

Major arteries of the body



Objectives:

At the end of the lecture, the student should be able to:

- 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.

Red: important notes.

Grey: extra information.

Arteries

- Arteries carry blood from the heart to the body.
- All arteries, carry **oxygenated blood**, EXCEPT the **pulmonary artery or trunk** which carry deoxygenated blood to the lungs.
- The flow of blood depends on the **pumping action of the heart** "contraction", arteries have **elastic wall** containing **NO valves**.
- The branches of arteries supplying adjacent areas normally **ANASTOMOSE** with one another freely providing backup routes for blood to flow if one artery is blocked, e.g. **arteries of limbs**.
- The arteries whose terminal branches do not anastomose with branches of adjacent arteries are called "**END ARTERIES**". End arteries are of two types:
 - *Anatomic (True) End Artery: When NO anastomosis exists, e.g. **artery of the retina**. "if it blocked it will lead to blindness "
 - *Functional End Artery: When an anastomosis exists but is incapable of providing a sufficient supply of blood, e.g. **splenic artery, renal artery**.

• The **largest** artery in the body , begins at the left ventricle and end in abdomen at the 5th lumbar vertebra .

• Carries oxygenated blood to all parts of the body . Is divided into 4 parts:

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 & Left coronary arteries (supplying heart), arise from aortic sinuses.

arch of aorta

-Continuation of the ascending aorta.

-Leads to descending aorta.

--begins and ends at the sternal angle .

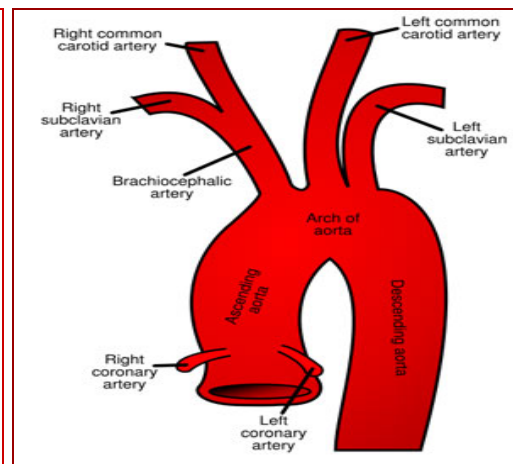
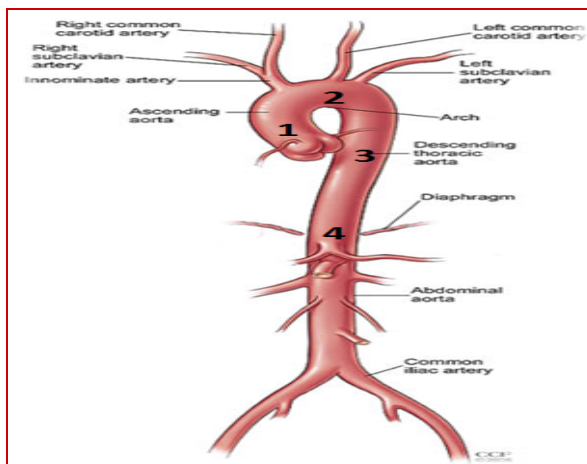
-Located behind the lower part of manubrium sterni and on the left side of trachea. "if manubrium broken the arch of aorta will be affected ."

