

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# MAJOR ARTERIES OF THE BODY

***PROF. AHMED FATHALLA & DR. JAMILA ELMEDANY***

# 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.

# **“ARTERIES”**

- **Blood vessels that carry blood from the heart to the body.**
- **All arteries, carry oxygenated blood, EXCEPT the PULMONARY ARTERY which carry deoxygenated blood to the lungs.**

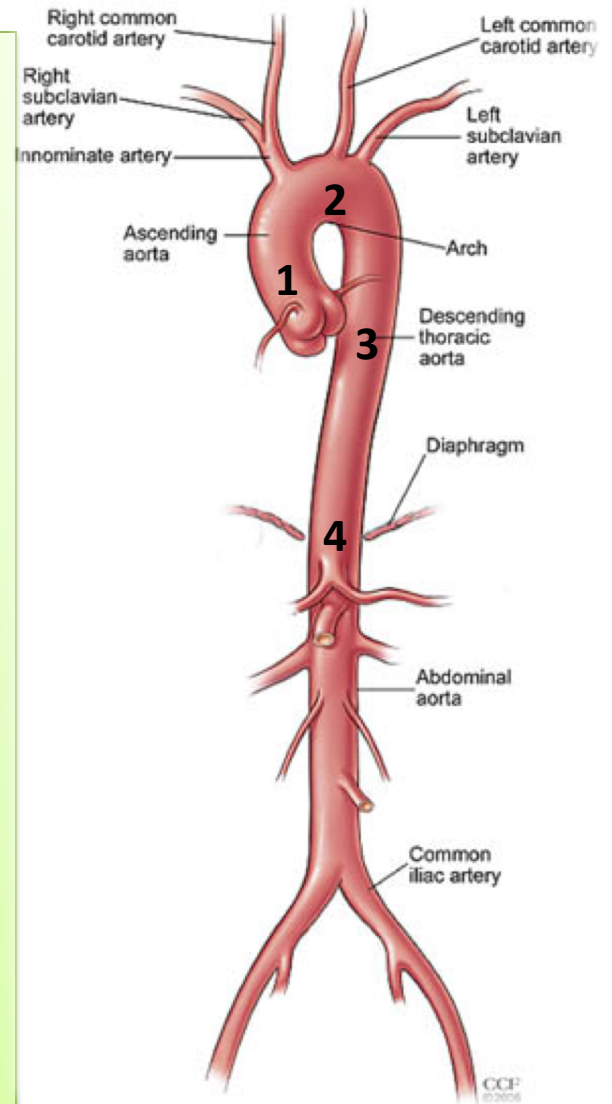
# GENERAL PRINCIPLES OF ARTERIES

- The flow of blood depends on the **pumping action of the heart**.
- 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***.
  - **Functional End Artery**: When an anastomosis exists but is incapable of providing a sufficient supply of blood, e.g. ***splenic artery, renal artery***.



# AORTA

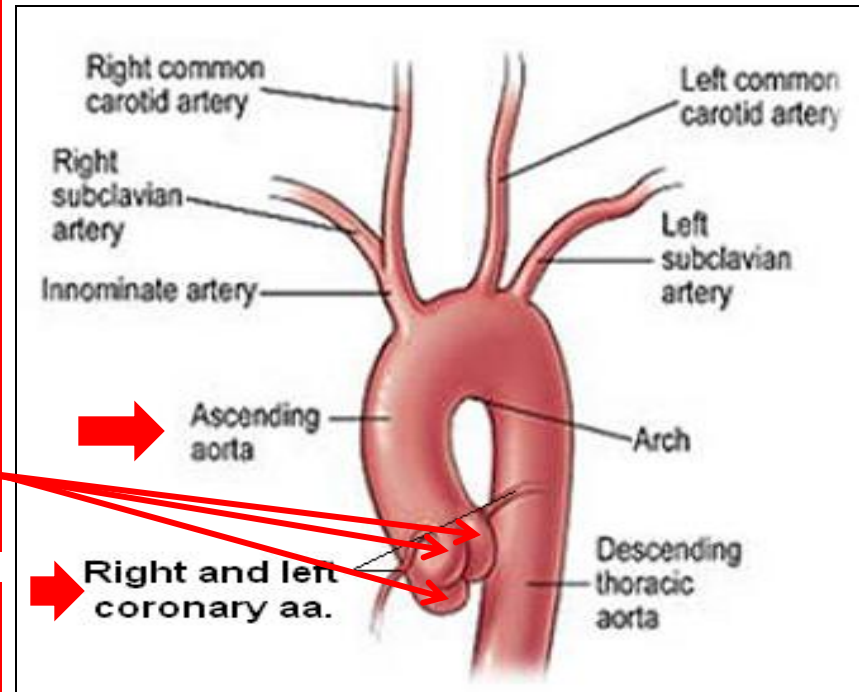
- **The largest artery in the body**
- **Carries oxygenated blood to all parts of the body**
- **Is divided into 4 parts:**
  - 1. Ascending aorta**
  - 2. Arch of aorta**
  - 3. Descending thoracic aorta**
  - 4. Abdominal aorta**



