

Towards
unbounded
thinking.

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MEDICINE

MMB [009]



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Axilla (1)

**Boundaries, axillary artery,
axillary vein & lymph nodes**

Anatomy Division Staff

2024-2025

Objectives

Aims: To review the clinical anatomy of the axilla

Objectives

At the end of the sessions you should be able to:

- Define the boundaries of the axilla and list its contents.
- Delineate the extent and relationships of the axillary artery and vein, including their branches and tributaries.
- Discuss the functional importance of the arterial anastomosis around the scapula.
- Identify the location and drainage patterns of the axillary group of lymph nodes and vessels, showing its relationships to the axillary blood vessels.
- Complete the related tasks on the surface anatomy schedule.



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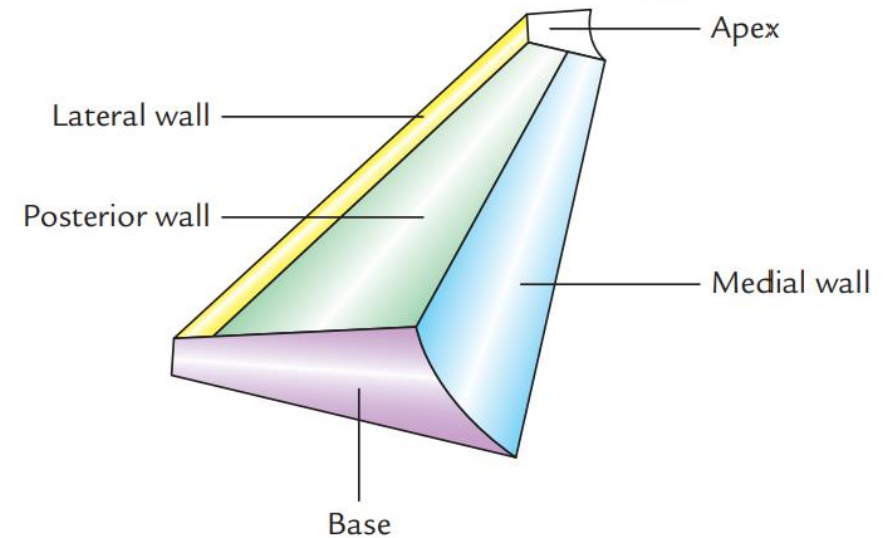
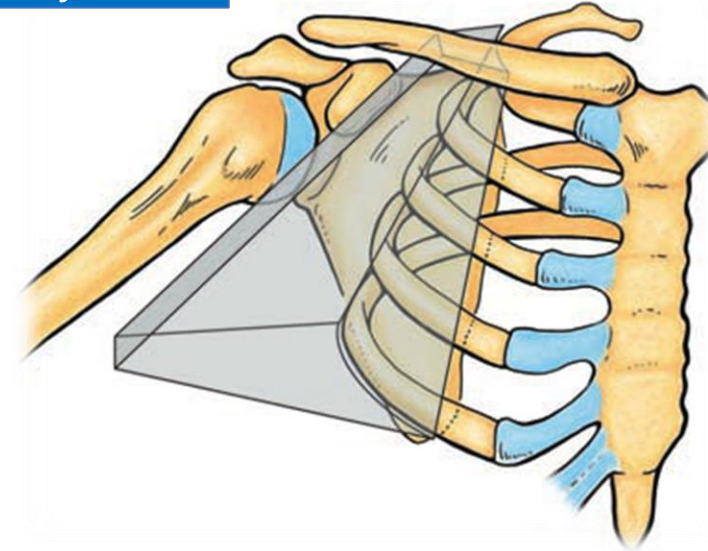
Axilla (Arm pit)

Definition:

Four-sided pyramidal space between upper part of thoracic wall & medial side of arm

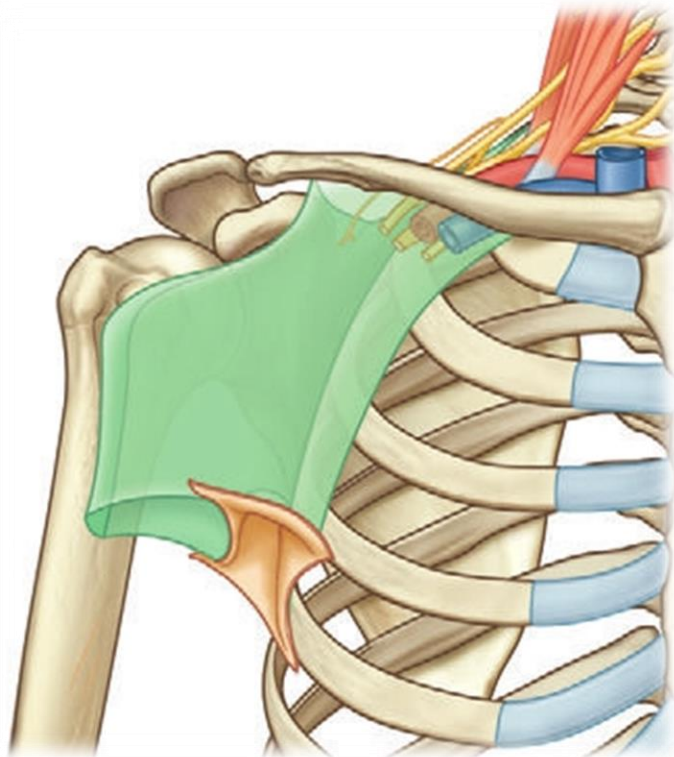
Boundaries:

- Apex
- Base (or floor)
- Four walls (anterior, posterior, lateral and medial).

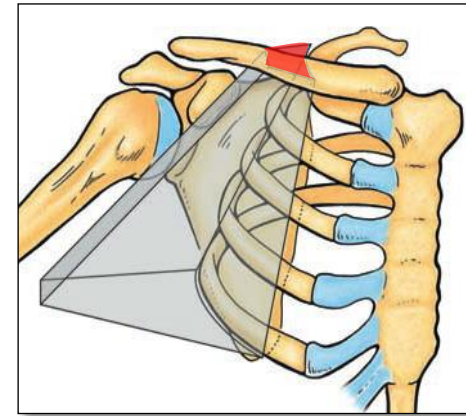
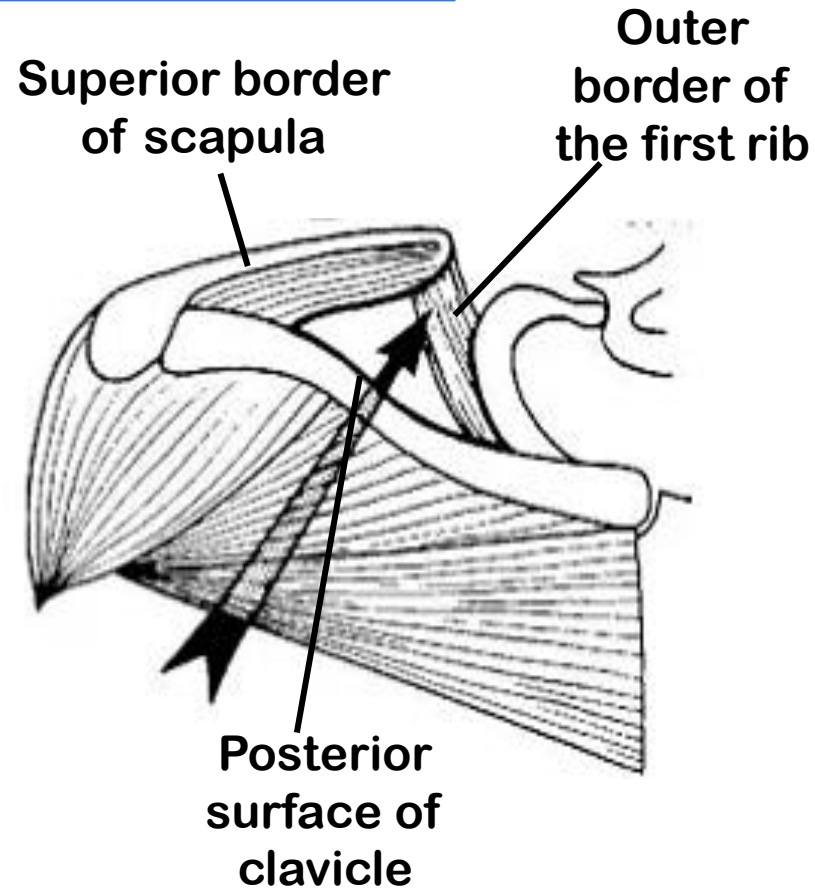


