

Vascular Anatomy of the Upper Limbs

Anatomy Team 434

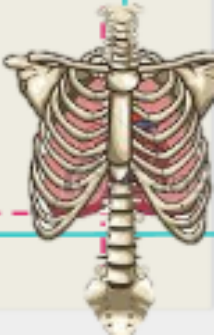
Color Index:

- **Important Points**
- Helping notes
- **Explanation**

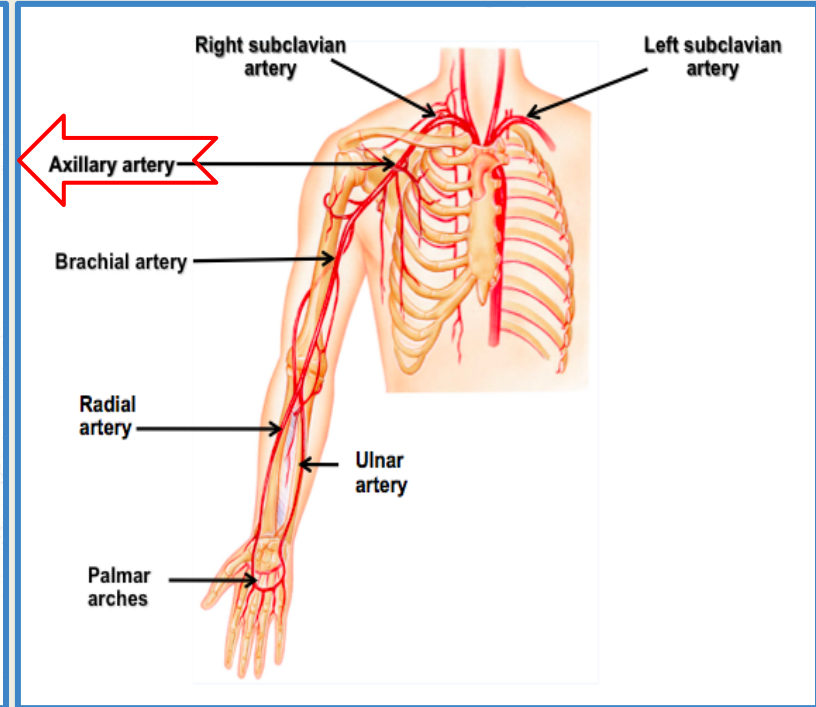
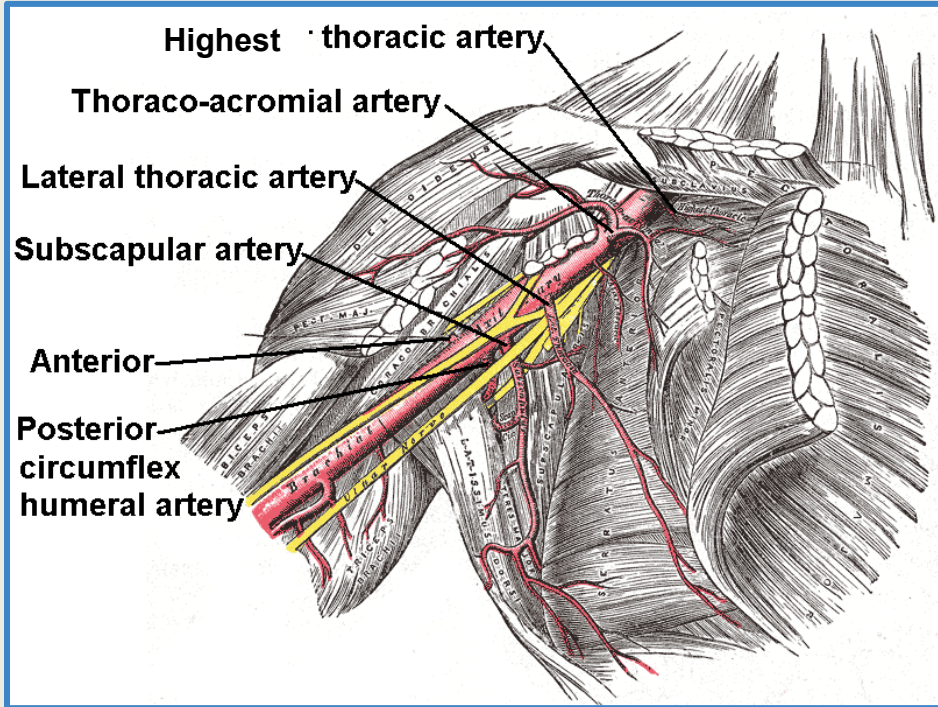
If you have any complaint or suggestion please don't hesitate to contact us on:
AnatomyTeam434@gmail.com

