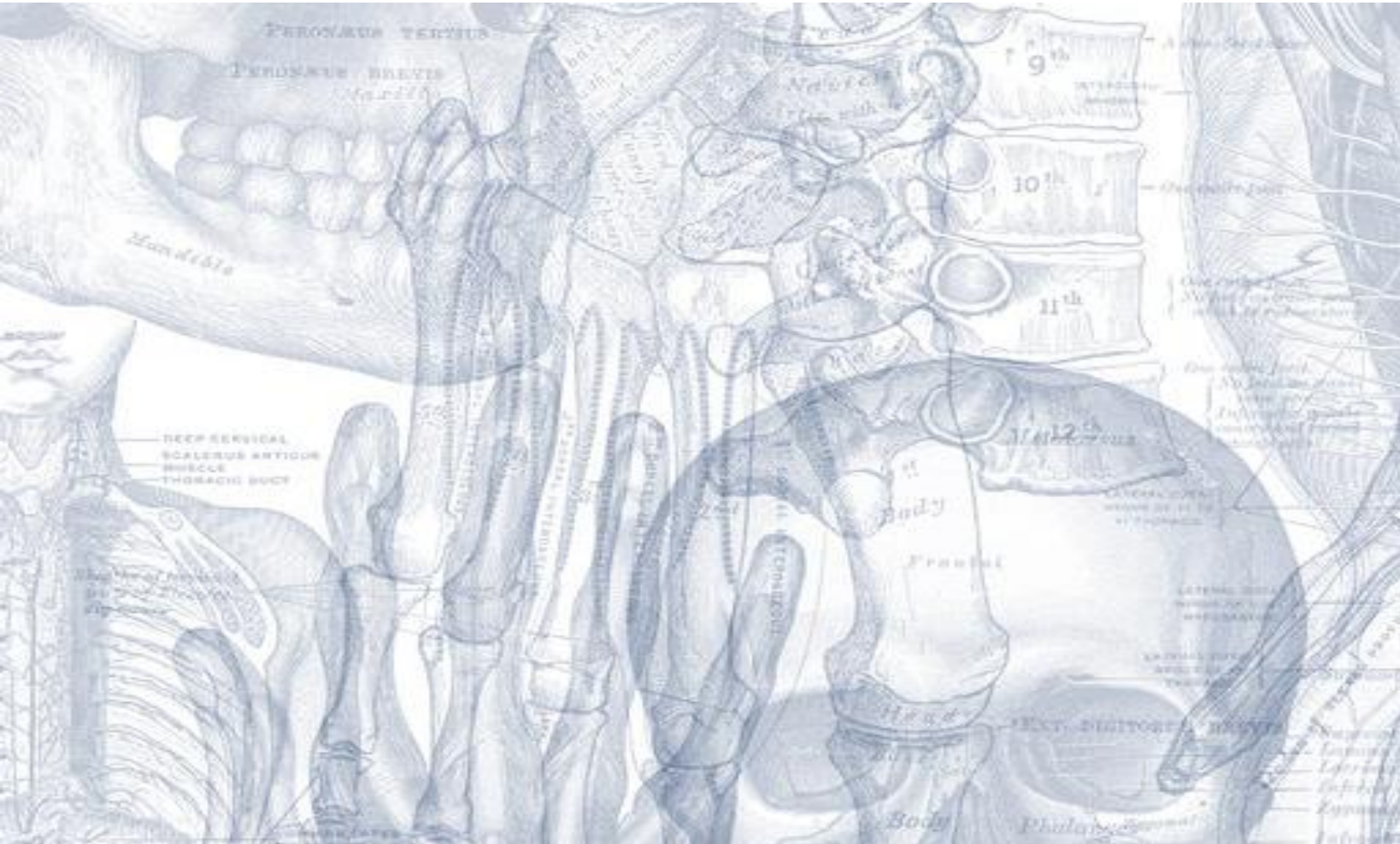


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Major Arteries of the Body

Please view our [Editing File](#) before studying this lecture to check for any changes.

Color Code

- **Important**
- **Doctors Notes**
- **Notes/Extra explanation**

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

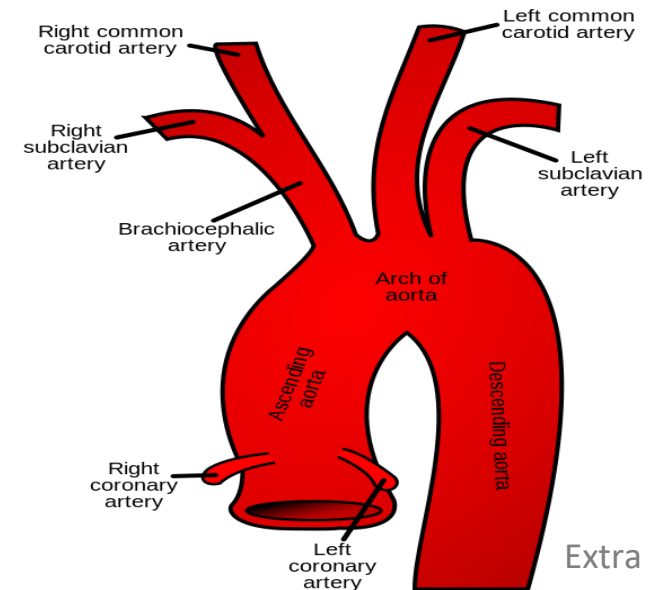
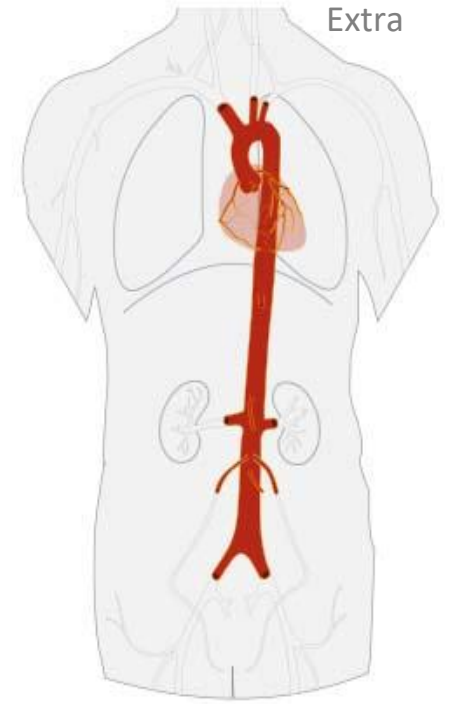
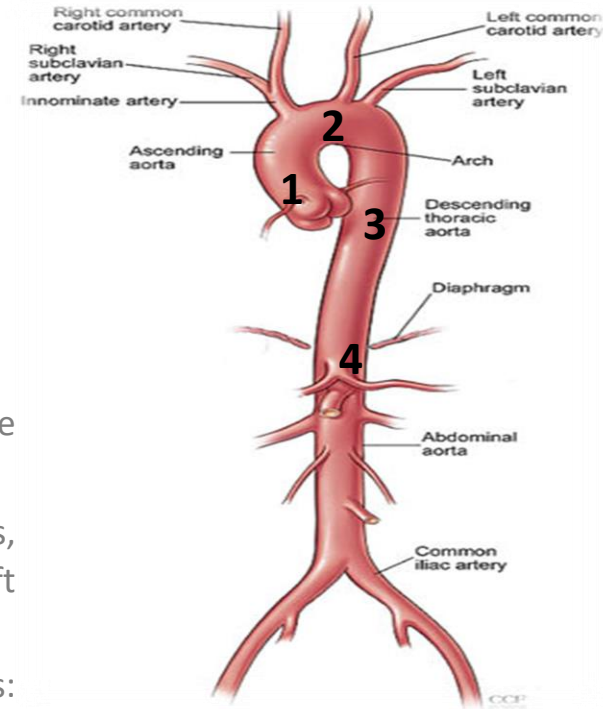
- Arteries carry blood from the heart to the body.
- All arteries, carry oxygenated blood,
- EXCEPT the **PULMONARY ARTERY** (and the umbilical artery in the fetus) which carry **deoxygenated** blood to the lungs. (basically whatever brings blood (with or without O₂) is vein , and what takes blood away from heart (with or without O₂) is artery.