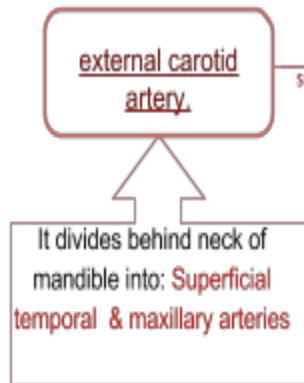
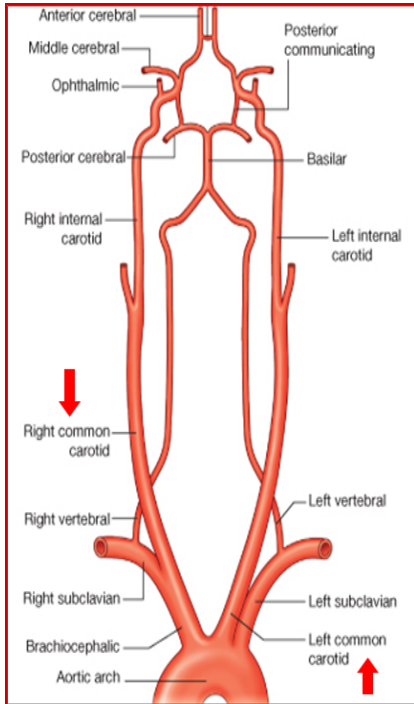
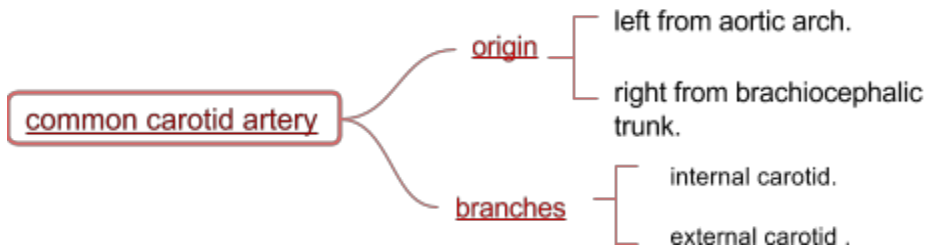
branches

brachiocephalic trunk

left common carotid artery

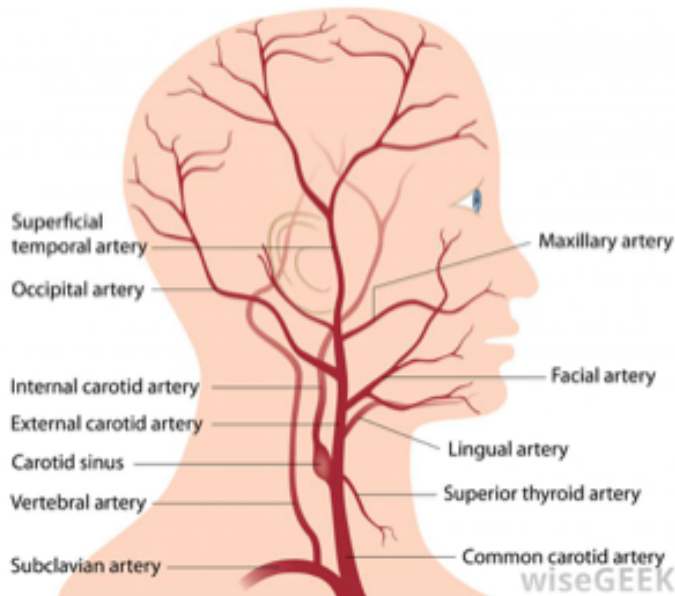
left subclavian artery .





- It supplies
- Scalp:** Superficial temporal, occipital, & posterior auricular "behind the ear" arteries
 - Face:** Facial artery
 - Maxilla & mandible:** Maxillary artery
 - Tongue:** Lingual artery
 - Pharynx:** ascending pharyngeal artery
 - Thyroid gland:** Superior thyroid artery