OBJECTIVES

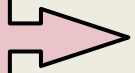
- **Identify the origin of the vascular supply for the upper limb.**
- **Describe the main arteries and their branches of the arm, forearm & hand.**
- **Describe the vascular arches for the hand.**
- **Describe the superficial and deep veins of the upper limb**



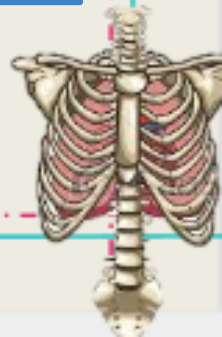
Arteries Of The Upper Limb



- H: Highest thoracic artery
- T: Thoracoacromial
- L: Lateral thoracic
- S: Subscapular
- P: Posterior circumflex humeral.
- A: Anterior circumflex humeral.



HoTeL SPA



The Subclavian Artery

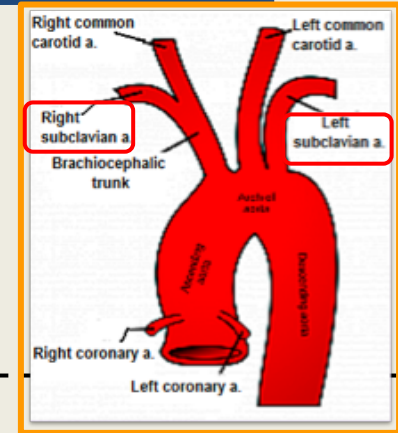
The **RIGHT** artery originates from the

Brachiocephalic trunk.

The **LEFT** artery originates from the

Arch of the Aorta

Continues as **Axillary artery** at the lateral border of the 1st rib



The Axillary Artery

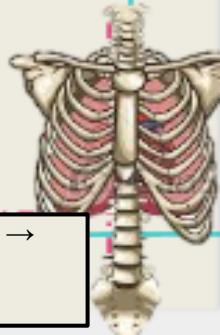
Begins at the lateral border of the 1st rib as continuation of the **subclavian artery**.

Continues as **brachial artery** at lower border of teres major muscle.

closely related to the cords of **brachial plexus** and their branches

Is enclosed within the **axillary sheath**.

Is crossed anteriorly by the **pectoralis minor** muscle, and is divided into three parts; **1st, 2nd & 3rd**.



Note: **Left subclavian** originates directly from the aorta, while the **right subclavian** artery originates from other branch (Brachiocephalic trunk).

Note: **Axillary Artery nomenclature:** Right Subclavian → Axillary Artery → Brachial Artery → Ulnar & Radius Arteries.

The 1st part of the axillary artery

- Extends from the lateral border of 1st rib to upper border of the pectoralis minor muscle. - Related:

• **Anteriorly**: to the pectoralis major muscle.

• **Laterally**: to the cords of the brachial plexus.

- It gives; ONE branch: **Highest thoracic artery**.

The 2nd part of the axillary artery

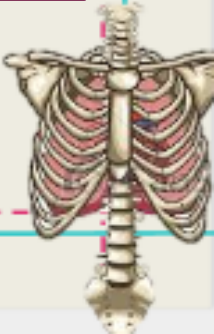
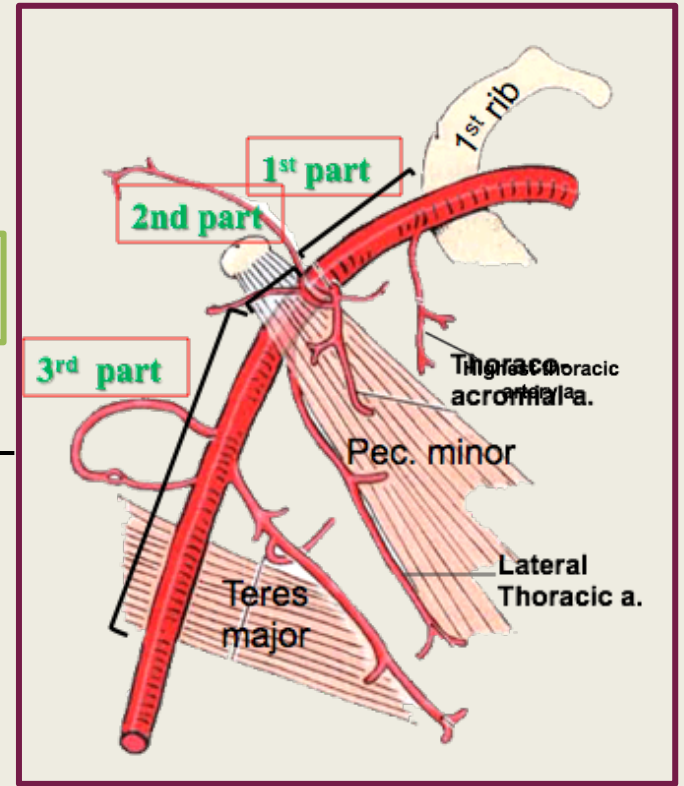
Lies behind the pectoralis minor muscle.