General Principles Of Arteries

- The flow of blood depends on the pumping action of the heart.
- Arteries have ELASTIC WALL containing NO VALVES. unlike veins which need valves to keep the flow against gravity.
- The branches of arteries supplying adjacent areas normally **ANASTOMOSE** with one another freely (especially in places where we need a rich blood supply) 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 and longest** artery in the body.
- Carries oxygenated blood to all parts of the body.
- Is divided into 4 parts:
 1. **Ascending aorta** (The only branches of the ascending aorta are the two coronary arteries which supply the heart)
 2. **Arch of aorta** (The aortic arch has three branches, the brachiocephalic trunk, left common carotid artery, and left subclavian artery.)
 3. **Descending thoracic aorta** (It has six paired branches: bronchial arteries, mediastinal arteries, esophageal arteries, pericardial arteries, superior phrenic artery, and intercostal arteries.
 4. **Abdominal aorta** (**Visceral Branches:** Coeliac, Superior and inferior Mesenteric, Middle Suprarenals, Renals, Internal Spermatics or ovarian in females. **Parietal Branches:** Inferior Phrenics, Lumbars ,Middle Sacral. **Terminal Branches:** Common Iliacs).

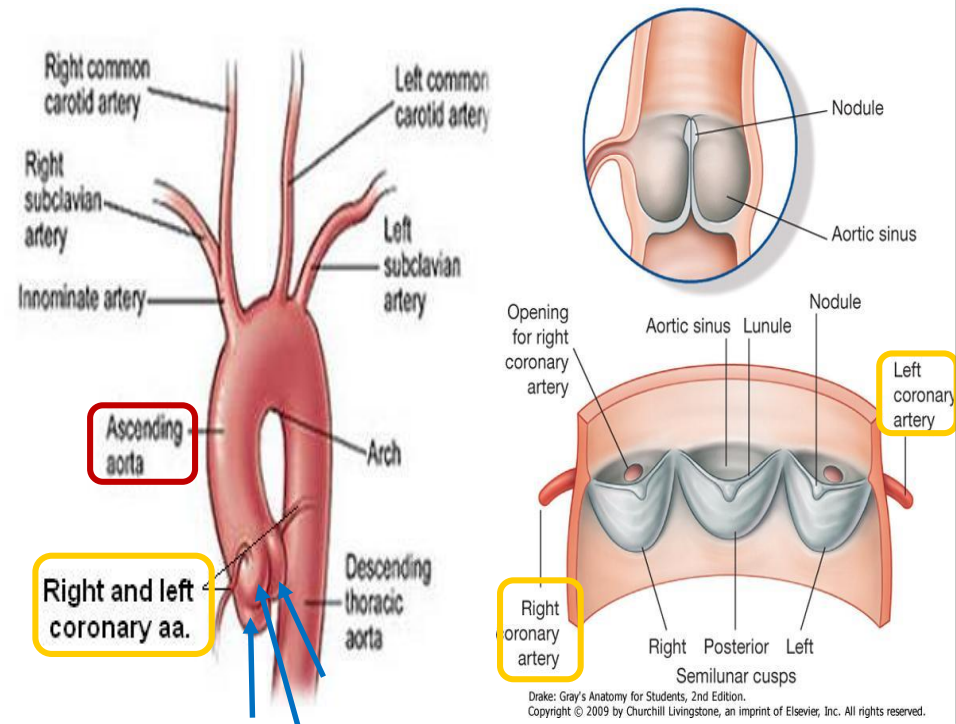


1. Ascending Aorta

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

Branches :

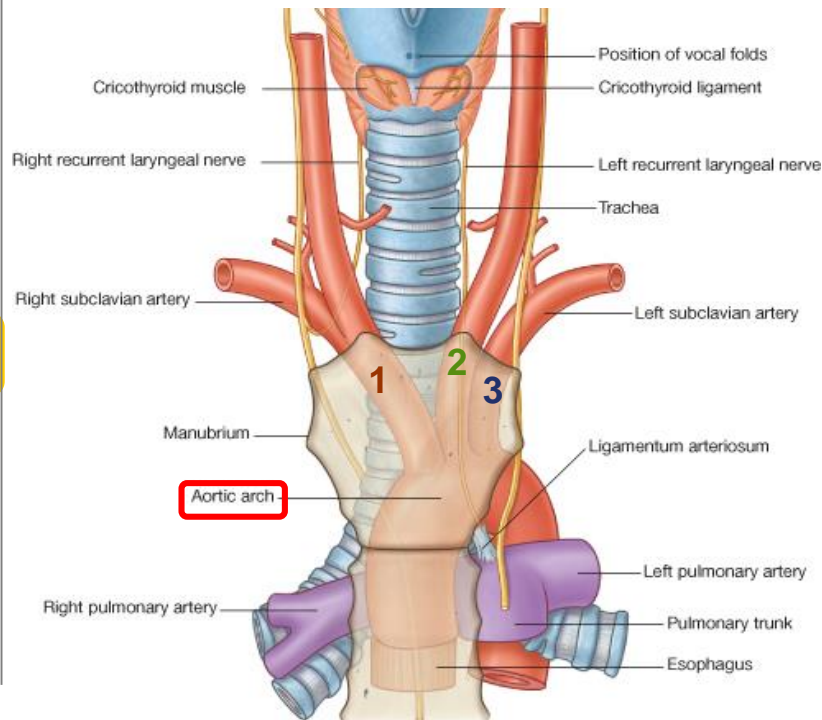
Right & Left **coronary arteries (supplying heart)**, arise from **aortic sinuses**.