Source: Anne M.R. Agur. Aurther F. Dalley -
Grant Atlas of Anatomy – 13th edition

Boundaries



Source: Gray's Basic Anatomy - Richard L. Drake, Wayne Vogl, Adam W.M. Mitchell



Source: Anne M.R. Agur, Arthur F. Dalley - Grant Atlas of Anatomy – 13th edition

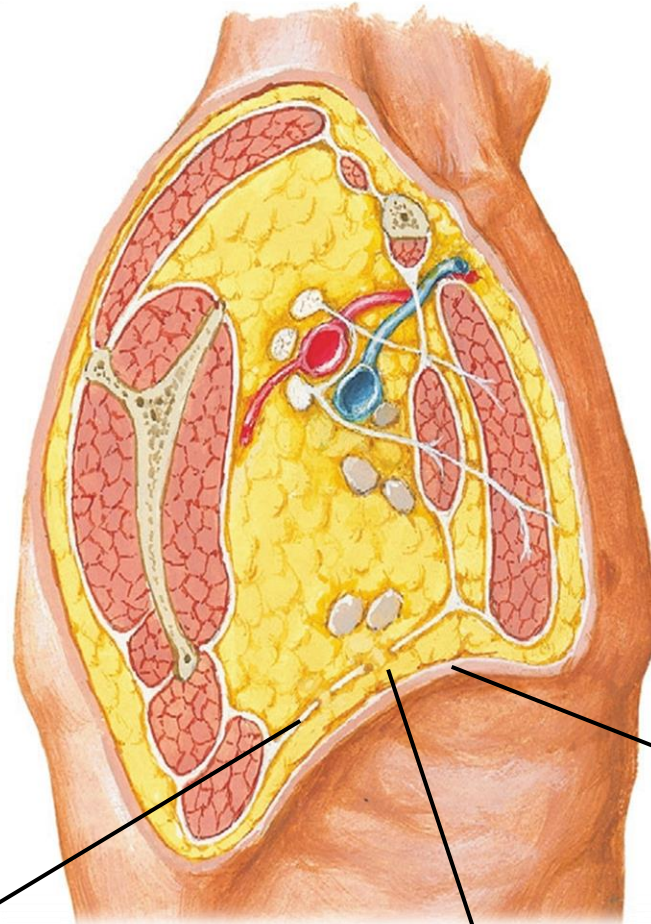
Apex (Cervico-axillary canal)

- It is the site where nerves & vessels pass between neck & upper limb.
- Is directed upwards & medially to the root of the neck.
- It is bounded, by three bones:
 1. Clavicle anteriorly.
 2. Upper border of the scapula posteriorly.
 3. Outer border of the first rib medially.

Base (floor)

Formed of:

- Skin.
- Superficial fascia.
- Axillary fascia.

