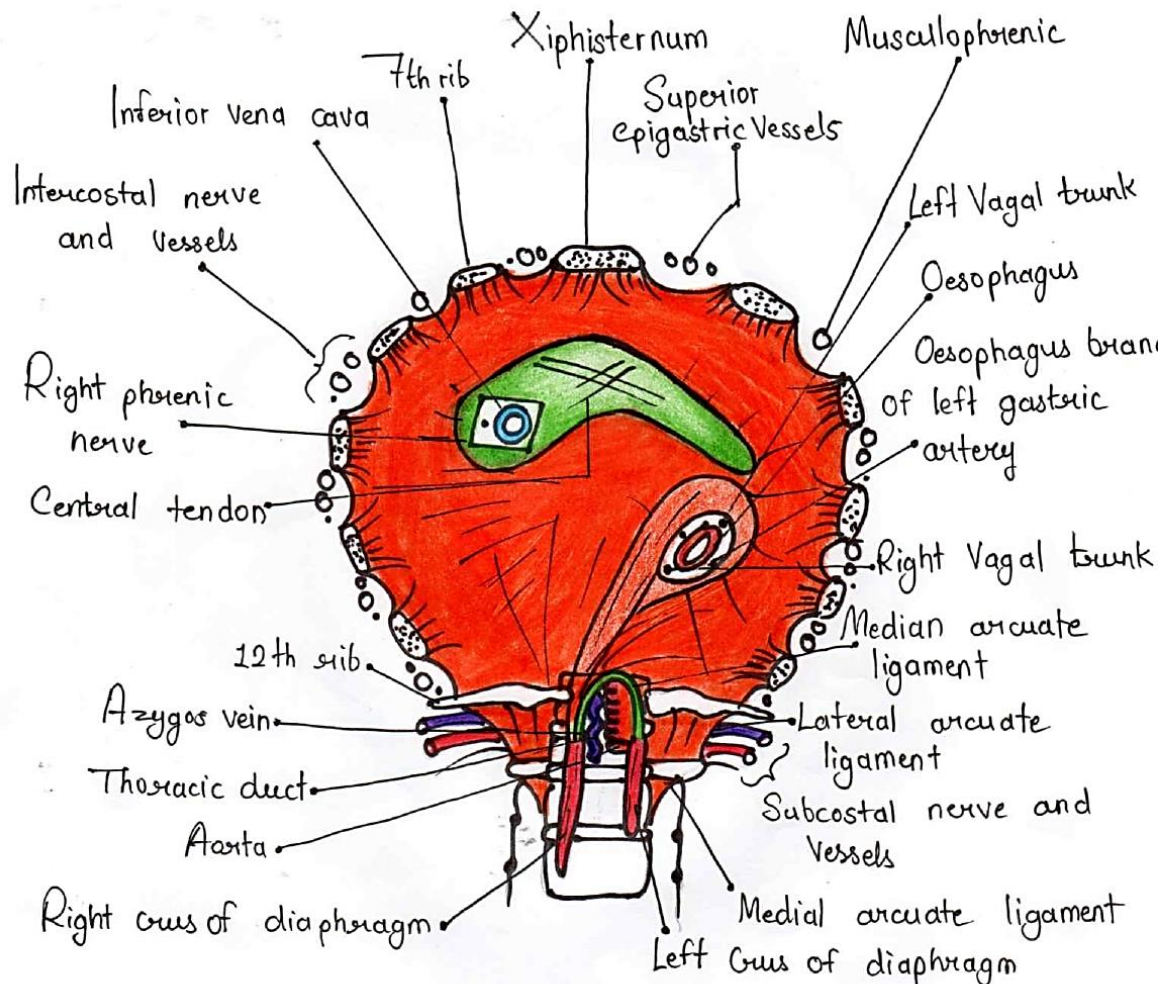
CLINICAL ANATOMY

DIAPHRAGMATIC PARALYSIS

- THE UNILATERAL DAMAGE OF PHRENIC NERVE LEAD TO UNILATERAL DIAPHRAMATIC PARALYSIS
 - THE BILATERAL DAMAGE OF PHRENIC NEREVES LEAD TO COMPLETE DIAPHRAGMATIC PARALYSIS
- IT IS A SERIOUD CONDITION MAY CAUSE RESPIRATORY FAILURE

HICCUPS

- OCCUR DUE TO INVOLUNTARY SPASMODIC CONTRACTIONS OF DIAPHRAGM ACCOMPANIED BY CLOSURE OF GLOTTIS
- HICCUPS NORMALLY OCCUR AFTER EATING OR DRINKING AS A RESULT OF GASTRIC IRRITATION
- PATHOLOGICAL CAUSES OF HICCUPS INCLUDE DIAPHRAGMATIC IRRITATION, PHRENIC NERVE IRRITATION



BLOOD SUPPLY OF THORAX

ARCH OF AORTA



CONTINUATION OF ASCENDING AORTA
SITUATED IN MEDIASTINUM.

COURSE

1. BEGIN BEHIND THE UPPER BORDER OF THE 2ND RIGHT STERNOCHONDRAL JOINT.
2. RUN UPWARD, BACKWARD & BIFURCATION OF TRACHEA.
3. IT THUS ARCHES OVER ROOT OF LUNG.
4. ENDS AT LOWER BORDER OF BODY OF 4TH THORACIC VERTEBRAE.

BRANCHES

- 1) BRACHIOCEPHALIC ARTERY → DIVIDES → RIGHT COMMON CAROTID
→ RIGHT SUBCLAVIAN ARTERIES
- 2) LEFT COMMON CAROTID ARTERY
- 3) LEFT SUBCLAVIAN ARTERY

CLINICAL ANATOMY

PATENT DUCTUS ARTERIOSUS

- IN FOETAL LIFE, PULMONARY TRUNK IS CONNECTED TO ARCH OF AORTA BY SHORT WIDE CHANNEL CALLED DUCTUS ARTERIOSUS
- NORMALLY AFTER BIRTH, IT CLOSE FUNCTIONALLY WITHIN WEEK
- THE OBLITERATED DUCTUS ARTERIOSUS IS CALLED LIGAMENTUM ARTERIOSUM
- NON-OBLITERATED DUCTUS ARTERIOSUS IS CALLED PATENT DUCTUS ARTERIOSUS



DESCENDING THORACIC AORTA

DESCENDING THORACIC AORTA IS CONTINUATION OF ARCH OF AORTA IN POSTERIOR MEDIASTINUM.

COURSE

1. **BEGINS ON LEFT SIDE OF LOWER BORDER OF FOURTH THORACIC (T₄) VERTEBRA**
2. **DESCENDS IN POSTERIOR MEDIASTINUM**
3. **TERMINATE IN FRONT OF LOWER BORDER OF BODY OF 12TH THORACIC VERTEBRA**
4. **LOWER END -> PASSES THROUGH THE AORTIC OPENING OF DIAPHRAGM AND CONTINUE AS ABDOMINAL AORTA**

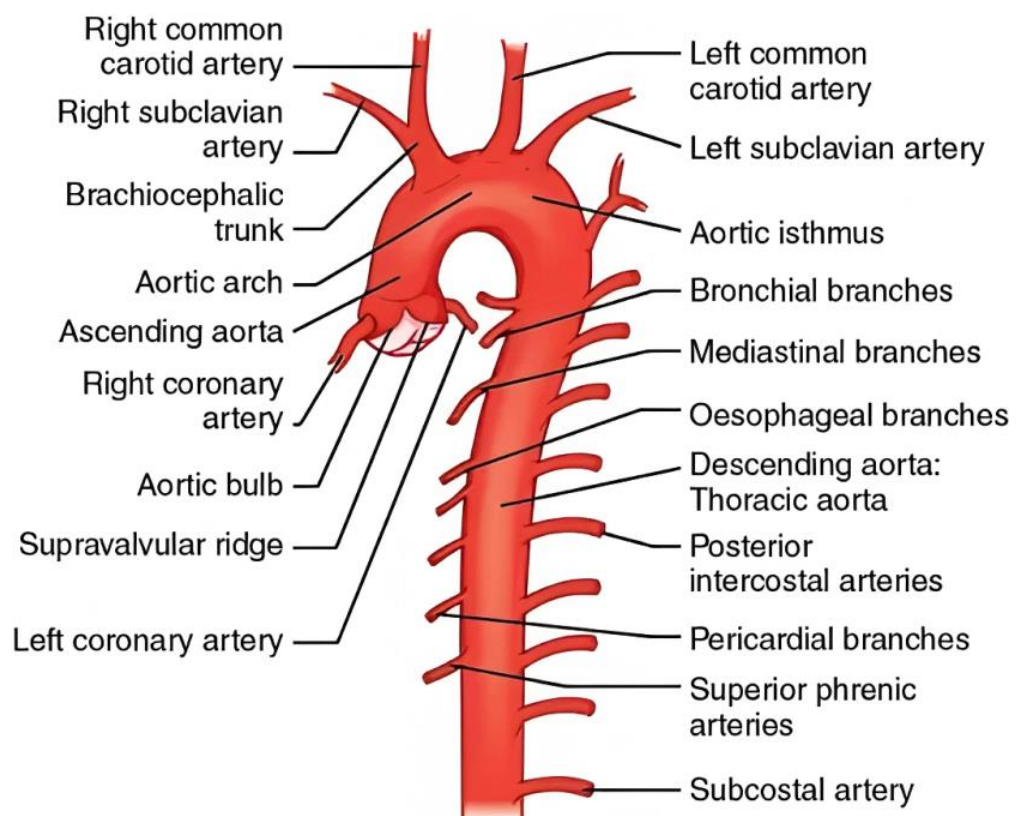
BRANCHES

- 1) **PARITEAL BRANCHES -> NINE (3RD- 11) POSTERIOR INTERCOSTAL ARTERIES ON EACH SIDE**
 - > **SUBCOSTAL ARTERY ON EACH SIDE**
 - > **SUPERIOR PHRENIC ARTERY ON EACH SIDE**
- 2) **VISCERAL BRANCHES -> PERICARDIAL BRANCHES**
 - > **MEDIASTINAL BRANCHES**
 - > **TWO LEFT BRONCHIAL ARTERIES**
 - > **OESOPHAGEAL BRANCHES**

CLINICAL ANATOMY

DISSECTING ANEURYSM

- UNDER THIS CONDITION, BLOOD FROM AORTIC LUMEN ENTERS INTO ITS WALL THROUGH A TEAR IN TUNICA INTIMA CREATING A CHANNEL OF BLOOD IN TUNICA MEDIA THAT LEADS TO DILATATION OF AORTA
- CLINICALLY IT PRESENTS AS PAIN IN BACK DUE TO COMPRESSION OF INTERCOSTAL NERVE





AZYGOS VEIN



- THE AZYGOS TERM MEANS UNPAIR.
- AZYGOS VEIN DRAIN THORACIC WALL & THE UPPER LUMBAR REGION.
- FROM IMPORTANT CHANNEL CONNECTING INFERIOR VENA CAVA
- VEIN OCCUPIES UPPER PART OF POST. WALL OF ABDOMINAL WALL & THE POST. MEDIASTINUM.

FORMATION - FORM BY UNION OF LUMBAR AZYGOS VEIN

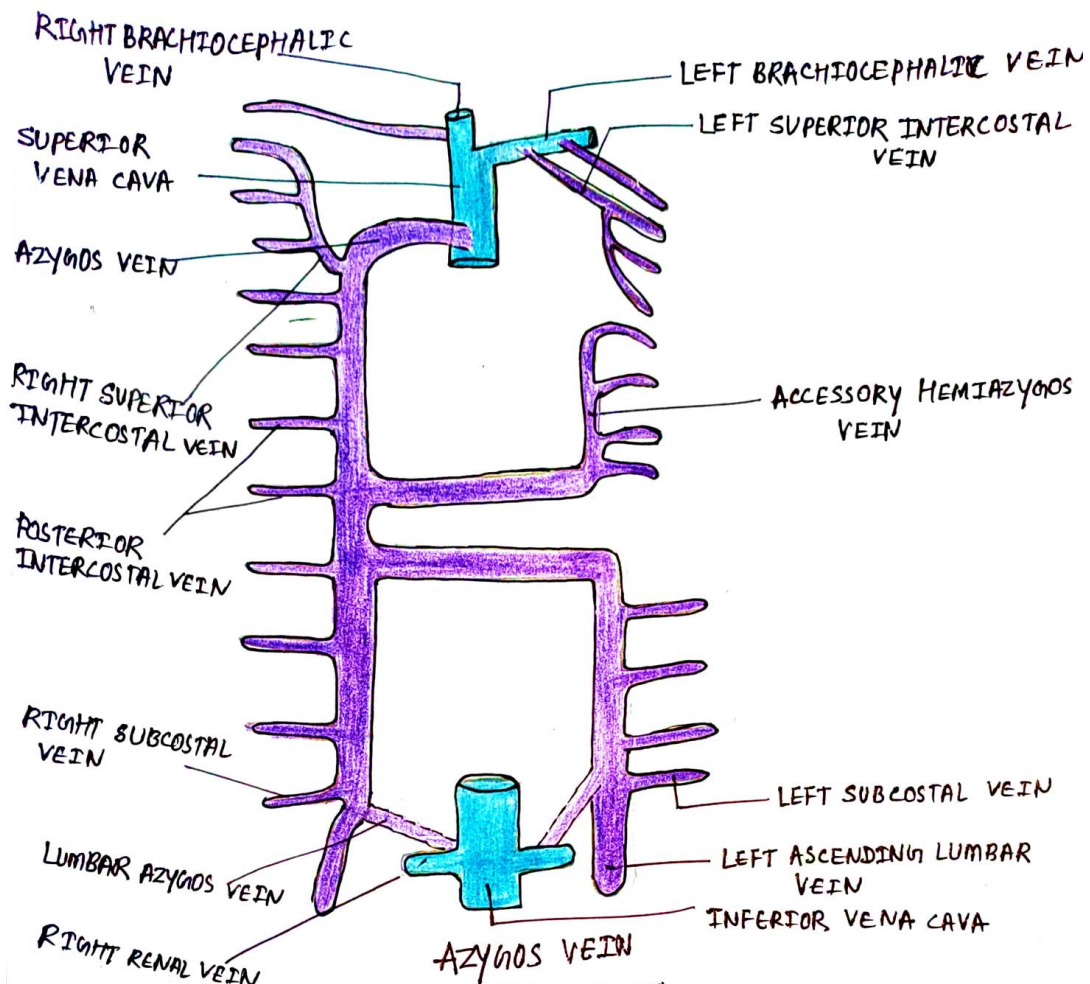
- RIGHT SUB COASTAL VEIN
- ASCENDING LUMBAR VEIN.

COURSE -

- 1) AZYGOS VEIN -> ENTER THORAX BY PASSING THROUGH AORTIC OPENING OF DIAPHRAGM
- 2) THEN ASCEND -> UP TO FOURTH THORACIC VERTEBRA WHERE ITS ARCH FORWARDS OVER THE ROOT OF RIGHT LUNGS
- 3) ENDS BY JOINING THE POSTERIOR ASPECT OF SUPERIOR VENA CAVA BEFORE IT PIERCE THE PERICARDIUM

TRIBUTARIES

- 1) RIGHT SUPERIOR INTERCOASTAL VEIN -> FORM BY UNION OF 2ND, 3RD, 4TH POST. INTERCOASTAL VEIN.
- 2) 5TH TO 8TH POST. INTERCOASTAL VEIN.
- 3) HEMIAZYGOS -> AT LEVEL OF LOWER BORDER OF 8 THORACIC VERTEBRAE.
- 4) ACCESSORY HEMIAZYGOS VEIN - AT THE LEVEL OF UPPER BORDER OF 8TH THORACIC VERTEBRA
- 5) RIGHT BRONCHIAL VEIN, NEAR THE TERMINAL END OF AZYGOS VEIN.
- 6) SEVERAL OESOPHAGEAL, MEDIASTINAL, PERICARDIAL VEINS.





THORACIC DUCT



LARGEST LYMPHATIC VESSEL OF THE BODY THAT DRAINS THE LYMPH FROM MOST OF BODY INTO BLOOD STREAM

EXTEND - UPPER END OF CISTERNA CHYLI ON POSTERIOR ABDOMINAL WALL AT T12 VERTEBRA TO JUNCTION OF LEFT INTERNAL JUGULAR AND LEFT SUBCLAVIAN VEIN AT ROOT OF NECK

MEASUREMNET - LENGTH : 45CM
- WIDTH OF LUMEN : 5MM

COURSE

- 1) BEGINS AS A CONTINUATION OF THE UPPER END OF THE CISTERNA CHYLI NEAR LOWER BORDER → 12 THORACIC VERTEBRAE
- 2) ENTER THORAX THROUGH AORTIC OPENING OF DIAPHRAGM
- 3) THEN ASCEND THROUGH POSTERIOR MEDIASTINUM FROM LEVEL OF 2ND - 5TH THORACIC VERTEBRAE.
- 4) THEN IT COURSE THROUGH SUPERIOR MEDIASTINUM
- 5) IN NECK - ARCH LAT. AT LEVEL OF 7TH CERVICAL VERTEBRAE
- 6) END BY OPENING INTO ANGLE OF JUNCTION BETWEEN LEFT SUBCLAVIAN & LEFT INTERNAL JUGULAR VEIN.

RELATION

- AT AORTIC OPENING OF DIAPHRAGM - ANTERIORLY-DIAPHRAGM
 - POSTERIORLY-VERTEBRAL COLUMN
 - TO THE RIGHT - AZYGOS VEIN
 - TO THE LEFT - AORTA
- IN THE POST.MEDIASTINUM - ANTERIORLY - DIAPHRAGM
 - OESOPHAGUS
 - RIGHT PLEURAL RECESS
 - POSTERIORLY - VERTEBRAL COLUMN
 - RIGHT POST.INTERCOASTAL ARTERIES
 - TO THE RIGHT - AZYGOS VEIN
 - TO THE LEFT - DESCENDING AORTA
- IN SUP.MEDIASTINUM - ANTERIORLY - ARCH OF AORTA
 - POSTERIORLY - VERTEBRAL COLUMN
 - TO THE RIGHT - OESOPHAGUS
 - TO THE LEFT - PLEURA
- IN THE NECK - THE THORACIC DUCT FORMS AN ARCH RISING ABOUT 3-4CM ABOVE THE CLAVICLE
 - ANTERIORLY - LEFT COMMON CAROTID ARTERY
 - LEFT VAGUS
 - INTERNAL JUGULAR VEIN
 - POSTERIORLY - VERTEBRAL ARTERY
 - SYMPATHETIC TRUNK
 - LEFT PHRENIC NERVE

**TRIBUTARIES**

- THORACIC DUCT RECEIVE LYMPH FROM BOTH HALF OF BODY BELOW DIAPHRAGM & LEFT HALF ABOVE ABDOMEN.
- IN THORAX THORACIC DUCT RECEIVE - LYMPH VESSEL FROM POST.MEDIASTINAL NODE & SMALL INTERCOASTAL NODE.
- LEFT JUGULAR TRUNK, LEFT SUBCLAVIAN TRUNK END IN THORACIC DUCT
- LEFT BRONCHOMEDIASTINAL TRUNK -> DRAIN LYMPH FROM LEFT HALF OF THORAX & END IN THORACIC DUCT.