# ASCENDING AORTA

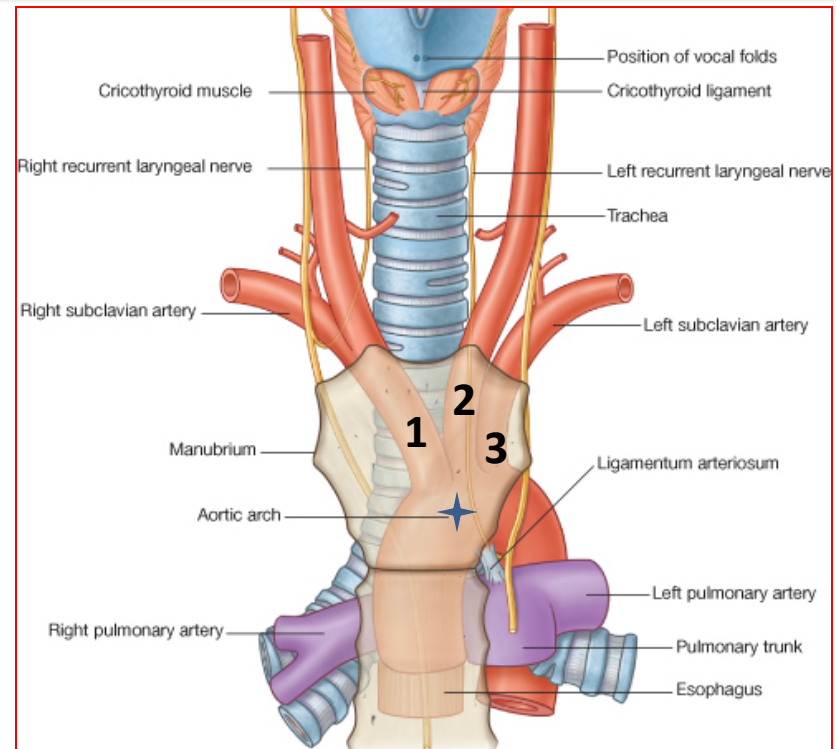
- **Originates from left ventricle.**
- **Continues as the **arch of aorta****
- **Has three dilatations at its base, called **aortic sinuses****

- **Branches:**
  - **Right & Left coronary arteries (supplying heart), arise from aortic sinuses**



# ARCH OF AORTA

- **Continuation of the ascending aorta.**
- **Leads to descending aorta.**
- **Located behind the lower part of manubrium sterni and on the left side of trachea.**



- **Branches:**
  1. **Brachiocephalic trunk.**
  2. **Left common carotid artery.**
  3. **Left subclavian artery.**

# COMMON CAROTID ARTERY

- **Origin:**

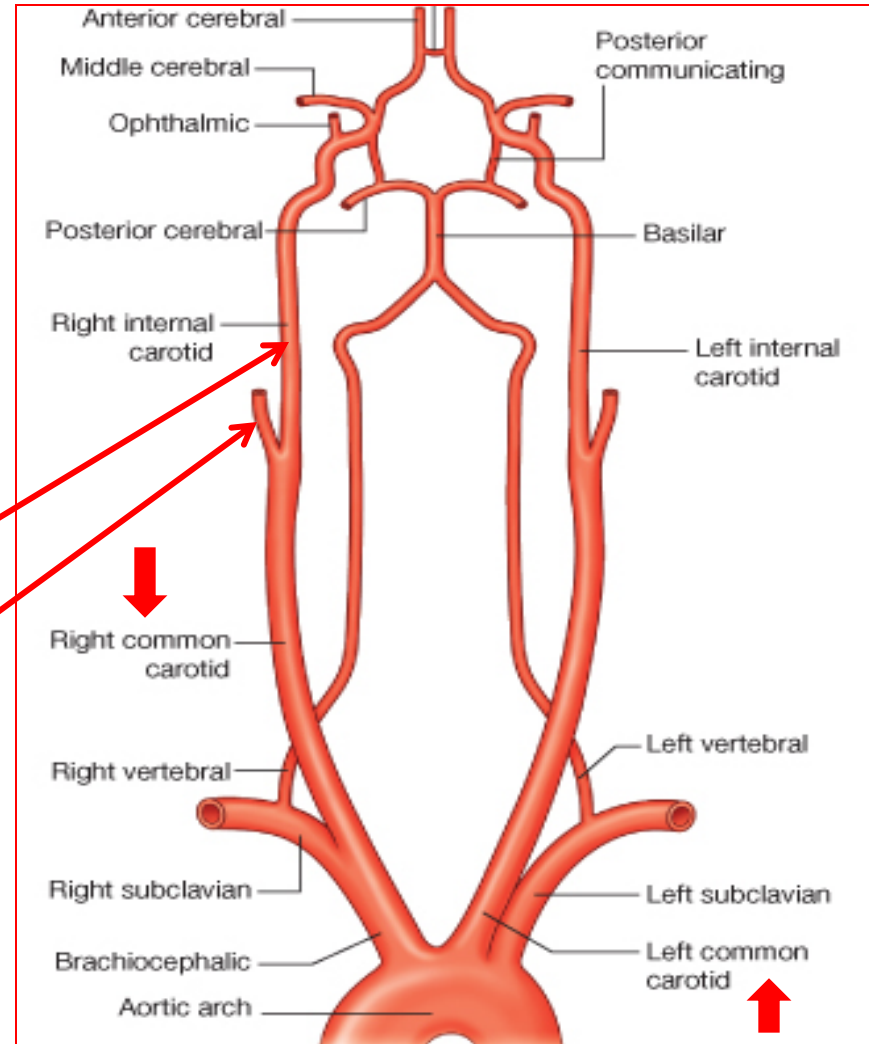
- **LEFT** from **aortic arch**.