It is related medially, laterally, and posteriorly to the corresponding **cord** of the brachial plexus.

It gives; TWO branches:

→ A) **Thoracoacromial**

→ B) **Lateral thoracic**



The 3rd part of the axillary artery

- Extends from the lower border of pectoralis minor muscle to the lower border teres major muscle.

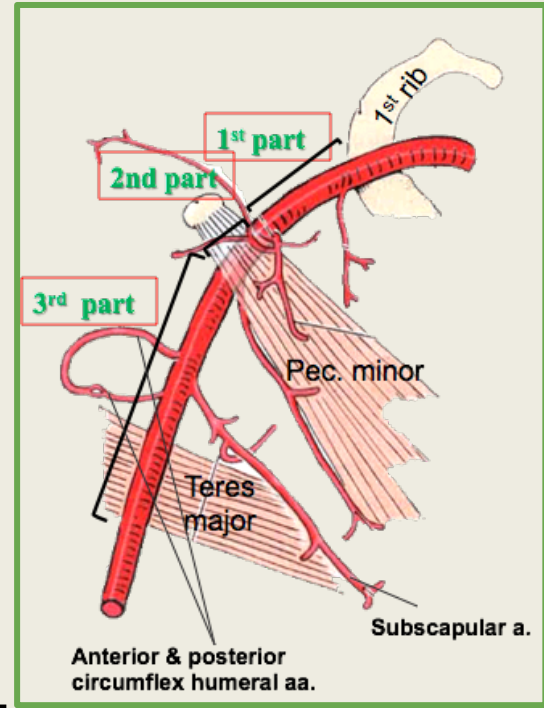
- Related medially, laterally, and posteriorly, to the branches of the cords of the brachial plexus .

It gives; THREE branches:

A) Subscabular

B) Anterior circumflex humeral

C) Posterior circumflex humeral.

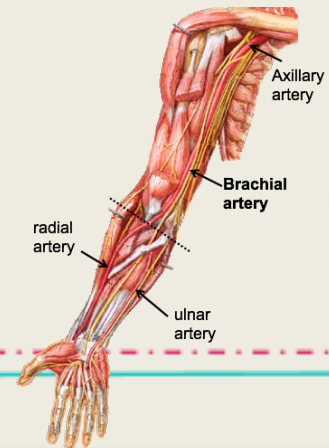


The Brachial Artery

- Is a continuation of the axillary artery at the lower border of teres major muscle.

- Provides main arterial supply for the arm.

- **Terminates** opposite neck of radius by dividing into radial & ulnar arteries.



Brachial Artery

Relations

Anteriorly

Posteriorly

Medially

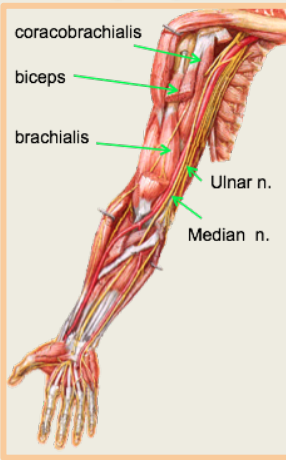
Laterally

crossed from above downward by medial cutaneous nerve of the forearm, median nerve, and bicipital aponeurosis.

Triceps, coracobrachialis and brachialis.

