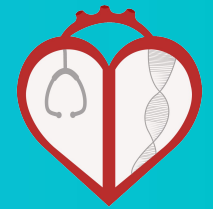




Anatomy Team
MED 439



MED439
KING SAUD UNIVERSITY

Anatomy of the large blood vessels-Arteries

Cardiovascular Block - Lecture 3

Color index:

Important

In male's slides only

In female's slides only

notes

Extra information, explanation

Don't forget to check the [Editing File](#)

Objectives:

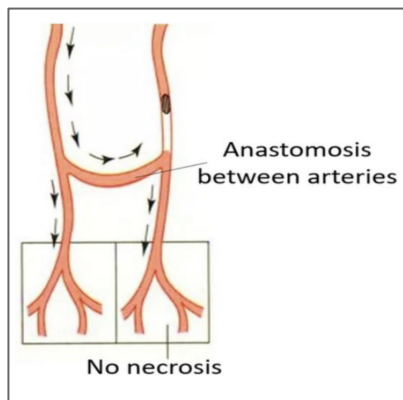
- Define the word artery and understand the general principles of the arterial system.
- Define arterial anastomosis and describe its significance.
- Define end arteries and give examples.
- Describe the aorta and its divisions & list the branches from each part.
- List major arteries and their distribution in the head & neck, thorax, abdomen and upper & lower extremities..
- List main pulse points.

Arteries And Their General Principles

- Arteries carry blood from the heart to the body.
- ALL arteries carry **oxygenated blood**, EXCEPT the **Pulmonary Artery** which carries **deoxygenated blood** to the lungs.
- The flow of blood depends on the **Pumping action of the heart**.
- Arteries have **Elastic Walls** containing **NO VALVES**.

ANASTOMOSIS

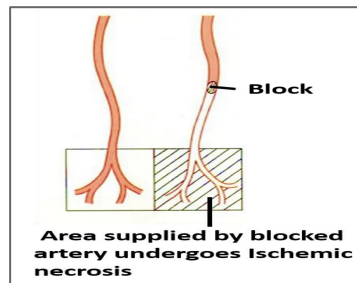
The branches of arteries supplying adjacent areas normally **Anastomose** with one another freely, providing backup routes for blood to flow if one artery got blocked, e.g. Arteries of limb, GIT



The arteries whose terminal branches **DO NOT Anastomose** with branches of adjacent arteries are called **END ARTERIES**. They are **two types**:

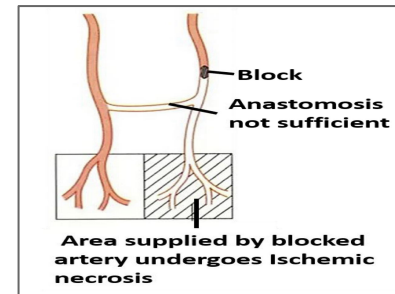
Anatomic (True) End artery:

When **No anastomosis exists**
e.g. Artery of retina
(blocking of it causes blindness)
frequently affected in diabetic patients.



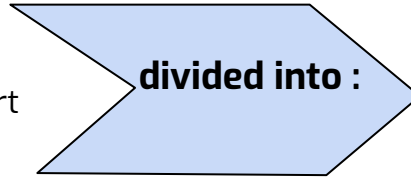
Functional End Artery:

When **an anastomosis exists, but is incapable** of providing a sufficient supply of blood
E.g. Splenic artery, Renal artery

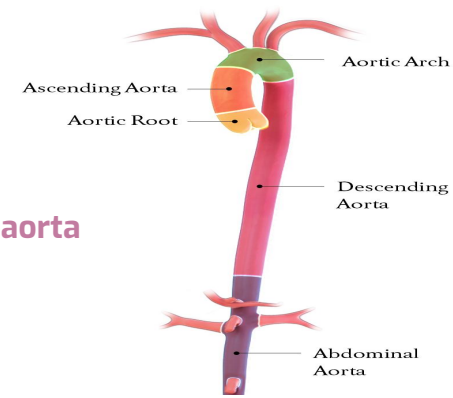


Aorta

- The **largest** artery in the body
- Carries oxygenated blood to all part of the body