- **RIGHT** from **brachiocephalic trunk**.

- Each common carotid divides into two branches:

- **Internal carotid**

- **External carotid**

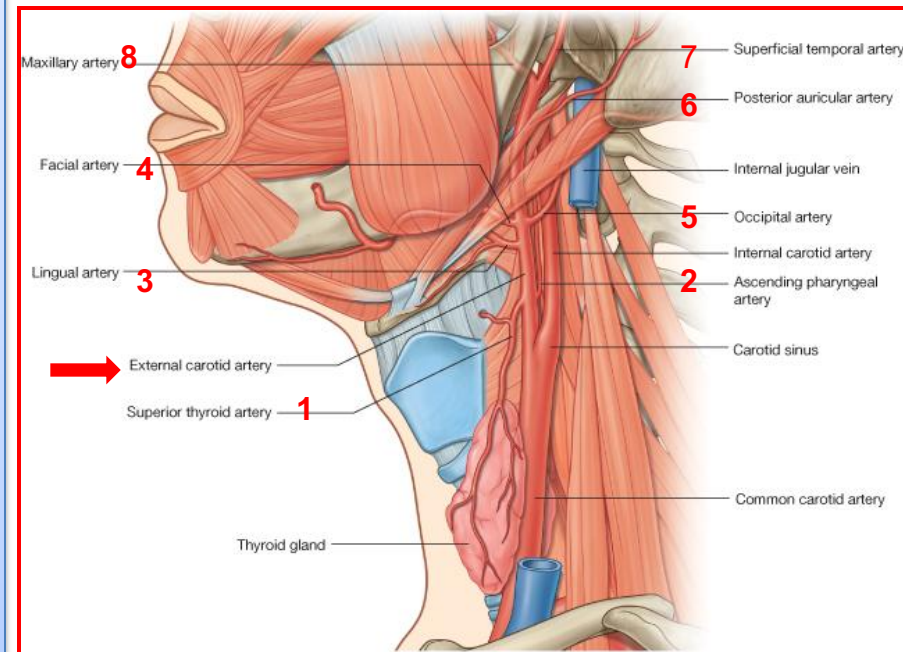


# EXTERNAL CAROTID ARTERY

It divides behind neck of mandible into: **Superficial temporal & maxillary arteries**

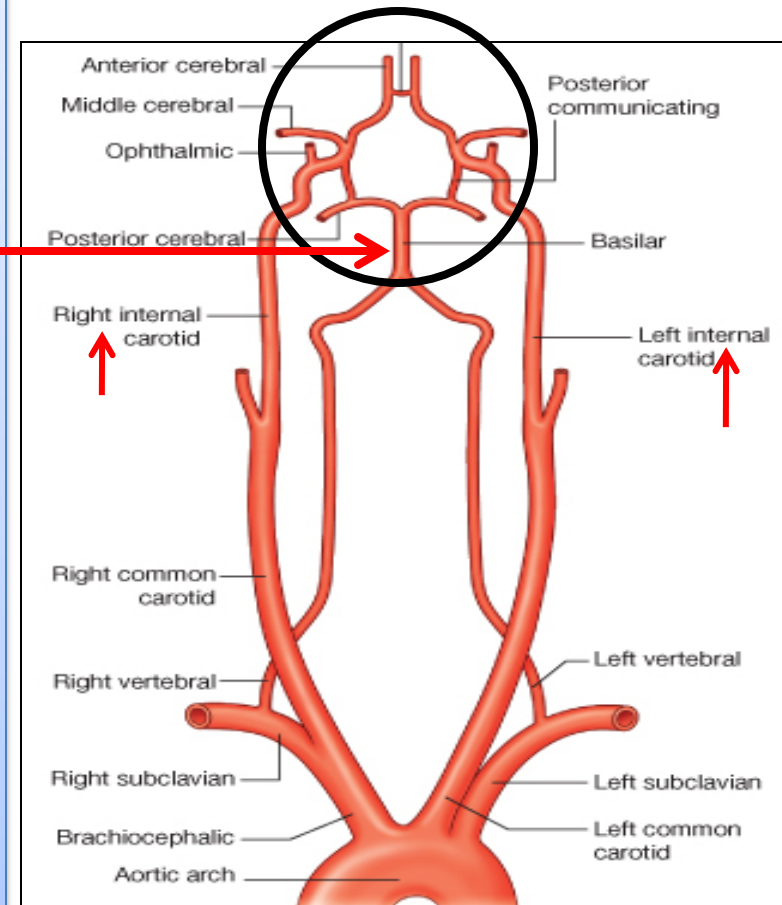
It supplies:

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



# INTERNAL CAROTID ARTERY

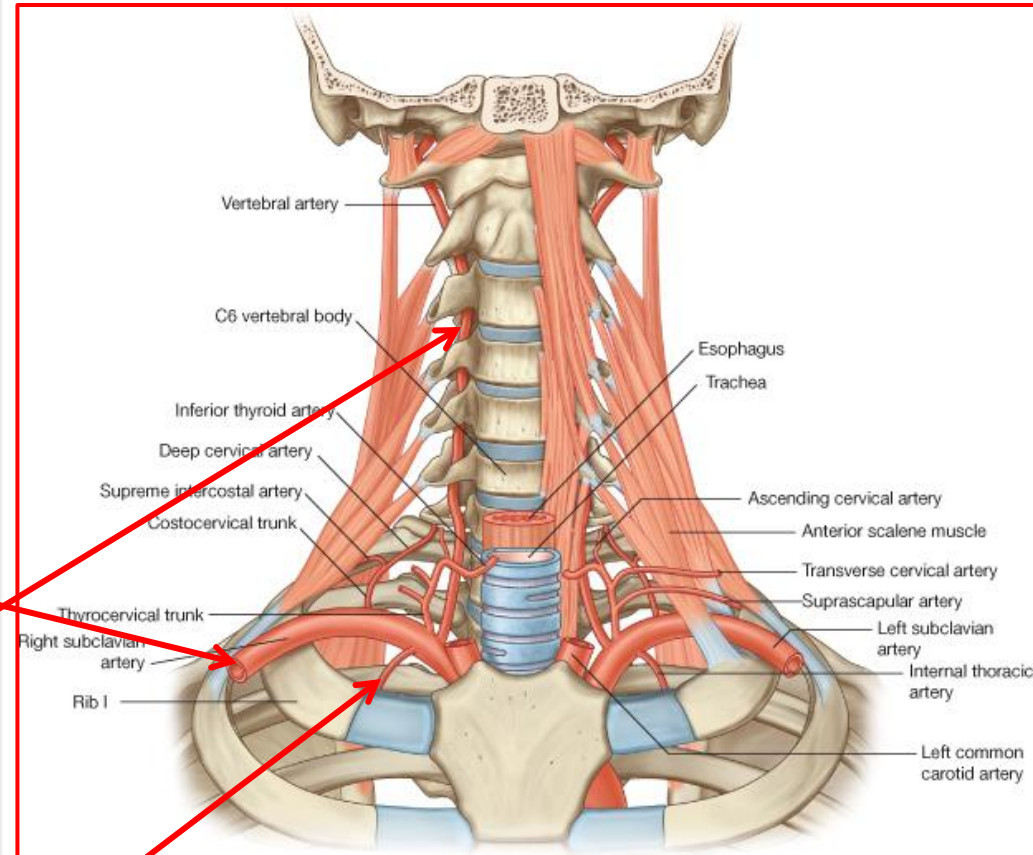
- Has **NO** branches in the neck
- Enters the cranial cavity, joins the **basilar artery** (formed by the union of two vertebral arteries) and forms '**arterial circle of Willis**' to supply brain.
- In addition, it supplies
  - Nose
  - Scalp
  - Eye