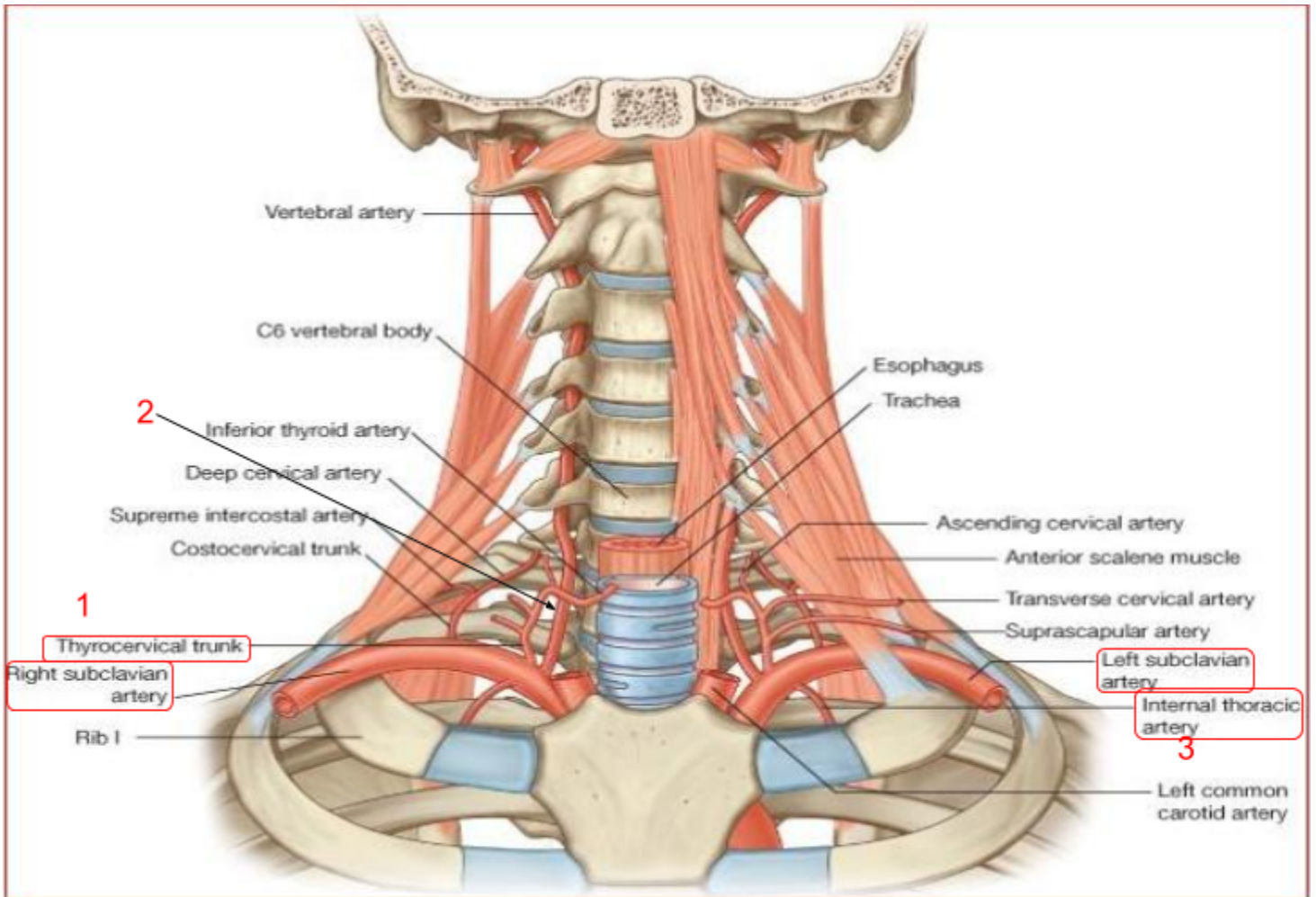
note: facial and lingual arteries are tortuous "منعرج" because muscles of face are always contracted cause pressure on arteries leading to decrease in blood supply so the artery must look like snake .



¹ فروه الرأس scalp

auricular : relating to the ear or to the sense of hearing

Subclavian Artery



● It is the main source of the arterial supply of the **upper limb**.

● **Two** Subclavian Arteries (**Right & left**)

right subclavian: from **Brachiocephalic trunk**.

left subclavian: from **Arch of Aorta**.

● its main branches:

1. **Thyrocervical trunk**: supplies thyroid gland & neck
2. **Vertebral artery**: supplies brain & spinal cord (passes through transversus processes of the cervical vertebrae)
3. **Internal thoracic artery**: supplies breast & thoracic wall