- 1- **Ascending aorta**
- 2- **Arch of aorta**
- 3- **Descending thoracic aorta**
- 4- **Abdominal aorta**

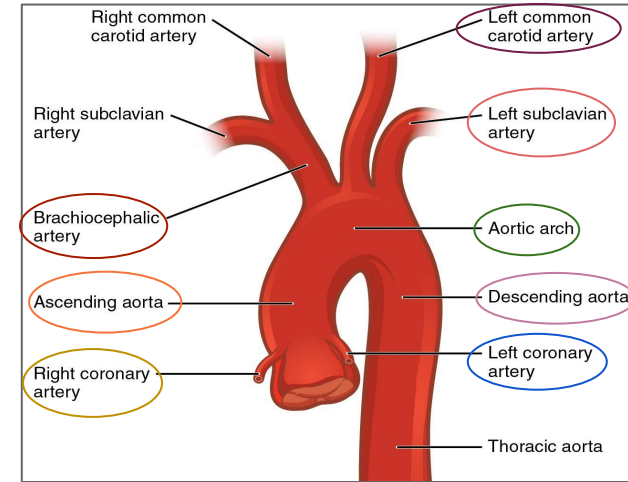


Ascending aorta

- Originates from left ventricle.
- Continues as **the arch of aorta**
- Has three dilatations at its base, called **aortic sinuses**
- **Branches:**
 - **Right coronary artery**
 - **Left coronary artery**(supplying heart), arise from **aortic sinuses**

Arch of aorta

- Continuation of **the ascending aorta**
- Leads to **descending aorta**
- Located behind the lower part of manubrium sterni and on the left side of trachea
- **Branches:**
 - **Brachiocephalic trunk**
 - **Left common carotid artery**
 - **Left subclavian artery**



Extra information and notes:

- From Respa : The arch of Aorta begins and terminates at the level of T4 (sternal angle)
- The brachiocephalic trunk is more to the right
- The left common carotid artery is to the left (medial)
- The left subclavian artery is more to the left (lateral)

Carotids arteries

- **Origin of common carotid artery:**

Left from **Aortic arch**

Right from **Brachiocephalic**

At the level of the disc between **C3 & C4**, each common carotid divides into two branches:

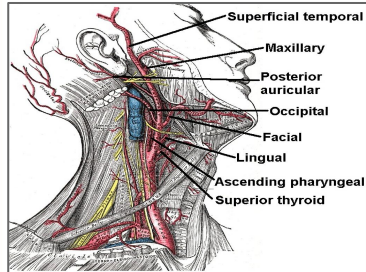
1- External carotid artery

It divides behind the neck of the mandible into:

Superficial temporal & Maxillary arteries

It supplies:

- **Scalp:**
 - 1- Superficial temporal artery
 - 2- Occipital artery
 - 3- Posterior auricular arteries
- **Face:** Facial artery
- **Maxilla & Mandible:** Maxillary artery
- **Tongue:** Lingual artery
- **Pharynx:** Ascending pharyngeal artery
- **Thyroid gland:** Superior thyroid artery

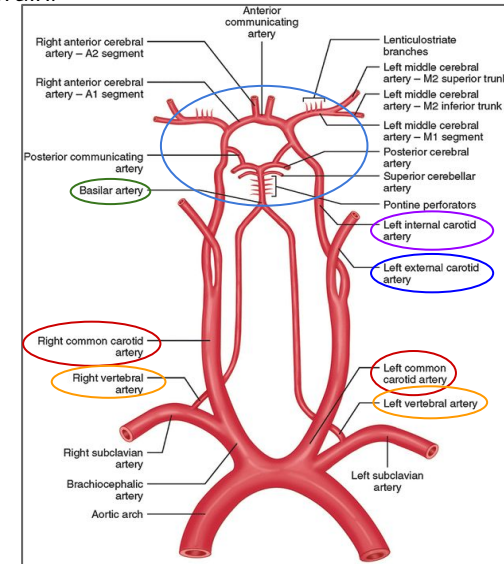
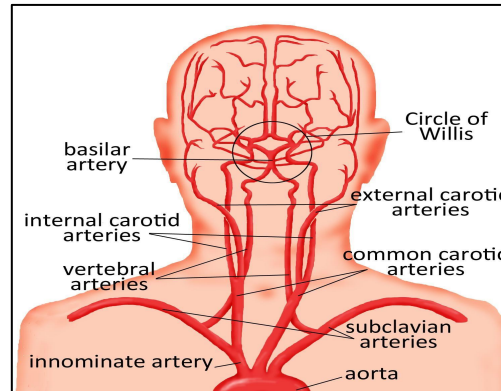