Basilic vein, ulnar and median nerves

Coracobrachialis and biceps muscles



Branches

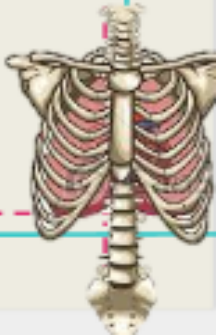
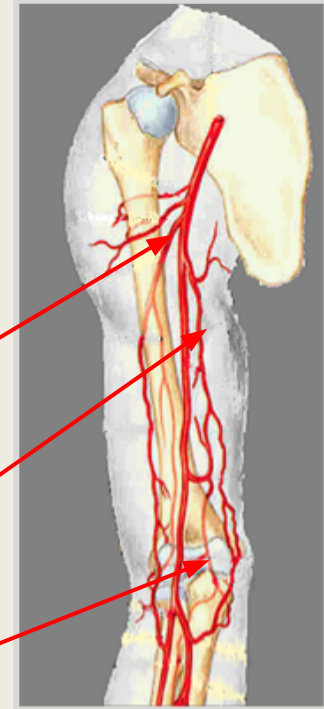
Muscular.

Nutrient to humerus.

Profunda brachii

Superior ulnar collateral.

Inferior ulnar collateral.



The Ulnar Artery

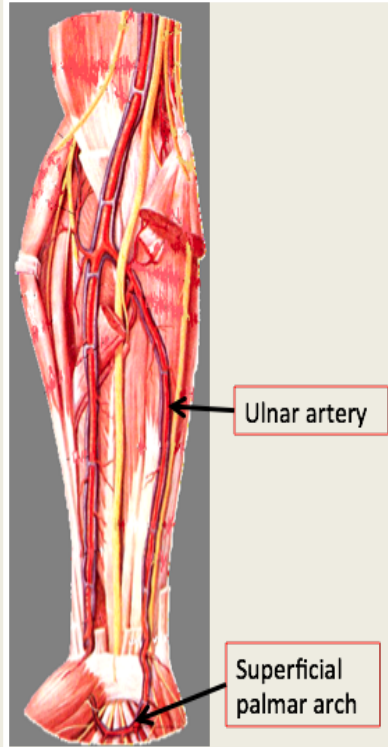
The **larger** of the two terminal branches of the **brachial artery**.

Begins in the cubital fossa at the level of **neck of radius**.

Descends through the **anterior compartment** of the forearm.

Enters the palm, **in front of the flexor retinaculum**, with the ulnar nerve.

Ends by forming the **superficial palmar arch**, by anastomosing with superficial palmar branch of radial artery.



Branches

Muscular.

Recurrent branch for anastomosis around the elbow joint.

Common interosseous artery, which gives anterior and posterior interosseous arteries.

Branch to anastomoses around the wrist joint.



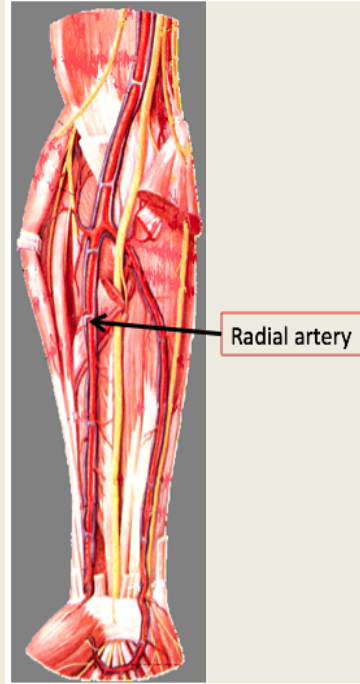
The Radial Artery

The **smaller** of the two terminal branches of the **brachial artery**.

Begins in the cubital fossa at the level of **neck of radius**.

Descends downward and laterally.

Leaves the forearm by **winding** around the lateral aspect of the wrist to reach the **dorsum** of the hand.

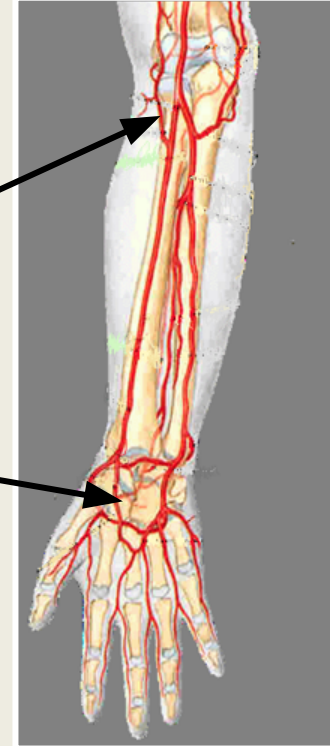


Branches

Muscular.