RIGHT HALF ABOVE DIAPHRAGM

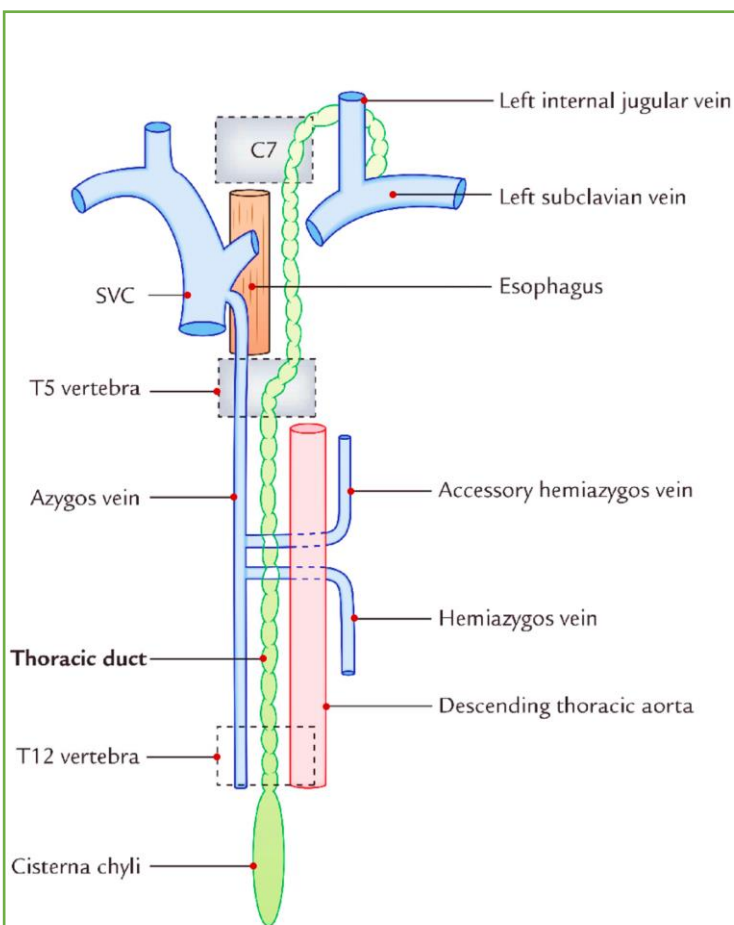
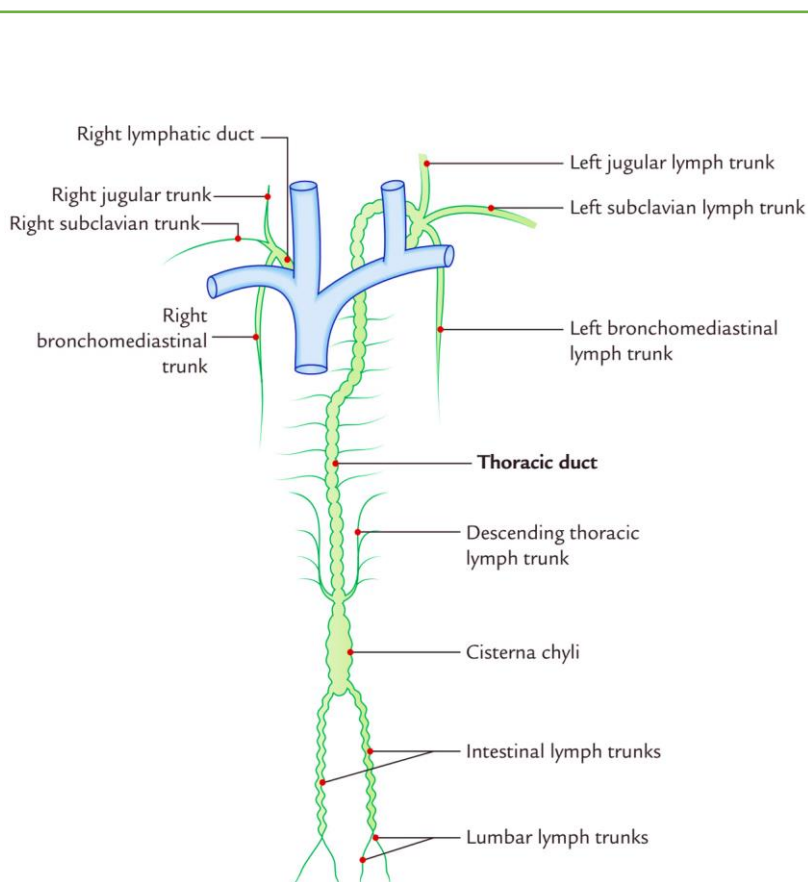
- RIGHT SIDE THERE IS RIGHT LYMPHATIC DUCT → INTO WHICH RIGHT BRONCHIOMEDIASTINAL, RIGHT JUGULAR, RIGHT SUBCLAVIAN LYMPH DRAIN.
- RIGHT LYMPHATIC TRUNK END IN RIGHT BRACHIOCEPHALIC VEIN.

CLINICAL ANATOMY**OBSTRUCTION OF THORACIC DUCT**

- SOME TIME IN FILARIAL INFECTION, THORACIC DUCT IS OBSTRUCTED BY MICROFILARIAL PARASITES (WUCHERERIA BANCROFTI)

CYLOTHORAX

- LACERATION OF THORACIC DUCT DURING LUNG SURGERY LEADS TO LEAKAGE OF CHYLE INTO PLEURAL CAVITY PRODUCING A CLINICAL CONDITION CALLED CHYLOTHORAX

**THORACIC DUCT FORMATION AND COURSE****TRIBUTARIES OF THORACIC DUCT**



INTERCOSTAL SPACES AND MUSCLES



GAP BETWEEN RIBS ARE CALLED INTERCOASTAL SPACE

FILL BY INTERCOASTAL MUSCLE & CONTAIN INTERCOASTAL VESSELS AND NERVE

9 INTERCOASTAL SPACE - > ANTERIORLY

11 INTERCOASTAL SPACE -> POSTERIORLY

INTERCOASTAL MUSCLE - 1) EXTERNAL INTERCOASTAL MUSCLE
2) INTERNAL INTERCOASTAL MUSCLE
3) TRANSVERSUS THORACIS - DIVIDED INTO 3 PARTS-SUBCOSTALIS, INTERCOSTALIS INTIMI, STERNOCOSTALIS

EXTEND

1) EXTERNAL INTERCOASTAL - POSTERIOR - TUBERCLE OF RIB

- ANTERIOR - COSTOCHONDRAL JUNCTION

ANTERIORLY - BETWEEN COSTOCHONDRAL JUNCTION AND STERNUM

REPLACED BY EXTERNAL INTERCOASTAL MEMBRANE

POSTERIORLY - END OF MUSCLE IS CONTINUOUS WITH POSTERIOR FIBERS

→SUPERIOR COSTO TRANSVERSE LIGAMENT

DIRECTION OF FIBRE - DOWNWARD, FORWARD & MEDIALY IN FRONT

NERVE SUPPLY - INTERCOSTAL NERVE OF SAME SPACES

ACTION - ELEVATE THE RIBS DURING INSPIRATION

2) INTERNAL INTERCOASTAL - ANTERIOR -> LATERAL BORDER OF STERNUM → CONTINUOUS
→ SUPERIOR COSTO LIGAMENT

- POSTERIOR -> ANGLE OF RIB BEYOND POSTERIOR

-> INTERCOASTAL MEMBRANE

DIRECTION OF FIBRE - DOWNWARD, BACKWARD, LATERALLY

NERVE SUPPLY - INTERCOSTAL NERVE OF SAME SPACES

ACTION - ELEVATE THE RIBS DURING EXPIRATION

3) SUBCOSTALIS - POSTERIOR PART OF LOWER INTERCOASTAL SPACE

ORIGIN & INSERTION - ARISE FROM INNER SURFACE OF RIB NEAR ANGLE

- INSERT ON INNER SURFACE OF SECOND & THIRD RIB

NERVE SUPPLY - BY INTERCOSTAL NERVE OF SAME SPACE

ACTION - DEPRESSOR OF RIBS

4) INTERCOSTALIS - MIDDLE 2/4 OF ALL INTERCOSTAL SPACE

ORIGIN & INSERTION - ARISE FROM INNER SURFACE OF RIB ABOVE

- INSERT ON INNER SURFACE OF RIB BELOW

NERVE SUPPLY - BY INTERCOSTAL NERVE OF SAME SPACE

ACTION - ELEVATE THE RIBS DURING EXPIRATION

5) STERNOCOSTALIS - ANTERIOR PART OF UPPER INTERCOSTAL SPACE

ORIGIN & INSERTION - ARISE FROM INNER SURFACE OF RIB NEAR ANGLE

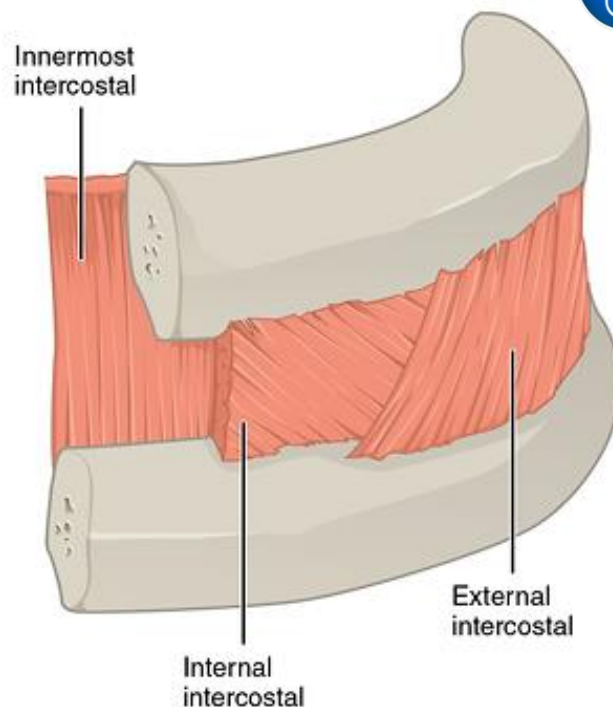
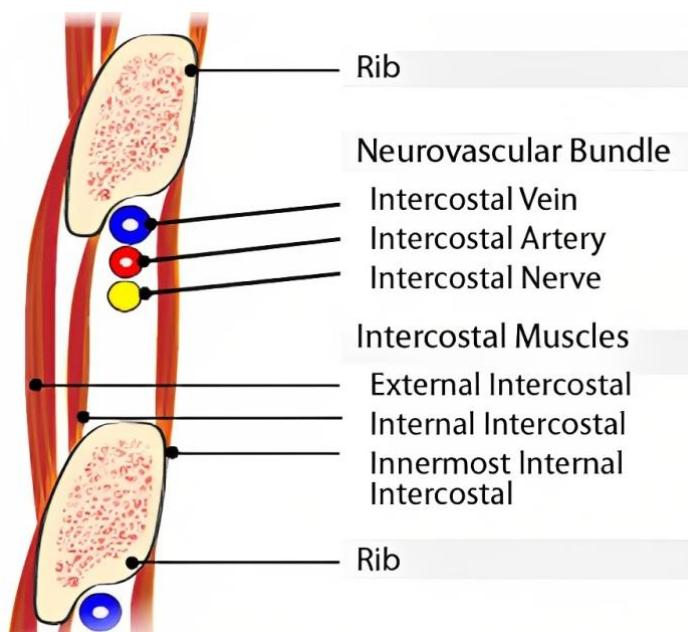
- INSERT ON INNER SURFACE OF SECOND & THIRD RIB

NERVE SUPPLY - BY INTERCOSTAL NERVE OF SAME SPACE

ACTION - IT DRAWS DOWN THE COSTAL CARTILAGE IN WHICH IT INSERT

MNEMONIC FOR INTERCOSTAL CONTENTS

VAN (V-INTERCOSTAL VEIN, A - INTERCOSTAL ARTERY, N - INTERCOSTAL NERVE)



INTERCOSTAL NERVE

12 PAIRS OF THORACIC SPINAL NERVE SUPPLY THORACIC WALL

- INTERCOASTAL NERVE ARE ANTERIOR PRIMARY RAMI OF THORACIC T1-11 SPINAL NERVE
- THE ANT.PRIMARY RAMI OF 12 THORACIC NERVE - FORM SUBCOASTAL NERVE.
- IN ADDITIONAL TO SUPPLY INTERCOASTAL SPACE -
 - UPPER 2 INTERCOASTAL NERVE - ALSO SUPPLY UPPER LIMB MUSCLE
 - LOWER 5 - SUPPLY ABDOMINAL WALL ALSO CALLED THORACO ABDOMINAL NERVE
 - 3-6 SUPPLY ONLY THORACIC WALL THEY ARE CALLED TYPICAL INTERCOASTAL NERVE.

CLASSIFICATION -

- 1) TYPICAL INTERCOSTAL NERVE (3RD - 6TH)
TYPICAL INTERCOSTAL NERVE -> REMAIN CONFINED TO THEIR OWN INTERCOSTAL SPACE
- 2) ATYPICAL INTERCOSTAL NERVE (1ST, 2ND, 7TH TO 11TH)
ATYPICAL INTECOSTAL NERVE EXTEND BEYOND THE THORACIC WALL AND PARTLY SUPPLY THE OTHER REGIONS

COURSE - INTERCOASTAL NERVE RUN IN COASTAL GROOVE-→END NEAR STERNUM

BRANCHES

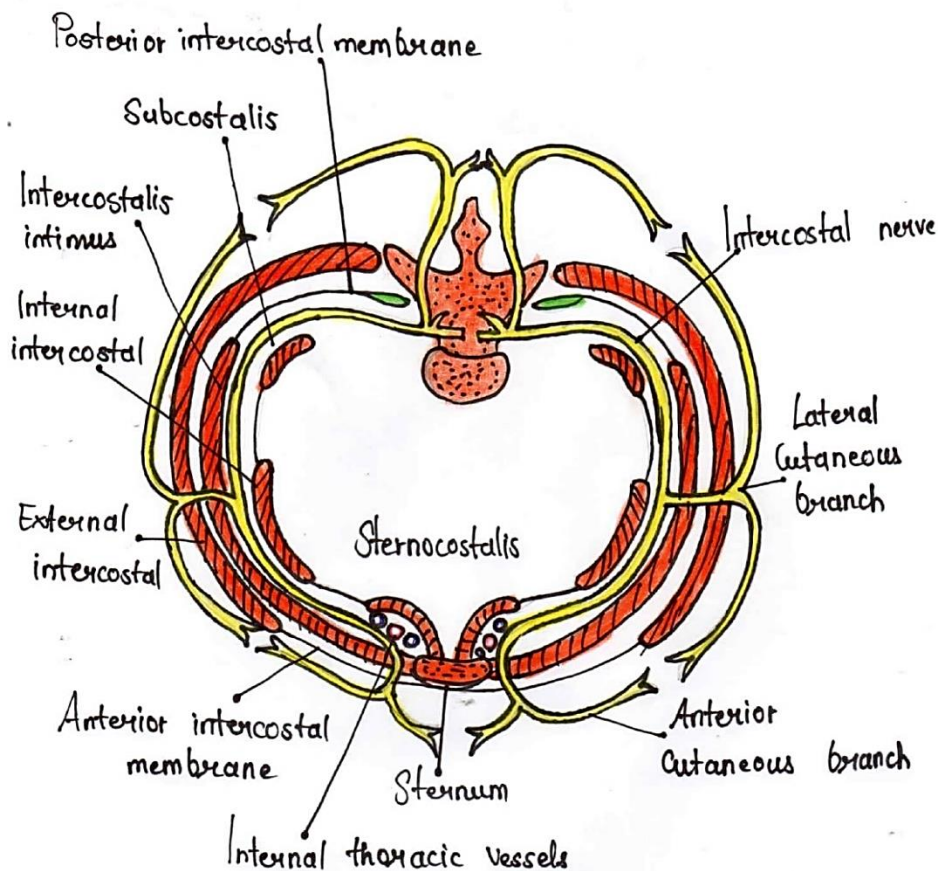
- 1) MUSCULAR BRANCH - NUMEROUS MUSCULAR BRANCH SUPPLY INTERCOASTAL MUSCLE TRANSVERSUS THORACIS
- 2) SENSORY BRANCH - MAIN BRANCH & COLLATERAL BRANCH ALSO SUPPLY PARIETAL PLEURA & PERIOSTEUM OF RIB
- 3) LAT.CUTANEOUS BRANCH ARISE-NEAR ANGLE OF RIB WHERE IT PAIR INTERCOASTAL MUSCLE & DISTRIBUTED TO THE SKIN.
- 4) ANT.CUTANEOUS BRANCH - EMERGE ON THE SIDE OF STERNUM -SUPPLY OVERLYING SKIN.
- 5) COMMUNICATING BRANCH - EACH NERVE IS CONNECTED TO THORACIC SYMPATHETIC GANGLION BY A DISTAL PACE WHITE & PROXIMAL GREY RAMUS COMMUNICANS.



CLINICAL ANATOMY

HERPES ZOSTER

- INVOLVING THORACIC SPINAL GANGLIA, CUTANEOUS VESICLES APPEAR IN DERMATOMAL AREA OF DISTRIBUTION OF INTERCOSTAL NERVE
- EXTREMELY PAINFUL CONDITION



INTERCOSTAL ARTERIES

- THE THORACIC WALL HAS RICH BLOOD SUPPLY -> PROVIDED BY POSTERIOR & ANTERIOR INTERCOSTAL ARTERIES
- EACH INTERCOSTAL SPACE CONTAINS 1 POSTERIOR & 2 ANTERIOR INTERCOSTAL ARTERIES

POSTERIOR INTERCOSTAL ARTERIES-

11 PAIRS OF INTERCOSTAL ARTERIES, ONE IN EACH SPACE

ORIGIN -

- 1) FIRST & SECOND POSTERIOR INTERCOSTAL ARTERIES ARE BRANCHES OF SUPERIOR INTERCOSTAL ARTERY BRANCH OF COSTOCERVICAL TRUNK
- 2) 3RD TO 11TH POSTERIOR INTERCOSTAL ARTERIES ARISE -> DIRECTLY FROM THE DESCENDING THORACIC AORTA

TERMINATION -

EACH POSTERIOR INTERCOSTAL ARTERY ENDS AT LEVEL OF COSTOCHONDRAL JUNCTION BY ANASTOMOSING WITH UPPER ANTERIOR INTERCOSTAL ARTERY OF SPACE



- BRANCHES** - DORSAL BRANCH
- COLLATERAL BRANCH
- MUSCULAR BRANCHES
- LATERAL CUTANEOUS BRANCH
- MAMMARY BRANCHES
- RIGHT BRONCHIAL ARTERY

ANTERIOR INTERCOSTAL ARTERIES-

2 INTERCOSTAL ARTERIES IN EACH INTERCOSTAL SPACE, THEY ARE PRESENT IN UPPER NINE INTERCOSTAL SPACE ONLY

ORIGIN -

- 1) 1ST TO 6TH SPACES, ARISE FROM INTERNAL THORACIC ARTERY
- 2) 7TH TO 9TH SPACES, ARISE FROM THE MUSCULOPHRENIC ARTERY

TERMINATION -

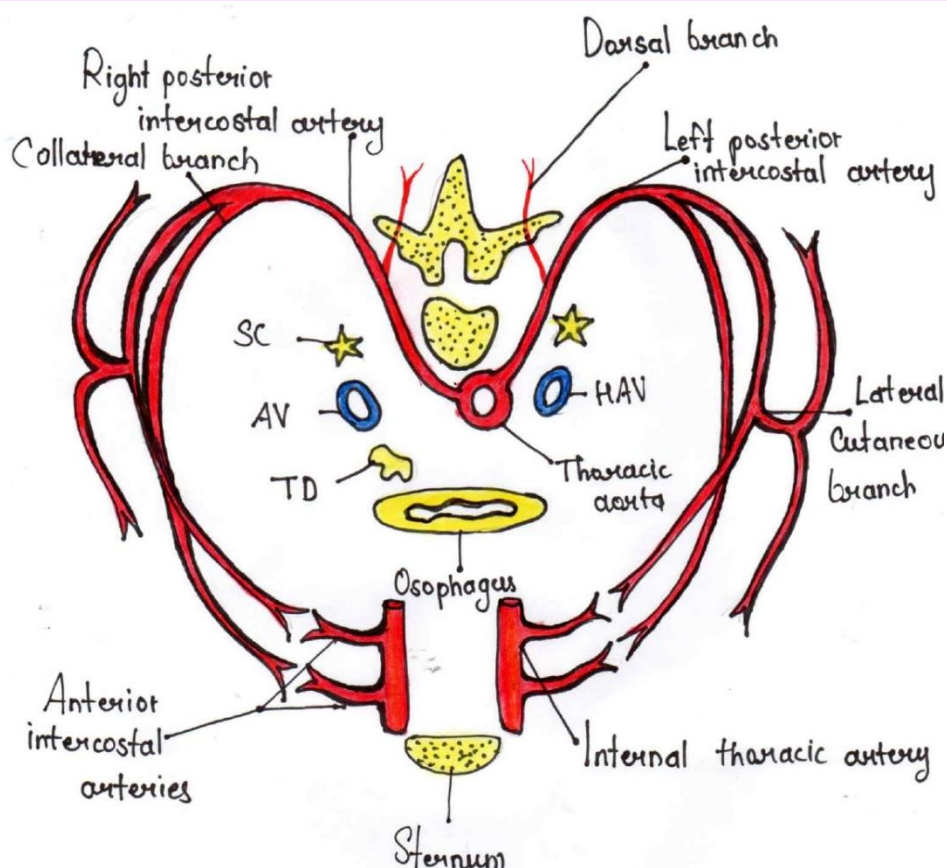
ANTERIOR INTERCOSTAL ARTERIES ARE SHORT AND END AT THE LEVEL OF COSTOCHONDRAL JUNCTION AS FOLLOWS

- 1) UPPER ANTERIOR INTERCOSTAL ARTERY ANASTOMOSES WITH CORRESPONDING POSTERIOR INTERCOSTAL ARTERY
- 2) LOWER ANTERIOR INTERCOSTAL ARTERY ANASTOMOSES WITH COLLATERAL BRANCH OF CORRESPONDING POSTERIOR INTERCOSTAL ARTERY

CLINICAL ANATOMY

COARCTATION OF AORTA

IN COARCTATION OF AORTA, THE POSTERIOR INTERCOSTAL ARTERIES ARE MARKEDLY ENLARGED AND CAUSE NOTCHING OF RIBS, PARTICULARLY IN THEIR POSTERIOR PARTS





PLEURA



PLEURA IS A SEROUS MEMBRANE - LINED BY MESOTHELIUM.

