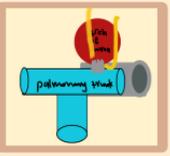
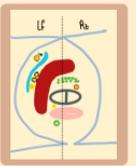


aorta

	Ascending Aorta	Arch of Aorta	Desending aorta	Abdominal aorta
definition	A short wide artery	<p>Points to be noted in the course of arch of aorta</p> <ul style="list-style-type: none"> • A. The arch of aorta arches over the root of left lung. • B. It begins and ends at the same level, i.e., at sternal angle. • C. It begins anteriorly and ends posteriorly. 	Is the Section of the thoracic aorta which is contained in the posterior mediastinum	
	It is 5 cm long with its whole length lies inside the fibrous pericardium			
beginning	It begins at the aortic orifice of the left ventricle	It begins at the 2nd right sternocostal junction as a continuation of ascending aorta	It originates leveled along with the lower boundary of the T4 vertebra. consistent with the aortic arch	Beginning: It enters the abdomen opposite 12th thoracic vertebra through aortic opening of the diaphragm
	behind the left border of the sternum opposite the 3rd left intercostal space.			
course	It runs obliquely upwards, forwards and to the right	It passes first upwards, backwards and to left	Initially begins to the left of vertebral column	
		then backwards and downwards — on the left side of the trachea	Approaches the midline as it descends	
			It leaves the thorax via aortic hiatus	
Ending	end behind the 2nd right sternocostal junction by becoming arch of aorta.	ends on the left side of lower border of T4 vertebra by becoming the descending thoracic aorta	Terminates anterior to the lower boundary of the T12 vertebra within the aortic hiatus in the diaphragm, and becomes the abdominal aorta	Termination: It ends by dividing into 2 common iliac arteries opposite the 4th lumbar vertebra.
Note	At its beginning, the ascending aorta has 3 dilatations opposite the cusps of the aortic valve called the aortic sinuses	<ul style="list-style-type: none"> — one anterior — two posterior 		

	Ascending Aorta	Arch of Aorta	Descending aorta	Abdominal aorta
Relations		<p>a-The upper convex aspect is related to:</p> <ul style="list-style-type: none"> 1. Origins of its 3 large branches <ul style="list-style-type: none"> Brachiocephalic artery — behind center of manubrium. Left common carotid artery — left of brachiocephalic artery Left subclavian artery — behind the left common carotid artery. 2. Left brachiocephalic vein <ul style="list-style-type: none"> runs obliquely along upper border of the arch of the aorta in front of the origin of its main branches 	<p>from above downwards</p> <p>a. Anteriorly</p> <ul style="list-style-type: none"> The left principal bronchus Fibrous pericardium & Oblique sinus of — separating it from the left atrium Desophagus — cross from right to left in front of aorta at T7 vertebra Diaphragm 	<p>from superior to inferior</p> <p>Anterior relations</p> <ol style="list-style-type: none"> 1. Celiac trunk, ganglia and plexus 2. Body of the pancreas 3. Splenic and left renal veins 4. (3rd part) of the duodenum 5. Superior mesenteric vessels and root of mesentery 6. coils of small intestine
		<p>B-The lower concave aspect is related to:</p> <ul style="list-style-type: none"> Bifurcation of pulmonary trunk — into right and left pulmonary arteries. Ligamentum arteriosum — extends between <ul style="list-style-type: none"> left pulmonary artery lower surface of arch of aorta Superficial cardiac plexus — in front of ligamentum arteriosum Left recurrent laryngeal nerve Left principal bronchus 	<p>from above downwards</p> <p>b. Posteriorly</p> <ul style="list-style-type: none"> Lower 5 thoracic vertebrae (T8-T12) The superior and inferior hemiazygos veins — cross from left to right behind the aorta at T8 and T9 vertebrae respectively) 	<p>Posterior relations:</p> <ol style="list-style-type: none"> 1. Lumbar vertebrae (I-4) and intervertebral discs 2. Anterior longitudinal ligament 3. The left 3rd and 4th lumbar veins — which cross behind the aorta to end in the inferior vena cava
		<p>c- The left anterior aspect is related to:</p> <ol style="list-style-type: none"> 1. The mediastinal surfaces of the left pleura and lung. 2. The structures crossing the arch: <ul style="list-style-type: none"> Left phrenic nerve and pericardiophrenic vessels. Left vagus nerve — crossed superficially by the left phrenic nerve branch of left sympathetic chain Superior cervical cardiac branch of left vagus nerve Inferior cervical cardiac Left superior intercostal vein 	<p>from above downwards</p> <p>c. On its right side</p> <ul style="list-style-type: none"> Oesophagus — before crossing in front of aorta at T7 vertebra Azygos vein — right side of lower part of aorta The thoracic duct — between azygos vein and lower part of aorta 	<p>On the right:</p> <ol style="list-style-type: none"> 1) Azygos vein 2) Cisterna chyli and thoracic duct 3) Right crus of the diaphragm 4) Inferior vena cava
		<p>D- The right posterior aspect is related to:</p> <ol style="list-style-type: none"> 1. Trachea. 2. Deep cardiac plexus tracheobronchial lymph nodes <p>on the bifurcation of the trachea</p> <ul style="list-style-type: none"> Oesophagus — behind the trachea Left recurrent laryngeal nerve — in the groove between trachea and oesophagus Thoracic duct — behind left border of the oesophagus 	<p>from above downwards</p> <p>d. On its left side:</p> <ul style="list-style-type: none"> Its upper part — left pleura and lung lower end — oesophagus 	<p>On the left:</p> <ol style="list-style-type: none"> 1. Left crus of the diaphragm 2. Duodeno- jejunal junction 3. Left Sympathetic trunk