Recurrent branch for anastomosis around the elbow joint.

Superficial palmar branch, joins the ulnar artery to form the superficial palmar arch.



Arteries of the Palm

Ulnar artery

it enters the
:hand

Becomes
Anterior to the
flexor
retinaculum

Becomes on the
lateral side of
the **ulnar nerve**
and the **pisiform**
bone

gives a deep
branch

Continues as the
superficial palmar
arch

Leaves the dorsum of the hand by
turning forward between both

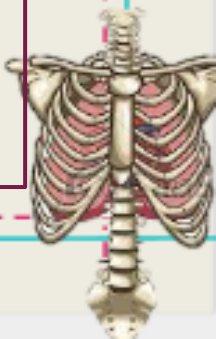
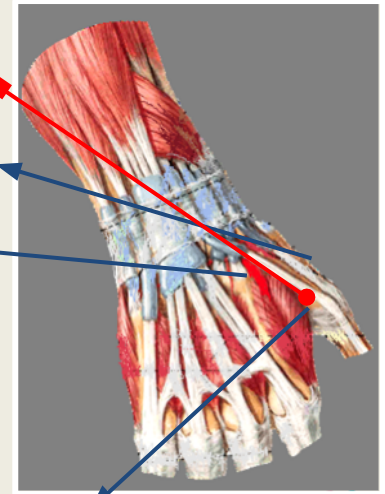
continues as deep
palmar arch " when
it enters the palm"

gives 1- arteria **radial indecis**
(Radial artery of index finger)
2- arteria **princeps polices** (principal
artery of the thumb)

Radial artery

the proximal ends
of the 1st and 2nd
metacarpal bones

The two heads
of the 1st dorsal
interosseous
muscle



The Superficial Palmar Arch

It is a **direct continuation** of the **ULNAR ARTERY** and is completed by a **RADIAL ARTERY BRANCH** (superficial palmar branch)

Location : it curves laterally behind the palmar aponeurosis "and" later lies approximately at the level of the **distal border of the extended thumb**

it gives : **digital arteries** from its convexity to supply the fingers of the hand

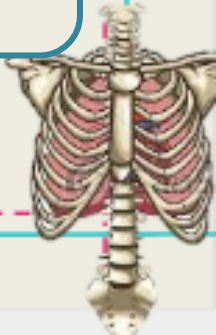
Remember : The superficial palmar arch is more distal than the deep palmar arch (the deep is more proximal than the superficial).

The Deep Palmar Arch

it is a **continuation** of the **RADIAL ARTERY** and it completed "on the medial side" by an **ULNAR ARTERY DEEP BRANCH**

Location: it curves medially beneath the long flexor tendons in front of the metacarpal bones and the **interosseous muscles** "and" later lies at the level of the **proximal border of the extended thumb**

it gives branches : 1- **Superiorly**: to share in anastomosis around the wrist joint 2- **inferiorly**: to join branches with the .superficial palmar arch



Veins of the Upper Limb

Are divided into SUPERFICIAL and DEEP
(they both anastomose frequently with each other)



The SUPERFICIAL veins : are placed immediately beneath the skin in the superficial fascia



The DEEP veins :

- 1- accompany the arteries
- 2- constitute the venae comitantes of those vessels



Superficial Veins of the Upper Limb

Dorsal Venous Arch (network)

The dorsal venous arch (network) is made when the dorsal digital veins **drains** into the dorsal metacarpal veins and **unite**.

Location: lies on the **dorsum of the hand** in the **subcutaneous tissue proximal** to the **metacarpophalangeal joint**

1- **cephalic vein** (**Arises** from the **lateral** side of the dorsal venous arch of the hand)

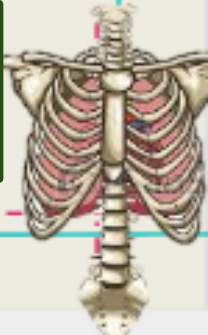
- it **ascends** (goes up) on the **Radial side** of the forearm to the elbow
- in the upper part of the arm it continues to the **deltopectoral groove**
- and **percies** the **clavipectoral fascia** to drain into **the axillary vein**

2- **Basilic vein** (**Arises** from the **medial** side of the dorsal venous arch of the hand)

- it **ascends** on the **ulnar side** of the forearm and elbow
- in the middle part of the arm it **percies** the **deep fascia**
- to **join** the **brachial vein** and continue as the **axillary vein**

The **medial cubital vein** : 1- attaches the cephalic vein with the basilic vein when forming the **axillary vein** in **the cubital fossa**

2- it is an important frequent site for **venipuncture** “مكان سحب الدم”



Deep Veins of the Upper Limb

The accompany **the arteries** and have **similar names**.