Mnemonic: from bottom to top

Some American Ladies Found Our Pyramids So Magnificent

2- Internal carotid artery

- Has **NO branches** in the neck.
- Enters the cranial cavity, joins the **Basilar artery** (formed by the **union** of two **Vertebral arteries**) and forms **Arterial circle of Willis** to supply brain.
- In addition, it supplies,
 - **Nose**
 - **Scalp**
 - **Eye**



Subclavian artery

- **Origin of Subclavian Artery:**

Left from **arch of aorta**

Right from **brachiocephalic trunk**

It continues, at **lateral border** of first rib, as **axillary artery** of upper limb

- **Main branches:**

Vertebral artery (remember me from Basilar artery?); **Supplies brain & spinal cord**

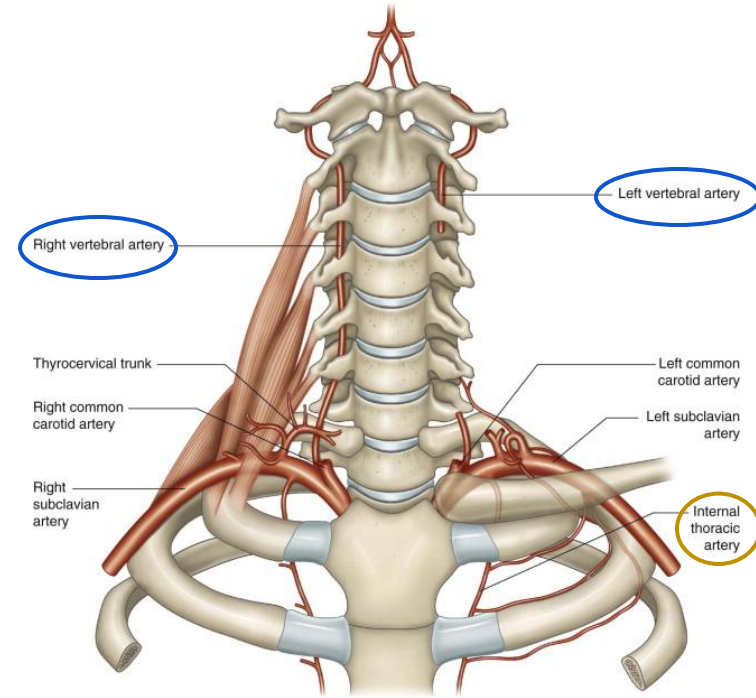
Note: The vertebral artery ascends through all cervical (C1-C6) transverse foramen EXCEPT C7