Drake: Gray's Anatomy for Students, 2nd Edition.
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2. 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**.



2. Arch Of Aorta

Common Carotid Artery

Origin:

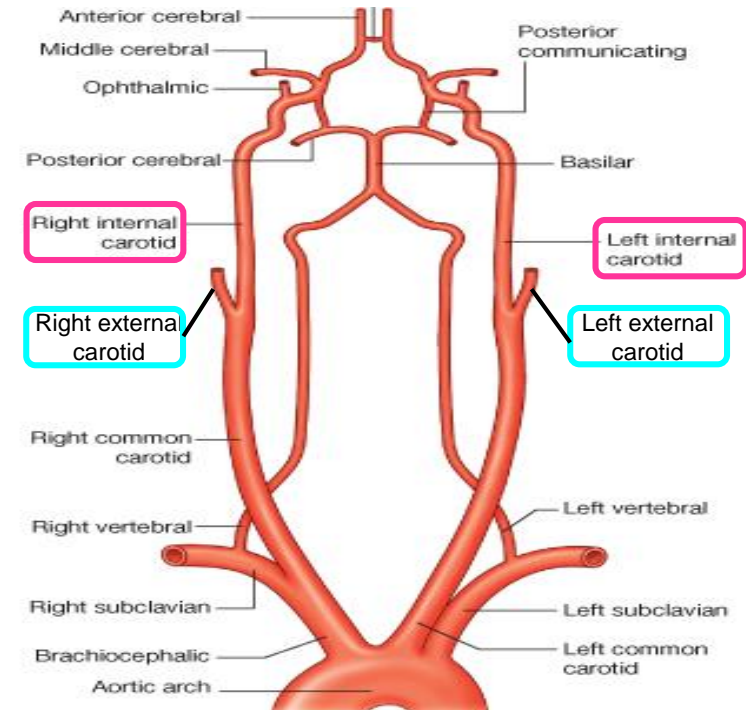
LEFT from **aortic arch**.

RIGHT from **brachiocephalic trunk**.

Each common carotid divides into two branches:

1. **Internal carotid**
2. **External carotid**

At the level of the disc between C3 & C4



2. Arch Of Aorta

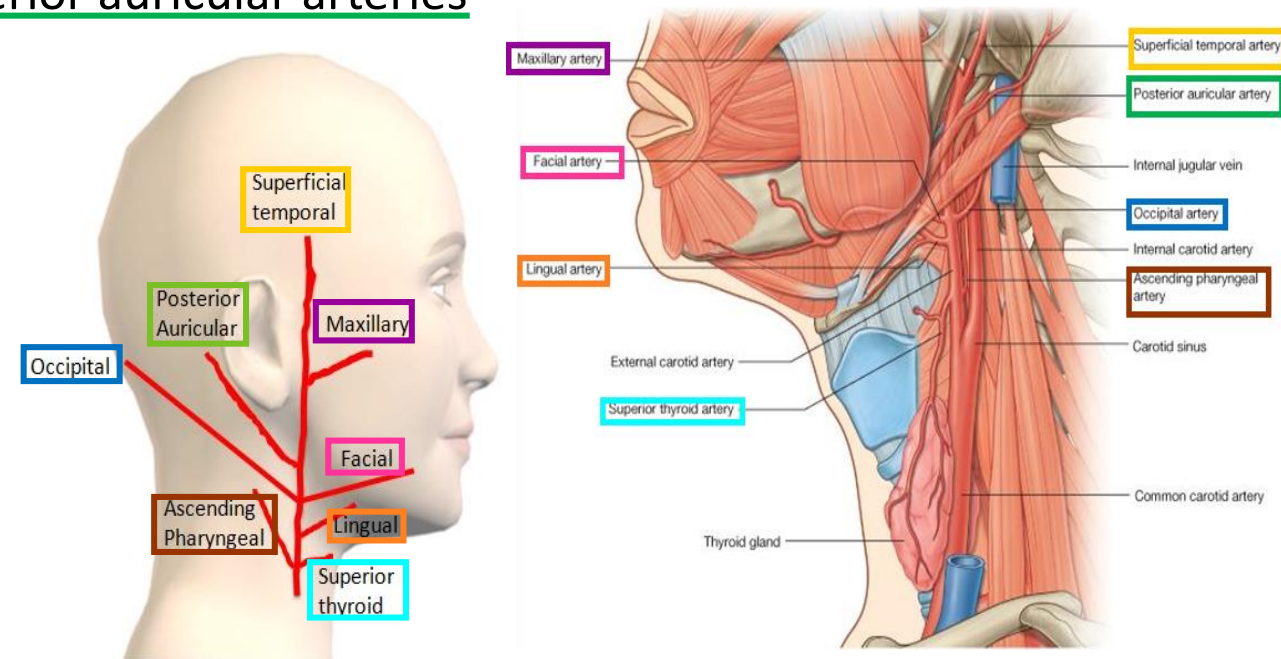
External Carotid Artery

- It divides behind neck of mandible into:
 1. Superficial temporal
 2. Maxillary arteries
- It supplies:
 1. **Scalp***: Superficial temporal, occipital, & posterior auricular arteries
 2. **Face**: Facial artery
 3. **Maxilla & mandible**: Maxillary artery
 4. **Tongue**: Lingual artery
 5. **Pharynx**: ascending pharyngeal artery
 6. **Thyroid gland**: Superior thyroid artery