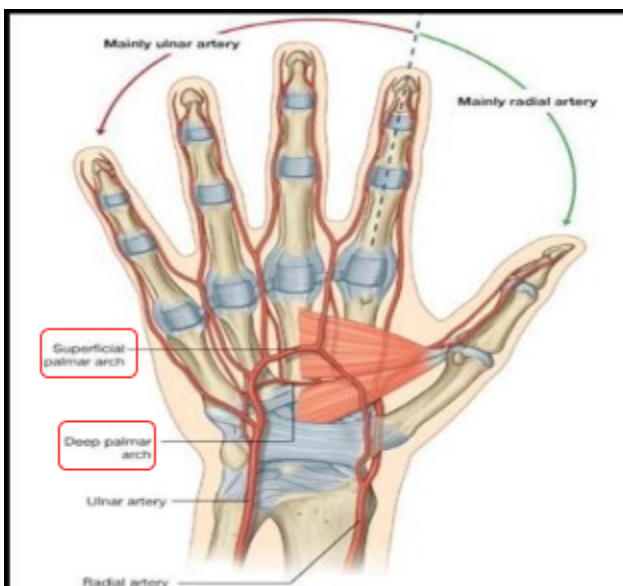
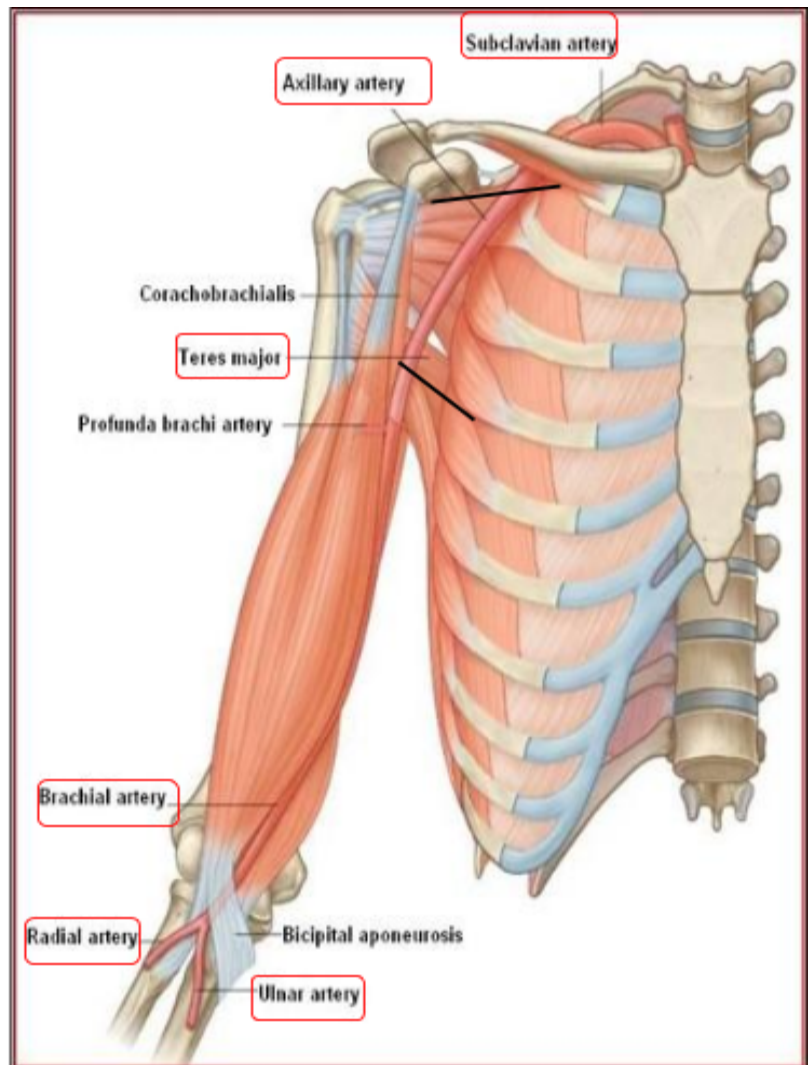
ARTERIES OF UPPER LIMB

Axillary artery

Begins at the **lateral border of the first rib**, as continuation of the subclavian artery, passes through the **axilla** and continues in the arm, **at the lower border of teres major muscle**, as the brachial artery.

Brachial artery

Descends close to the medial side of the humerus, passes in front of the elbow joint (**cubital fossa**). Divides, **at the level of neck of radius**, into two terminal branches: **Ulnar & Radial**. The ulnar & radial arteries descend in the **forearm**, enter the hand and form the **palmar arches**



2 palmar Arches:

- **Superficial** palmar arch (distal)
- **Deep** palmar Arch (proximal)