Venae comitantes : are generally arranged in pairs.

situated on either side of the corresponding artery

connected at intervals by short transverse branches

The **superficial and deep palmar arterial arches** are each accompanied by a **pair venae comitantes** : 1- which constitute the superficial and deep palmar venous arches 2- receive the **veins** corresponding to the **branches of the arterial arches**

The Axillary vein :

begins : from the lower border of teres major (**as a continuation of basilic vein**)

Ends : at the outer border of the 1st rib (**as the subclavian vein**)

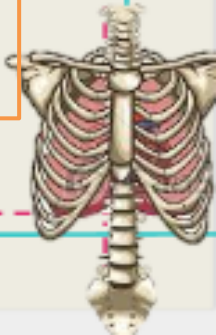
- receives the brachial vein
- receives the cephalic vein (when it is near from termination point)

The Subclavian Vein : (a continuation of the axillary vein)

Extends : from the outer border of the first rib

Ends : at the sternal end of clavicle (where it unites with the **internal jugular vein** to form the **brachiocephalic** (innominate) vein

The Deep Veins of the Forearm are venae comitantes of the radial and ulnar veins
the brachial veins are placed on either side of the **brachial artery**





1- Which one of the following gives a branch to the first part of the axillary artery:

- a) thoracoacromial
- b) subscapular
- c) anterior circumflex humeral
- d) highest thoracic

2- which of the following is not a branch for the brachial artery:

- a) interosseous
- b) nutrient to humerus
- c) profunda brachii
- d) superior ulnar collateral

3) which of the following arteries leaves the forearm by winding around the lateral aspect of the wrist:

- a) ulnar artery
- b) radial artery
- c) brachial artery
- d) axillary artery

4) one of the following is a link between the cephalic and basilic vein:

- a) median vein of the forearm
- b) brachial vein
- c) median cubital vein
- d) radial vein

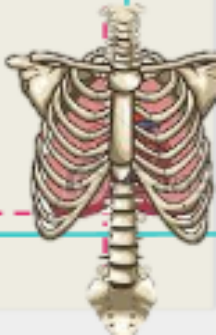
5) The subclavian vein extends from the outer border of the first rib to the sternal end of the clavicle:

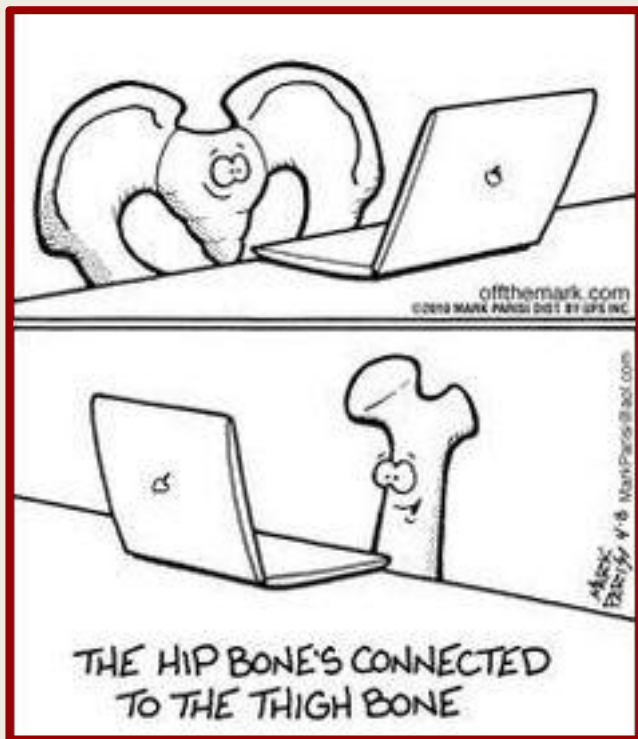
- a) True
- b) False

6) the axillary vein begins at the lower border of the teres minor:

- a) True
- b) False

1-d
2-a
3-b
4-c
5-a
6-b





GOOD
LUCK

Done By Anatomy Team 434 ..