*Scalp = فروة الرأس

Some American Ladies Found Our Pyramids So Magnificent

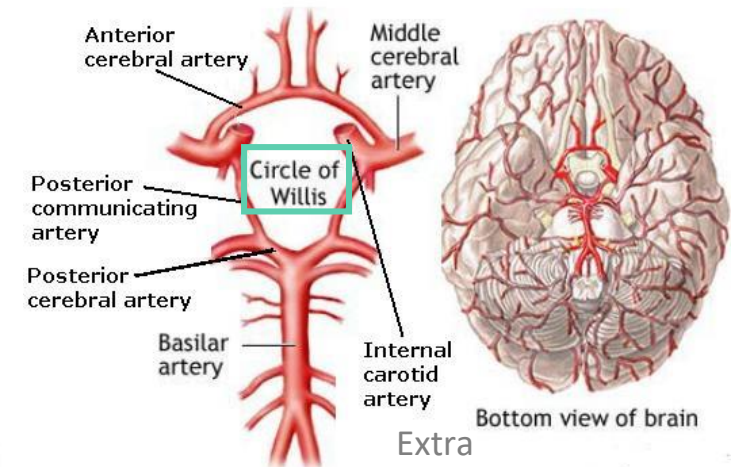
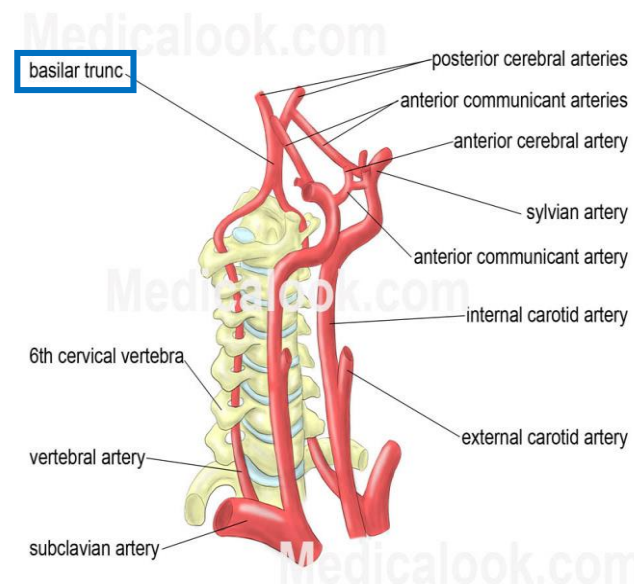
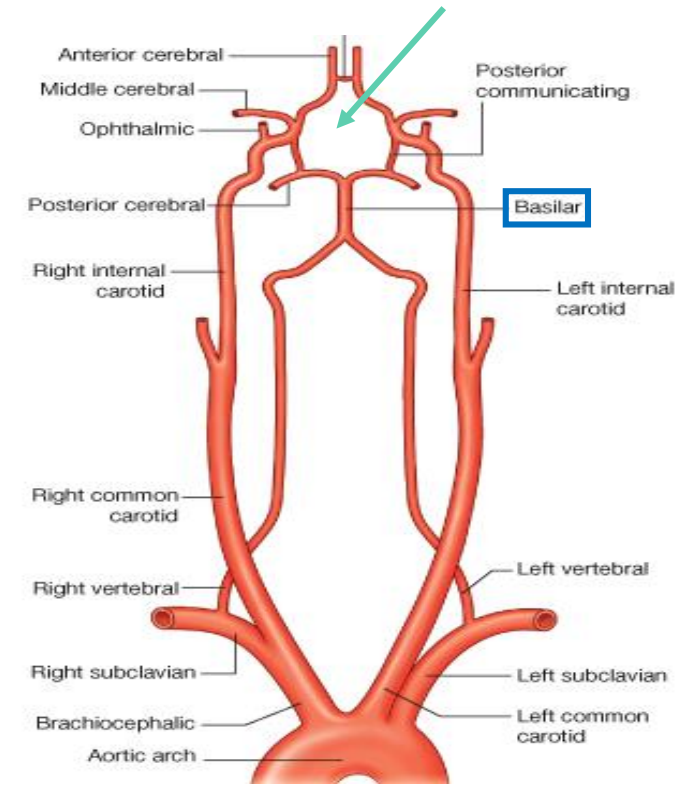
- Some: Superior temporal artery
- American: Ascending pharyngeal artery
- Ladies: Lingual artery
- Found: Facial artery
- Our: Occipital artery
- Pyramids: Posterior auricular artery
- So: Superior thyroid
- Magnificent: Maxillary