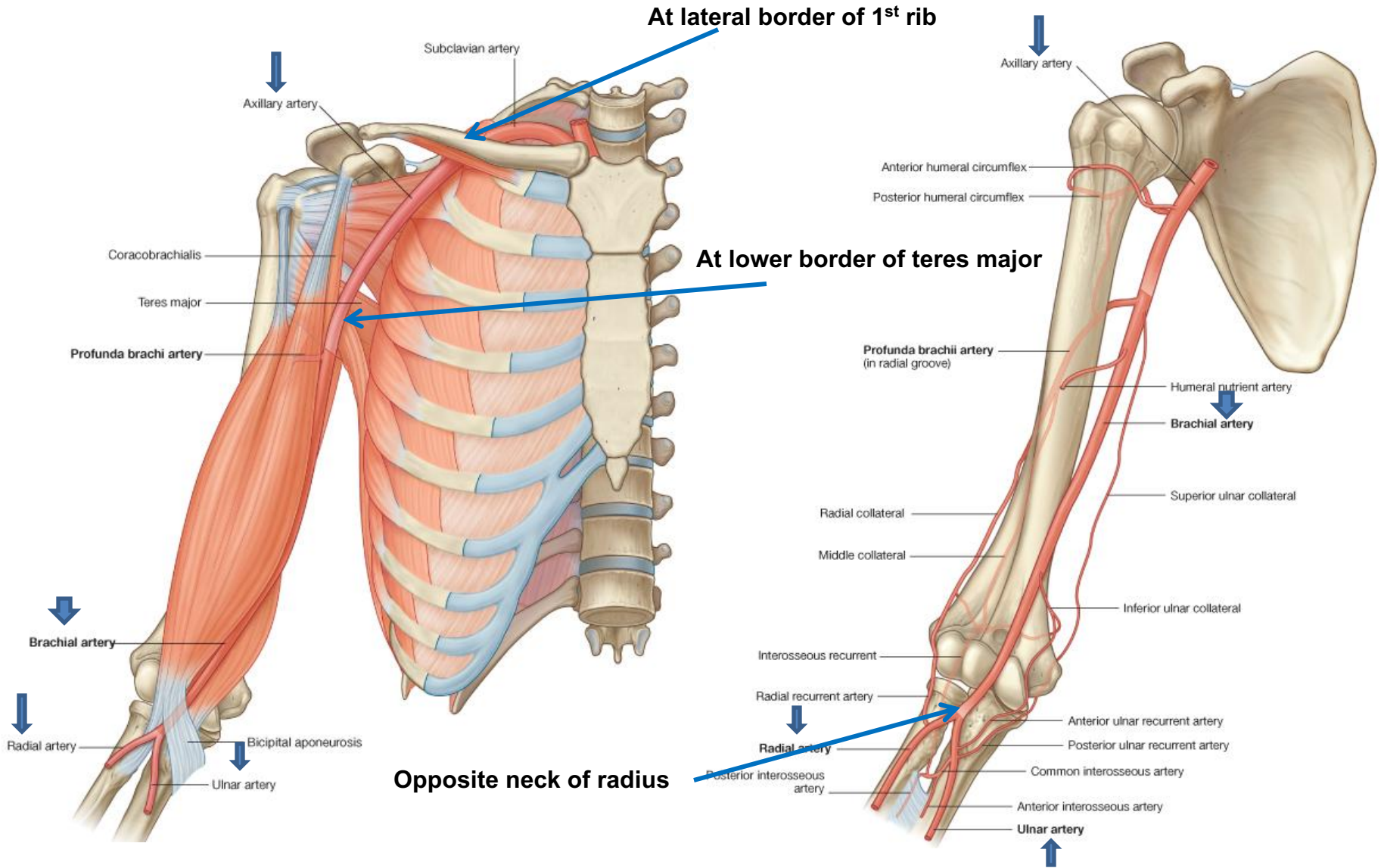


# SUBCLAVIAN ARTERY

- **Origin:**
  - **LEFT:** from **arch of aorta**
  - **RIGHT:** from **brachiocephalic trunk**
- It continues, at lateral border of first rib, as **axillary artery: artery of upper limb**
- **Main branches:**
  - **Vertebral artery:** supplies **brain & spinal cord**
  - **Internal thoracic artery:** supplies **thoracic wall**