Internal thoracic artery: **supplies thoracic wall**

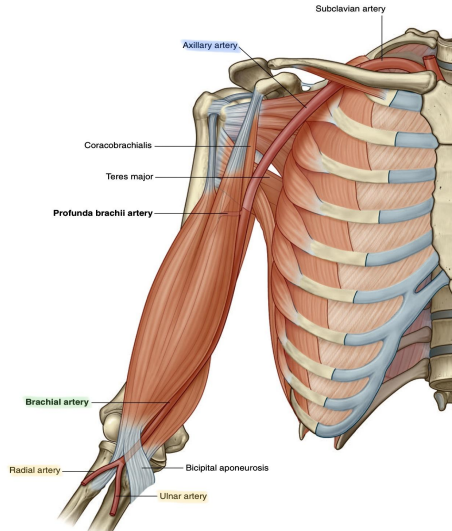
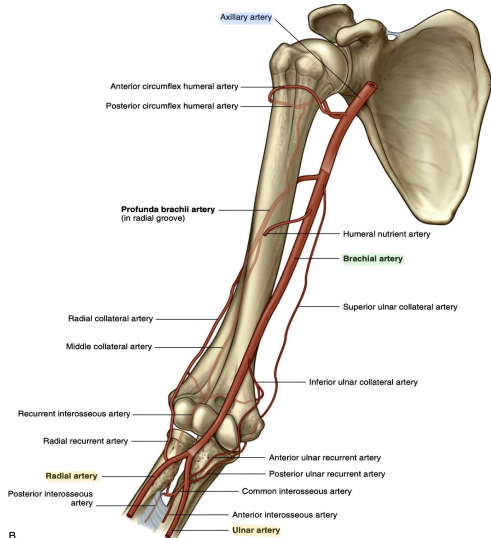
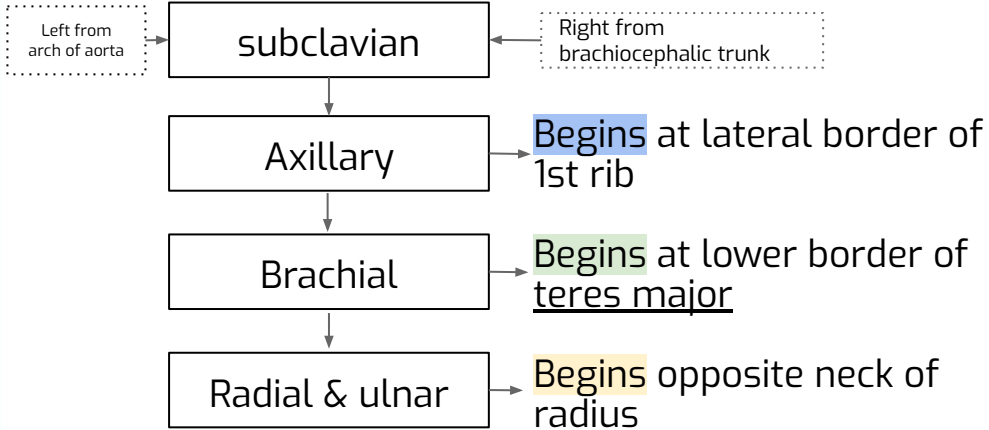
Note: Descending behind the sternum, it also supplies the mammary gland in females



Please study well so we can make MBS proud of us



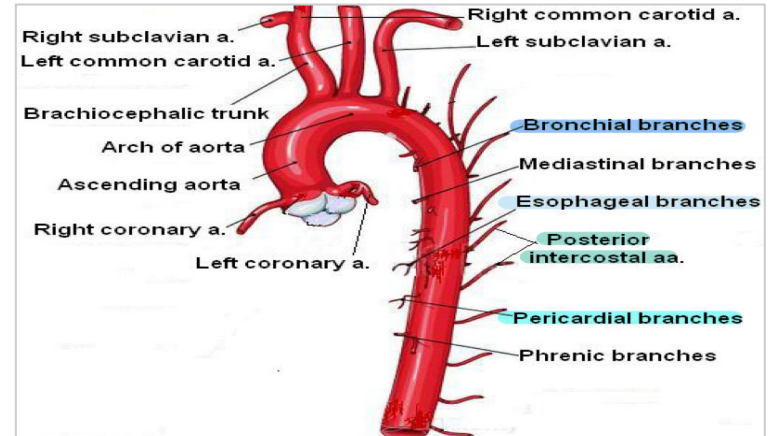
Arteries of the upper limb



Descending thoracic aorta

- It is the continuation of aortic arch.
- At the level of the 12th thoracic vertebra, it passes through the diaphragm and continues as the **abdominal aorta**.