2. Arch Of Aorta

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**



2. Arch Of Aorta

Subclavian Artery

- **Origin:**

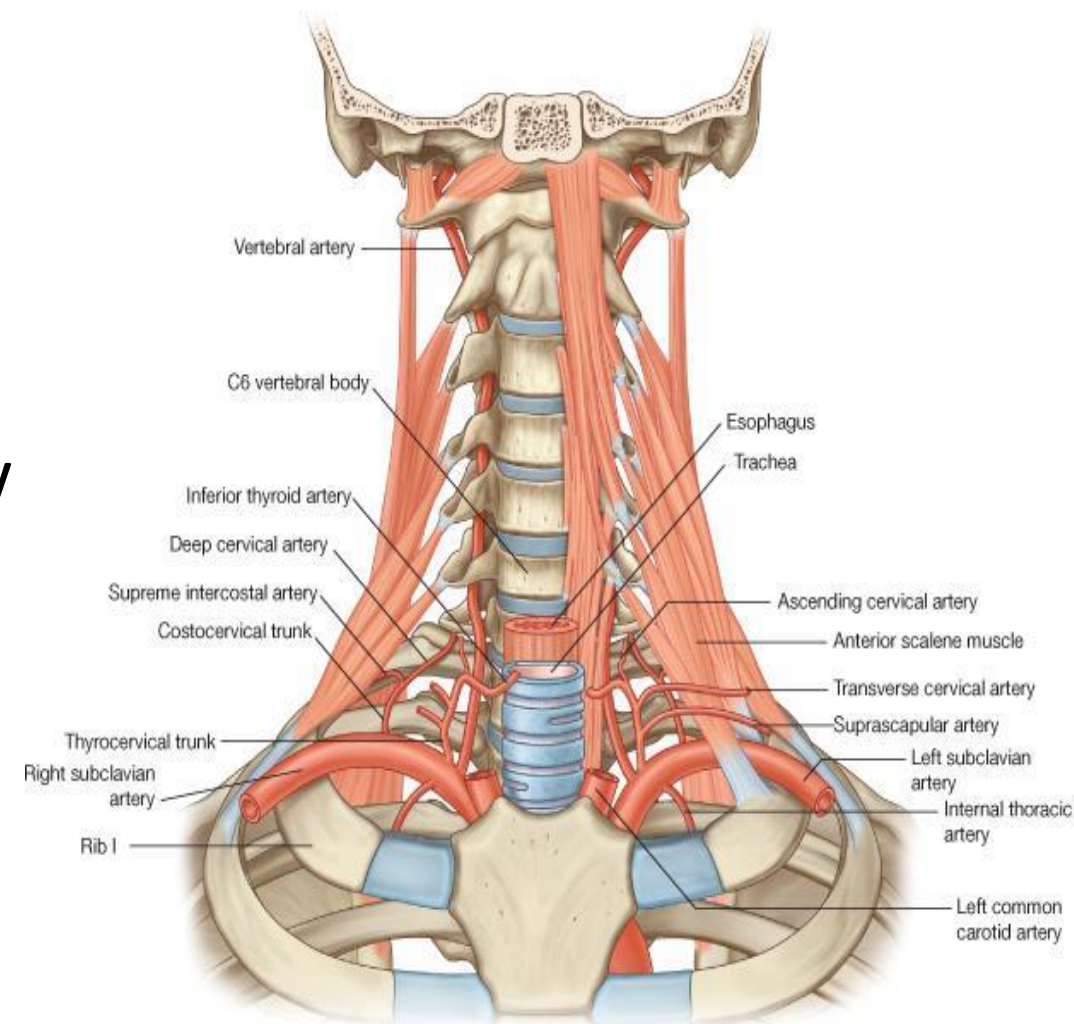
- LEFT: **from arch of aorta**

- RIGHT: **from brachiocephalic trunk**

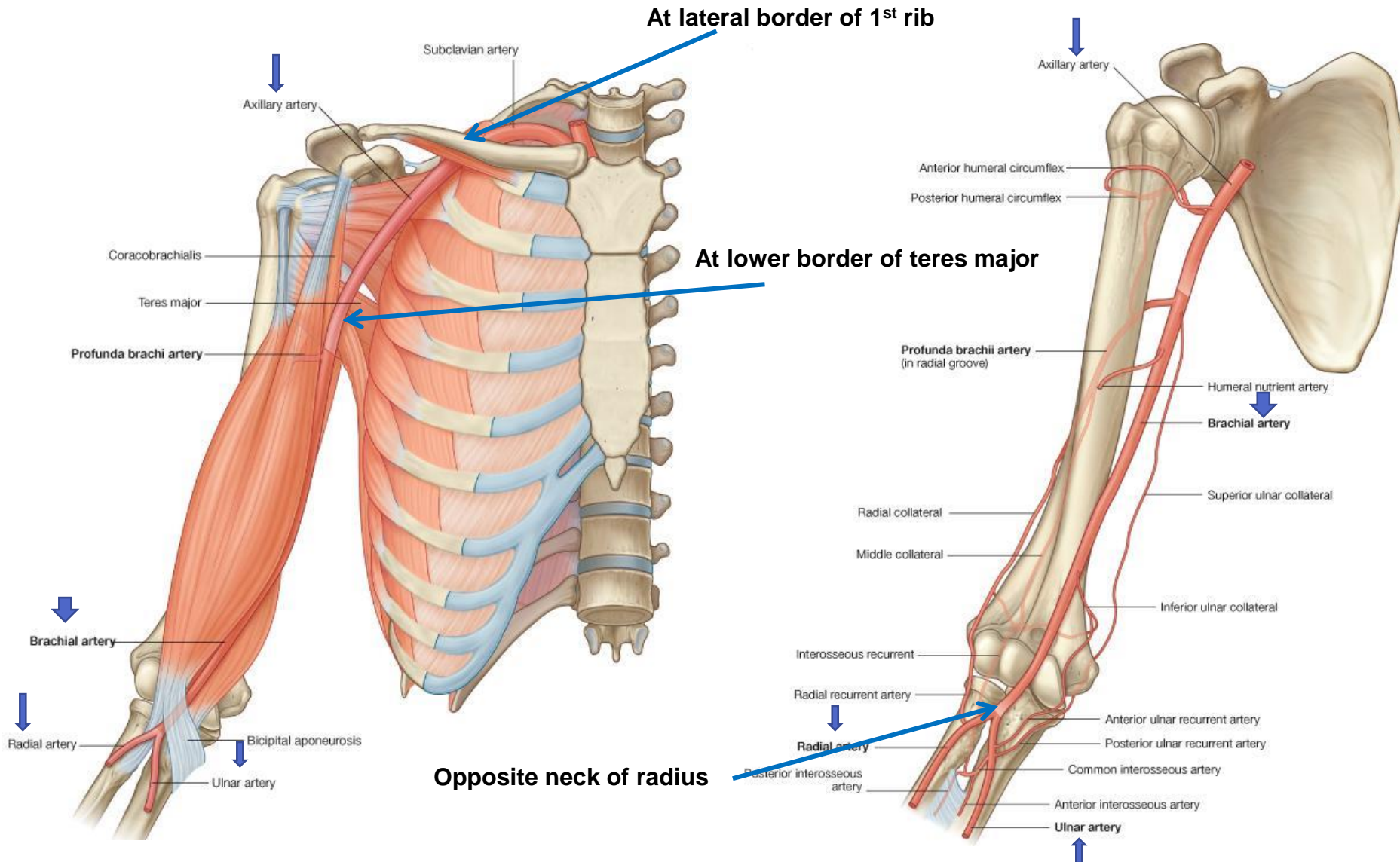
- It continues, at lateral border of first rib, as **axillary artery** (artery of upper limb)

- **Main branches:**

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



Arteries of Upper Limb



Recall the arteries of the upper limb:

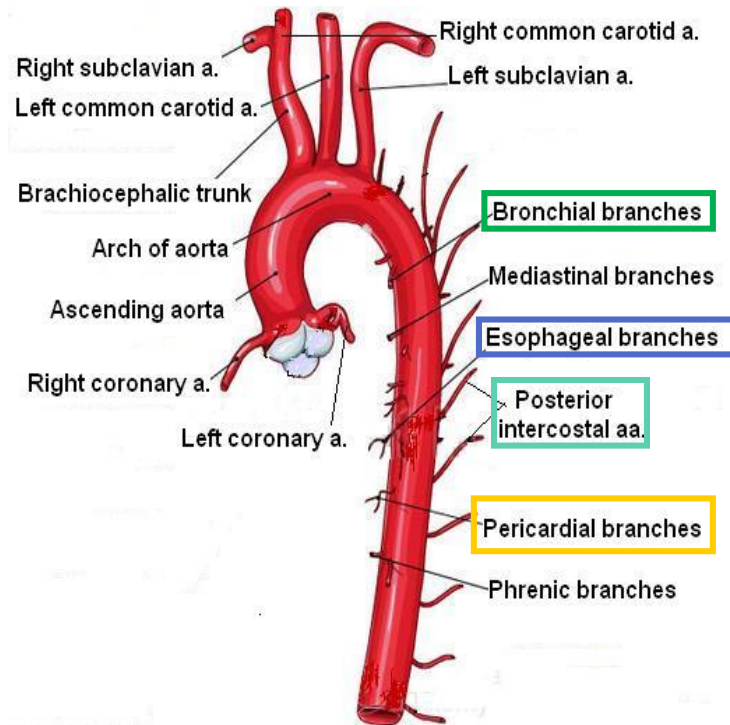
- At the lateral border of the first rib the **subclavian** artery continues as the **axillary** artery.
- The **axillary** artery ends at the lower border of teres major and becomes the **brachial** artery.
- The **brachial** artery bifurcates into **radial** and **ulnar** arteries opposite the neck of radius.

3. 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**.