# ARTERIES OF UPPER LIMB



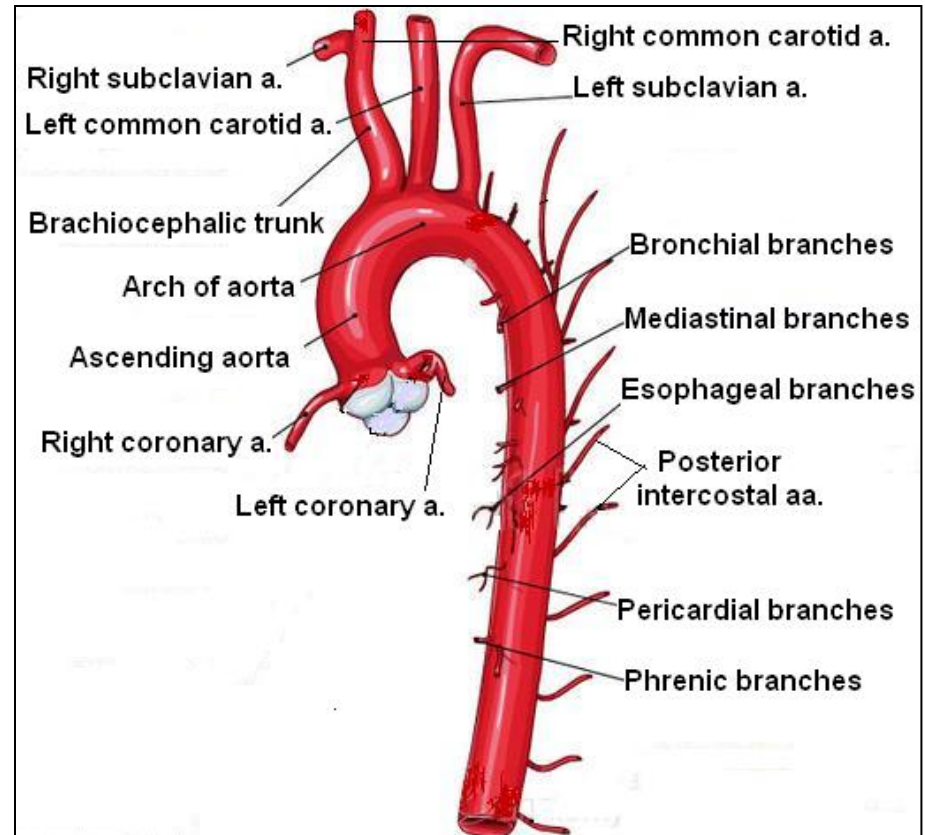


# DESCENDING THORACIC AORTA

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

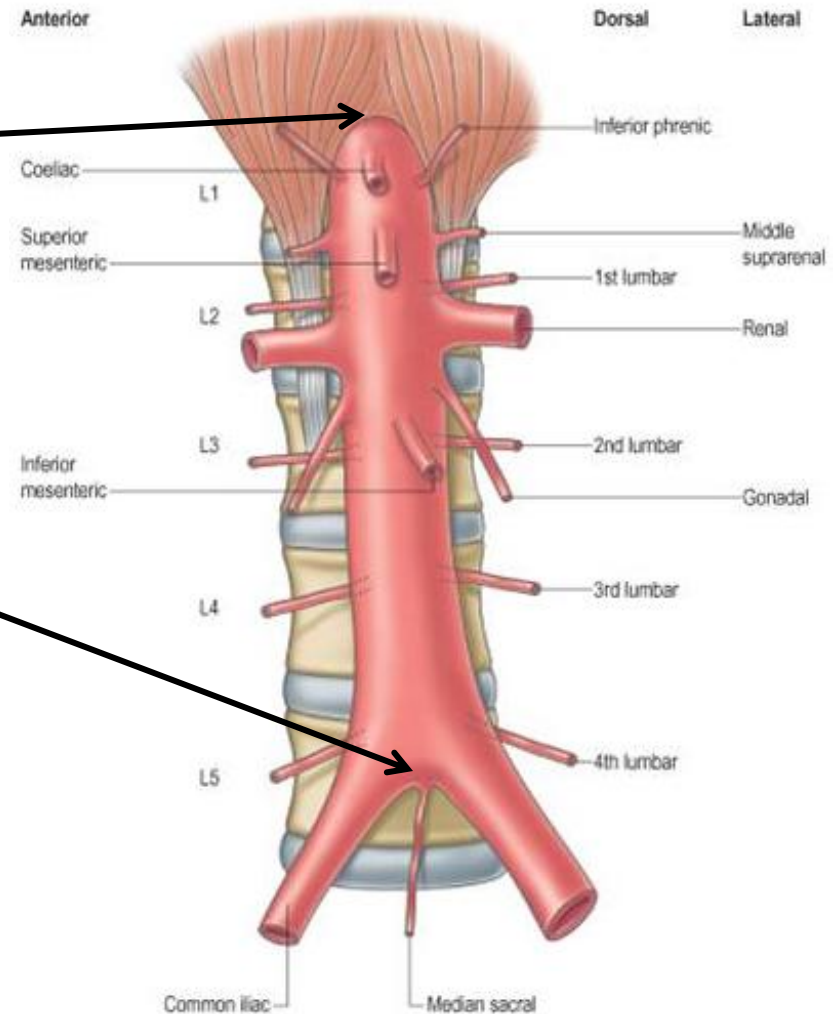
- **Branches:**

- **Pericardial**
- **Esophageal**
- **Bronchial**
- **Posterior intercostal**

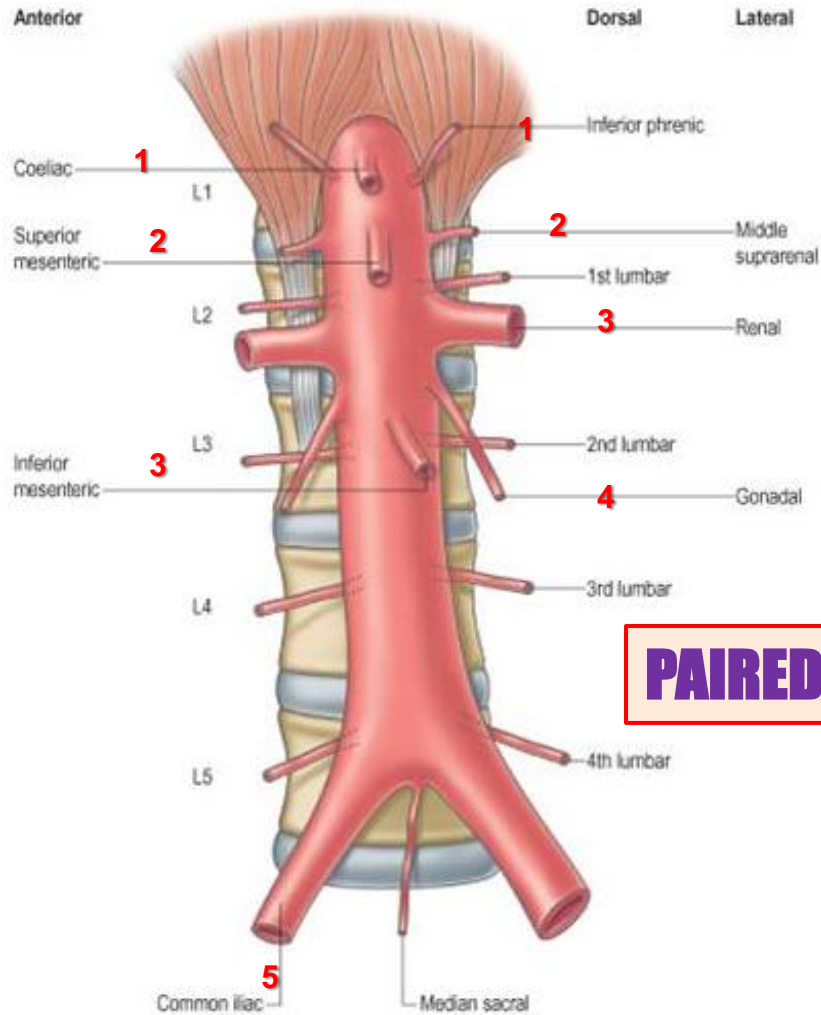


# ABDOMINAL AORTA

- It enters the abdomen through the **aortic opening of diaphragm**.
- At the level of lower border of L4, it divides into **two common iliac arteries**.