Aorta

	Ascending Aorta	Arch of Aorta	Descending aorta	Abdominal aorta														
Branches	aortic sinuses { <ul style="list-style-type: none"> anterior aortic sinus — Right coronary artery left posterior aortic sinus — Left coronary artery 	BCA (innominate)	1.Nine pairs of posterior intercostal arteries (from 3rd to 11th)	Paired branches of abdominal aorta — <table border="1"> <thead> <tr> <th>Branch</th> <th>Vertebral level</th> </tr> </thead> <tbody> <tr> <td>Inferior phrenic</td> <td>L1 (upper border)</td> </tr> <tr> <td>Middle suprarenal</td> <td>L1 (lower border)</td> </tr> <tr> <td>renal</td> <td>L2</td> </tr> <tr> <td>gonadal</td> <td>L3</td> </tr> <tr> <td>four lumbar</td> <td>L1-L4</td> </tr> <tr> <td>Common iliac</td> <td>L4</td> </tr> </tbody> </table>	Branch	Vertebral level	Inferior phrenic	L1 (upper border)	Middle suprarenal	L1 (lower border)	renal	L2	gonadal	L3	four lumbar	L1-L4	Common iliac	L4
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four lumbar	L1-L4																	
Common iliac	L4																	
Left CCA	2.One pair of subcostal arteries.																	
Left SCA	3. bronchial arteries.																	
Occasionally, 4th branch referred to as thyroidea ima artery may originate from the arch of aorta	4. oesophageal branches																	
		Few small twigs to <ul style="list-style-type: none"> pericardial mediastinal superior phrenic branches 	Single branches of abdominal aorta — <table border="1"> <thead> <tr> <th>Branch</th> <th>Vertebral level</th> </tr> </thead> <tbody> <tr> <td>coeliac trunk</td> <td>L1 (upper border)</td> </tr> <tr> <td>superior mesenteric artery</td> <td>L1 (lower border)</td> </tr> <tr> <td>inferior mesenteric artery</td> <td>L3</td> </tr> <tr> <td>median sacral artery</td> <td>L4</td> </tr> </tbody> </table>	Branch	Vertebral level	coeliac trunk	L1 (upper border)	superior mesenteric artery	L1 (lower border)	inferior mesenteric artery	L3	median sacral artery	L4					
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Large Veins of the Thorax

	brachiocephalic veins	Superior Vena Cava (S.V.C.)	Inferior vena cava (IVC)
Beginning and ending	Each vein begins — behind the medial end of the corresponding clavicle	Begin — by the union of the 2 brachiocephalic veins — behind the lower border of the 1st right costal cartilage close to sternum	Begin — by union of two common iliac veins at 5th lumbar vertebra
	Each vein end — behind the lower border of the 1st right costal cartilage close to sternum — by uniting together to form the S.V.C	Course — descends vertically to pierce the pericardium at the level of the 2nd right costal cartilage Ends — by opening into the right atrium behind the 3rd right costal cartilage, close to the sternum	Course — It ascends on the right side of aorta — passes through the caval opening of diaphragm — by piercing its central tendon opposite T8 — drains into the right atrium
Note	The 2 brachiocephalic veins (right and left) drain — the upper limbs (brachium) — the head and neck (cephalic) — anterior wall of the thorax — upper part of the posterior wall of the thorax — lymph from the whole body	A large vein which drains venous blood from upper 1/2 of the body It measures about 2 inches long Its upper 1/2 lies in the superior mediastinum its lower 1/2, lies inside the fibrous pericardium — in the middle mediastinum	It is the largest vein in the body
Tributaries	Tributaries — Tributaries of left brachiocephalic vein — Left superior intercostal vein — Tributaries of right brachiocephalic vein — Right lymphatic duct [Right superior intercostal vein ends in the arch of azygos vein]	The S.V.C. has only one tributary — the azygos vein — which enters it from behind — at the level of the 2nd right costal cartilage — just before it pierces the pericardium	Tributaries of I.V.C: — 1. Two common iliac veins — they unite together forming I.V.C — 2. Two pairs of lumbar veins — 3rd, 4th — 3. Right gonadal vein — 4. Two renal veins (Rt. & Lt.) — 5. Right supra renal vein — 6. Two inferior phrenic veins — 7. hepatic veins