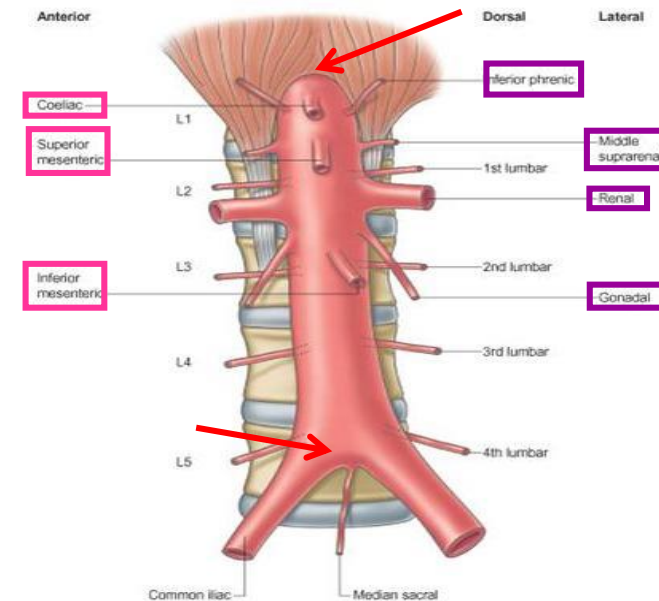
- **Branches:**

- Pericardial
- Esophageal
- Bronchial
- Posterior intercostal



4. Abdominal Aorta

- It enters the abdomen through the **aortic opening of diaphragm at level of T12**.
- At the level of **lower border of L4**, it divides into **two common iliac arteries**.
- **Branches:** divided into two groups:
 - Single branches (supplying GIT)
Coeliac, superior mesenteric, inferior mesenteric
 - Paired branches
Inferior phrenic, middle suprarenal, renal, gonadal



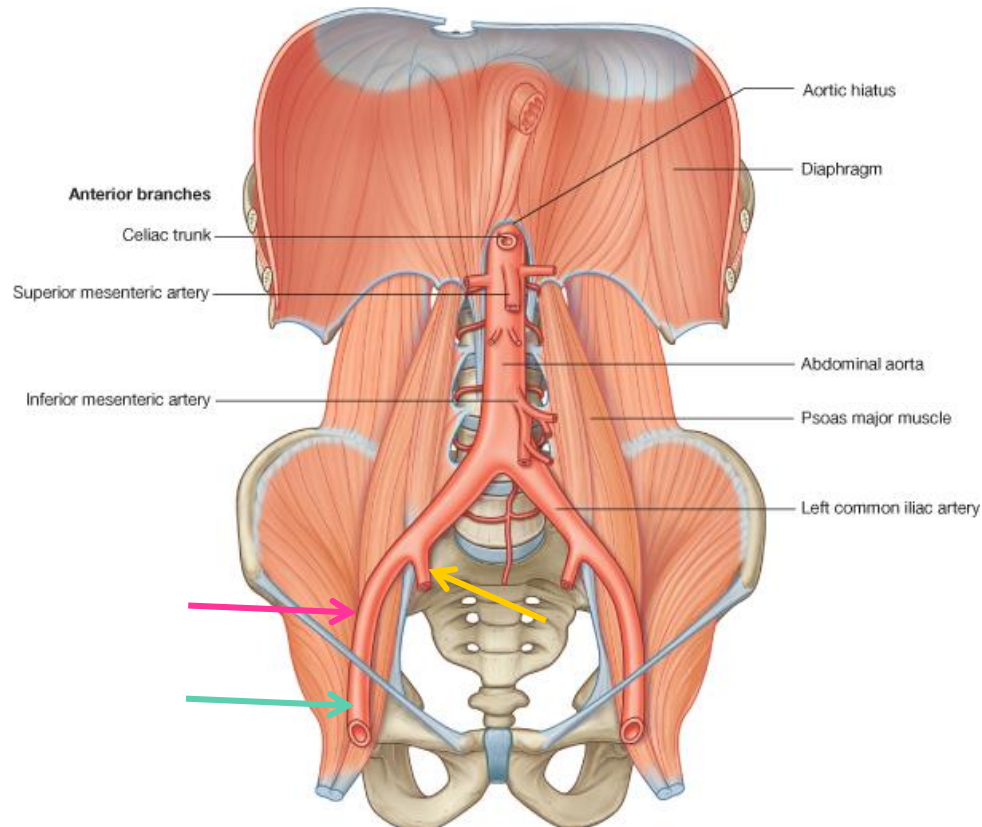
Branches of Common Iliac Artery

1- EXTERNAL ILIAC ARTERY:

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

2- INTERNAL ILIAC ARTERY:

supplies **pelvis**.



Arteries of the Lower Limbs

Femoral Artery:

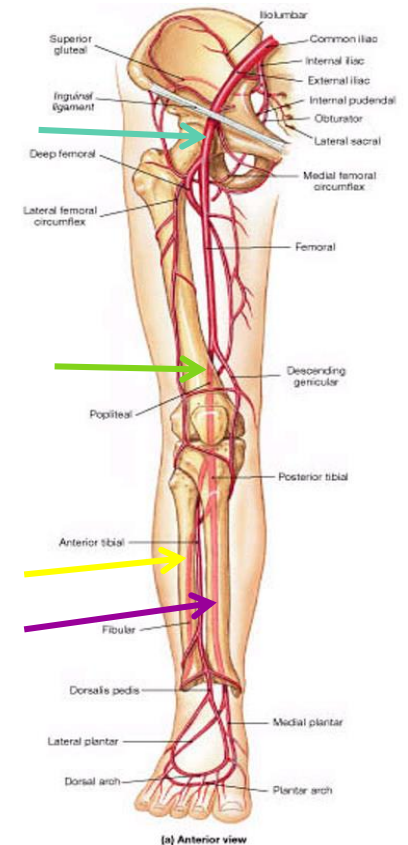
- Is the main arterial supply to lower limb
- Is the continuation of external iliac artery behind the midpoint of the inguinal ligament.
- Passes through **adductor hiatus** and continues as:

Popliteal Artery

- Deeply placed in the popliteal fossa.
- Divides, at lower end of popliteal fossa into:

1-Anterior Tibial Artery

2-Posterior Tibial Artery



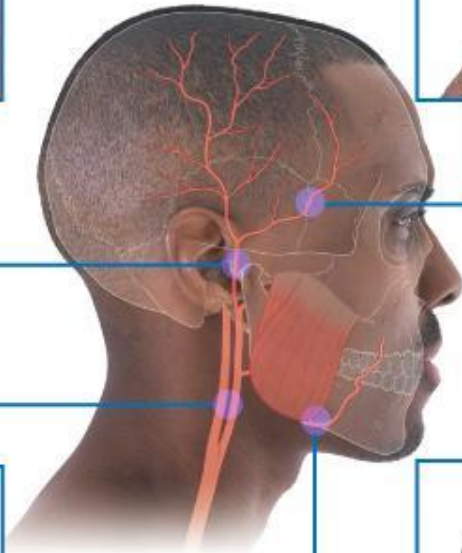
Pulse Points in Head & Neck



Temporal pulse
(superficial temporal artery)