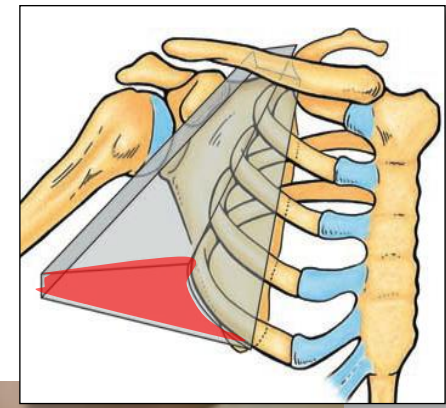


Source: Atlas of Human Anatomy, Sixth Edition-
Frank H. Netter, M.D

Deep (axillary)
fascia

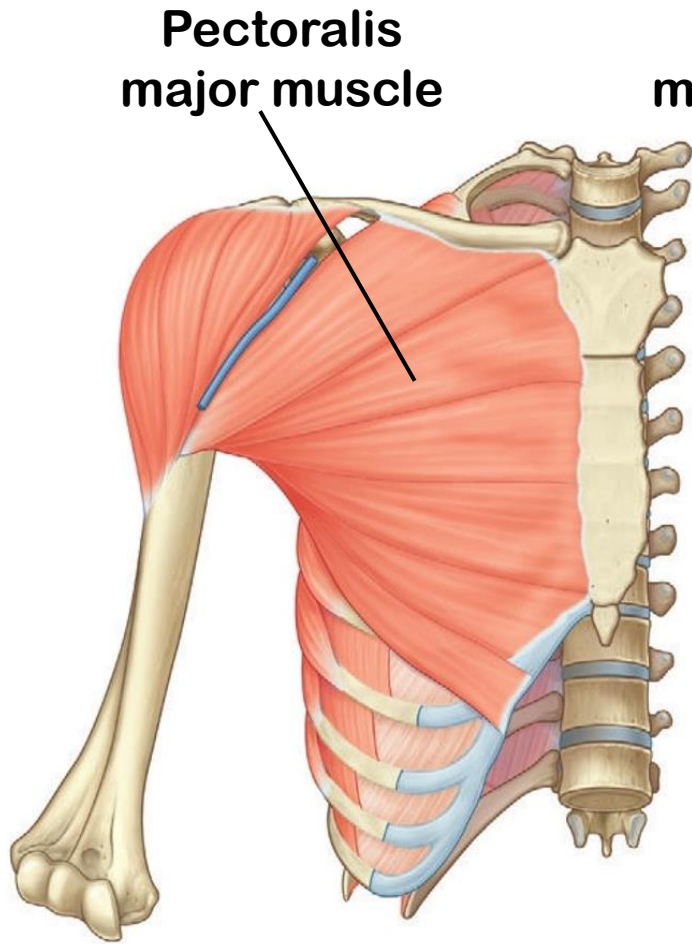
Superficial
fascia

Skin

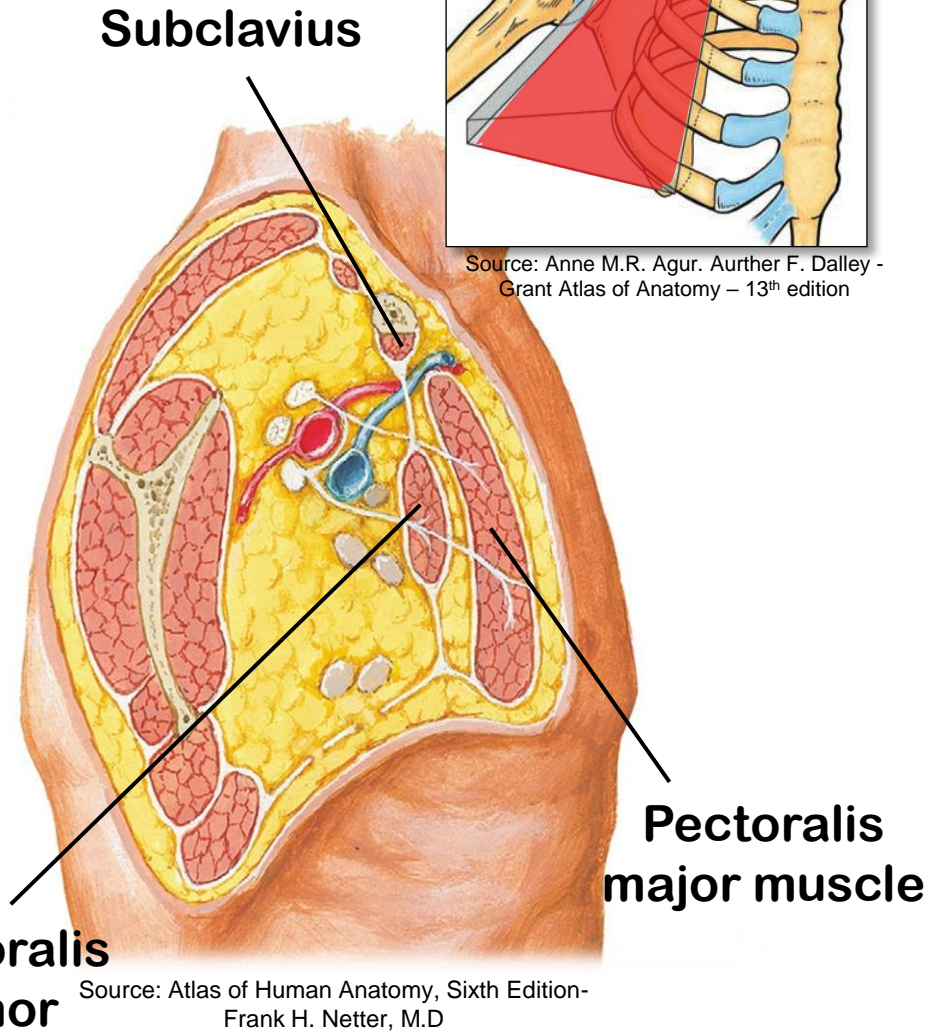
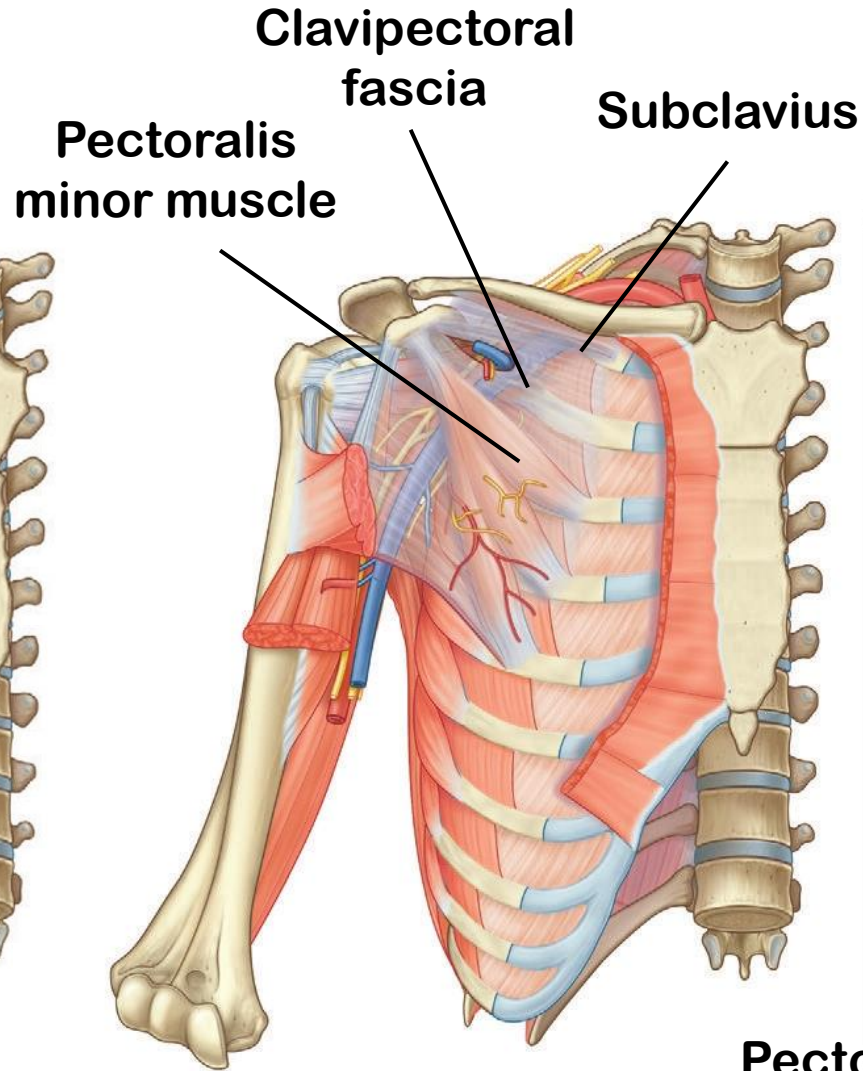


Source: Anne M.R. Agur, Aurthur F. Dalley -
Grant Atlas of Anatomy – 13th edition





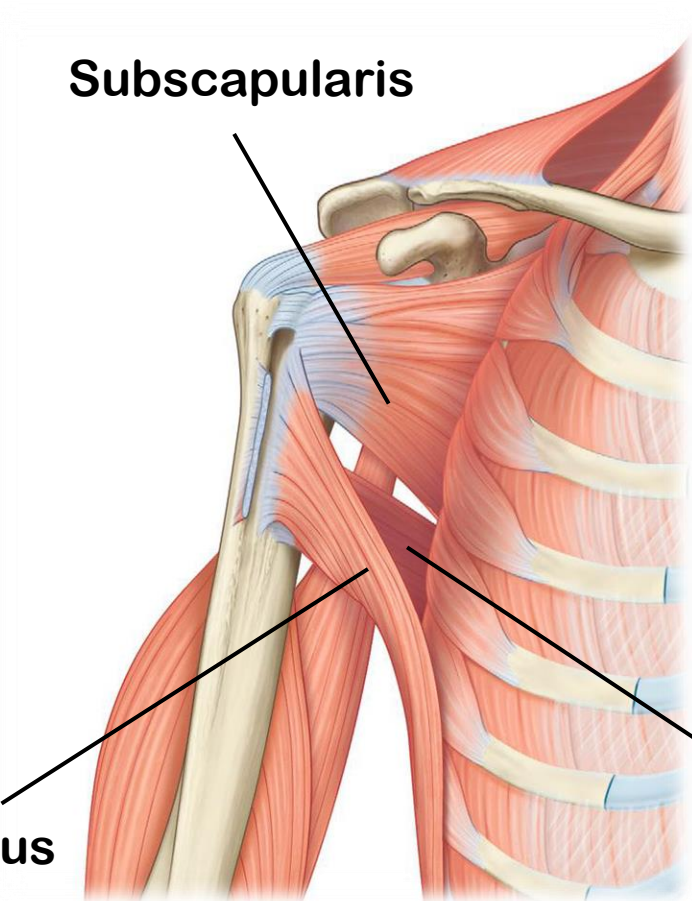
Source: Gray's Basic Anatomy - Richard L. Drake, Wayne Vogl, Adam W.M. Mitchell



Source: Anne M.R. Agur, Aurther F. Dalley - Grant Atlas of Anatomy - 13th edition

Anterior wall

1. **Superficial layer:** is formed by pectoralis major muscle.
2. **Deep layer:** is formed by subclavius, clavipectoral fascia & pectoralis minor muscle.



Subscapularis

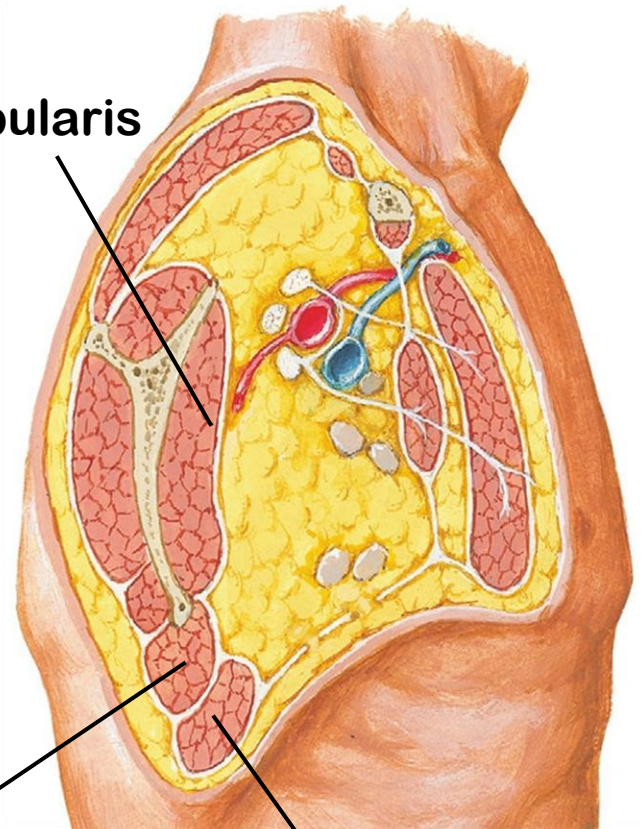
Latissimus dorsi

Teres major

Source: Gray's Basic Anatomy - Richard L. Drake, Wayne Vogl, Adam W.M. Mitchell

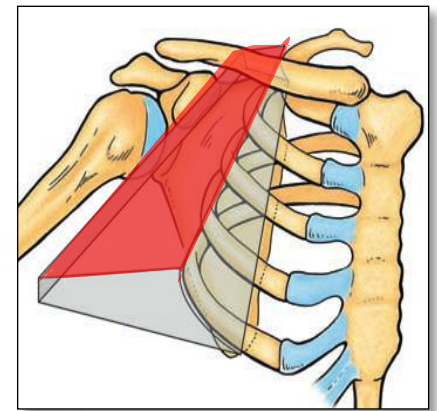
Subscapularis

Teres major



Source: Atlas of Human Anatomy, Sixth Edition - Frank H. Netter, M.D

Latissimus dorsi



Source: Anne M.R. Agur, Aurthur F. Dalley - Grant Atlas of Anatomy - 13th edition