2 PLEURAL SAC, 1 ON EITHER SIDE OF THE MEDIASTINUM.

OUTER LAYER IS PARIETAL PLEURA.

INNER LAYER IS VISCERAL OR PULMONARY PLEURA.

2 PLEURA CONTINUE WITH EACH OTHER AROUND HILUM OF LUNGS BETWEEN PLEURAL CAVITY.

COMPARISON OF VISCERAL & PARIETAL PLEURA

DEVELOPMENT	SPLENOPLEURIC MESODERM	SOMATOPLEURIC MESODERM
POSITION	LINES SURFACE OF LUNG INCLUDING TISSUES	LINE THORACIC WALL, MEDIASTINUM & DIAPHRAGM.
NERVE SUPPLY	SYMPATHETIC NERVES FROM T2-T5 GANGLIA, PARASYMPATHETIC FROM VAGUS NERVE	THORACIC NERVES & PHRENIC NERVES
SENSITIVITY	INSENSITIVE TO PAIN	SENSITIVE TO PAIN
BLOOD SUPPLY	BRONCHIAL VESSELS	INTERCOASTAL & PERICARDIOPHRENIC VESSELS
LYMPHATIC DRAINAGE	TRACHEOBRONCHIAL LYMPH NODE	INTERCOASTAL LYMPH NODE

VISCERAL PLEURA - COVER SURFACE & FISSURES OF LUNGS EXCEPT HILUM WHERE IT CONTINUE WITH PARIETAL PLEURA.

-FIRMLY ADHERENT TO THE LUNGS CAN NOT BE SEPARATED.

PARIETAL PLEURA - THICKER THAN VISCERAL PLEURA SUB DIVIDED INTO 4 PARTS -
1.COSTAL, 2.DIAPHRAGMATIC, 3.MEDIASTINAL, 4.CERVICAL

SURFACE MARKING OF PLEURA - (PARIETAL)

1.CERVICAL PLEURA - REPRESENT BY CURVED LINE. - ABOUT 2.5CM ABOVE CLAVICLE.

2.ANTERIOR MARGIN OF COSTOMEDIASTINAL -

- RIGHT SIDE - EXTEND - STERNOCLAVICULAR JOINT TO STERNUM ANGLE.

- VERTICALLY DOWNWARD TO XIPHISTERNAL POINT

- LEFT SIDE - FOLLOW THE SAME COURSE UP TO 4TH COSTOCARTILAGE LEVEL.

- THEN ARCH DOWN TO 6TH COSTOCARTILAGE.

3.POSTERIOR MARGIN - PASS 2CM LATERAL TO 12 THORACIC SPINE TO 2CM LATERAL TO 4TH CERVICAL SPINE.

4.INFERIOR MARGIN - CROSS 8TH RIB IN MID CLAVICULAR LINE - 10TH RIB IN MID AXILLARY LINE

SURFACE MAKING OF PLEURA - (VISCERAL)

APEX - 2.5CM ABOVE MEDIAL 2/3 CLAVICLE.

1.ANTERIOR BORDER OF VISCERAL PLEURA -

-RIGHT SIDE - CORRESPONDS CLOSELY WITH COSTO MEDIASTINAL LINE.

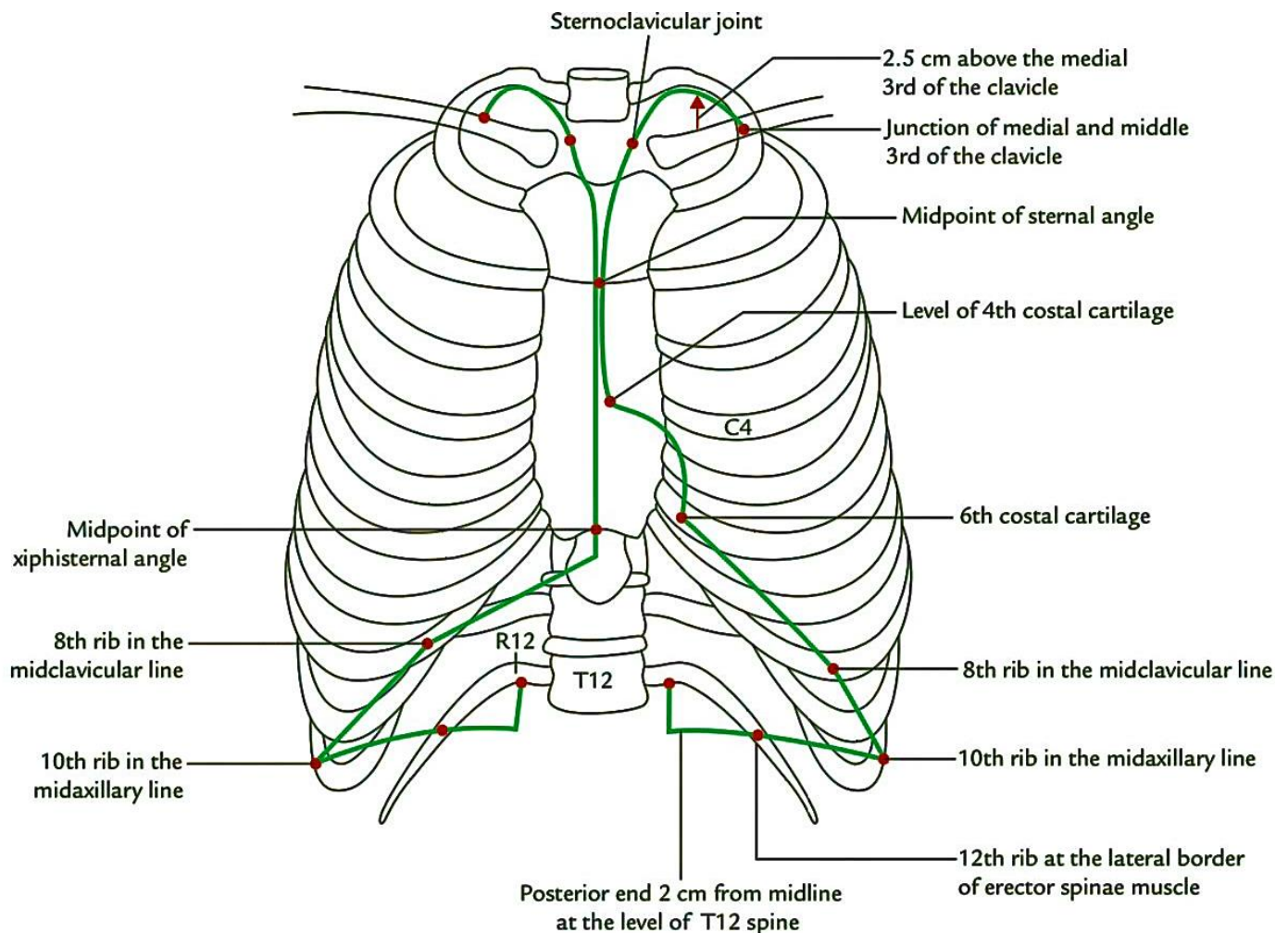
- OBTAIN BY JOINING - STERNOCLAVICULAR JOINT & STERNAL ANGLE

- MEDIAL PLANE JUST ABOVE XIPHISTERNAL JOINT.



- LEFT SIDE :- CORRESPONDS TO COSTOMEDIASTINAL LINE UP TO LEVEL OF 4TH COSTOCARTILAGE
- LOWER PART REPRESENT A CARDIAC NOTCH
- FROM 4TH COSTOCARTILAGE IT PASS - LATERAL 3.5CM FROM STERNAL MARGIN
- THEN CURVE DOWN MEDIALY TO REACH 6TH COSTOCARTILAGE
- AREA OF CARDIAC NOTCH IS DULL ON PERCUSSION CALLED AREA OF SUPERFICIAL CARDIAC DULLNESS.

2. LOWER BORDER- CROSS 6TH RIB IN MIDCLAVICULAR LINE, 8TH RIB IN MID AXILLARY LINE.



RECESSES OF PLEURA

THERE ARE 2 RECESSES OF PARIETAL PLEURA ACT → RESERVE SPACE FOR LUNGS TO EXPAND DURING INSPIRATION

1) COSTOMEDIASTINAL RECESS-

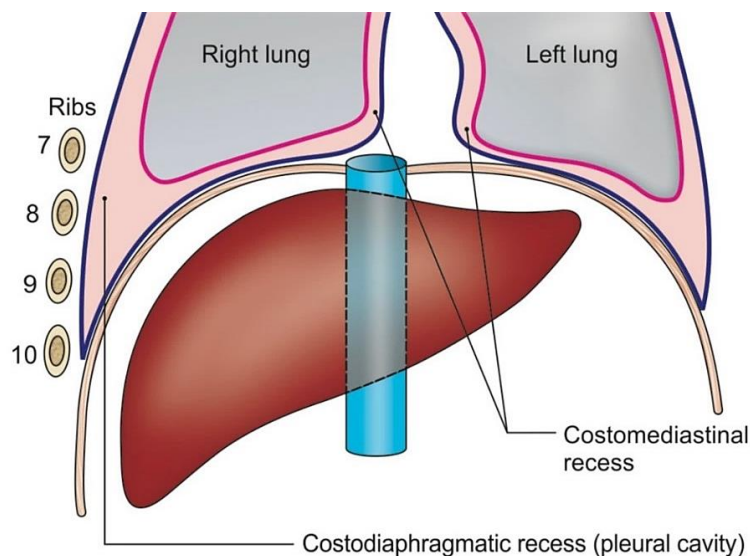
- LIE ANTERIORLY, BEHIND STERNUM AND COSTAL CARTILAGE
- BETWEEN COSTAL AND MEDIASTINAL PLEURA
- PARTICULARLY IN RELATION → CARDIAC NOTCH OF LEFT LUNG
- FILLED UP BY → ANTERIOR MARGIN OF LUNGS EVEN DURING QUIET BREATHING
- ONLY OBVIOUS → REGION OF CARDIAC NOTCH OF LUNG





2) COSTODIAPHRAGMATIC RECESS-

- LIE INFERIORLY BETWEEN COSTAL AND DIAPHRAGMATIC PLEURA
- VERTICALLY 5CM AND EXTEND FROM 8TH → TO 10TH RIB IN MIDAXILLARY LINE
- FILLED BY -> LUNGS EXPEND INTO RECESSES DURING INSPIRATION
- SO THIS RECESS ARE OBVIOUS ONLY IN -> EXPIRATION

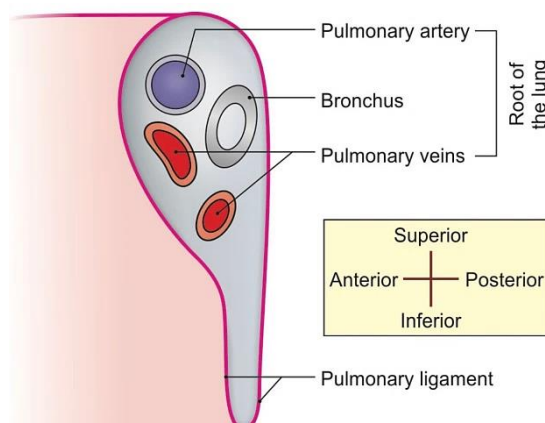


RECESSES OF PLEURA

1) PARIETAL PLEURA -> SURROUND ROOT OF LUNGS -> EXTEND DOWNWARD BEYOND ROOT AS FOLD CALLED PULMONARY LIGAMENT

2) FOLD CONTAIN -> THIN LAYER OF LOOSE AREOLAR TISSUE WITH FEW LYMPHATICS

3) PROVIDE -> DEAD SPACE -> INTO PULMONARY VEIN EXPAND DURING -> INCREASE IN VENOUS RETURN IN EXERCISE



CLINICAL ANATOMY

RADIOLOGICAL APPEARANCE OF PLEURAL EFFUSION

- WHEN SMALL QUANTITY OF FLUID IS ACCUMULATES IN COSTODIAPHRAGMATIC RECESS THE COSTODIAPHRAGMATIC ANGLE IS OBLITERATED
- IT IS SEEN AS A RADIOPAQUE SHADOW WITH A FLUID LINE IN CHEST X-RAY

REFERRED PAIN OF PLEURA

- PAIN FROM CENTRAL DIAPHRAGMATIC PLEURA AND MEDIASTINAL PLEURA IS REFERRED TO NECK OR SHOULDER THROUGH PHRENIC NERVE (C3,4,5)
- BECAUSE SKIN AT THESE SITE HAS THE SAME SEGMENTAL SUPPLY THROUGH SUPRACLAVICULAR NERVE (C3,4,5)

**PNEUMOTHORAX**

- ACCUMULATION OF AIR IN PLEURAL CAVITY

PLEURITIS

- IT IS INFLAMMATION OF PARIETAL PLEURA, CLINICALLY IT PRESENT AS PAIN WHICH IS AGGRAVATED BY RESPIRATORY MOVEMENTS
- IT IS COMMONLY CAUSED BY PULMONARY TUBERCULOSIS

**LOBES & FISSURES OF LUNGS**

RIGHT LUNG → DIVIDED INTO 3 LOBES - UPPER, MIDDLE & LOWER BY OBLIQUE FISSURE AND HORIZONTAL FISSURE

LEFT LUNG → DIVIDED INTO 2 LOBES - UPPER & LOWER LOBE BY OBLIQUE FISSURE

OBLIQUE FISSURE

- RUNS OBLIQUELY DOWNWARD AND FORWARD CROSSING THE POSTERIOR BORDER ABOUT 6CM BELOW APEX AND INFERIOR BORDER ABOUT 7.5CM LATERAL TO MIDLINE
- CUT INTO WHOLE THICKNESS OF LUNGS, EXCEPT AT HILUM
- DUE TO OBLIQUE PLANE OF FISSURE → LOWER LOBE IS MORE POSTERIOR
→ UPPER & MIDDLE LOBE MORE ANTERIOR

HORIZONTAL FISSURE

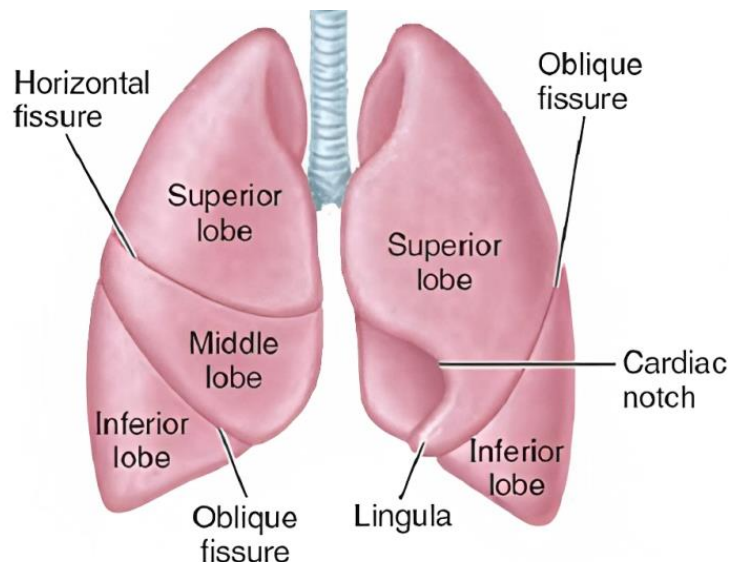
- SHORT HORIZONTAL FISSURE IS PRESENT ONLY IN RIGHT LUNG
- PASSES FROM ANTERIOR BORDER UP TO OBLIQUE FISSURE
- SEPARATE WEDGE-SHAPED MIDDLE LOBE FROM UPPER LOBE
- RUN HORIZONTALLY AT LEVEL OF FOURTH COSTAL CARTILAGE
- TONGUE SHAPE PROJECTION OF LEFT LUNG BELOW CARDIAC NOTCH CALLED LINGULA

IMPRESSION ON MEDIASTINAL SURFACE**1) RIGHT LUNGS - ESOPHAGUS**

- TRACHEA - RIGHT VAGUS NERVE
- RIGHT PHRENIC NERVE
- SUPERIOR VENA CAVA → ARCH OF AZYGOS VEIN
- RIGHT BRACHIOCEPHALIC VEIN
- INFERIOR VENA CAVA
- HILUM
- IMPRESSION OF RIGHT ATRIUM

2) LEFT LUNGS - ESOPHAGUS

- THORACIC DUCT
- TRACHEA
- LEFT PHRENIC NERVE
- LEFT VAGUS NERVE
- PULMONARY TRUNK
- HILUM
- IMPRESSION OF LEFT VENTRICLE