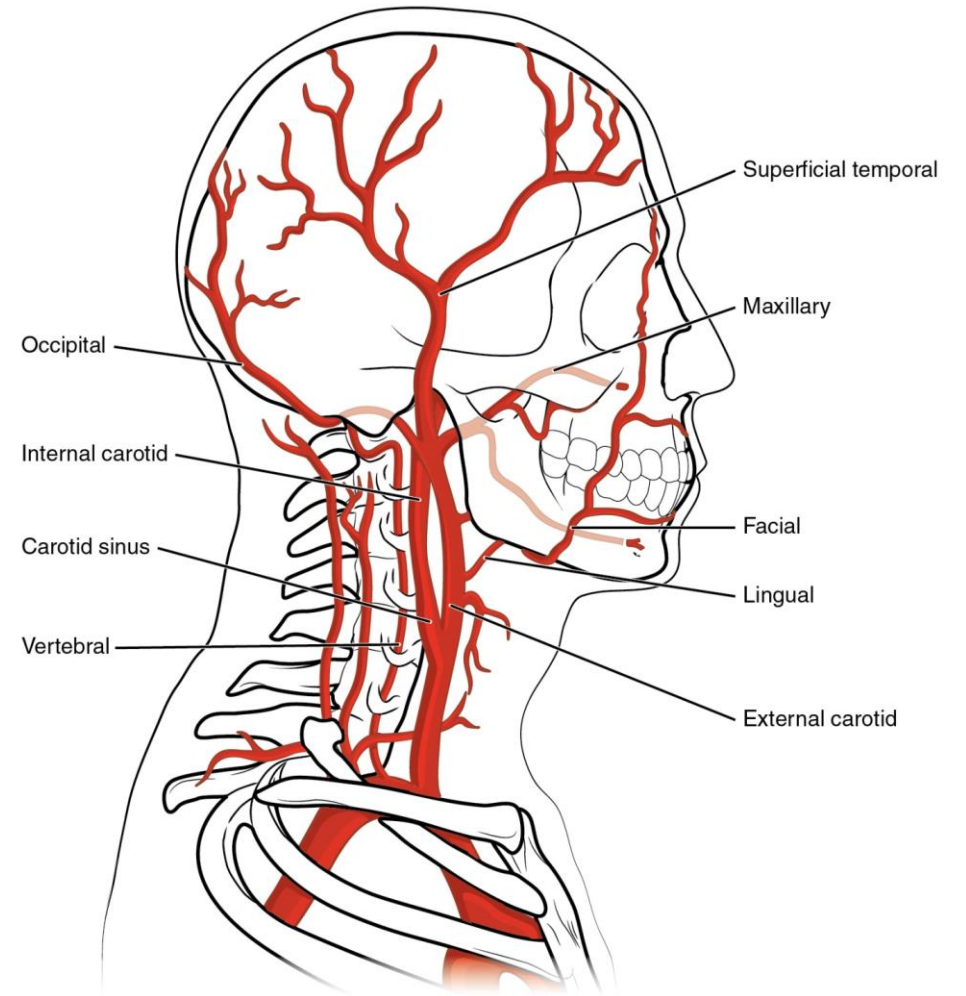
Temporal pulse
(anterior branch of
superficial temporal artery)