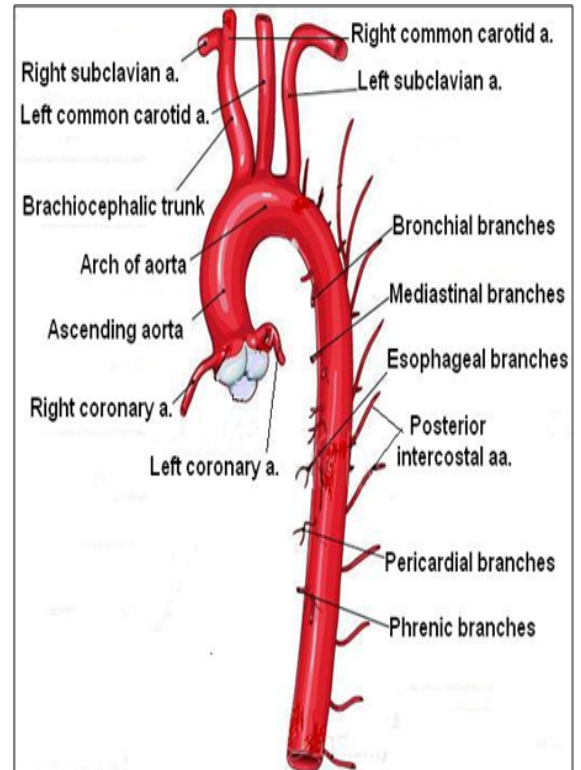
Descending Thoracic Aorta:

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**.

its branches:

- Pericardial
- Esophageal
- Bronchial
- Posterior intercostal

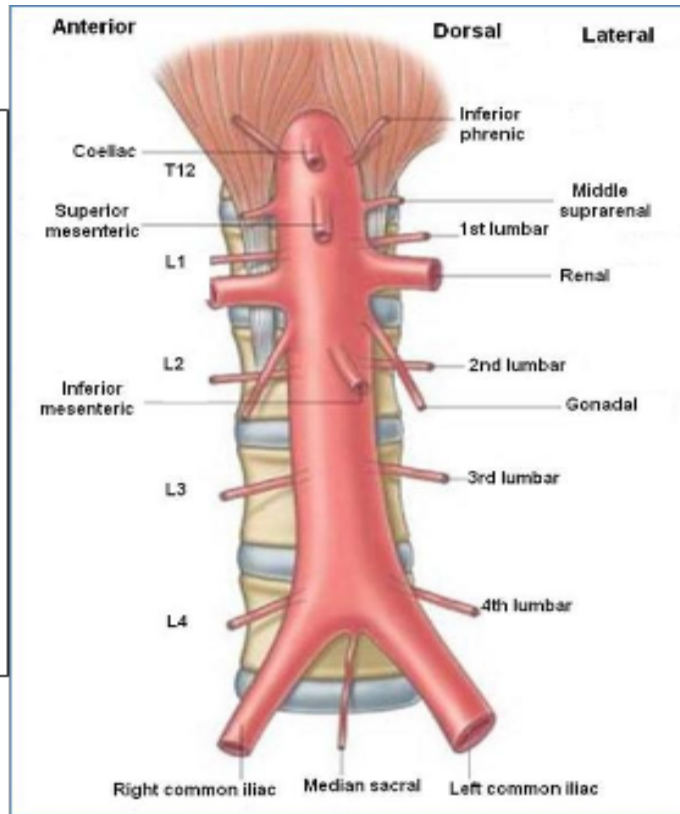


Descending Abdominal Aorta:

- It enters the abdomen through the **aortic opening of diaphragm at (T12)**.
- Terminates at the level of **L4**, by dividing into **two common Iliac arteries**.
- Branches of abdominal aorta are divided into two groups:
 - Single branches
 - Paired branches

Main branches of Abdominal Aorta:

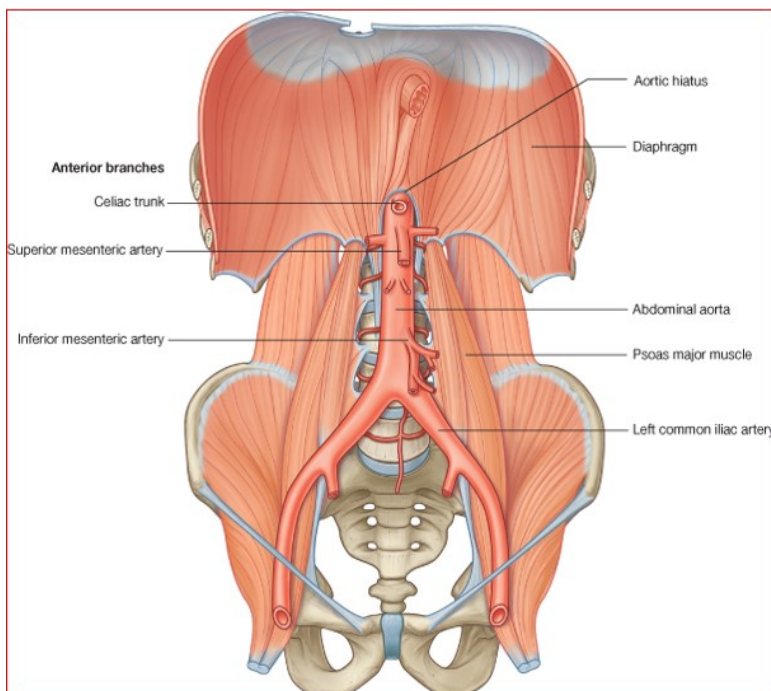
single branches:
 supply gastrointestinal tract:
 1. Celiac Trunk
 2. Superior mesenteric artery
 3. Inferior mesenteric artery
 4. median sacral