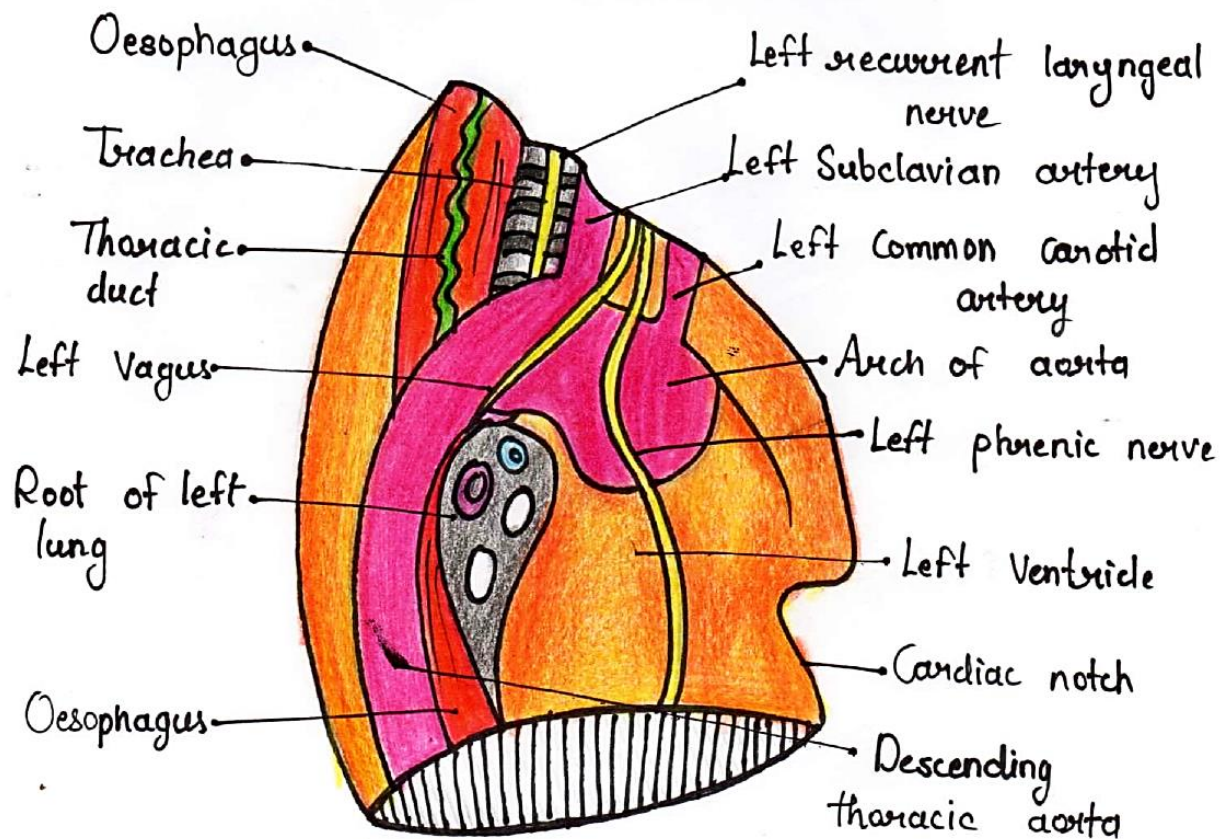
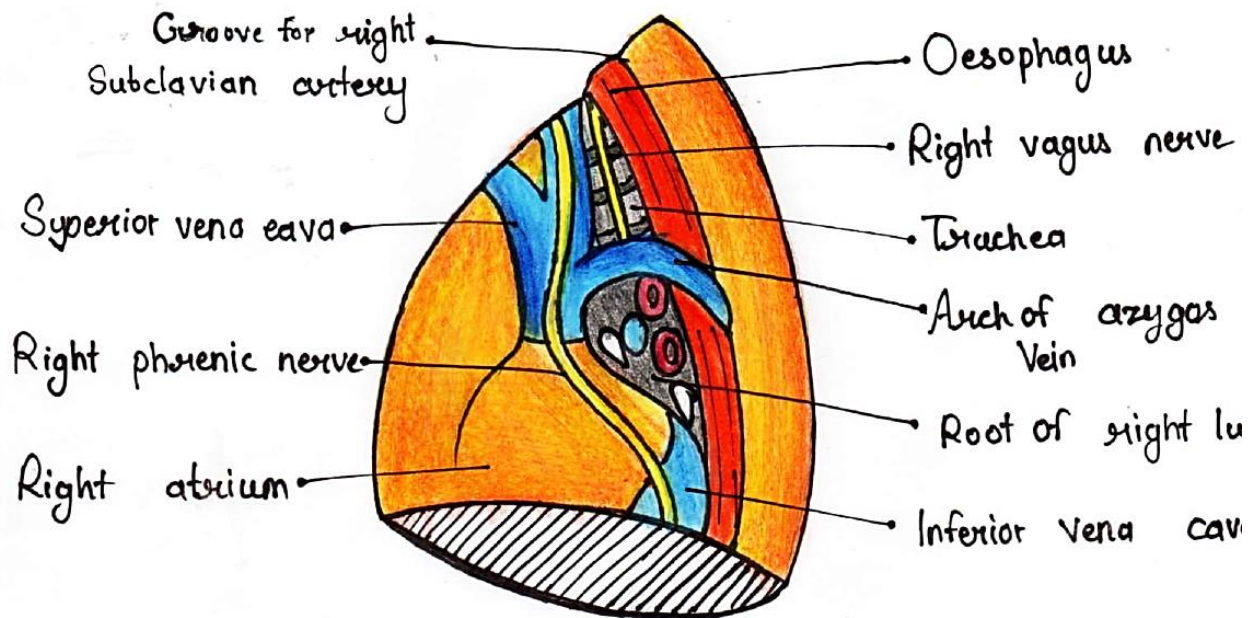




CLINICAL ANATOMY

ACCESSORY LOBES AND FISSURE

- LOBE OF AZYGOS VEIN - SOMETIMES THE MEDIAL PART OF SUPERIOR LOBE IS PARTIALLY SEPARATED BY A FISSURE OF VARIABLE LENGTH, WHICH CONTAIN THE TERMINAL PART OF AZYGOS VEIN,
- ENCLOSED IN THE FREE MARGIN OF MESENTERY DERIVED FROM MEDIASTINAL PLEURA
- THIS IS TERMED THE LOBE OF AZYGOS VEIN





ROOTS OF LUNG

SHORT, BROAD PEDICLE WHICH CONNECT MEDIAL SURFACE OF LUNGS TO MEDIASTINUM

FROM BY STRUCTURE WHICH EITHER ENTER OR COME OUT OF LUNGS AT HILUM.
LIE OPPOSITE THE BODY OF 5TH 6TH & 7TH THORACIC VERTEBRAE

- CONTENTS** - PRINCIPAL BRONCHUS ON LEFT SIDE
- EPARTERIAL & HYPARTERIAL BRONCHI ON RIGHT SIDE
 - 1 PULMONARY ARTERY
 - 2 PULMONARY VEIN - SUPERIOR & INFERIOR
 - BRONCHIAL ARTERIES
 - BRONCHIAL VEINS
 - ANTERIOR & POSTERIOR PULMONARY PLEXUSES OF NERVE
 - LYMPHATICS OF LUNGS

ARRANGEMENT OF STRUCTURE IN ROOT -

- ANT. TO POST. - SIMILAR IN BOTH SIDES - SUPERIOR PULMONARY VEIN
- PULMONARY ARTERY
 - BRONCHUS

MNEMONIC FOR ARRANGEMENT OF STRUCTURE

VAB (V-VEIN, A - ARTERY, B - BRONCHUS)

ABOVE DOWNWARD - DIFFERENT IN 2 SIDES

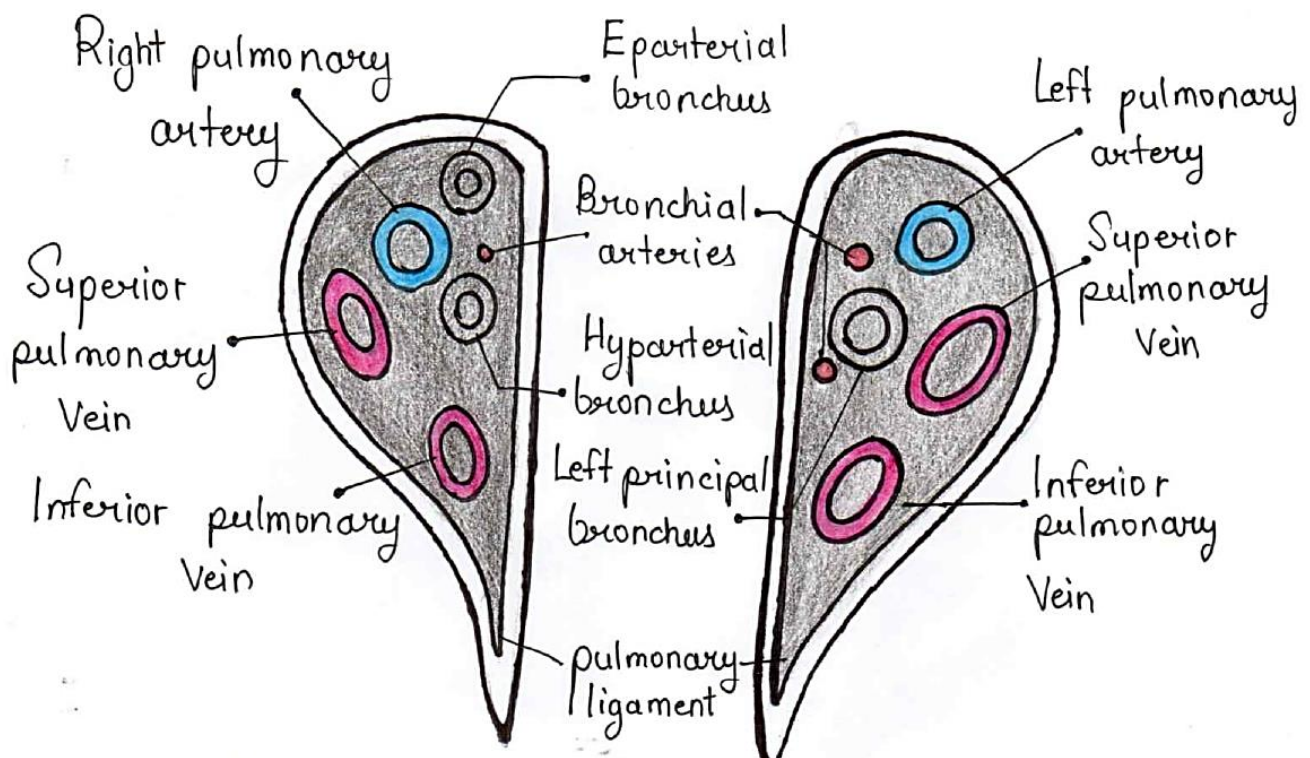
- 1) RIGHT SIDE - EPARTERIAL BRONCHUS
 - PULMONARY ARTERY
 - HYPARTERIAL BRONCHUS
 - INFERIOR PULMONARY VEIN
- 2) LEFT SIDE - PULMONARY ARTERY
 - BRONCHUS
 - INFERIOR PULMONARY VEIN

- RELATIONS** - ANTERIOR - COMMON ON 2 SIDES - PHRENIC NERVE
- PERICARDIACOPHRENIC VESSELS
 - ON RIGHT SIDE - SUPERIOR VENA CAVA
- POSTERIOR - COMMON ON 2 SIDES - VAGUS NERVE
- ON LEFT SIDE - DESCENDING THORACIC AORTA
- SUPERIOR - ON RIGHT SIDE - TERMINAL PART OF AZYGOS VEIN
- ON LEFT SIDE - ARCH OF AORTA

CLINICAL ANATOMY

HILAR SHADOW IN CHEST RADIOGRAPH

IN X-RAY CHEST PA VIEW, THE ROOT OF EACH LUNG CASTS A RADIOPAQUE SHADOW CALLED THE HILAR SHADOW IN MEDIAL ONE-THIRD OF LUNG FIELD



ARRANGEMENT OF STRUCTURE IN ROOT OF LUNGS

BRONCHIAL TREE & BRONCHOPULMONARY SEGMENTS



- 1) TRACHEA DIVIDES INTO 2 PRIMARY PRINCIPAL BRONCHI → RIGHT & LEFT BRONCHUS
- 2) EACH PRINCIPAL BRONCHUS ENTER LUNGS → THROUGH HILUM
- 3) DIVIDES INTO SECONDARY LOBAR BRONCHI → ONE FOR EACH LOBES → 3 LOBAR BRONCHI - RIGHT SIDE 2 LOBAR BRONCHI - LEFT SIDE
- 4) EACH LOBAR BRONCHUS DIVIDE INTO TERTIARY → 1 FOR EACH BRONCHOPULMONARY SEGMENTS → WHICH ARE 10 ON RIGHT AND LEFT SIDE
- 5) SMALLER BRANCHES ARE CALLED **RESPIRATORY BRONCHIOLES**

BRONCHOPULMONARY SEGMENTS

10 SEGMENTS IN RIGHT SIDE AND 10 ON LEFT SIDE

FEATURES -

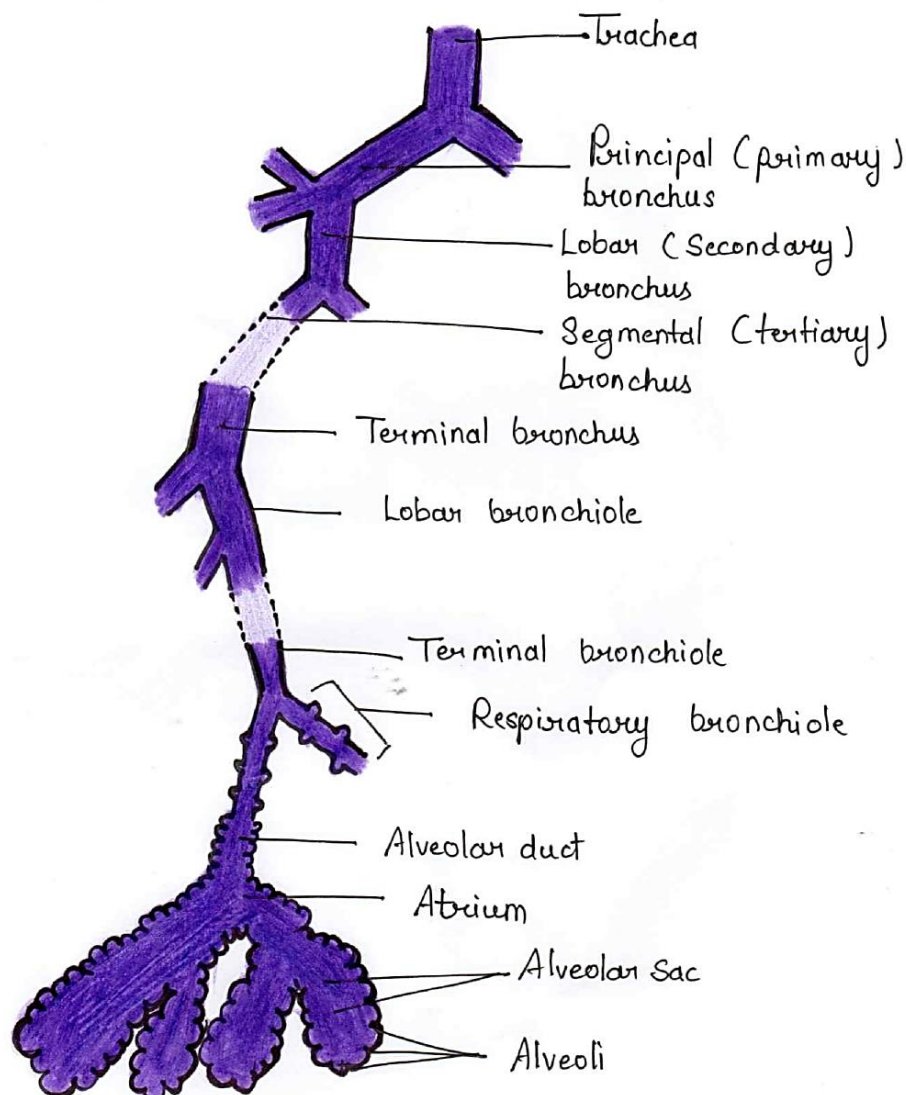
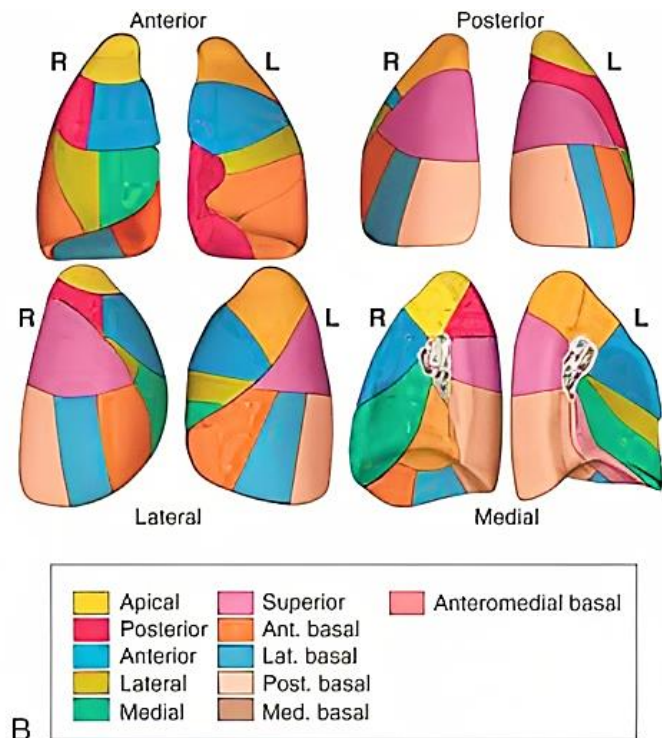
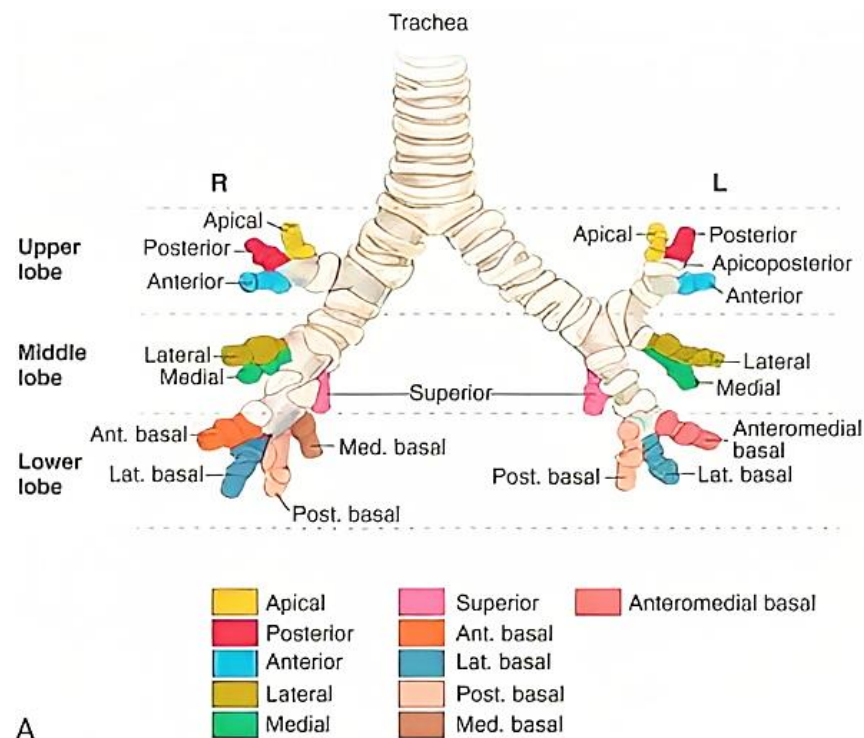
1. WELL DEFINED ANATOMIC, FUNCTIONAL AND SURGICAL SECTOR OF LUNGS
2. EACH ONE IS AERATED BY TERTIARY BRONCHUS
3. EACH SEGMENTS IS PYRAMIDAL IN SPACE → APEX → TOWARD ROOT OF LUNGS
4. EACH SEGMENTS HAS SEGMENTAL BRONCHUS & ARTERY AND AUTONOMIC NERVE
5. SEGMENTAL VENULES LIE → IN CONNECTIVE TISSUE BETWEEN ADJACENT PULMONARY UNITS
6. DURING SEGMENTAL RESECTION, THE SURGEON WORKS ALONG SEGMENTAL VEIN TO ISOLATE A PARTICULAR SEGMENT

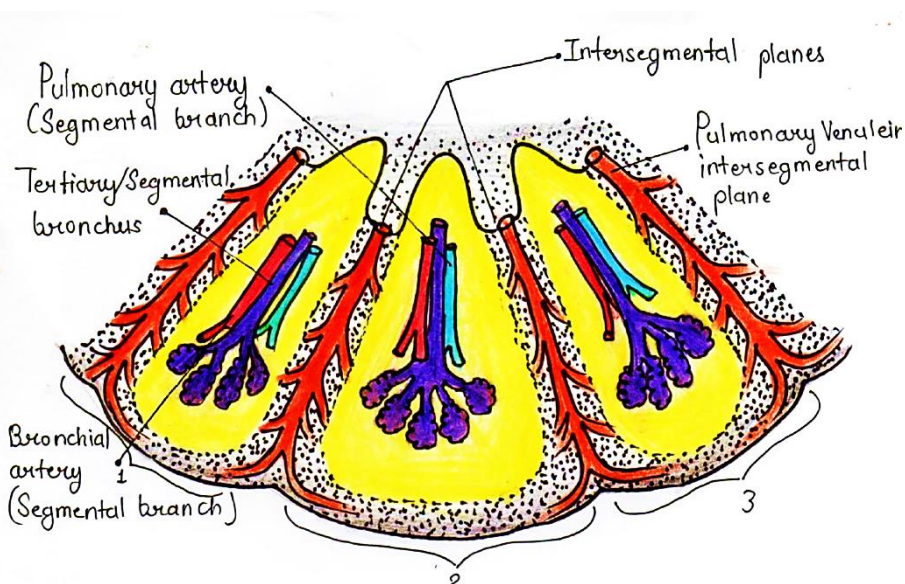
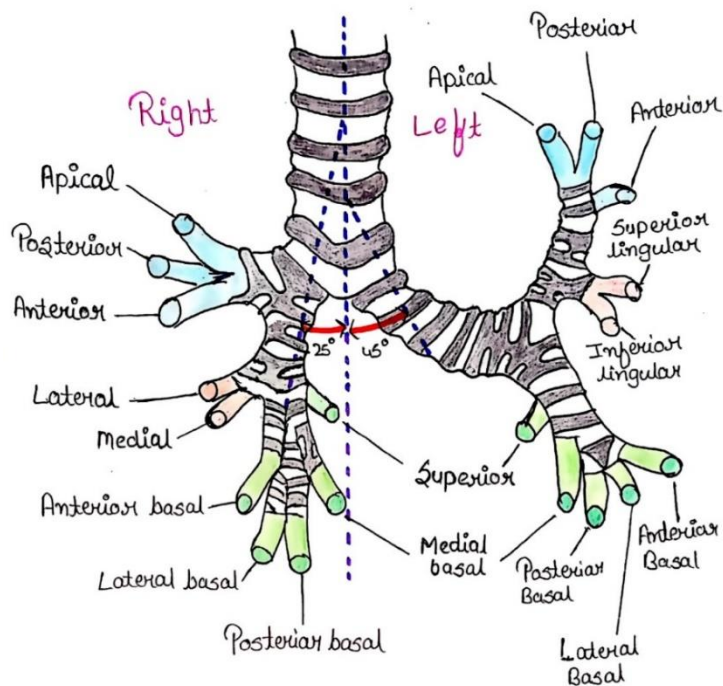
RELATION TO PULMONARY ARTERY

- BRANCHES OF PULMONARY ARTERY ACCOMPANY THE BRONCHI

**RELATION TO PULMONARY VEIN**

- PULMONARY VEIN DO NOT ACCOMPANY THE BRONCHI NOR PULMONARY ARTERIES
- RUN IN THE INTERSEGMENTAL PLANES





CLINICAL ANATOMY

EMPHYSEMA -

-UNDER THIS CONDITION, ALVEOLI OF LUNGS ARE DAMAGED BY CHEMICALS RELEASED BY POLLUTANTS
-CLINICALLY, IT PRESENT AS THE SHORTNESS OF BREATH AND CHEST APPEARS BARREL SHAPED IN CHEST RADIOGRAPH

ASPIRATION OF FOREIGN BODY -

USUALLY OCCUR IN RIGHT PRINCIPAL BRONCHUS BECAUSE IT IS SHORTER, WIDER AND IN LINE WITH TRACHEA

BRONCHOSCOPY -

IT IS A PROCEDURE, IN WHICH A FLEXIBLE, FIBRE OPTIC BRONCHOSCOPE IS INTRODUCED IN TRACHEA TO VISUALIZE THE INTERIOR OF TRACHEA AND BRONCHI

INFECTION OF A BRONCHOPULMONARY SEGMENT -

1) USUALLY, THE INFECTION OF A BRONCHOPULMONARY SEGMENT REMAINS RESTRICTED TO IT, ALTHOUGH TUBERCULOSIS & BRONCHOGENIC CARCINOMA MAY SPREAD FROM ONE SEGMENT TO ANOTHER.