Carotid pulse



Facial pulse



Pulse Points in Upper limb

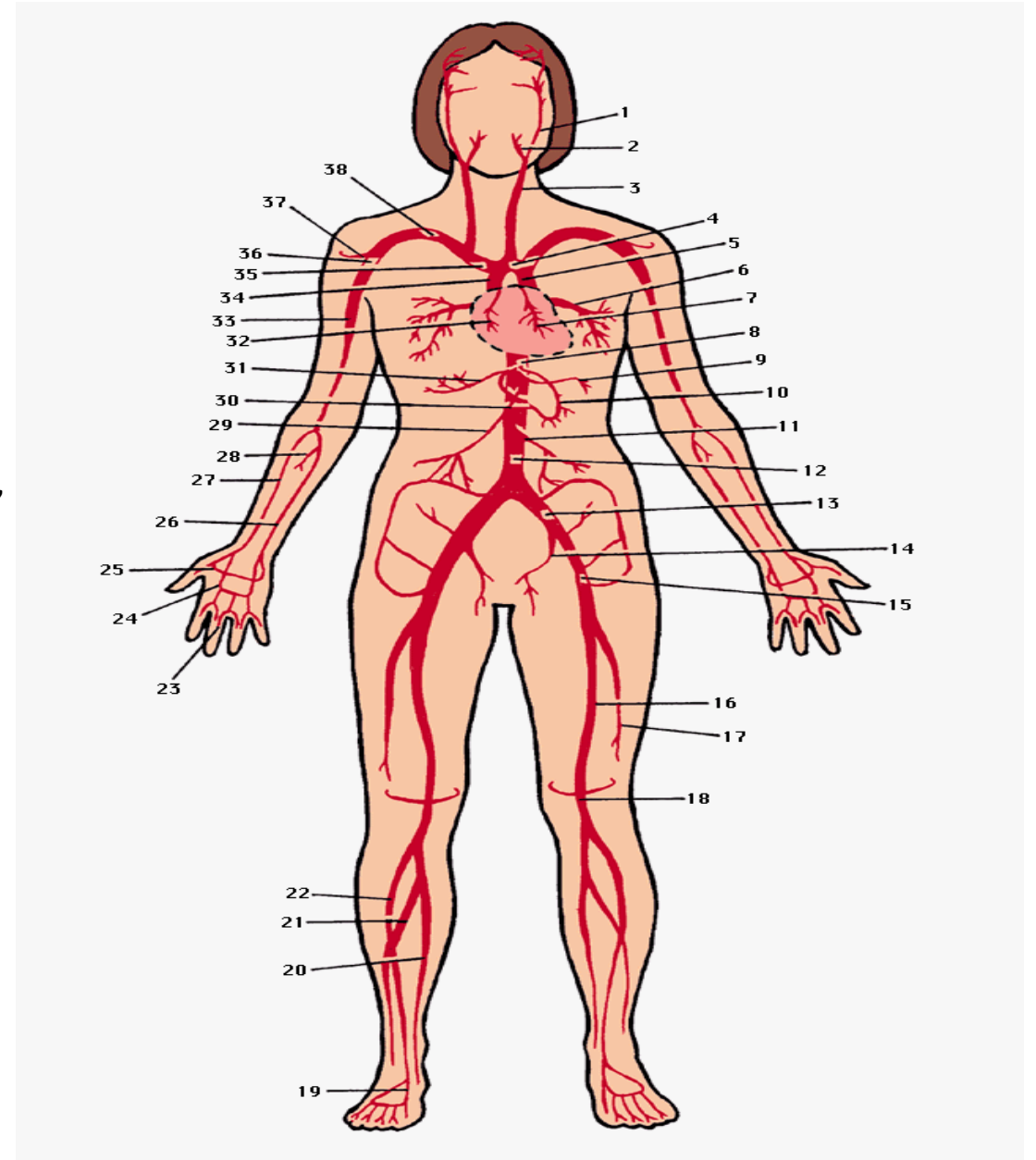


Pulse Points in Lower limb

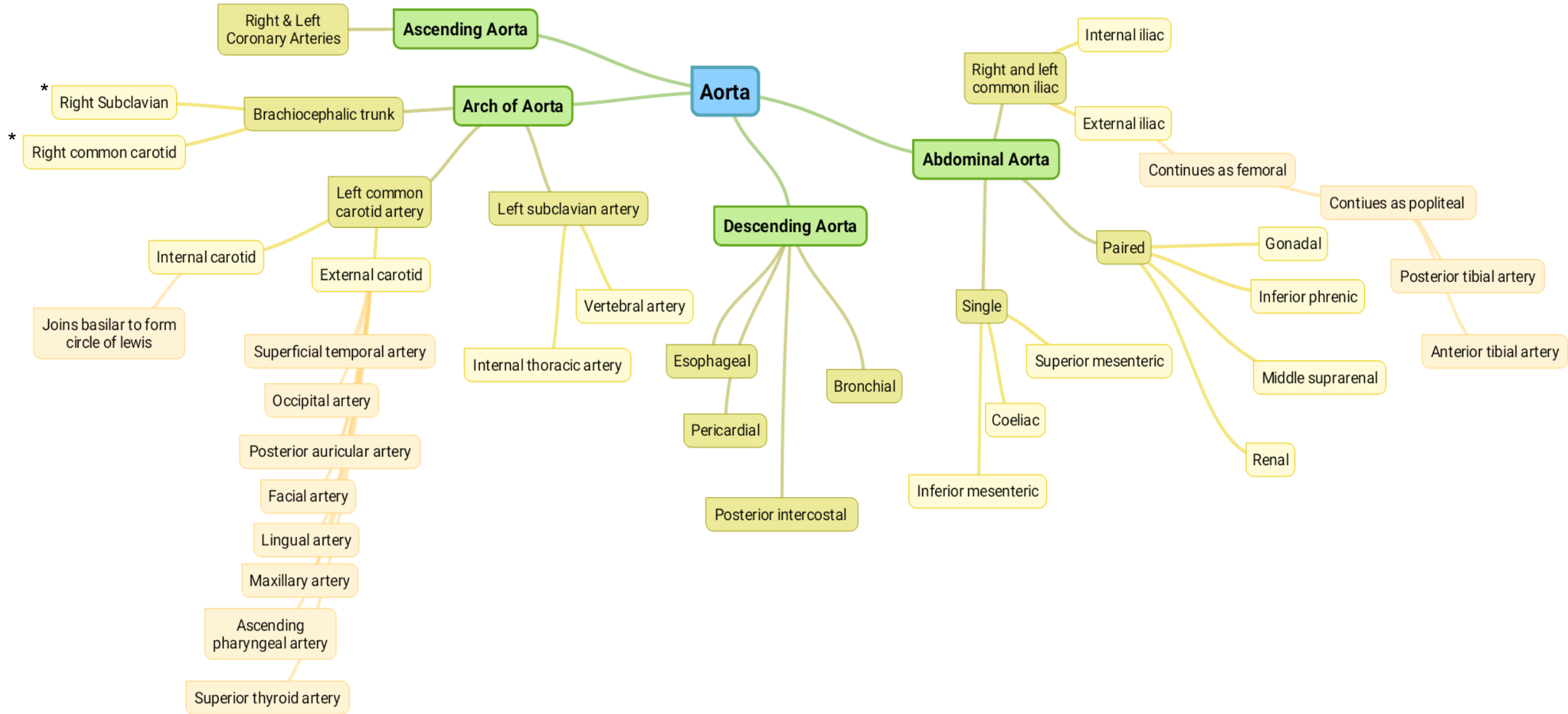


Principal arteries of the human body:

- | | |
|---------------------------------------|---|
| 1 internal carotid artery, | 21 peroneal artery, |
| 2 external carotid artery, | 22 anterior tibial artery, |
| 3 common carotid artery, | 23 digital artery, |
| 4 arch of the aorta, | 24 superficial palmar arch, |
| 5 descending aorta, | 25 deep palmar arch, |
| 6 pulmonary vein, | 26 ulnar artery, |
| 7 left coronary artery, | 27 radial artery, |
| 8 celiac artery, | 28 common interosseous artery, |
| 9 splenic artery, | 29 superior mesenteric artery, |
| 10 left gastric artery, | 30 right gastric artery, |
| 11 inferior mesenteric artery, | 31 hepatic artery, |
| 12 abdominal aorta, | 32 right coronary artery, |
| 13 common iliac artery, | 33 brachial artery, |
| 14 internal iliac artery, | 34 ascending aorta, |
| 15 external iliac artery, | 35 brachiocephalic artery, |
| 16 femoral artery, | 36 axillary artery, |
| 17 profunda femoris artery, | 37 anterior circumflex humeral artery, |
| 18 popliteal artery, | 38 subclavian artery |
| 19 dorsalis pedis, | |
| 20 posterior tibial artery, | |



Summary



*the branches on the right are the same as those on the left

MCQ

1. Which artery that enters the abdomen then divides to two iliac arteries?

- A. descending thoracic aorta.
- B. abdominal aorta.
- C. Bronchial artery.
- D. Posterior intercostal.

2. What are the branches of the subclavian artery?

- A. Vertebral artery
- B. internal thoracic artery
- C. Axillary artery
- D. A & B

3. Common carotid artery originates from :

- A- brachiocephalic artery
- B- arch of aorta
- C- subclavian artery
- D- A & B

4. Which one of the following supplies the pelvis?

- A. Internal Iliac artery
- B. External Iliac artery
- C. Femoral artery
- D. Popliteal artery

5. Which one of the following is a single branch artery that supplies the GIT ?

- A. Renal artery
- B. Inferior phrenic
- C. Superior mesenteric
- D. Gonadal artery

6. Which of the following pulses can NOT be felt in upper limbs?

- A. Axillary pulse
- B. Carotid pulse
- C. Brachial pulse
- D. Ulnar pulse

7. Which one of the following is a functional end artery?

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

8. Which one of the following is a branch of external carotid artery?

- A. Vertebral artery
- B. Brachial artery
- C. Basilar artery
- D. Facial artery

9. Which one of the following arteries could be palpated opposite the lower border of the mandible?

- A. Facial artery
- B. Lingual artery
- C. Superficial temporal artery
- D. External carotid artery

ANSWERS:

1.B, 2.D, 3.D, 4.A, 5.C, 6.B, 7.A, 8.C, 9.A

SAQ

Q1. How is the circle of Willis formed?

Q2. What are the pulse points in lower limb?

Q3. Mention (A) one Anatomic (True) End Artery and (B) one Functional End Artery:

ANSWERS:

1. The union of Internal Carotid Artery and the basilar artery.

2. Femoral pulse, Popliteal pulse, Posterior tibial pulse and Dorsalis pedis pulse

3. A-artery of retina .

B-renal artery.