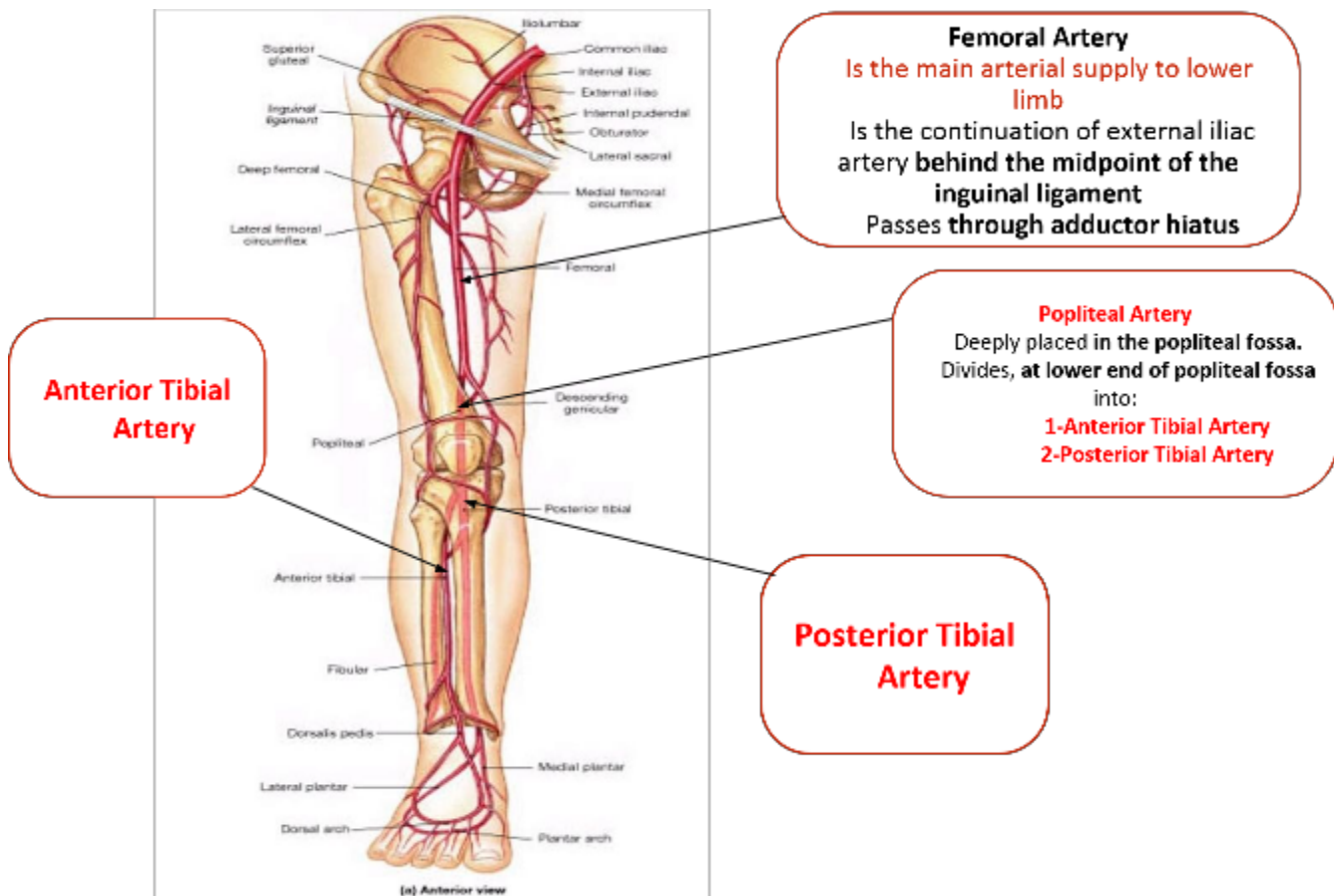
paired branches:
 1. Inferior phrenic
 2. Suprarenal
 3. Renal
 4. Gonadal (Testicular or Ovarian)
 5. Lumbar
 6. Common iliac (Terminal branches)