2) KNOWLEDGE OF THE DETAILED ANATOMY OF THE BRONCHIAL TREE HELPS CONSIDERABLY IN SEGMENTARY RESECTION.



MEDIASTINUM

MEDIASTINUM -> MIDDLE SPACE IN THORACIC CAVITY BETWEEN LUNGS

MOST IMPORTANT CONTENT IS HEART ENCLOSED IN PERICARDIUM

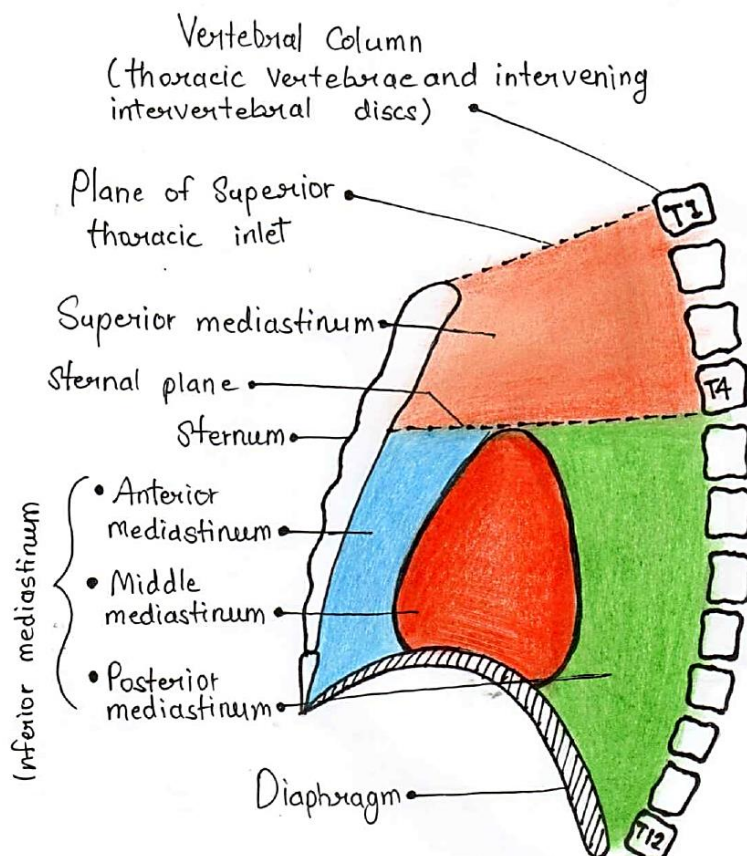
DIVISION - SUPERIOR AND INFERIOR MEDIASTINUM

BOUNDARIES

- ANTERIORLY - STERNUM
- POSTERIORLY - VERTEBRAL COLUMN
- SUPERIORLY - SUPERIOR THORACIC APERTURE
- INFERIORLY - DIAPHRAGM
- ON EACH SIDE - MEDIASTINAL PLEURA

CONTENTS

- 1. THYMUS, TRACHEA & ESOPHAGUS
- 2. HEART ENCLOSED IN THE PERICARDIAL SAC
- 3. ARTERIES - ARCH OF AORTA
 - BRACHIOCEPHALIC ARTERY
 - LEFT COMMON CAROTID ARTERY & SUBCLAVIAN ARTERY
- 4. VEIN - LEFT & RIGHT BRACHIOCEPHALIC VEIN
- 5. NERVE - SYMPATHETIC TRUNKS, VAGUS, PHRENIC
- 6. LYMPH NODES



SUPERIOR MEDIASTINUM

SUPERIOR MEDIASTINUM

SEPARATED FROM INFERIOR BY IMAGINARY PLANE PASSING THROUGH STERNAL ANGLE ANTERIORLY & THORACIC VERTEBRAE POSTERIORLY



- BOUNDARIES** -
- ANTERIORLY - MANUBRIUM STERNI
 - POSTERIORLY - UPPER THORACIC 4 VERTEBRAE
 - SUPERIORLY - PLANE OF THORACIC INLET
 - INFERIORLY - AN IMAGINARY LINE
 - ON EACH SIDE - MEDIASTINAL PLEURA

- CONTENTS** -
1. TRACHEA & ESOPHAGUS
 2. MUSCLE - STERNOHYOID & STERNOTHYROID & LONGUS COLI
 3. ARTERIES - ARCH OF AORTA
 - BRACHIOCEPHALIC ARTERY
 - LEFT COMMON CAROTID ARTERY & LEFT SUBCLAVIAN ARTERY
 4. VEIN - LEFT & RIGHT BRACHIOCEPHALIC VEIN
 - UPPER HALF OF SUPERIOR VENA CAVA
 - LEFT SUPERIOR INTERCOSTAL VEIN
 5. NERVE - VAGUS, PHRENIC & CARDIAC NERVE OF BOTH SIDE
 - LEFT RECURRENT LARYNGEAL NERVE
 6. THORACIC DUCT & LYMPH NODES & THYMUS

INFERIOR MEDIASTIUM

DIVIDED INTO - ANTERIOR, MIDDLE, POSTERIOR MEDIASTINUM



ANTERIOR MEDIASTINUM - VERY NARROW SPACE IN FRONT OF PERICARDIUM

- BOUNDARIES** -
1. ANTERIORLY - BODY OF STERNUM
 2. POSTERIORLY - PERICARDIUM
 3. SUPERIORLY - IMAGINARY LINE
 4. ON EACH SIDE - MEDIASTINAL PLEURA
 5. INFERIORLY - DIAPHRAGM

- CONTENTS** -
1. STERNOPERICARDIAL LIGAMENT
 2. THREE OR FOUR LYMPH NODE
 3. LOWEST PART OF THYMUS
 4. LOOSE AREOLAR TISSUE

MIDDLE MEDIASTINUM - OCCUPIED BY PERICARDIUM & ITS CONTENTS

- BOUNDARIES** -
1. ANTERIORLY - STERNOPERICARDIAL LIGAMENT
 2. POSTERIORLY - OESOPHAGUS
 - DESCENDING THORACIC AORTA.
 3. ON EACH SIDE - MEDIASTINAL PLEURA

- CONTENT** -
1. HEART ENCLOSED IN PERICARDIUM
 2. ARTERIES - PULMONARY TRUNK
 - ASCENDING AORTA & 2 PULMONARY ARTERIES
 3. VEINS - LOWER PART OF SUPERIOR VENA CAVA
 - TERMINAL PART OF AZYGUS VEIN
 - RIGHT AND LEFT PULMONARY VEIN



4. NERVES - PHRENIC

- DEEP CARDIAC PLEXUS

5. TRACHEOBRONCHIAL LYMPH NODES

6. BIFURCATION OF TRACHEA

POSTERIOR MEDIASTINUM

BOUNDARIES

- ANTERIORLY - PERICARDIUM
- BIFURCATION OF TRACHEA
- PULMONARY VESSELS
- POSTERIOR PART OF THE UPPER SURFACE OF THE DIAPHRAGM.
- POSTERIORLY - LOWER 8 THORACIC VERTEBRAE & INTERVENING DISCS.
- ON EACH SIDE - MEDIASTINAL PLEURA.

CONTENT-

1. OESOPHAGUS

2. ARTERIES - DESCENDING THORACIC AORTA & ITS BRANCHES

3. VEINS - 1. AZYGOS VEIN

2. HEMIAZYGOS VEIN

3. ACCESSORY HEMIAZYGOS VEIN

4. NERVES - 1. VAGI

2. SPLANCHNIC NERVES (GREATER, LESSER)

3. 8 THORACIC GANGLIA OF THE SYMPATHETIC CHAIN

5. LYMPH NODE

CLINICAL ANATOMY

MEDIASTINITIS -

- INFLAMMATION OF LOOSE CONNECTIVE TISSUE OF MEDIASTINUM
- THE FASCIAL SPACES OF NECK EXTEND BELOW INTO MEDIASTINUM WITHIN THE THORACIC CAVITY
- THEREFORE, DEEP INFECTION OF NECK MAY SPREAD INTO THORACIC CAVITY CAUSING MEDIASTINITIS

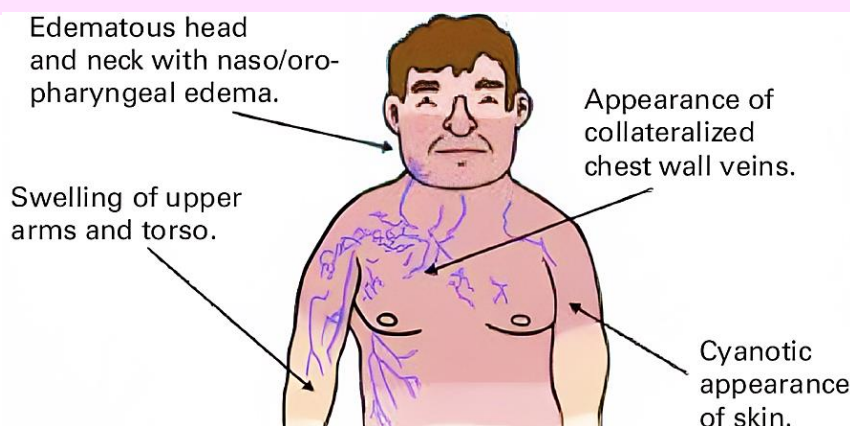
MEDIASTINAL SYNDROME-

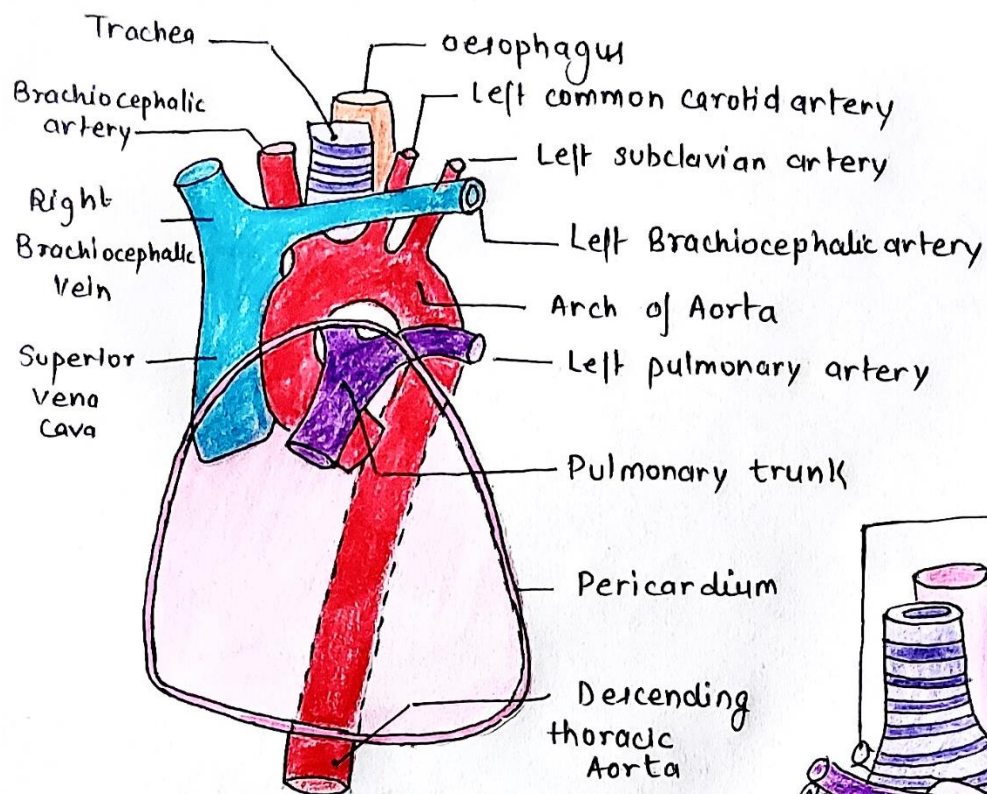
COMPRESSION OF MEDIASTINAL STRUCTURE BY ANY GROWTH SUCH AS TUMOUR OR CYST GIVES RISE TO GROUP OF SIGNS AND SYMPTOMS, PRODUCING A CLINICAL CONDITION CALLED MEDIASTINAL SYNDROME

- COMMON CAUSE -> BRONCHIOGENIC CARCINOMA & ENLARGEMENT OF MEDIASTINAL LYMPH NODES IN HODGKINS DISEASE

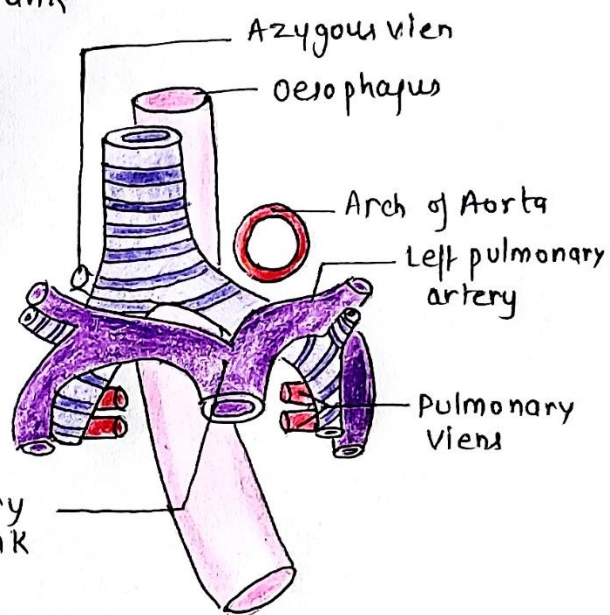
- CLINICAL FEATURES -

- 1) ENGORGEMENT OF VEINS - UPPER HALF OF BODY DUE TO OBSTRUCTIONS OF SVC
- 2) DYSPNOEA & DYSPHAGIA - DUE TO COMPRESSION OF TRACHEA & OESOPHAGUS
- 3) DYSPNOEA (HOARSENESS OF VOICE) - DUE TO COMPRESSION OF LEFT RECURRENT LARYNGEAL NERVE

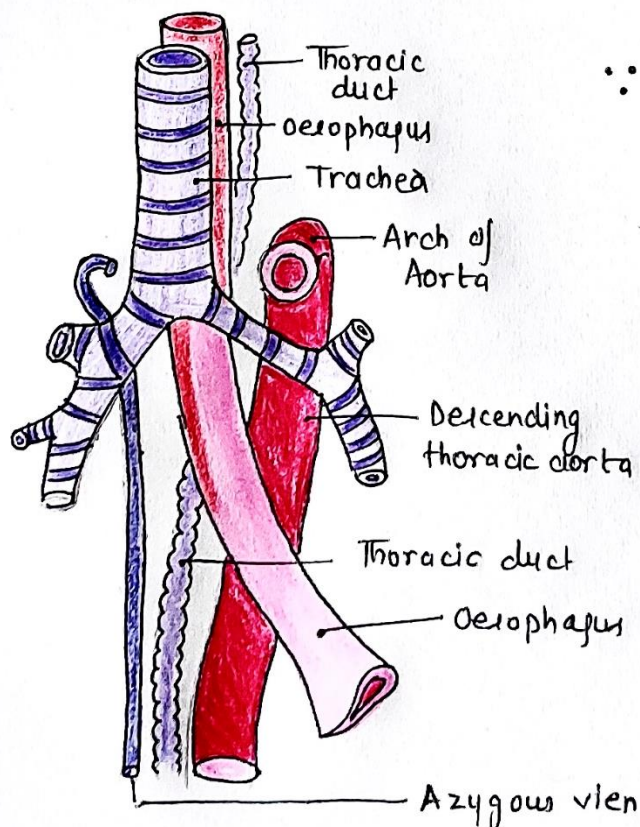




∴ Arrangement of large structure in superior mediastinum



∴ Some structure present in superior, middle & posterior mediastinum



∴ Structure in the posterior part of superior mediastinum



PERICARDIUM



**FIBROSEROUS SAC WHICH ENCLOSED HEART & ROOT OF GREAT VESSEL
CONSISTS OF FIBROUS PERICARDIUM & SEROUS PERICARDIUM**

1) FIBROUS PERICARDIUM

- CONICAL SAC MADE OF FIBROUS TISSUE
- PARIETAL LAYER OF SEROUS PERICARDIUM ATTACHED TO ITS DEEP SURFACE

FEATURE -

1. APEX IS BLUNT AND LIE AT LEVEL OF STERNAL ANGLE - FUSED WITH GREAT VESSEL.
2. BASE IS BROAD AND INSEPARABLY BLENDED WITH CENTRAL TENDON OF DIAPHRAGM
3. ANTERIOR CONNECTED TO STERNUM BY SUP. & INF. STERNOPERICARDIAL LIGAMENT
4. POSTERIOR RELATED TO PRINCIPAL BRONCHI, OESOPAGUS WITH NERVE PLEXUS
5. EACH SIDE BY → MEDIASTINAL PLEURA.

BLOOD SUPPLY - FIBROUS & PARIETAL PERICARDIA → SUPPLY BY INTERNAL THORACIC,
MUSCULOPHRENIC ARTERY
VEIN DRAIN INTO CORRESPONDING VEIN.

NERVE SUPPLY - FIBROUS AND PARIETAL ARE SUPPLIED BY → PHRENIC NERVE
- SENSITIVE TO PAIN

2) SEROUS PERICARDIUM :-

- SEROUS PERICARDIUM IS THIN, DOUBLE LAYERED SEROUS MEMBRANE
- OUTER LAYER - PARIETAL PERICARDIUM FUSED - WITH FIBROUS PERICARDIUM
- INNER LAYER - VISCERAL PERICARDIUM FUSED TO HEART

BLOOD SUPPLY → SUPPLIED BY CORONARY ARTERIES

NERVE SUPPLY - BRANCHES OF SYMPATHETIC TRUNK AND VAGUS NERVE
- INSENSITIVE TO PAIN

PERICARDIAL CAVITY - POTENTIAL SPACE - BETWEEN PARIETAL & VISCERAL PERICARDIUM
- CONTAIN ONLY THIN FILM OF SEROUS FLUID

CONTENTS OF PERICARDIUM - HEART WITH VESSEL AND NERVE
- ASCENDING AORTA
- PULMONARY TRUNK
- SVC (LOWER HALF) & IVC (TERMINAL PART)
- PULMONARY VEINS (TERMINAL PART)

2) SINUSES OF PERICARDIUM -

1. EPICARDIUM AT ROOT GREAT VESSEL ARRANGED IN FORM OF TWO TYPE →
→ ARTERIAL TUBE ENCLOSE → ASCENDING AORTA & PULMONARY TRUNK
→ VENOUS TUBE ENCLOSE → VENA CAVA & PULMONARY TRUNK
2. PASSAGE BETWEEN TWO TUBES → TRANSVERSE SINUS
3. DURING DEVELOPMENT TO BEGIN → VEIN OF HEART CROWDED TOGETHER
4. HEART INCREASE IN SIZE & VEIN SEPARATE OUT
5. PERICARDIAL REFLECTION SURROUND ALL OF THEM & FORM OBLIQUE PERICARDIAL SINUS.