- **Branches:** divided into two groups:
  - Single branches
  - Paired branches



# MAIN BRANCHES OF ABDOMINAL AORTA

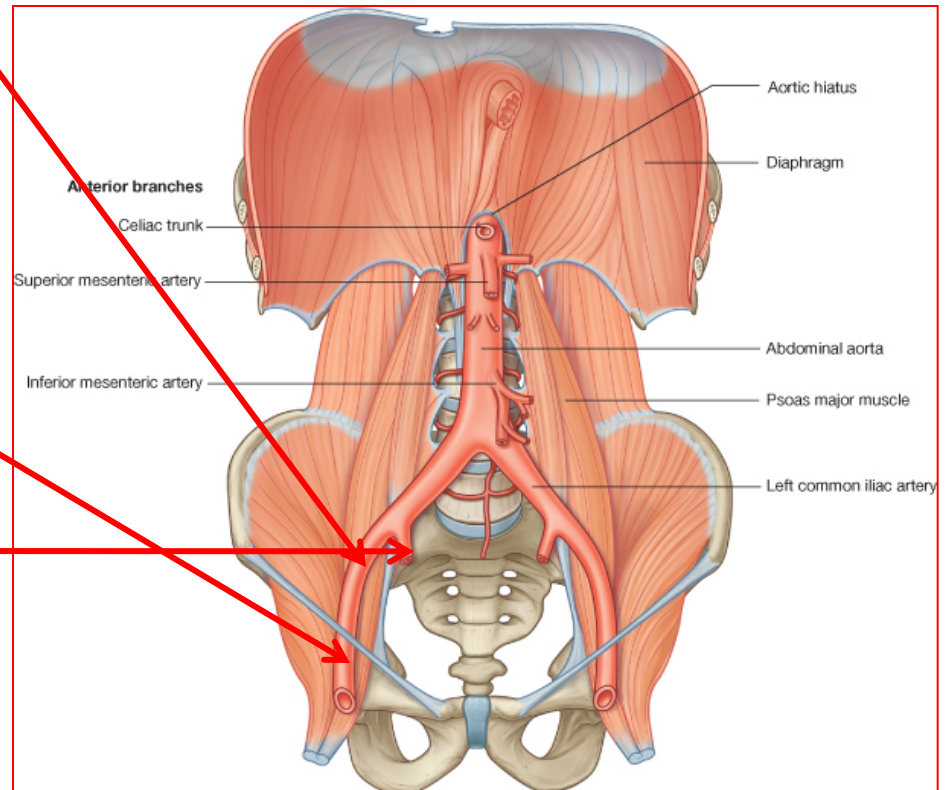


**SINGLE BRANCHES**  
SUPPLYING  
GASTROINTESTINAL  
TRACT

**PAIRED BRANCHES**

# BRANCHES OF COMMON ILIAC ARTERY

- **EXTERNAL ILIAC ARTERY:**  
continues (*at midpoint of inguinal ligament*) as **femoral artery** the main supply for **lower limb**
- **INTERNAL ILIAC ARTERY:**  
supplies **pelvis**