● Each **common iliac artery** divides into:

1. **External iliac artery:** continues (at midpoint of inguinal ligament) as **femoral artery** the main supply for lower limb
2. **Internal iliac artery:** which supplies the **pelvis & perineum**.



Arteries of the Lower Limb



- **Anterior tibial artery:** continues as the **dorsalis Pedis** artery on the dorsum of foot.
- **Posterior tibial artery :** supply the posterior compartments & sole of foot.

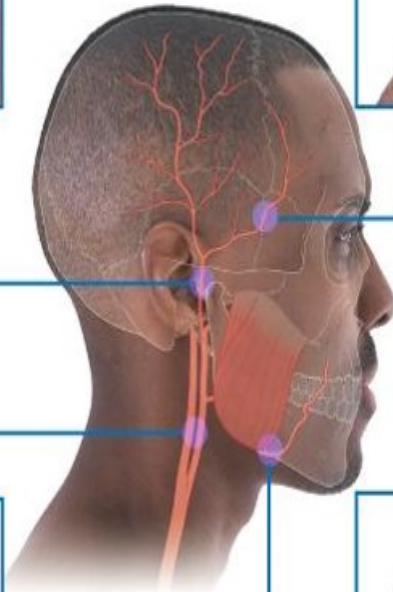
Pulse Points in Head & Neck



Temporal pulse
(superficial temporal artery)



Temporal pulse
(anterior branch of
superficial temporal artery)