**TRANSVERSE SINUS**

- TRANSVERSE RECESS BEHIND THE ASCENDING AORTA & PULMONARY TRUNK
- DEVELOPS DUE TO DEGENERATION OF DORSAL MESOCARDIUM
- **BOUNDED - ANTERIORLY - ASCENDING AORTA, PULMONARY TRUNK**
 - **POSTERIORLY - SUPERIOR VENA CAVA**

OBLIQUE SINUS

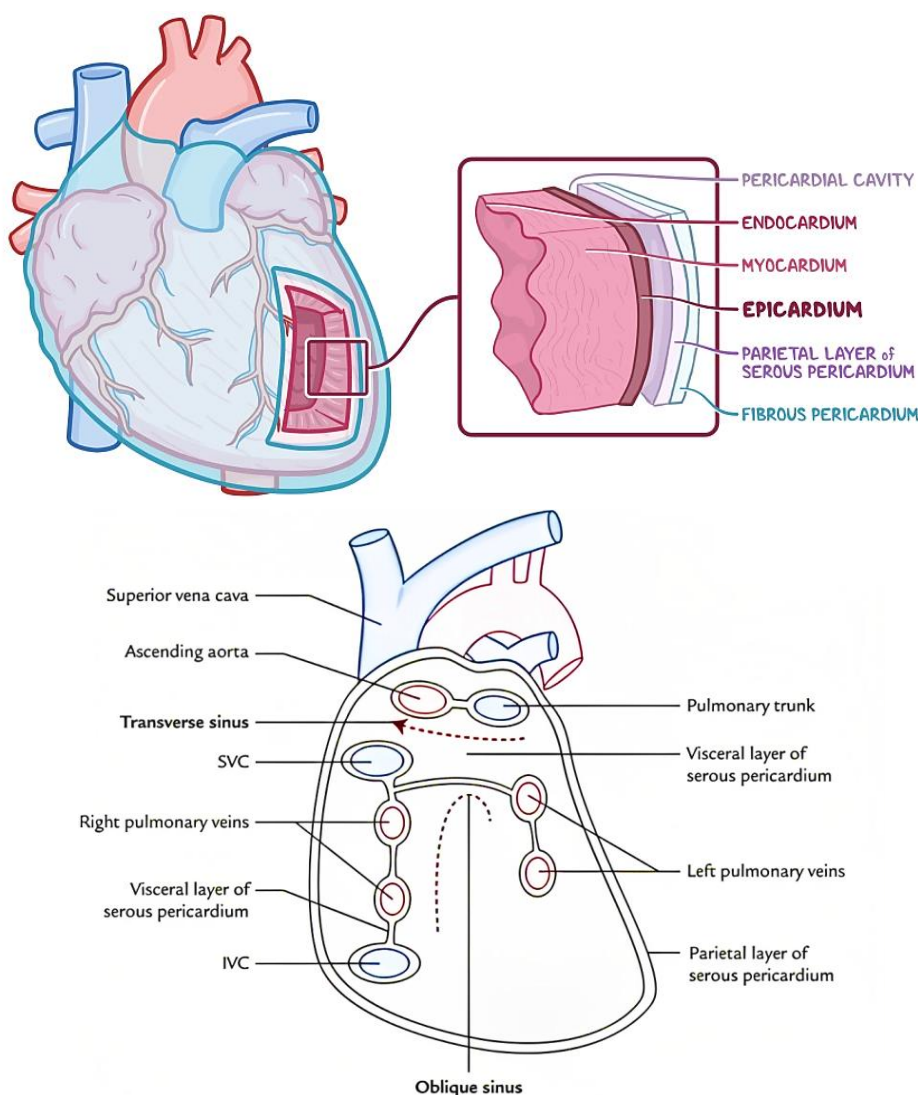
- RECESS OF SEROUS PERICARDIUM BEHIND THE BASE OF HEART
- IT IS ENCLOSED BY J-SHAPED SHEATH OF VISCERAL LAYER OF SEROUS PERICARDIUM ENCLOSING SIX VEINS
- **BOUNDED - ANTERIORLY - LEFT ATRIUM**
 - **POSTERIORLY - PARIETAL PERICARDIUM OESOPHAGUS**

CLINICAL ANATOMY**PERICARDITIS -**

- INFLAMMATION OF SEROUS PERICARDIUM IS CALLED PERICARDITIS
- THAT CAUSES THE ACCUMULATION OF SEROUS FLUID IN PERICARDIAL CAVITY, THE PERICARDIAL EFFUSION

PERICARDIOCENTESIS -

- EXCESSIVE PERICARDIAL FLUID CAN BE ASPIRATED FROM PERICARDIAL CAVITY BY TWO ROUTES
- **STERNAL APPROACH** -> NEEDLE IS INSERTED THROUGH LEFT FIFTH OR SIXTH INTERCOSTAL SPACES IMMEDIATELY ADJACENT TO STERNUM
- **SUBXIPHOID APPROACH** -> NEEDLE IS INSERTED IN LEFT COSTOXIPHOID ANGLE AND PASSED IN AN UPWARD AND BACKWARD DIRECTION AT AN ANGLE 45 DEGREE TO SKIN





HEART

HEART IS A HOLLOW MUSCULAR ORGAN SITUATED IN MEDIASTINUM OF THORACIC CAVITY, ENCLOSED IN PERICARDIUM

SHAPE - PYRAMIDAL IN SHAPED

MEASUREMENT - LENGTH -> 12CM

WIDTH -> 9CM

WEIGHT -> 300G IN MALES AND 250G IN FEMALES

PLACED - OBLIQUELY BEHIND STERNUM AND ADJOINING PARTS OF COSTAL CARTILAGES
- SO THAT 1/3 OF HEART IS TO RIGHT OF MEDIAN PLAN
- 2/3 OF IT IS TO LEFT OF MEDIAN PLAN

CHAMBERS - 4 CHAMBERS

- RIGHT ATRIUM & RIGHT VENTRICLE
- LEFT ATRIUM AND LEFT VENTRICLE
- ON SURFACE, ATRIA SEPARATED FROM VENTRICLE BY ATRIOVENTRICULAR GROOVE
- & VENTRICLE FROM EACH OTHER BY INTERVENTRICULAR GROOVES

EXTERNAL FEATURES - APEX

- BASE
- 4 SURFACE - STERNOCOSTAL
 - DIAPHRAGMATIC
 - LEFT & RIGHT
- 4 BORDER - RIGHT, LEFT, UPPER AND INFERIOR

APEX - CONICAL

- FORMED BY LEFT VENTRICLE
- DIRECTED DOWNWARD AND FORWARD AND TO THE LEFT

BASE - FORMED BY 2 ATRIA, MAINLY BY LEFT ATRIUM

- 2/3 FORMED BY -> POSTERIOR SURFACE OF LEFT ATRIUM
- 1/3 FORMED BY -> POSTERIOR SURFACE OF RIGHT ATRIUM

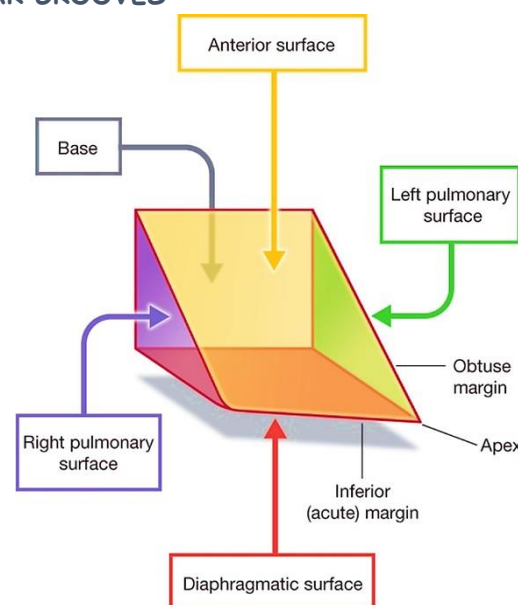
ATRIUM - DIRECTED BACKWARD AND TO THE RIGHT

SURFACE -

- 1) **STERNOCOSTAL - FORMED BY RIGHT ATRIUM AND RIGHT VENTRICLE**
- 2) **DIAPHRAGMATIC SURFACE - FORMED BY LEFT AND RIGHT VENTRICLE**
- 3) **LEFT SURFACE - FORMED BY LEFT VENTRICLE AND PARTLY LEFT ATRIUM**
 - DIRECTED UPWARD, BACKWARD AND TO LEFT
- 4) **RIGHT SURFACE - FORMED BY ATRIUM**

BORDER

- 1) **RIGHT BORDER - MORE OR LESS VERTICAL**
 - FORMED BY RIGHT ATRIUM
 - EXTEND -> RIGHT SIDE OF OPENING OF SVC TO IVC
- 2) **LEFT BORDER - CURVED AND OBLIQUE**
 - FORMED MAINLY BY LEFT VENTRICLE & PARTLY LEFT AURICLE
 - EXTEND -> FROM LEFT AURICLE TO THE APEX



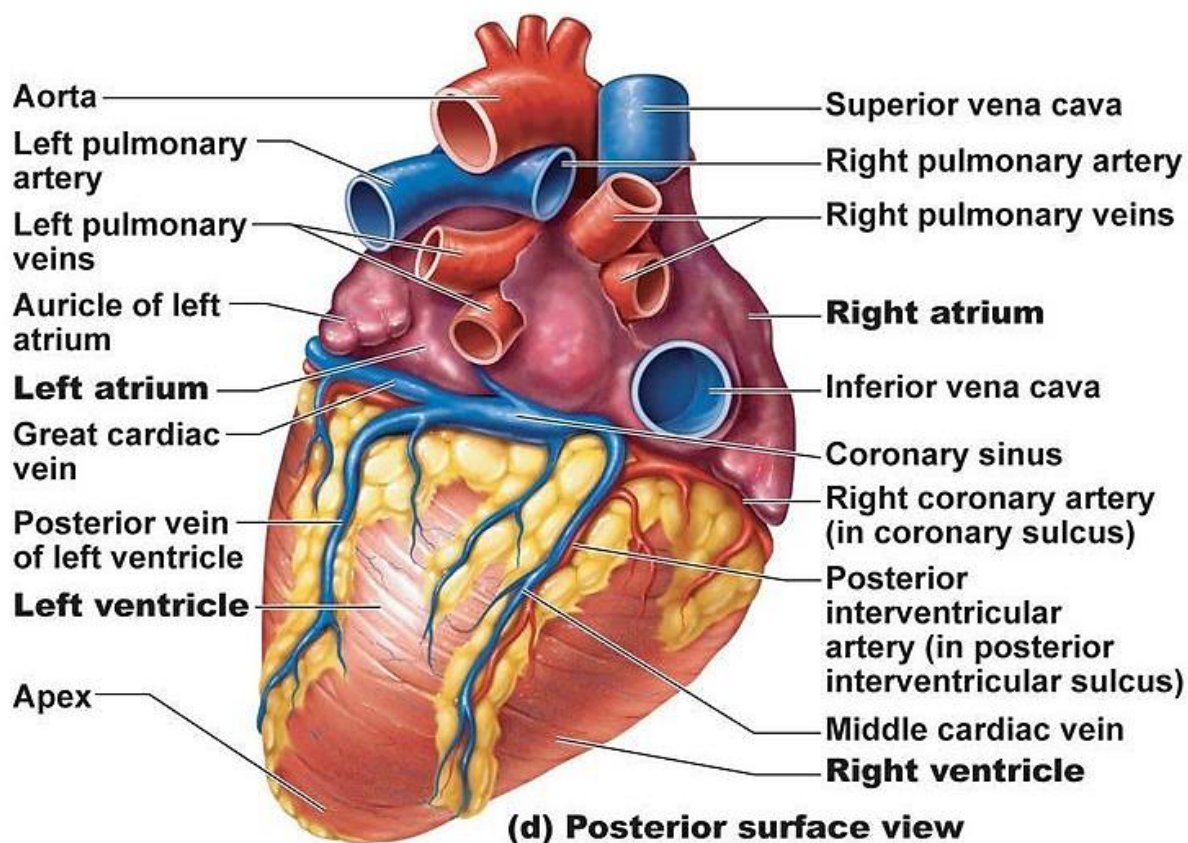
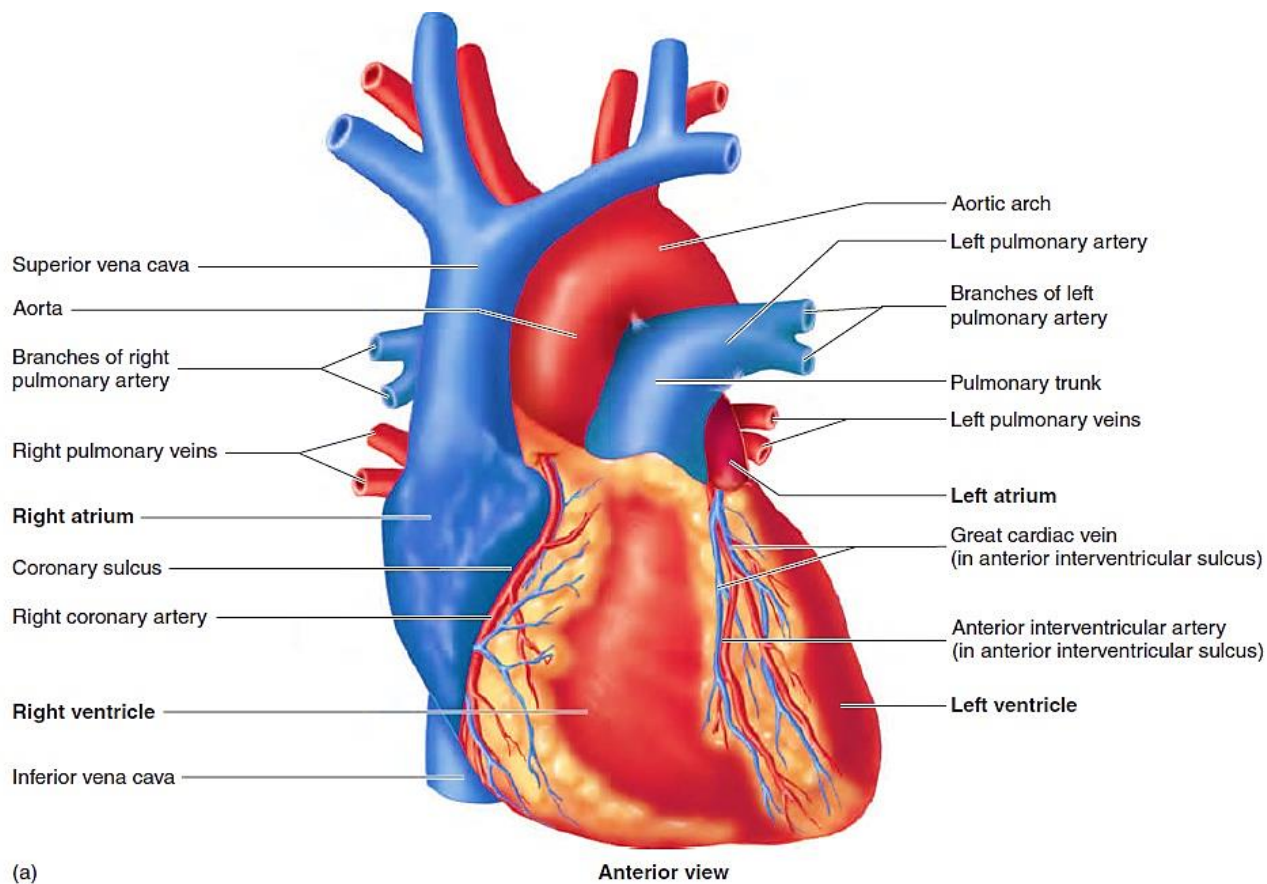


3) INFERIOR BORDER - NEARLY HORIZONTAL

- EXTENDS FROM OPENING OF IVC TO APEX OF HEART

4) UPPER BORDER - SLIGHTLY OBLIQUE

- FORMED BY RIGHT AND LEFT ATRIUM





RIGHT ATRIUM



RIGHT UPPER CHAMBER OF HEART RECEIVE VENOUS BLOOD FROM BODY
PUMP INTO RIGHT VENTRICLE THROUGH **TRICUSPID VALVE**
QUADRILATEAL CHAMBER SITUATED BEHIND AND RIGHT SIDE OF RIGHT VENTRICLE

EXTERNAL FEATURE -

1. CHAMBER IS ELONGATED VERTICALLY, RECEIVING THE SUP. VENA CAVA AT THE UPPER END & INF. VENA CAVA AT THE LOWER END.
2. ALONG RIGHT BORDER OF ATRIUM → SHALLOW VENTRICAL GROOVE WHICH PASSES FROM → SUPERIOR VENA CAVA TO INFERIOR VENA CAVA IS CALLED SULCUS TERMINALIS
3. IT PRODUCED BY INTERNAL MUSCULAR RIDGE CALLED CRISTA TERMINALIS
4. UPPER PART OF SULCUS CONTAINED S.A NODE
5. ANTRIOVENTRICULAR GROOVE SEPARATED RIGHT ATRIUM FROM RIGHT VENTRICLE INLET OF RIGHT ATRIUM -
 1. SUPERIOR VENA CAVA
 2. INFERIOR VENA CAVA
 3. CORONARY SINUS
 4. ANTERIOR CARDIAC VEINS

INTERNAL FEATURES - DIVIDED INTO 3 PARTS

1. SMOOTH PART

- DEVELOPMENT - DERIVED FROM RIGHT HORN SINUS VENOSUS
- MOST OF TRIBUTARIES EXCEPT ANT. CARDIAC VEINS OPEN INTO IT -
 1. SUPERIOR VENA CAVA
 2. INFERIOR VENA CAVA - EUSTACHIAN VALVE
 3. CORONARY SINUS - THEBESIAN VALVE
 4. VENAE CORDIS MINIMA