# ARTERIES OF LOWER LIMB

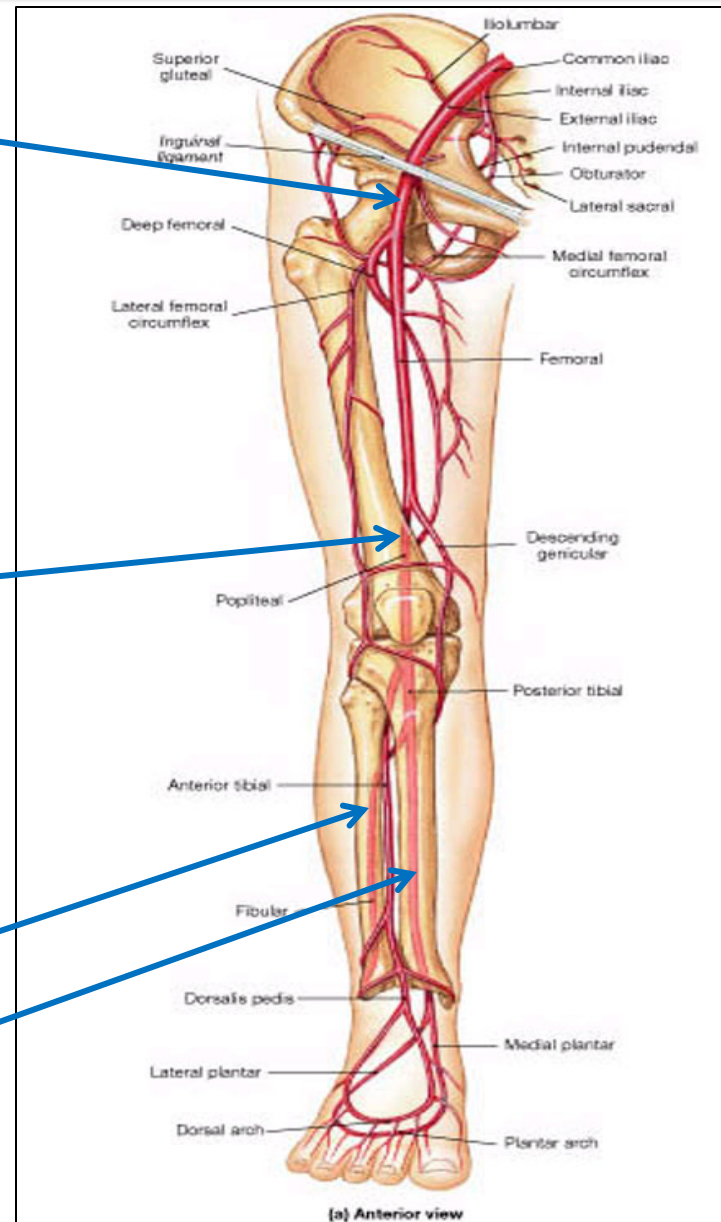
## ❖ Femoral Artery

- Is the main arterial supply to lower limb
- Is the continuation of external iliac artery **behind the midpoint of the inguinal ligament**
- 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**
- 2-Posterior Tibial Artery**



[a] Anterior view



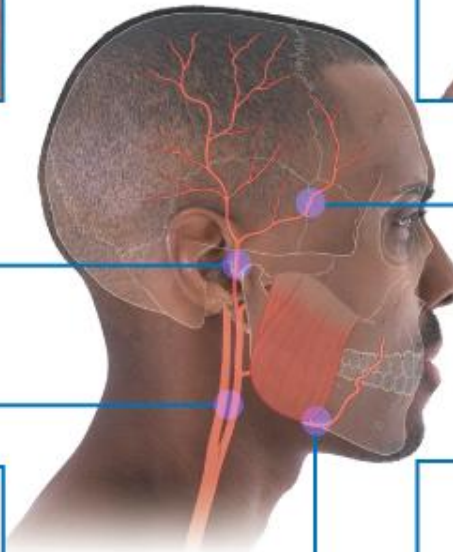
# PULSE POINTS IN HEAD & NECK



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



Femoral pulse



Popliteal pulse



Posterior tibial pulse



Dorsalis pedis pulse





**THANK YOU**