Carotid pulse



Facial pulse



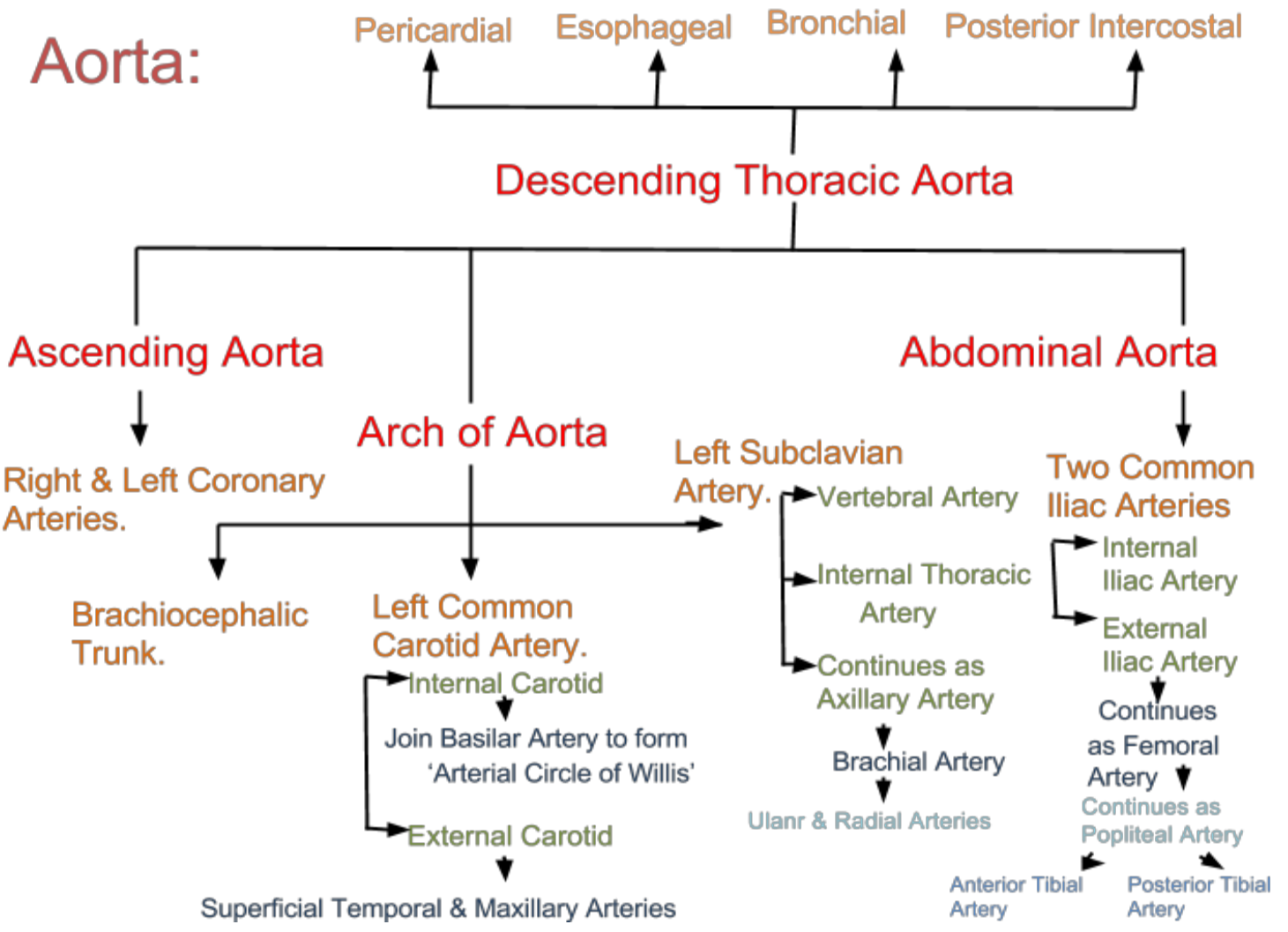
Pulse Points in Upper Limb



Pulse Points in Lower Limb



Summary:



MCQs:

1- Arterial circle of Willis that supplies the brain, formed by union of?

- a) R.common carotid and R.subclavian arteries.
- b) two vertebral arteries.
- c) L.common carotid and L.sub clavian arteries.
- d) Brachiocephalic trunk and R.subclavian.

Answer : B

2- Abdominal aorta is divides into two common Iliac arteries at the level of?

- a) T4.
- b) Sternal angle.
- c) 5th right intercostal space.
- d) L4.

Answer :D

3- The gonadal artery supplies which structures?

- a) Testis.
- b) Ovaries.
- c) Uterus*.
- d) A+B only.

*Uterus is supplied by internal iliac artery(branch of abdominal aorta)

Answer :D

4- EXTERNAL ILIAC ARTERY to supply the lower limb continues as ?

- a) Femoral artery
- b) Coeliac
- c) Superior mesenteric
- d) Inferior mesenteric

Answer : A

5- Pulmonary arteries carry:

- a) Oxygenated blood
- b) Deoxygenated blood
- c) Venous blood
- d) Both b and c

answer : D

6- Which of the following is NOT true regarding arteries:

- a) Can anastomose
- b) Have valves in their structure
- c) Have elastic wall
- d) Carry oxygenated blood generally.

Answer: B

7- Which of the following is NOT a part of Aorta:

- a) Aortic arch
- b) Ascending aorta
- c) Abdominal aorta
- d) Ascending thoracic aorta

Answer: D

8- Right and left coronary arteries arise from:

- a) Aortic arch
- b) Ascending aorta
- c) Aortic sinuses
- d) Thoracic aorta

Answer: C

9- Which of the following is NOT a branch of Aortic Arch:

- a) Right subclavian artery.
- b) Brachiocephalic trunk.
- c) Left common carotid artery.
- d) Left subclavian artery.

Answer: A

10- Which of the following is true and which is false regarding the Common Carotid Artery:

- A) The right and left common carotid arteries both originate from the aortic arch
- B) Each common carotid artery divided into two branches internal and external
- C) The External branch divides on neck of mandible into: Superficial temporal & maxillary arteries
- D) Thyroid gland is supplied by the Inferior thyroid artery

Answers:

- A) F
- B) T
- C) F The External branch divides behind neck
- D) F is superior, not inferior



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(وقل رب زمني علما)