2. ROUGH ANT. PART

- DEVELOPMENT - DERIVED FROM PRIMITIVE ATRIAL CHAMBER
- IT PRESENT A SERIES OF MUSCULAR RIDGE CALLED MUSCULO PECTINATI

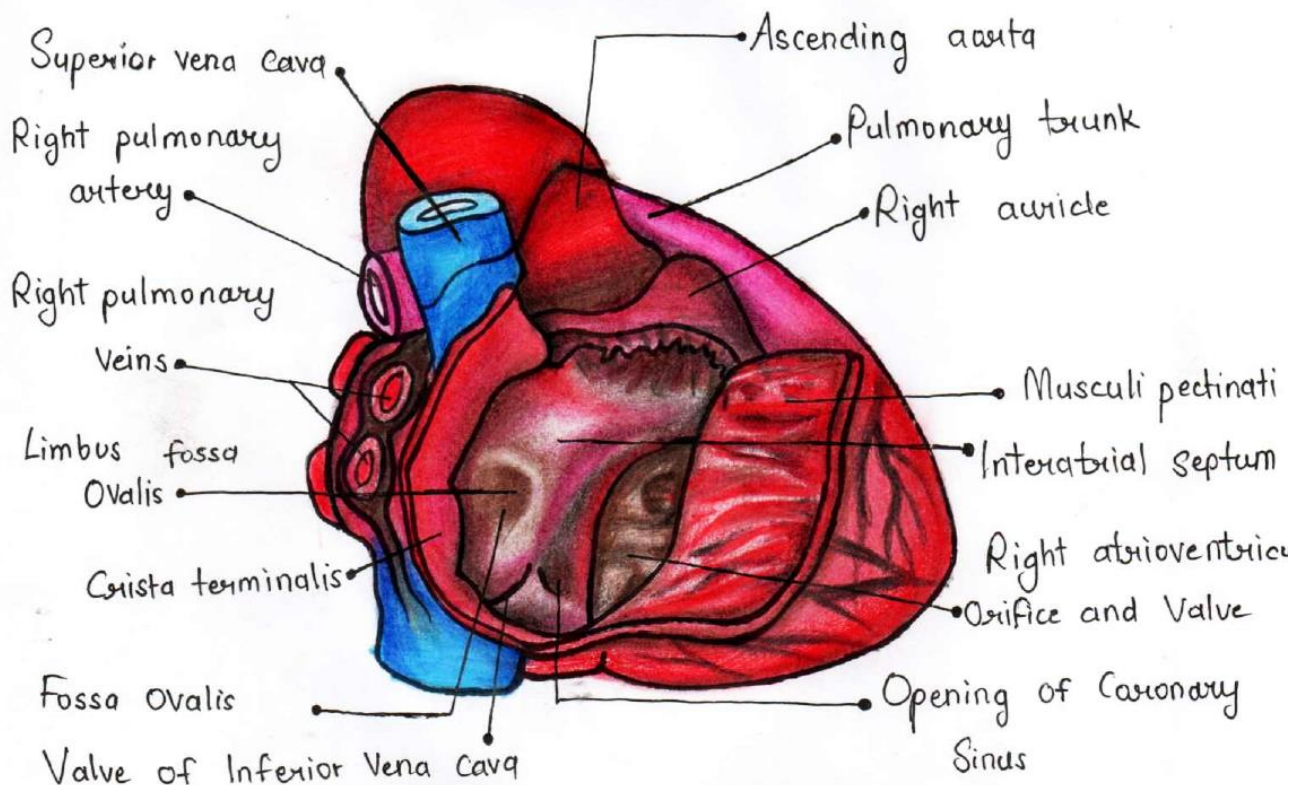
3. INTERATRIAL SEPTUM

- DEVELOPMENT - DERIVED FROM PRIMITIVE ATRIAL CHAMBER
- IT PRESENT THE FOSSA OVALIS A SHALLOW DEPRESSION IN LOWER PART
- ANNULUS OVALIS & FOSSA OVALIS THE PROMINENT MARGIN FOSSA OVALIS



IMPORTANT INFORMATION

THE SPONGE - LIKE INTERIOR OF RIGHT AURICLE PREVENTS THE FREE FLOW OF BLOOD AND THUS, FAVOURS THE FORMATION OF THE THROMBUS
THE THROMBI MAY DISLODGE DURING AURICULAR FIBRILLATION AND MAY CAUSE PULMONARY EMBOLISM



RIGHT VENTRICLE

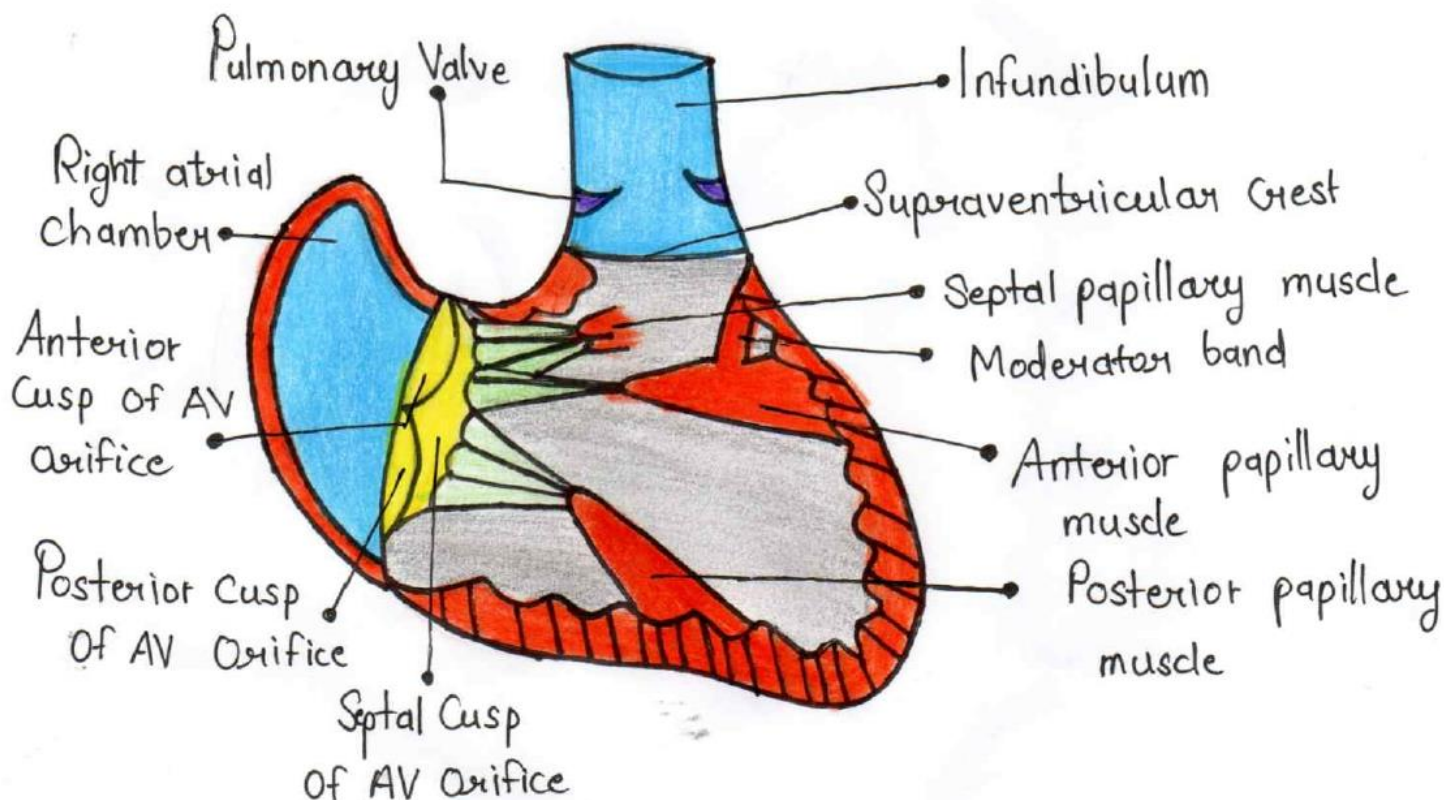
RIGHT VENTRICLE IS THE THICK WALLED TRINAGULAR CHAMBER OF HEART THAT COMMUNICATES WITH RIGHT ATRIUM THROUGH RIGHT AV ORIFICE AND WITH PULMONARY TRUNK THROUGH PULMONARY ORIFICE

EXTERNAL FEATURE -

- 1) FORM MOST OF STERNOCOSTAL SURFACE AND SMALL PART OF DIAPHRAGMATIC SURFACE OF HEART
- 2) ALSO FORM INFERIOR BORDER
- 3) SEPARATED FROM RIGHT ATRIUM BY MORE OR LESS VERTICAL ANTERIOR PART OF CORONARY SULCUS

INTERNAL FEATURES -

- 1) INTERIOR OF RIGHT VENTRICLE CONSIST OF TWO PARTS
 - (A) LARGER - LOWER ROUGH INFLOWING PART
 - (B) SMALL UPPER OUTFLOWING PART, THE INFUNDIBULUM
 - TWO PARTS SEPARATED FROM EACH OTHER BY MUSCULAR RIDGE
- 2) CAVITY OF RIGHT VENTRICLE IS FLATTENED BY THE FORWARD BULGE OF INTERVENTRICULAR SEPTUM
- 3) WALL OF RIGHT VENTRICLE IS THINNER THAN LEFT VENTRICLE



LEFT ATRIUM

EXTERNAL FEATURE -

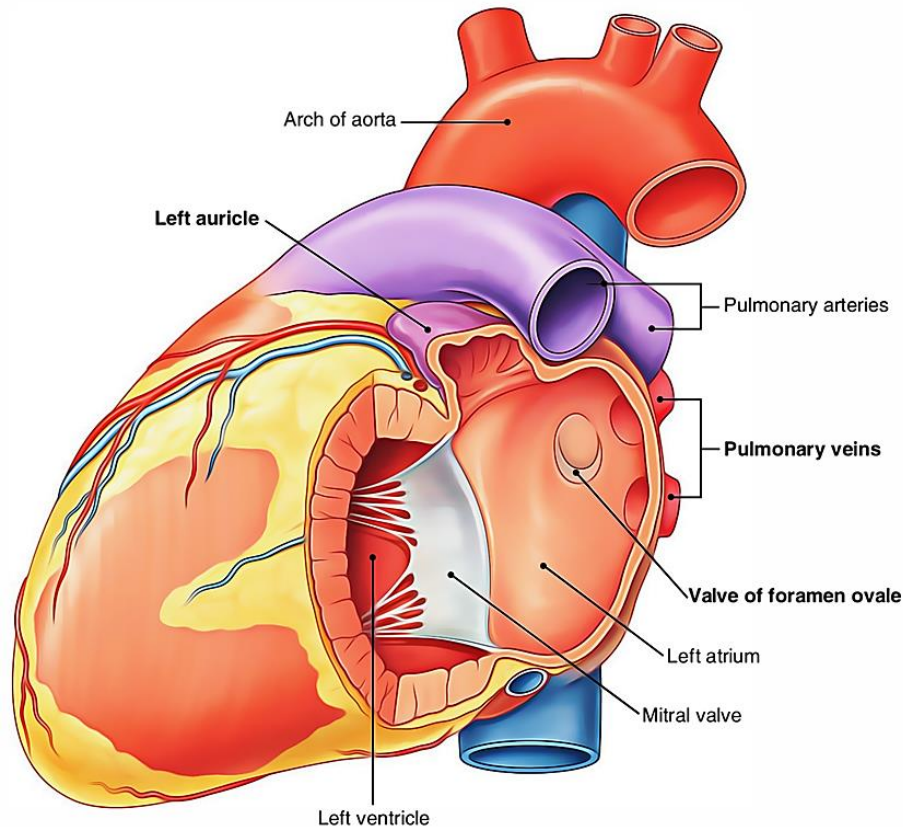
- 1) THIN WALLED QUADRANGULAR CHAMBER SITUATED POSTERIORLY BEHIND TO LEFT SIDE OF RIGHT ATRIUM
- 2) FORM GREATER PART OF BASE OF HEART
- 3) UPPER END IS PROLONGED ANTERIORLY TO FORM THE LEFT AURICLE, WHICH OVERLAPS THE INFUNDIBULUM OF RIGHT VENTRICLE
- 4) BEHIND THE LEFT ATRIUM LIES - OBLIQUE SINUS OF SEROUS PERICARDIUM

INTERNAL FEATURE -

- 1) INTERIOR OF LEFT ATRIUM IS SMOOTH BUT LEFT AURICLE POSSESSES MUSCULAR RIDGES IN FORM OF THE RETICULUM
- 2) ANTERIOR WALL OF LEFT ATRIAL CAVITY PRESENTS FOSSA LUNATA, WHICH CORRESPONDS TO FOSSA OVALIS OF RIGHT ATRIUM

OPENING IN LEFT ATRIUM -

- 1) OPENING OF 4 PULMONARY VEIN
- 2) NUMBER OF SMALL OPENING OF VENAE CORDIS MINIMAE
- 3) LEFT AV ORIFICE



LEFT VENTRICLE

LEFT VENTRICLE IS THICKE-WALLED TRINAGULAR CHAMBER OF HEART THAT COMMUNICATES WITH LEFT ATRIUM THROUGH LEFT AV ORIFICE AND WITH ASCENDING AORTA THROUGH AORTA ORIFICE

EXTERNAL FEATURE -

- 1) FORM APEX OF HEART
- 2) FORM SMALL PART OF STERNOCOSTAL SURFACE
- 3) FORM MOST OF DIAPHRAGMATIC SURFACE
- 4) MOST OF LEFT BORDER OF HEART

INTERIOR: DIVISIBLE INTO TWO PARTS:

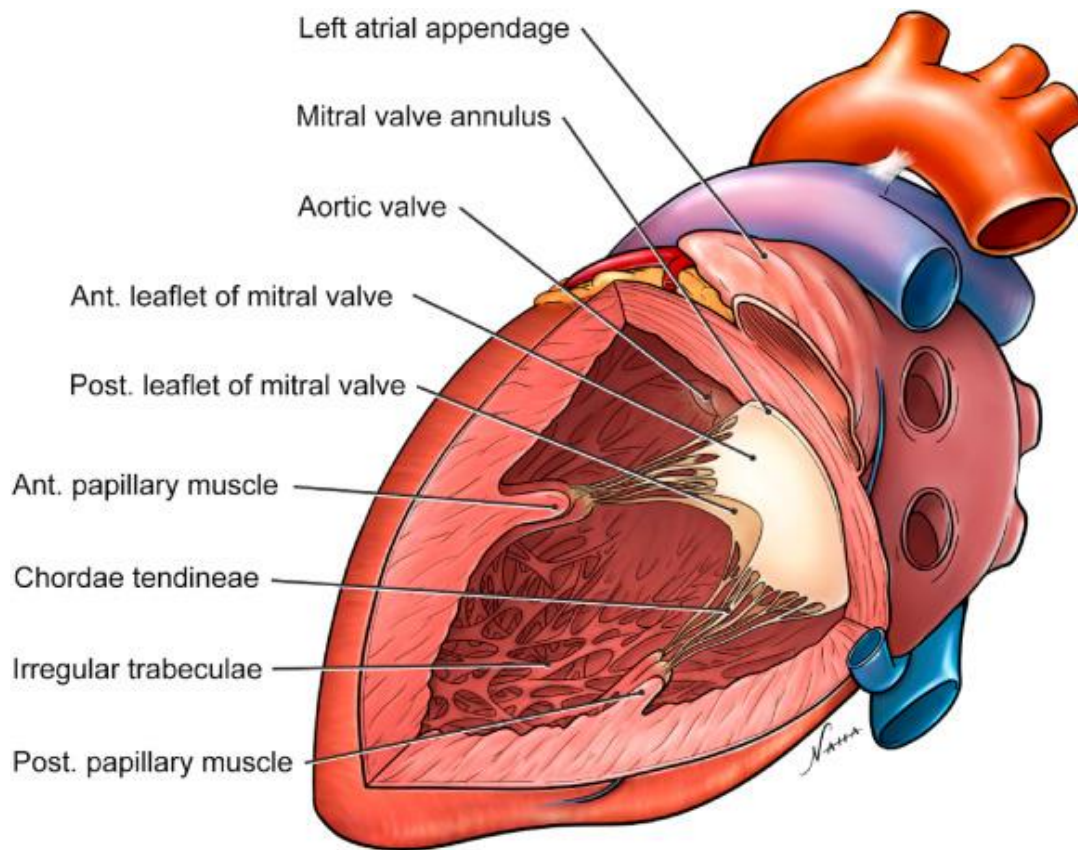
- 1) THE LOWER ROUGH PART WITH TRABECULAE CARNEAE
 - 2) THE UPPER SMOOTH PART OR AORTIC VESTIBULE GIVES ORIGIN TO THE ASCENDING AORTA
- THE INTERIOR OF THE VENTRICLE SHOWS ->

TWO ORIFICES:

LEFT ATRIOVENTRICULAR OR BICUSPID OR MITRAL ORIFICE- GUARDED BY THE BICUSPID OR MITRAL VALVE.

AORTIC ORIFICE- GUARDED BY THE AORTIC VALVE

THERE ARE **TWO WELL-DEVELOPED PAPILLARY MUSCLES— ANTERIOR AND POSTERIOR**. CHORDAE TENDINEAE FROM BOTH MUSCLES ARE ATTACHED TO BOTH THE CUSPS OF THE MITRAL VALVE



ARTERIES SUPPLY OF HEART



HEART IS SUPPLIED BY 2 CORONARY ARTERIES → ARISING FROM ASCENDING AORTA
BOTH ARTERIES RUN IN CORONARY SULCUS

RIGHT CORONARY ARTERY

POSITION - SMALLER THAN LEFT CORONARY ARTERY
- ARISE FROM **ANTERIOR AORTIC SINUS OF ASCENDING AORTA**

COURSE

- FIRST PASS FORWARD BETWEEN ROOT OF PULMONARY TRUNK & RIGHT AURICLE
- THEN RUN DOWNWARD → RIGHT ANTERIOR CORONARY SULCUS TO JUNCTION OF RIGHT AND INFERIOR BORDER OF HEART
- WINDS AROUND THE INFERIOR BORDER TO REACH → DIAPHRAGMATIC SURFACE OF HEART
- TERMINATE BY ANASTOMOSIS WITH CIRCUMFLEX BRANCH OF LEFT CORONARY ARTERY

BRANCHES -

1. **ARTERIAL BRANCH - ANTERIOR, POSTERIOR & LATERAL**
ONE OF ANTERIOR ATRIAL BRANCHES IS CALLED SA NODAL ARTERY
IN 35% CASES IT ARISES FROM CIRCUMFLEX BRANCH OF LEFT CORONARY ARTERY
2. **RIGHT CONUS ARTERY - FROM CIRCLE AROUND PULMONARY TRUNK CALLED 'ANNULUS OF VIEUSSSENS'**
3. **VENTRICULAR BRANCH- ANTERIOR & POSTERIOR GROUP**
4. **RIGHT MARGINAL ARTERY ARISES AS RIGHT CORONARY ARTERY CROSSES THE RIGHT BORDER OF HEART**



5. POSTERIOR INTERVENTRICULAR BRANCH - LIE IN POSTERIOR INTERVENTRICULAR GROOVE

GIVE SEPTAL BRANCHES TO POSTERIOR 1/3 OF INTERVENTRICULAR SEPTUM
IT ALSO SUPPLIES AV NODES

AREA OF DISTRIBUTION

- 1) RIGHT ATRIUM
- 2) VENTRICLE - GREAT PART OF RIGHT VENTRICLE - EXCEPT AREA ADJOINING INTERVENTRICULAR GROOVE
- 3) SMALL PART OF LEFT VENTRICLE
- 4) WHOLE CONDUCTING SYSTEM OF HEART EXCEPT A PART OF LEFT BRANCH OF AV BUNDLE.

LEFT CORONARY ARTERY

LEFT CORONARY ARTERY IS LARGER THAN RIGHT CORONARY ARTERY

POSITION - ARISE FROM LEFT AORTIC SINUS OF ASCENDING AORTA

COURSE

- FIRST RUN FORWARD TO LEFT END EMERGE BETWEEN PULMONARY TRUNK
- HERE IT GIVE THE INTERVENTRICULAR BRANCH WHICH RUN DOWNWARD IN GROOVE OF SAME NAME
- FURTHER CONTINUATION OF LCA IS CALLED CIRCUMFLEX ARTERY
- IT WIND AROUND LEFT BORDER OF HEART & CONTINUE IN LEFT CORONARY SULCUS
- TERMINATE BY ANASTOMOSIS WITH RCA

BRANCHES -

1. ANTERIOR INTERVENTRICULAR BRANCH - LARGEST BRANCH
 - IT DESCENDS IN ANTERIOR INTERVENTRICULAR GROOVE AND GIVE FOLLOWING BRANCHES
 - (A) ANTERIOR VENTRICULAR BRANCHES FOR VENTRICLES
 - (B) SEPTAL BRANCHES WHICH SUPPLY ANTERIOR 2/3 OF INTERVENTRICULAR SEPTUM
 - (C) LEFT CONUS ARTERY FORM AN ARTERIAL RING AROUND PULMONARY TRUNK
2. CIRCUMFLEX BRANCH IS TERMINAL PART OF LEFT CORONARY ARTERY AFTER IT HAS GIVEN OFF THE LARGE ANTERIOR INTERVENTRICULAR BRANCH

AREA OF DISTRIBUTION

1. LEFT ATRIUM
2. VENTRICLE - GREATER PART OF LEFT VENTRICLE EXCEPT AREA ADJOINING POSTERIOR INTERVENTRICULAR GROOVE
 - SMALL PART OF RIGHT VENTRICLE OR ANT. PART OF INTERVENTRICULAR SEPTUM.
3. ANTERIOR PART OF INTERVENTRICULAR SEPTUM.
4. LEFT BRANCH OF AV BUNDLE.