Extra information from Respa: It passes through the Aortic aperture



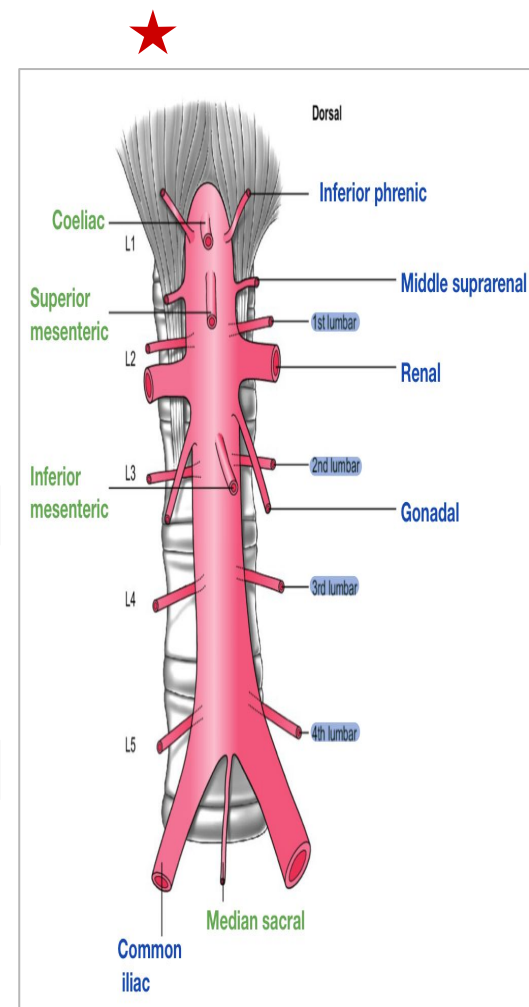
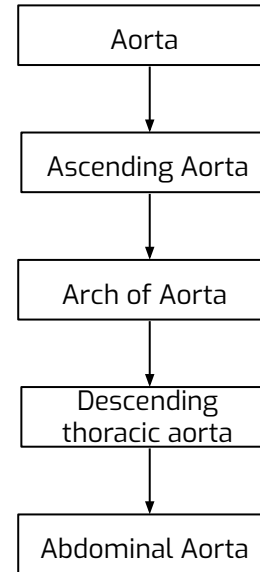
Branches:

- Bronchial
- Esophageal
- Posterior intercostal
- Pericardial

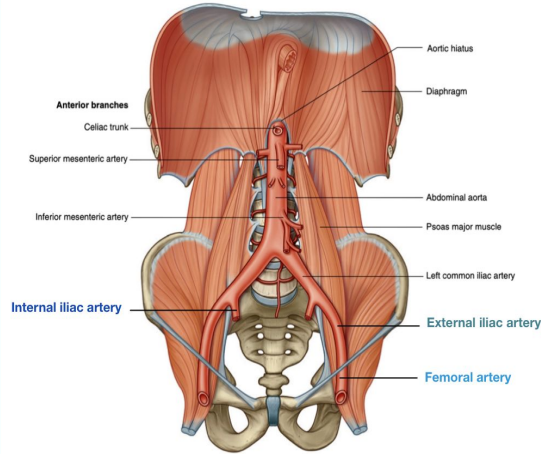
Abdominal Aorta & its main branches

- It enters the abdomen through the **aortic opening of diaphragm. (T12)**
- At the level of **lower border of L4**, it divides into **two common Iliac arteries**.
- Branches: divided into two groups:

Single branches	Paired branches
<ol style="list-style-type: none">1. Coeliac2. Superior mesenteric3. Inferior mesenteric4. Median sacral	<ol style="list-style-type: none">a. Inferior phrenicb. Middle suprarenalc. Renald. Gonadale. Four pairs of lumbar arteriesf. Common iliac
1, 2 & 3 supply the gastrointestinal tract	



Branches of common iliac artery



- External iliac artery:

↳ continues (at midpoint of inguinal ligament) as femoral artery which is the main supply for lower limb.