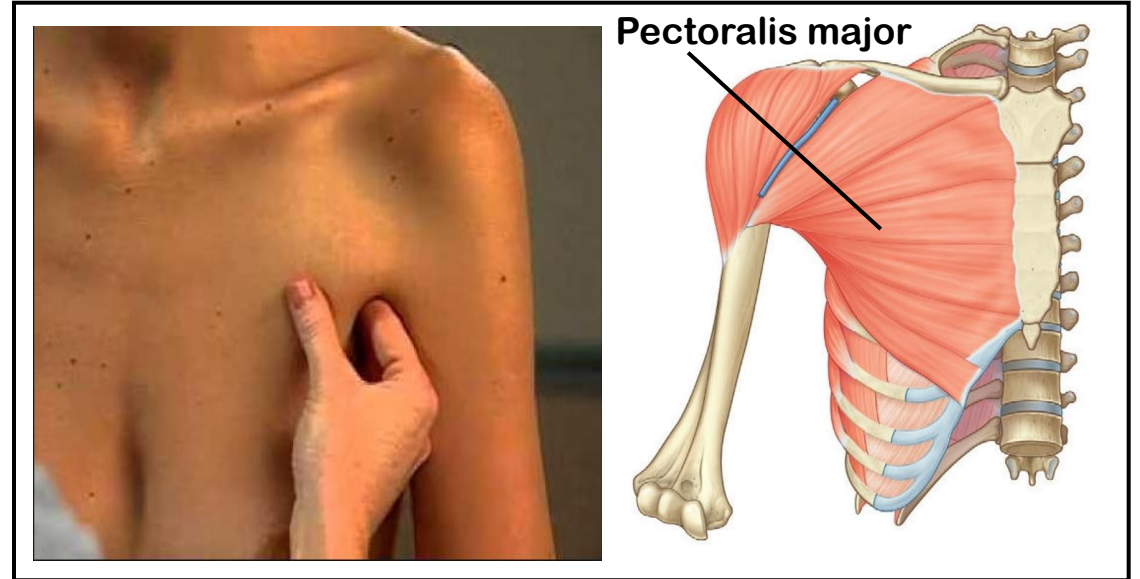
Posterior wall

- Subscapularis.
- Teres major.
- Latissimus dorsi muscle.

Anterior fold of axilla



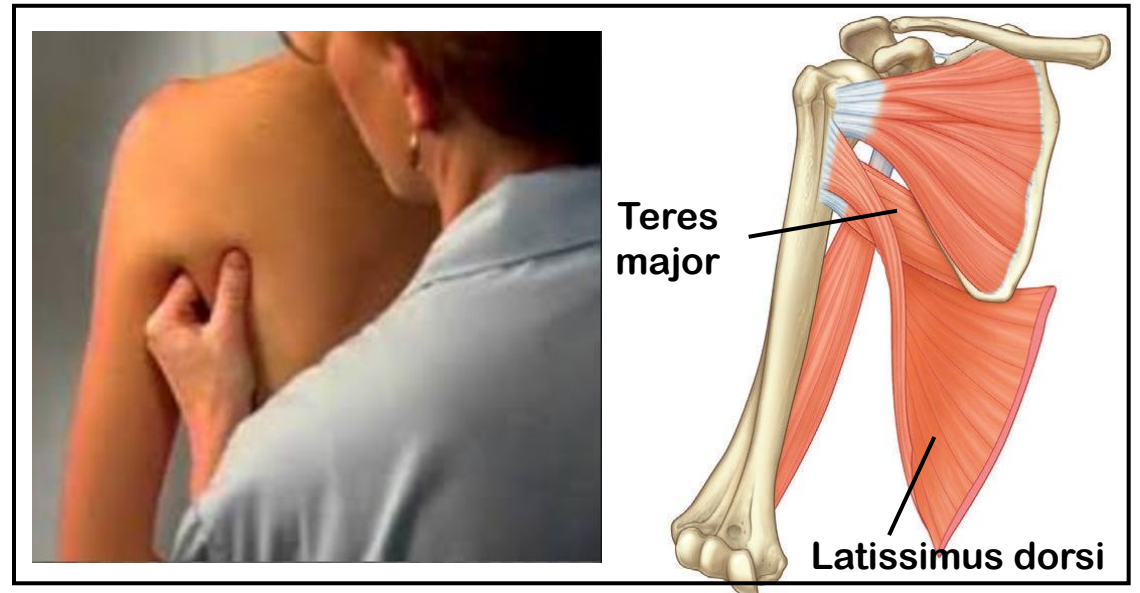
Twisted fibers of lower border of pectoralis major.



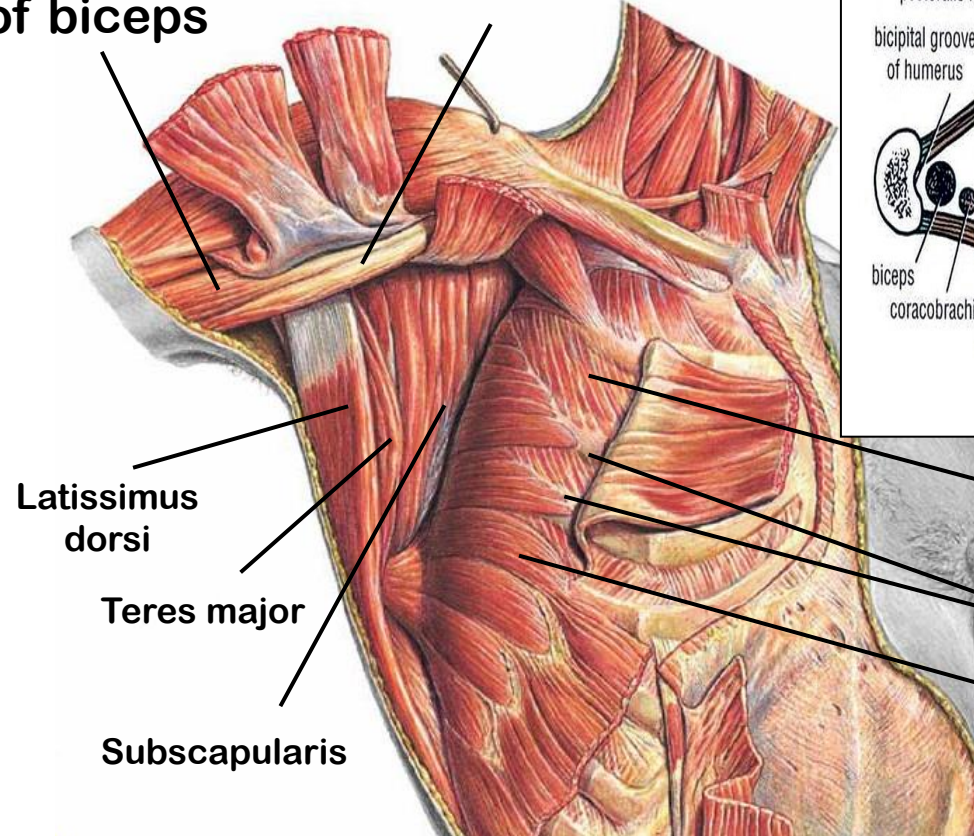
Posterior fold of axilla



Tendon of latissimus dorsi winds around the lower border of teres major.



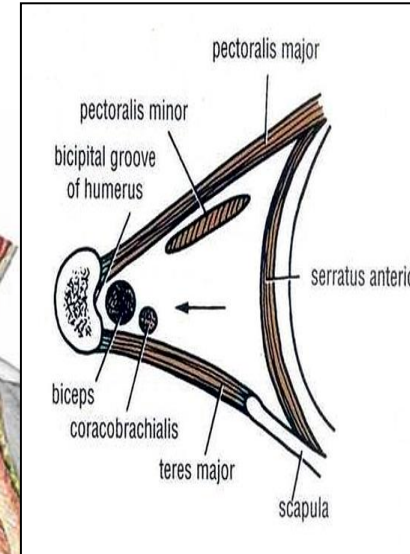
Short head of biceps
Coracobrachialis



Latissimus dorsi

Teres major

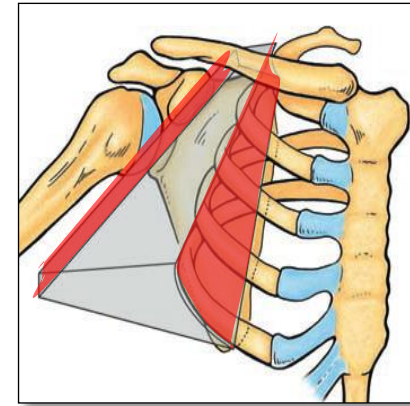
Subscapularis



Intercostal muscles

Upper 4-5 ribs

Serratus anterior



Source: Anne M.R. Agur, Arthur F. Dalley - Grant Atlas of Anatomy – 13th edition

Lateral wall

It is narrow and formed by:

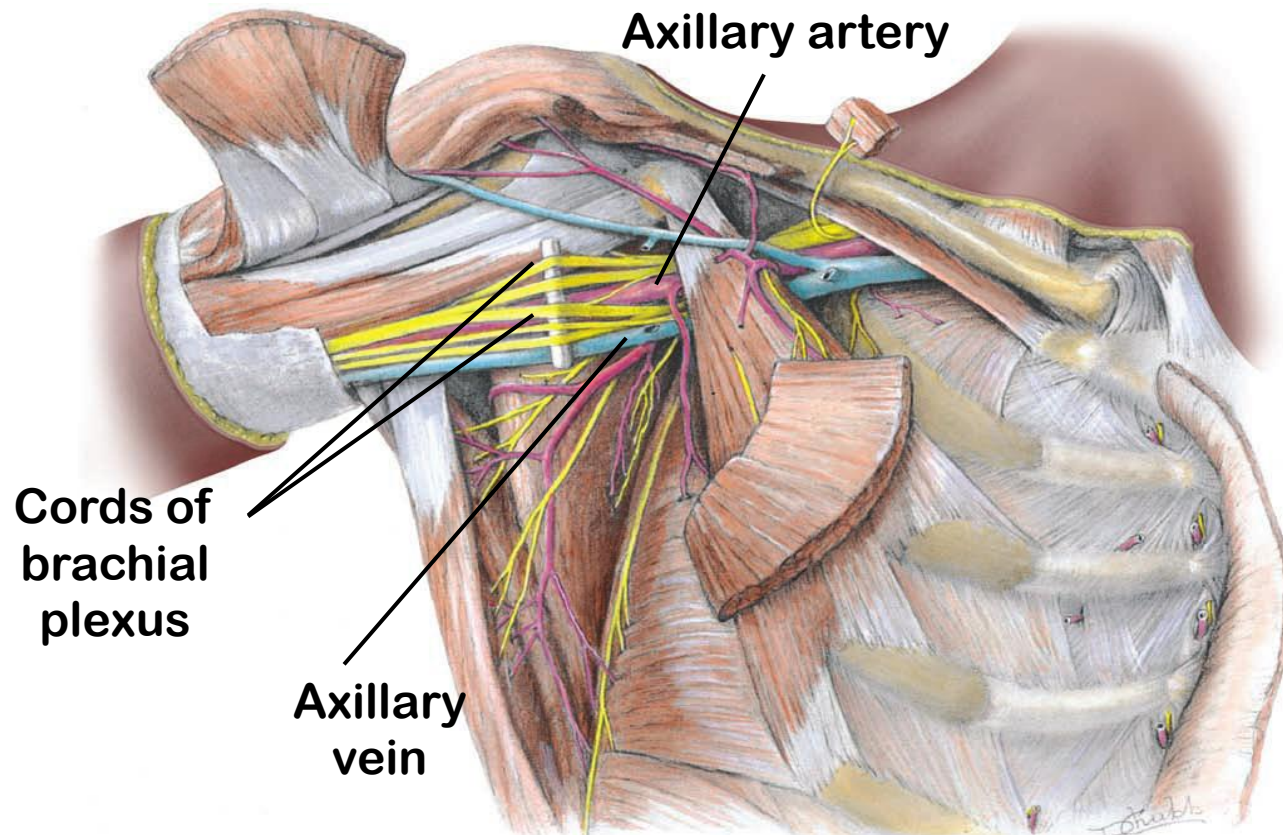
- Coracobrachialis.
- Biceps brachii.
- Bicipital groove of the humerus.

Medial wall

It is wide and formed by:

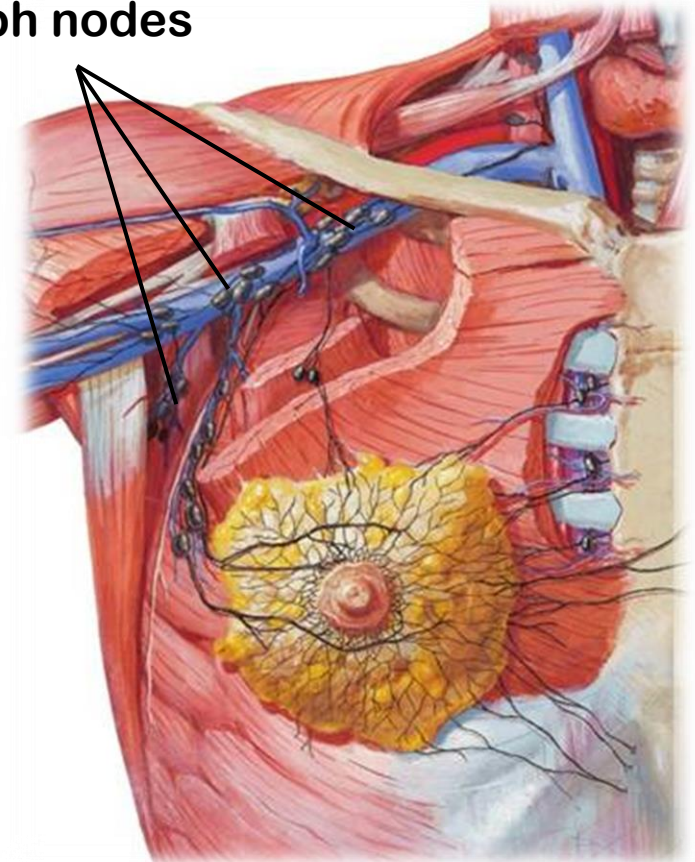
- Serratus anterior.
- Upper 4-5 ribs.
- Intercostal muscles.