CARDIAC DOMINANCE -

1. ARTERY GIVING POSTERIOR INTERVENTRICULAR BRANCH IS DOMINANT ARTERY
2. IN 90% RIGHT CORONARY ARTERY GIVE POSTERIOR INTERVENTRICULAR ARTERY
→ SUCH HEART IS CALLED RIGHT DOMINANT HEART
3. IN 10% OF CIRCUMFLEX ARTERY CONTINUATION OF LEFT CORONARY ARTERY
4. PROVIDE POSTERIOR INTERVENTRICULAR BRANCH SUCH HEART IS CALLED LEFT DOMINANT HEART.



CLINICAL ANATOMY

ANGINA PECTORIS -

- IF CORONARY ARTERIES ARE NARROWED, THE BLOOD SUPPLY TO CARDIAC MUSCLES IS REDUCED
- AS RESULT, ON EXERTION THE PATIENT FEELS MODERATELY SEVERE PAIN IN THE REGION OF LEFT PERICARDIUM THAT MAY LAST AS LONG AS 20 MIN

MYOCARDIAL INFARCTION -

- SUDDEN BLOCK OF ONE OF LARGER BRANCHES OF EITHER CORONARY ARTERY USUALLY LEADS TO MYOCARDIAL ISCHEMIA FOLLOWED BY MYOCARDIAL NECROSIS

CORONARY ATTACK / HEART ATTACK -

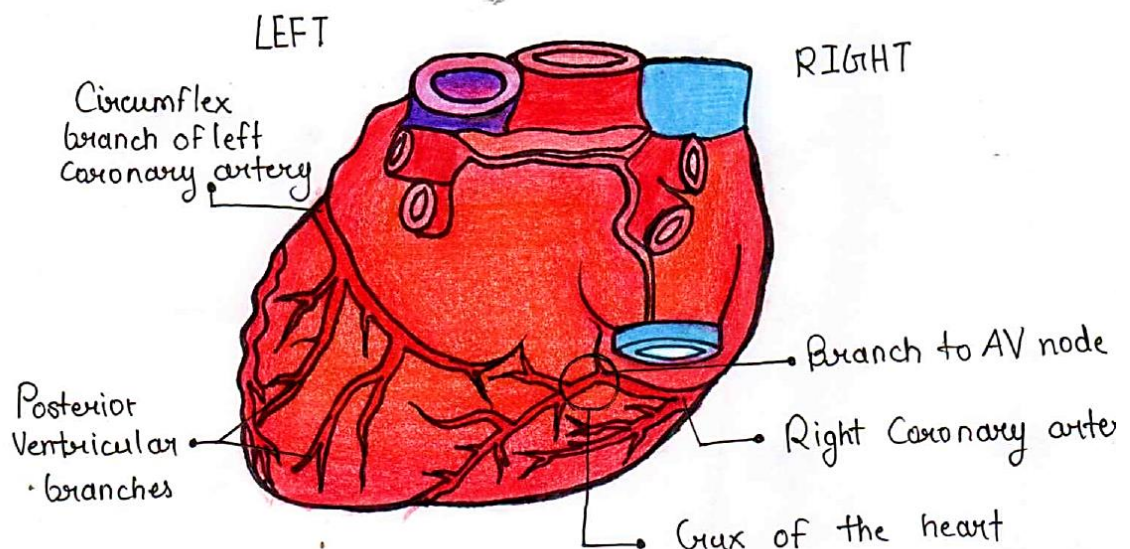
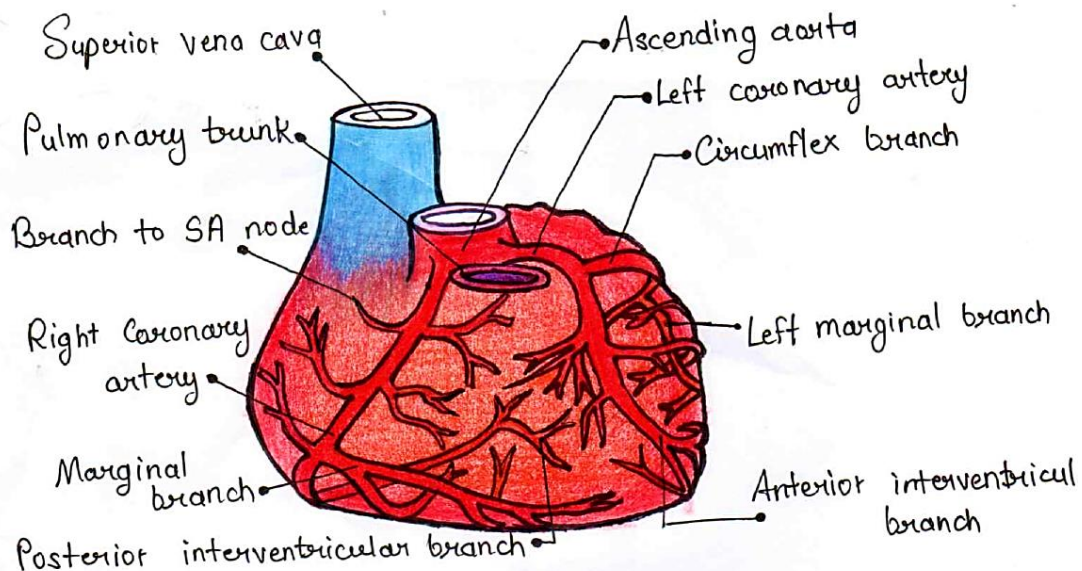
- THE PART OF HEART SUFFERING FROM MI STOPS FUNCTIONING AND OFTEN CAUSES DEATH THIS CONDITION IS TERMED HEART ATTACK OR CORONARY ATTACK

CORONARY ANGIOGRAPHY -

- CORONARY ANGIOGRAPHY IS A RADIOLOGICAL PROCEDURE TO VISUALIZE THE CORONARY ARTERIES AFTER INJECTING CONTRAST MEDIUM IN THEIR LUMEN

CORONARY BYPASS SURGERY -

- CORONARY BYPASS SURGERY HAS BECOME COMMON IN RECENT TIME IN PATIENTS WITH SEVERE ANGINA DUE TO OBSTRUCTION OF CORONARY ARTERY
- A CORONARY BYPASS GRAFT SHUNT BLOOD FROM AORTA TO CORONARY ARTERY DISTAL TO BLOCKAGE TO INCREASE THE CIRCULATION





VENOUS DRAINAGE OF HEART

THESE ARE GREAT CARDIAC VEIN, MIDDLE CARDIAC, RIGHT MARGINAL VEIN POSTERIOR VEIN OF LEFT VENTRICLE, ANTERIOR CARDIAC VEIN, VENAE CORDIS MINIMAE.

ALL VEIN EXCEPT → ANT. CARDIAC VEIN OPEN INTO

→ CORONARY SINUS

CORONARY SINUS OPENS INTO → RIGHT ATRIUM.

1. CORONARY SINUS - LARGEST VEIN OF HEART

- SITUATED INTO LEFT POSTERIOR CORONARY SULCUS END INTO RIGHT ATRIUM

- TRIBUTRIES OF CORONARY SINUS -

1. GREAT CARDIAC VEIN - ACCOMPANY FIRST ANT. VENTRICULAR ARTERY THAN LEFT CORONARY ARTERY

2. MIDDLE CARDIAC VEIN - ACCOMPANY - POSTERIOR INTERVENTRICULAR ARTERY

3. SMALL CARDIAC VVEIN - ACCOMPANY - RIGHT CORONARY ARTERY

4. RIGHT MARGINAL VEIN - ACCOMPANY - MARGINAL BRANCH OF RIGHT CORONARY ARTERY

5. POST. VEIN OF LEFT VENTRICLE - RUN ON DIAPHRAGMATIC SURFACE ON LEFT VENTRICLE

6. OBLIQUE VEIN OF LEFT ATRIUM - RUNNING OF POST. SURFACE LEFT ATRIUM

2. ANTERIOR CARDIAC VEIN

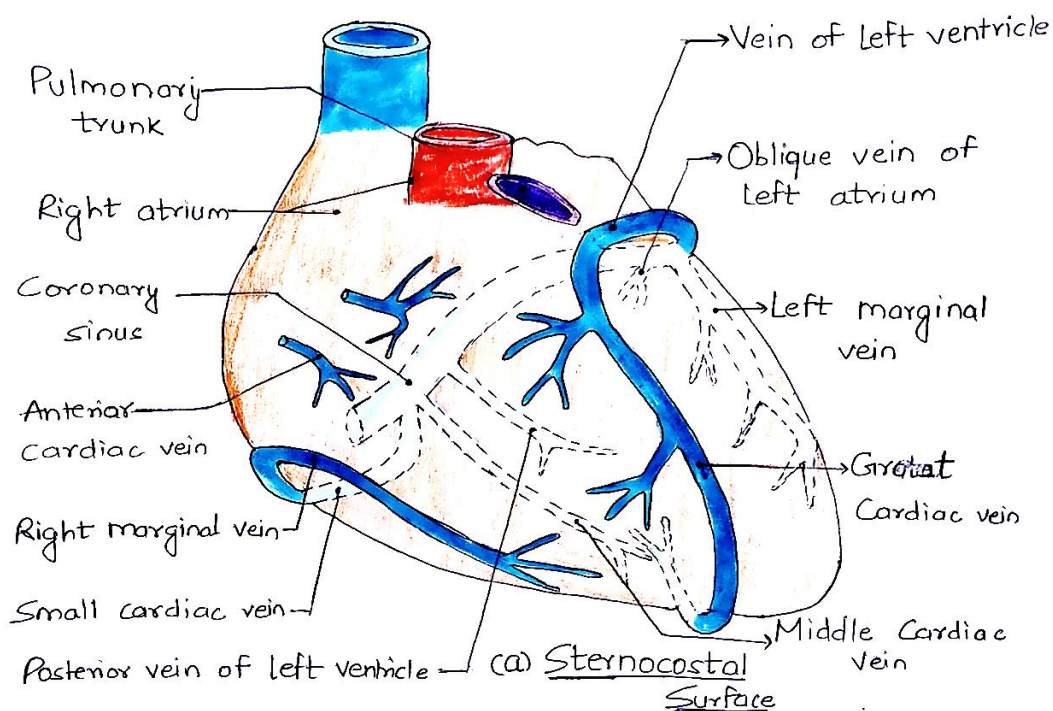
- 3 TO 4 SMALL VEIN WHICH RUN PARALLEL TO EACH OTHER ON THE ANT. WALL OF RIGHT VENTRICLE.

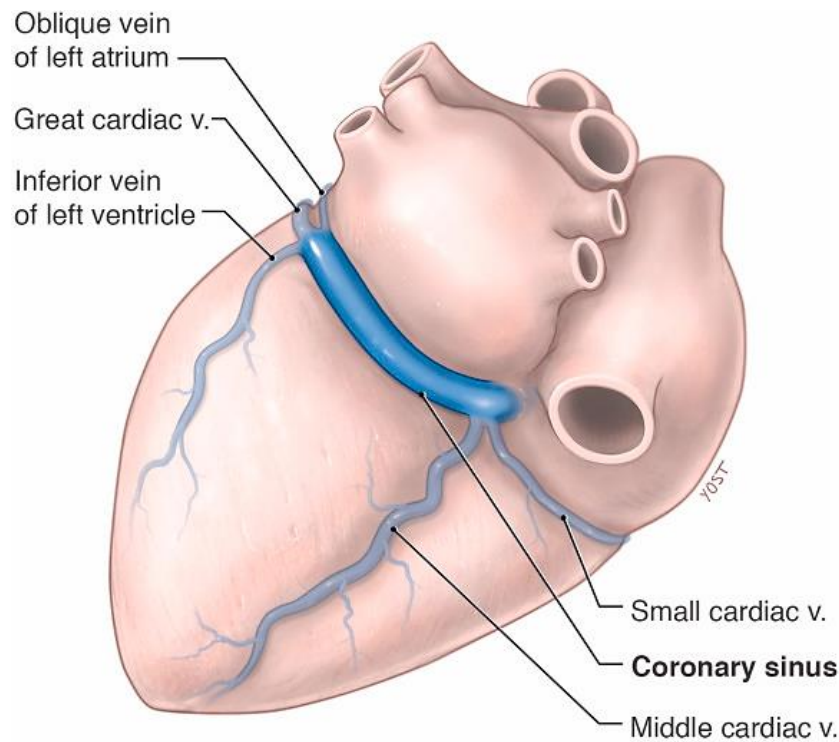
- OPEN DIRECTLY INTO RIGHT ATRIUM.

3. VENAE CORDIS MINIMAE

- VENAE CIRDIS MINIMAE ARE NUMEROUS SMALL VALVELESS VEINS PRESENT IN ALL FOUR CHAMBERS OF HEART WHICH OPEN DIRECTLY INTO CAVITY

- MORE NUMEROUS ON RIGHT SIDE OF HEART





NERVE SUPPLY OF HEART

PARASYMPATHETIC NERVES- REACH HEART VIA VAGUS

SYMPATHETIC NERVES- DERIVED FROM THE UPPER FOUR TO FIVE THORACIC SEGMENTS OF THE SPINAL CORD

BOTH PARASYMPATHETIC AND SYMPATHETIC NERVES FORM THE SUPERFICIAL AND DEEP CARDIAC PLEXUSES

SUPERFICIAL CARDIAC PLEXUS

SITUATED-BELOW THE ARCH OF THE AORTA AND IN FRONT OF THE RIGHT PULMONARY ARTERY.

IT IS FORMED BY:

- 1) THE SUPERIOR CERVICAL CARDIAC BRANCH OF THE LEFT SYMPATHETIC CHAIN. (C1-T5)**
- 2) THE INFERIOR CERVICAL CARDIAC BRANCH OF THE LEFT VAGUS NERVE.**

IT IS CONNECTED TO - DEEP CARDIAC PLEXUS

- RIGHT CORONARY ARTERY**
- LEFT ANTERIOR PULMONARY PLEXUS**

DEEP CARDIAC PLEXUS

SITUATED- IN FRONT OF THE BIFURCATION OF TRACHEA, AND BEHIND THE ARCH OF THE AORTA.

FORMED BY CARDIAC BRANCHES OF-

- 1) CERVICAL AND UPPER THORACIC GANGLIA OF THE SYMPATHETIC CHAIN (C1-T5)**
- 2) VAGUS AND RECURRENT LARYNGEAL NERVES, EXCEPT BRANCHES FORMING SUPERFICIAL PLEXUS.**

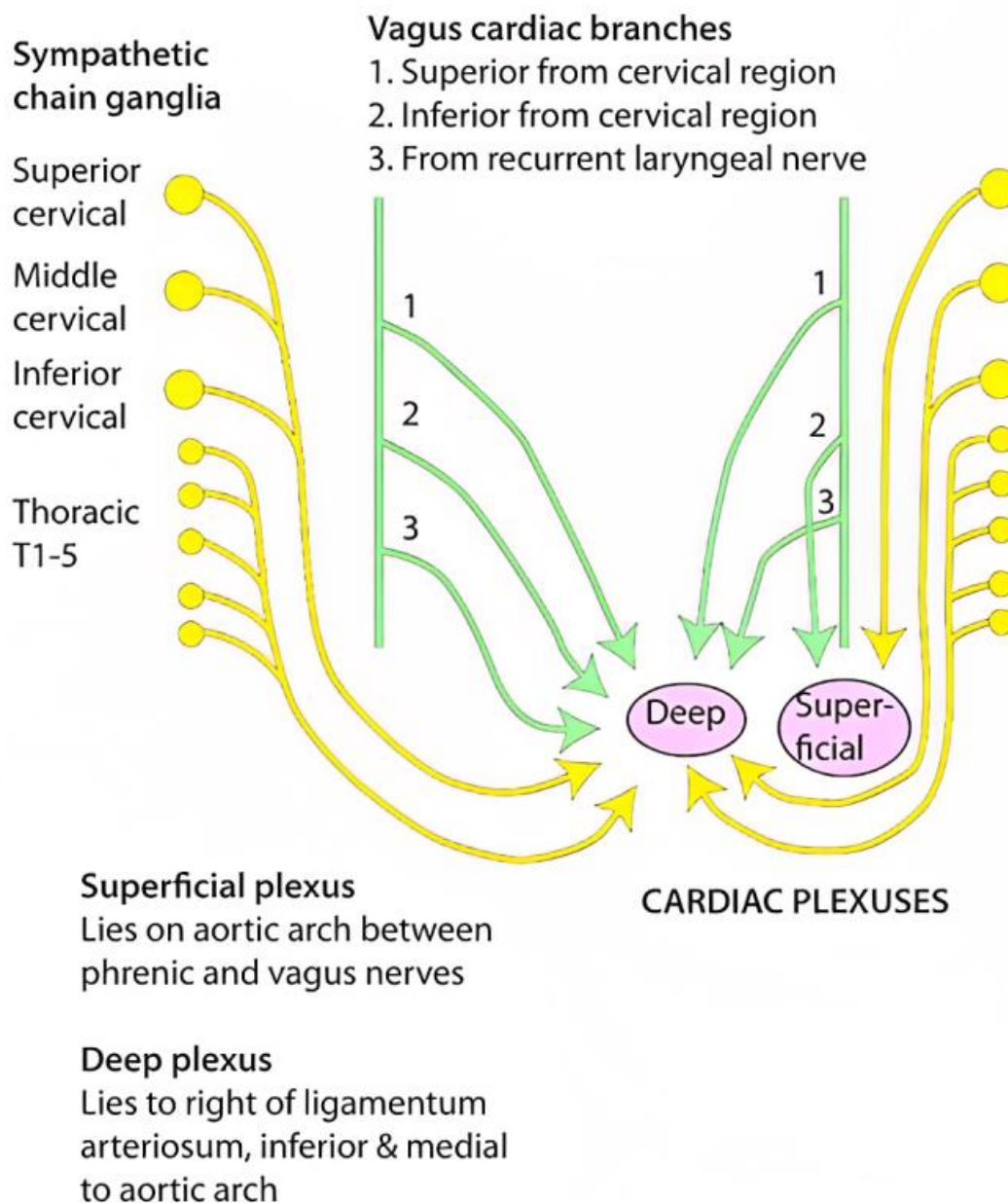


RIGHT AND LEFT HALVES OF THE PLEXUS- BRANCHES TO THE CORRESPONDING CORONARY AND PULMONARY PLEXUSES. SEPARATE BRANCHES- TO THE ATRIA.

CLINICAL ANATOMY

TACHYCARDIA - INCREASED HEART RATE

BRADYCARDIA - DECREASED HEART RATE



IMPORTANT INFORMATION

FOUR OESOPHAGUS CONSTRICTIONS-

- AT BEGINNING- 15 CM/6-INCH FROM THE INCISOR TEETH- CROSSED BY CRICOPHARYNGEUS MUSCLE.
 - CROSSED BY THE AORTIC ARCH, 22.5 CM/9-INCH FROM THE INCISOR TEETH.
 - CROSSED BY THE LEFT BRONCHUS, 27.5 CM/11- INCH FROM THE INCISOR TEETH.
 - PIERCES THE DIAPHRAGM 37.5 CM/15-INCH FROM THE INCISOR TEETH.
- THE DISTANCES FROM THE INCISOR TEETH ARE IMPORTANT IN PASSING INSTRUMENTS LIKE ENDOSCOPE INTO THE ROOT

**STUDY TIPS FOR MAXIMUM MARKS**

HOW TO WRITE IN UNIVERSITY EXAM AND HOW TO DRAW DIAGRAMS
ALREADY MENTION IN UPPER LIMB

**PREVIOUS YEAR UNIVERSITY QUESTIONS****LONG QUESTIONS - 20 MARKS**

1. DESCRIBE BRONCHOPULMONARY SEGMENTS WITH ITS APPLIED
2. DESCRIBE BLOOD SUPPLY OF HEART
3. DESCRIBE RIGHT ATRIUM UNDER FOLLOWING HEADINGS
 1. EXTERNAL FEATURES
 2. INTERNAL FEATURES
 3. DEVELOPMENT

SHORT NOTE - 5 MARKS

- 1) ROOT OF LUNGS
- 2) RECESSES OF PLEURA
- 3) SUPERIOR MEDIA STINUM
- 4) INFERIOR MEDIA STINUM
- 5) AZYGUS VEIN
- 6) THORACIC DUCT
- 7) INTERCOASTAL NERVE
- 8) INTERCOASTAL SPACE
- 9) DRAW THE DIAGRAM OF INLET OF THORAX
- 10) DRAW THE DIAGRAM OF OUTLET OF THORAX