- Internal iliac artery:

↳ supplies pelvis. Except ovaries & testes which are supplied by the abdominal aorta

Arteries of the lower limb

- Femoral Artery

↳ Is the main arterial supply to lower limb. (قناة اكم قبل شوي ماري ليش كاتعين نوحدها)

↳ Is the continuation of external iliac artery behind the midpoint of the **inguinal ligament**. (III)

↳ Passes through **adductor hiatus** and continues as:

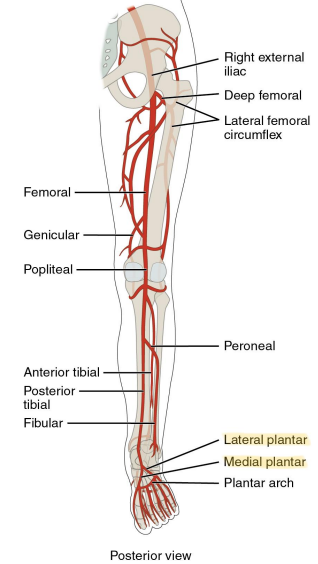
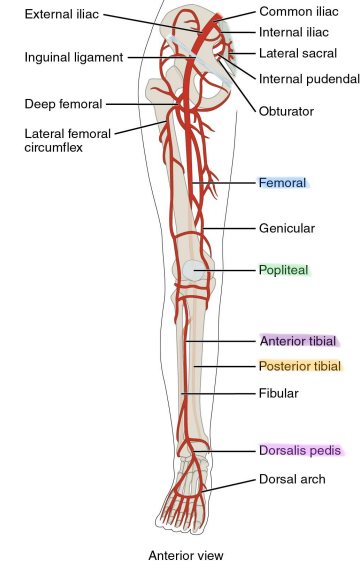
- Popliteal Artery

↳ Deeply placed in the **popliteal fossa**.

↳ Divides, at lower end of popliteal fossa into:

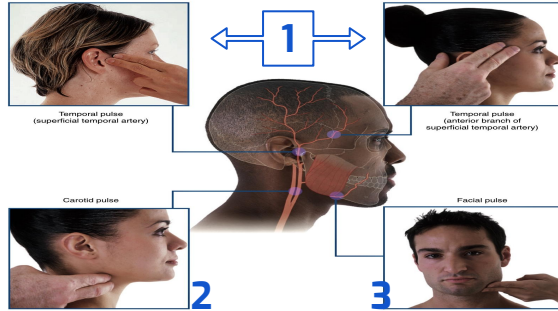
1-Anterior Tibial Artery (continues as Dorsalis Pedis Artery)

2-Posterior Tibial Artery (divides into Medial & Lateral Plantar Arteries)



Pulse points

Head & neck



1. Temporal pulse

- Superficial temporal artery
- Anterior branch of Superficial temporal artery

Palpated: Above & in front of the tragus of ear

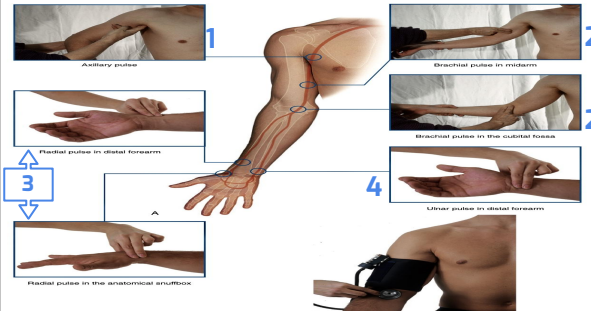
2. Carotid pulse

Palpated: Just below the angle of the mandible

3. Facial pulse

Palpated: Opposite the antero-inferior border of Masseter muscle

Upper limb



1. Axillary pulse

Palpated: Below the lateral wall of the axilla

2. Brachial pulse in:

- Mid-arm
- Cubital fossa, Palpated: medial to the biceps tendon

3. Radial pulse in:

- Distal forearm Palpated: lateral to tendon of flexor carpi radialis muscle

- Anatomical snuffbox

4. Ulnar pulse Palpated: lateral to tendon of flexor carpi ulnaris

Lower limb



1. Femoral pulse

Palpated: below inguinal ligament, midway between anterior superior iliac spine & Symphysis pubis

2. Popliteal pulse

Palpated: in the center of popliteal fossa

3. Posterior tibial pulse

Palpated: behind & below medial malleolus

4. Dorsalis pedis pulse

Palpated: Between 1st & 2nd Metatarsal bones, lateral to tendon of Extensor hallucis longus