Contents



Source: Anne M.R. Agur, Arthur F. Dalley - Grant
Atlas of Anatomy – 13th edition

Axillary lymph nodes

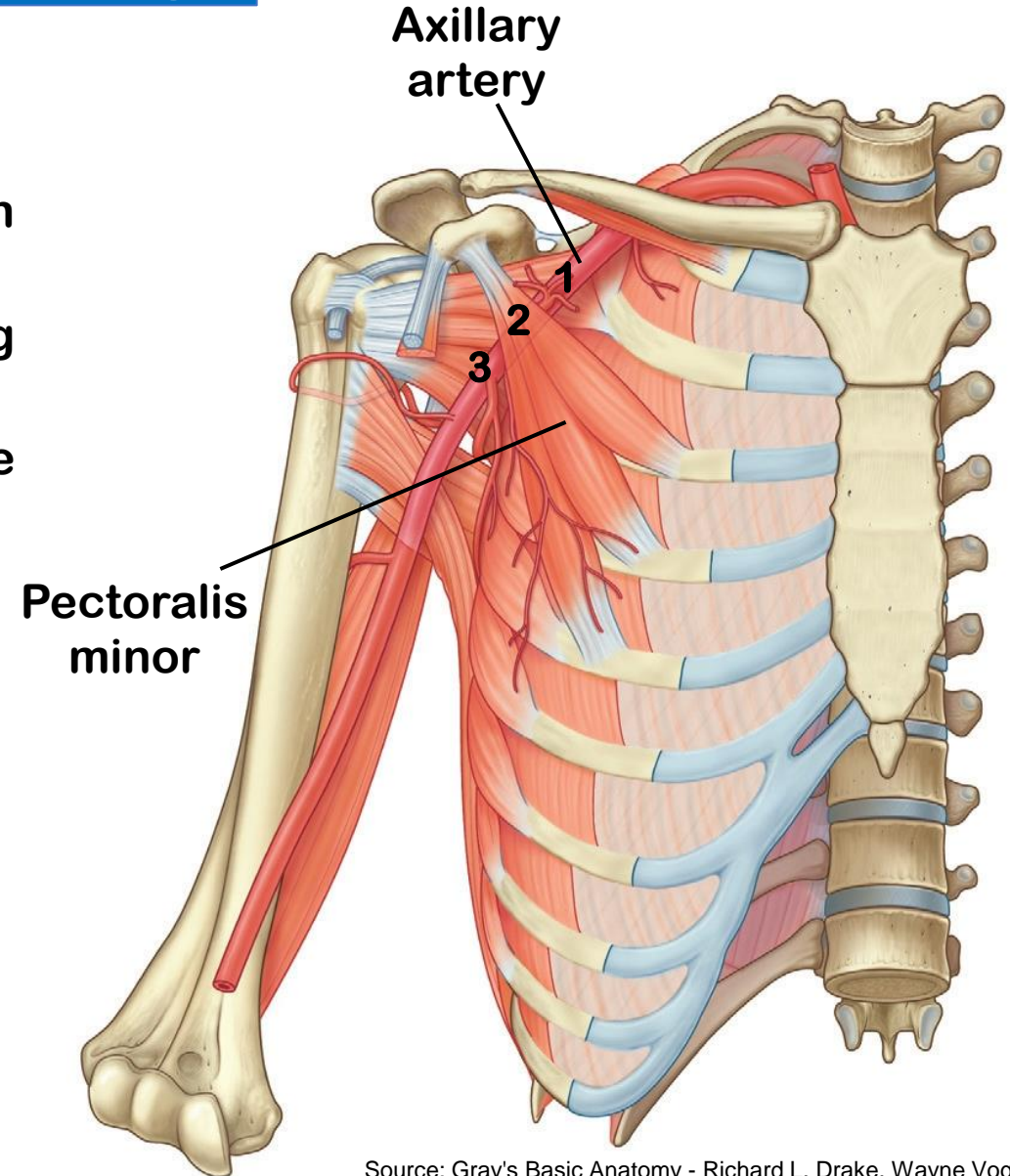


Source: Atlas of Human Anatomy, Sixth Edition-
Frank H. Netter, M.D

- 1- Vessels: Axillary artery & axillary vein.**
- 2- Nerves: cords and branches of brachial plexus.**
- 3- Axillary lymph nodes.**
- 4- Axillary fat.**
- 5- Tail of the breast.**

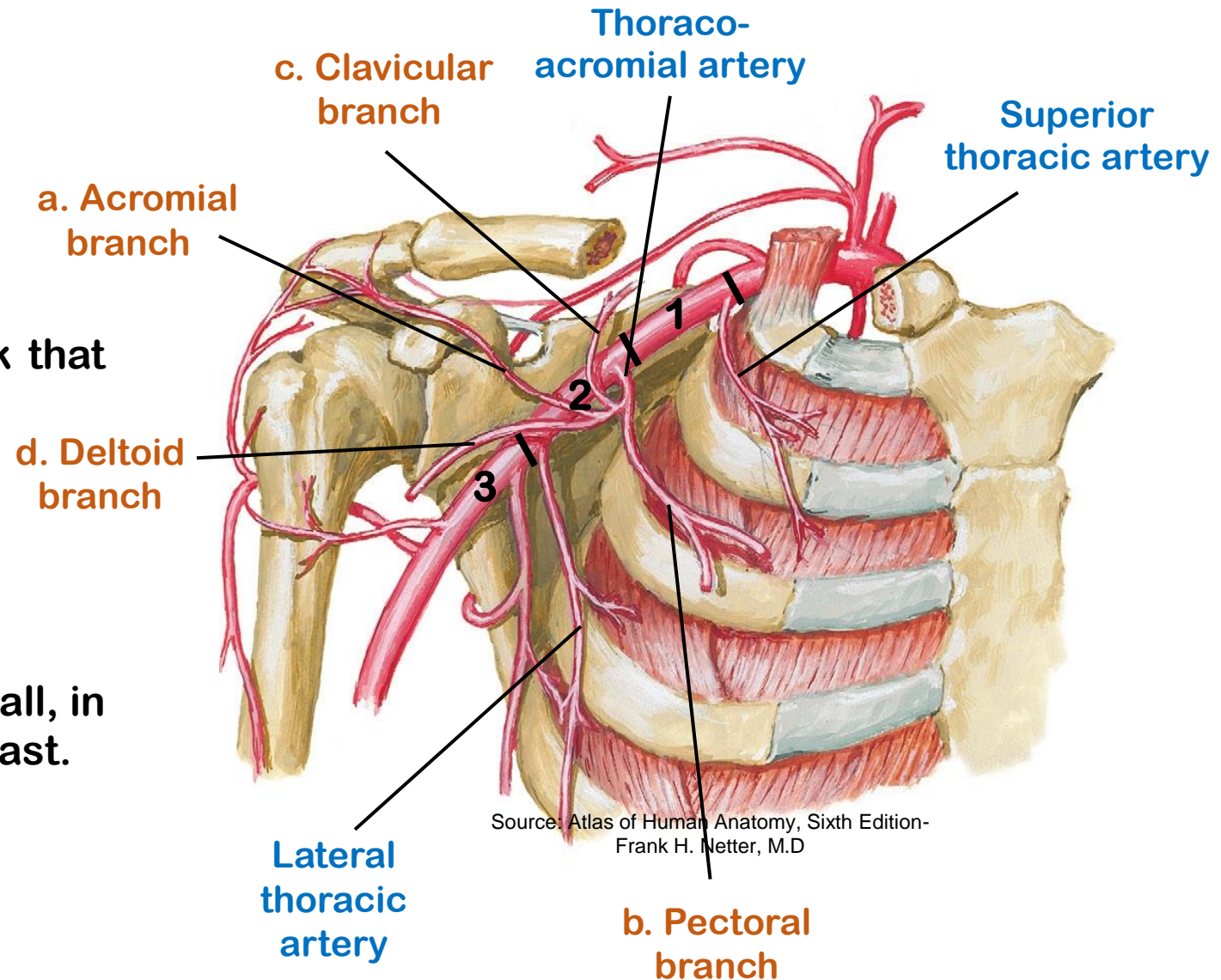
Axillary artery

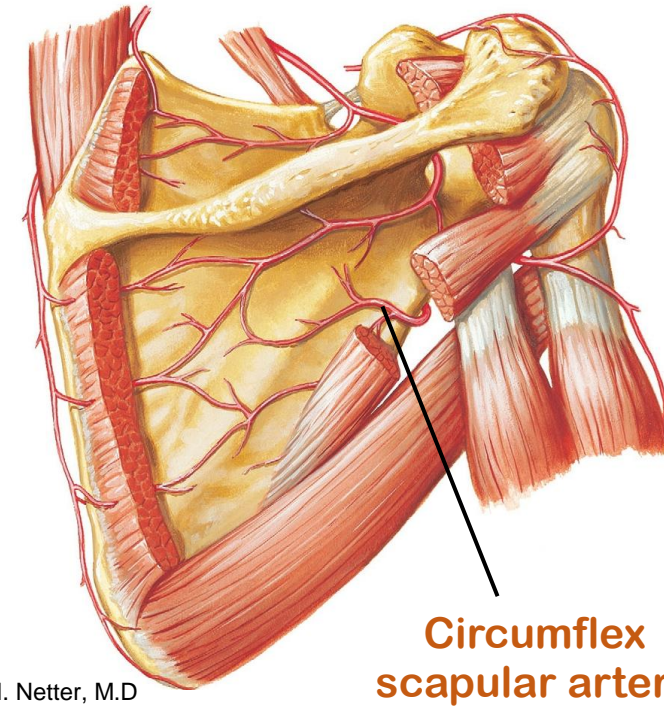
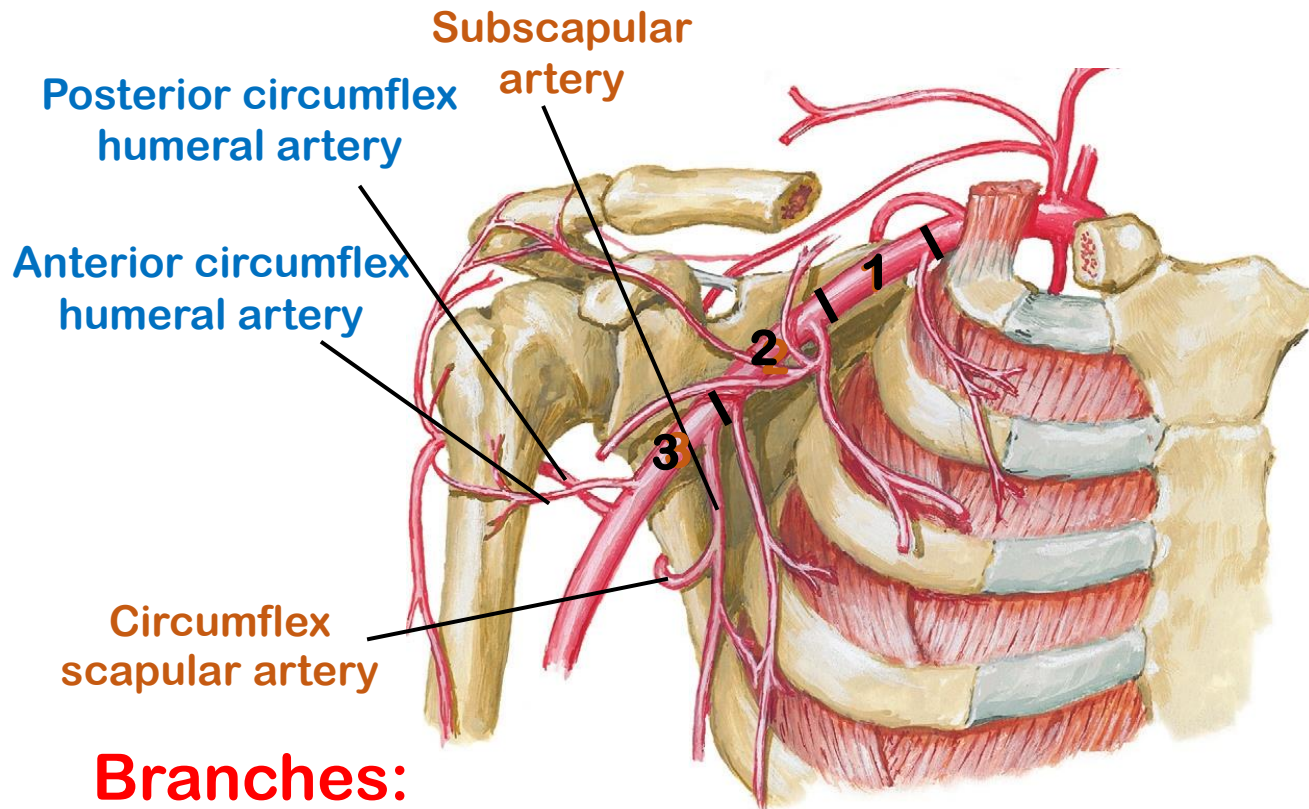
- **Beginning:** as the continuation of subclavian artery at outer border of first rib.
- **End:** at lower border of teres major by becoming brachial artery.
- **Course:** divided by pectoralis minor into three parts:
 - ✓ **1st part:** above pectoralis minor.
 - ✓ **2nd part:** behind or deep to pectoralis minor.
 - ✓ **3rd part:** below pectoralis minor.