MCQ

Q1: Abdominal aorta will begin at:

- A.** T12
- B.** L4
- C.** S4
- D.** T7

Q2: Celiac artery is:

- A.** Paired abdominal artery
- B.** Branch of left brachiocephalic artery
- C.** Single abdominal artery
- D.** Branch of renal artery

Q3: Gonads are supplied by branches of:

- A.** Descending aorta
- B.** External iliac artery
- C.** Abdominal aorta
- D.** Femoral artery

Q4: The main supply of the lower limb is: **Q5:** Arterial circle of Willis that supplies the brain is formed by the union of:

- A.** Internal iliac artery
- B.** Femoral artery
- C.** Abdominal aorta
- D.** Brachial artery

- A.** Right common carotid and right subclavian arteries
- B.** Two vertebral arteries
- C.** Left common carotid and left subclavian arteries
- D.** Brachiocephalic trunk and right subclavian

Q6: Has three dilatations at its base called aortic sinuses:

- A.** Arch of aorta
- B.** Ascending aorta
- C.** Abdominal aorta
- D.** Descending thoracic aorta

MCQ

Q7: Abdominal aorta is divided into 2 common iliac arteries at the level of:

- A. T4
- B. Sternal angle
- C. 5th right intercostal space
- D. L4

Q10: Which of the following is not a part of the aorta:

- A. Aortic arch
- B. Ascending aorta
- C. Abdominal aorta
- D. Ascending thoracic aorta

Q8: Pulmonary arteries carry:

- A. Oxygenated blood
- B. Deoxygenated blood
- C. Venous blood
- D. Both B & C

Q11: Right and left coronary arteries arise from:

- A. Aortic arch
- B. Ascending aorta
- C. Aortic sinuses
- D. Thoracic aorta

Q9: Which of the following is not true regarding arteries:

- A. Can anastomose
- B. Have valves in their structures
- C. Have elastic walls
- D. Generally carry oxygenated blood

Q12: Which of the following is NOT a branch of the aortic arch:

- A. Right subclavian artery
- B. Brachiocephalic trunk
- C. Left common carotid artery
- D. Left subclavian artery

MCQ

Q13: Which of the following is a functional end artery?

- A.** Splenic artery
- B.** Brachial artery
- C.** Central artery of the retina
- D.** Superior mesenteric artery

Q14: Which of the following is a branch of external carotid artery?

- A.** Facial artery
- B.** Vertebral artery
- C.** Basilar artery
- D.** Internal thoracic artery

Q15: Pulsations of which one of the following arteries could be checked below the angle of the mandible?

- A.** Facial
- B.** Lingual artery
- C.** Superficial temporal
- D.** Carotid

SAQ :

- 1 : What does the external carotid artery supply?
- 2 : List the main branches of the subclavian artery.
- 3 : List the branches of the descending thoracic aorta.
- 4: List the main pulse points in the lower limb.

SAQ Answers :

1 :

- Scalp (superior temporal artery, occipital artery, posterior auricular arteries)
- Face (facial artery)
- Maxilla and mandible (maxillary artery)
- Tongue (lingual artery)
- Pharynx (ascending pharyngeal artery)
- Thyroid gland (superior thyroid artery)

2 :

- Vertebral artery: supplies brain and spinal cord
- Internal thoracic artery: supplies thoracic wall


3 :


- Pericardial
- Esophageal
- Bronchial
- Posterior intercostal

4:

- Femoral pulse
- Popliteal pulse
- Posterior tibial pulse
- Dorsalis pedis pulse

Team leaders

Abdullah Alsubaihi 

Abeer Awwad 

Team Members :

- Shayma Abdullah
 - Sumo Abdulrahman
 - Fatimah Saad 
 - Shaden Alsaiedan
 - Ghada Aljedaie
 - Joud alnujaidi
 - Shahad almezel 
- Osama Alharbi
 - Nawaf Al-Shahrani
 - Bader Alrayes 
 - Nawaf Alsaadi
 - Mohammed Akresh 
 - Ibrahim Alabdulkarim 
-

This lecture is done by : 