Branches:

- **First part:** One branch:
Superior thoracic artery.
- **Second part:** Two branches:
 1. **Thoraco-acromial artery:** short trunk that divides into:
 - a. Acromial branch.
 - b. Pectoral branch.
 - c. Clavicular branch.
 - d. Deltoid branch.
 2. **Lateral thoracic artery:** to thoracic wall, in females, it is enlarged & supplies breast.



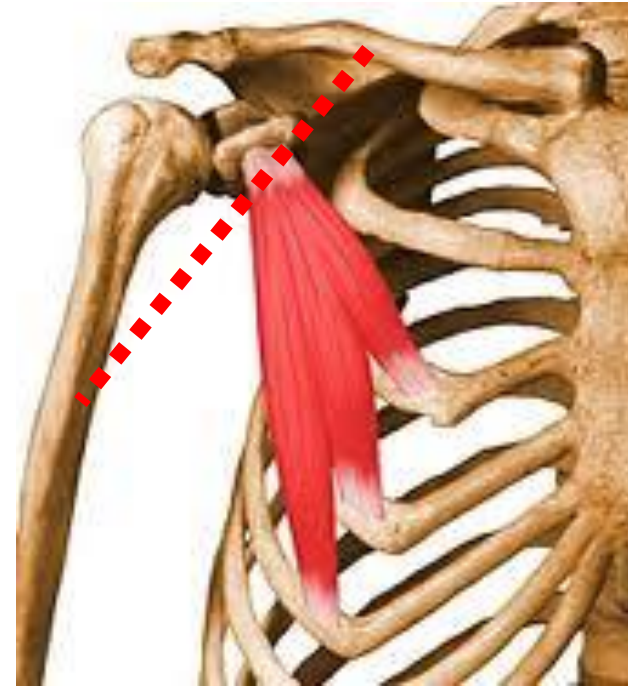
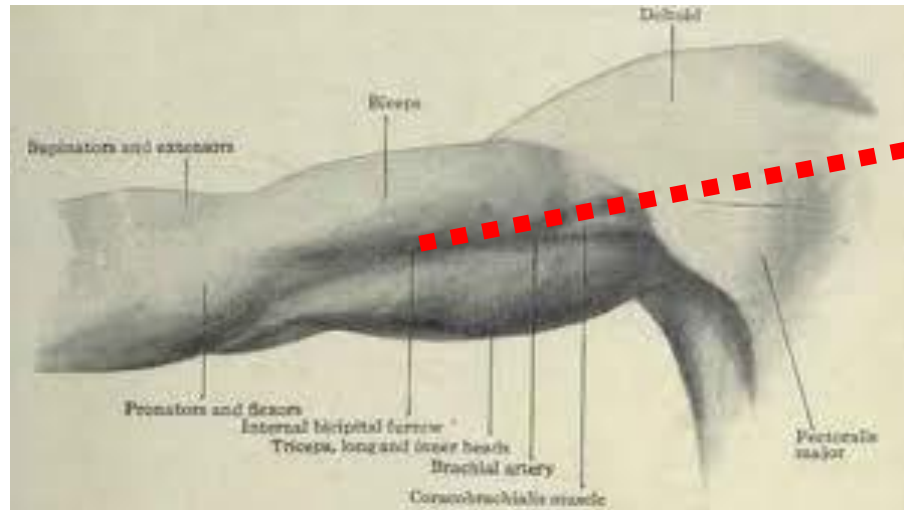


Source: Atlas of Human Anatomy, Sixth Edition-Frank H. Netter, M.D

Branches:

- **Third part:** Three branches:

1. **Subscapular artery:** Largest branch of axillary artery, follows lateral border of scapula till inferior angle, accompanies thoracodorsal nerve # around scapula → gives circumflex scapular artery → # around scapula.
2. **Anterior circumflex humeral artery:** Passes anterior to surgical neck of humerus & anastomoses with posterior circumflex humeral artery.
3. **Posterior circumflex humeral artery:** it accompanies axillary nerve & anastomoses with anterior circumflex forming a circular anastomosis around surgical neck.



Surface anatomy:

- Arm abducted & laterally rotated.
- Draw a line joining mid-clavicular point with a point at the middle of the medial side of the arm.

Anastomosis around scapula

Definition:

Anastomosis between **1st part** of subclavian artery & **3rd part** of axillary artery.

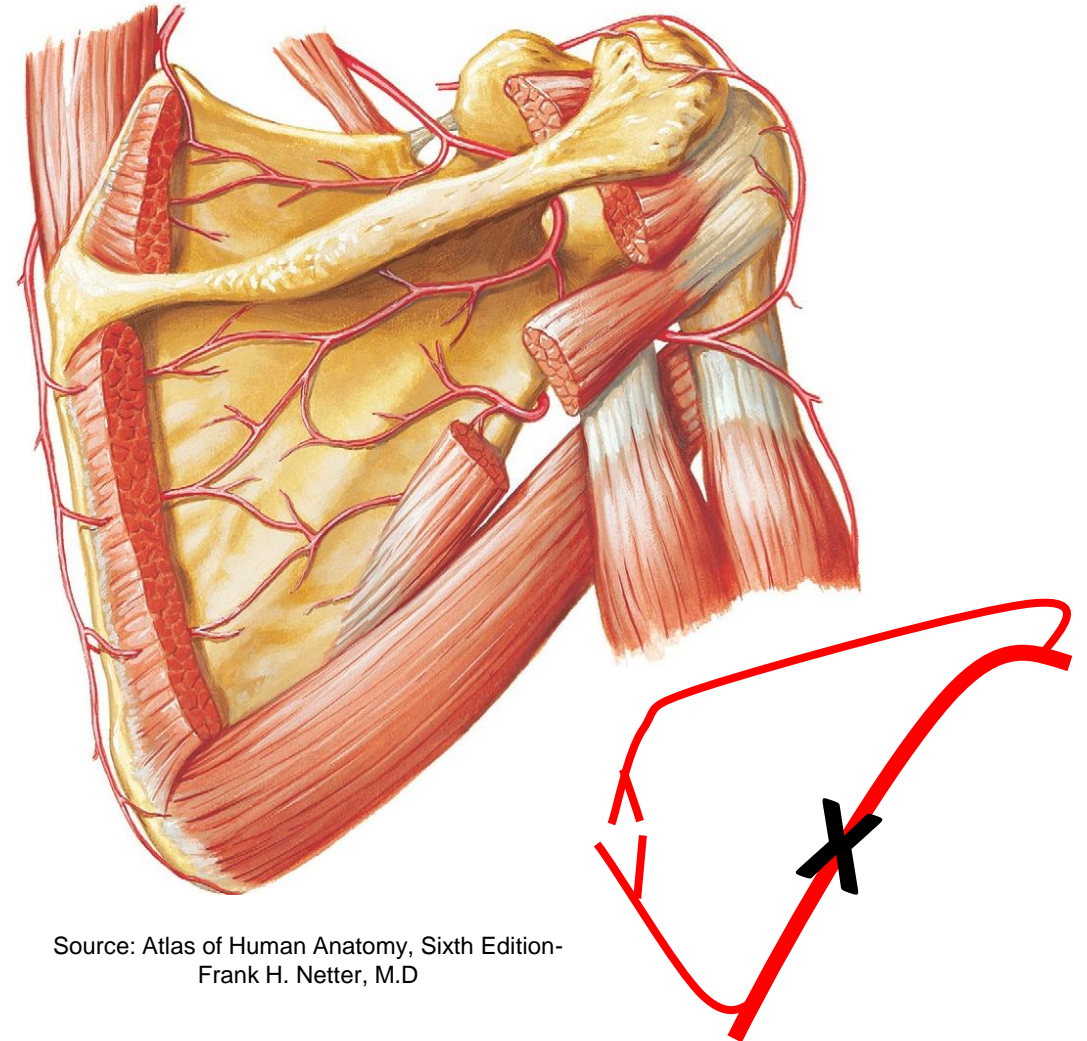
Value:

It carries adequate blood to the upper limb when there is an occlusion between the two arteries.

Site:

On the fossae of scapula, deep to the muscles.

Arterial Anastomosis: Connection between the arteries, which is present mainly around the joints. Joint movement leads to temporary occlusion of blood vessels. Anastomosis provides alternative routes for blood to upper limb.



Source: Atlas of Human Anatomy, Sixth Edition-
Frank H. Netter, M.D

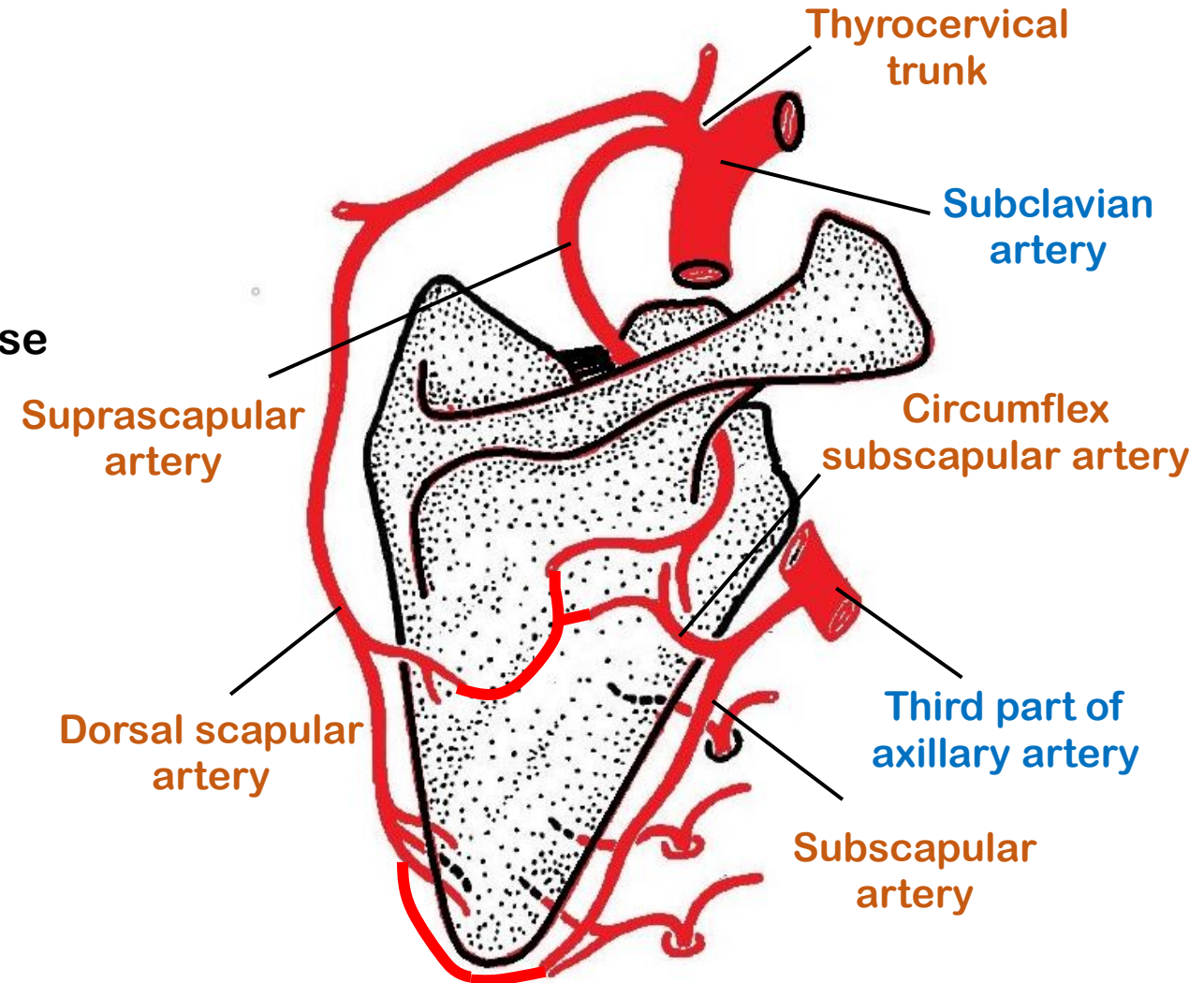
Arteries sharing in the anastomosis:

From 1st part of subclavian artery:

1. Dorsal scapular (deep branch of transverse cervical artery).
2. Suprascapular artery.

From 3rd part of axillary artery:

1. Subscapular artery.
2. Circumflex scapular artery.



Axillary vein

Beginning:

As the continuation of the basilic vein at the lower border of teres major.

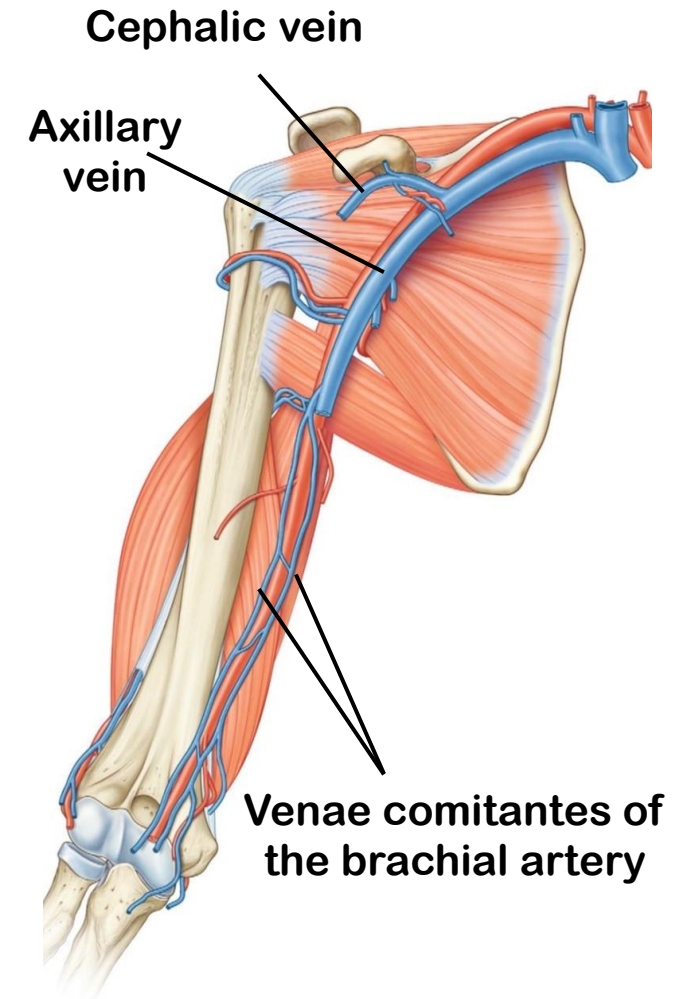
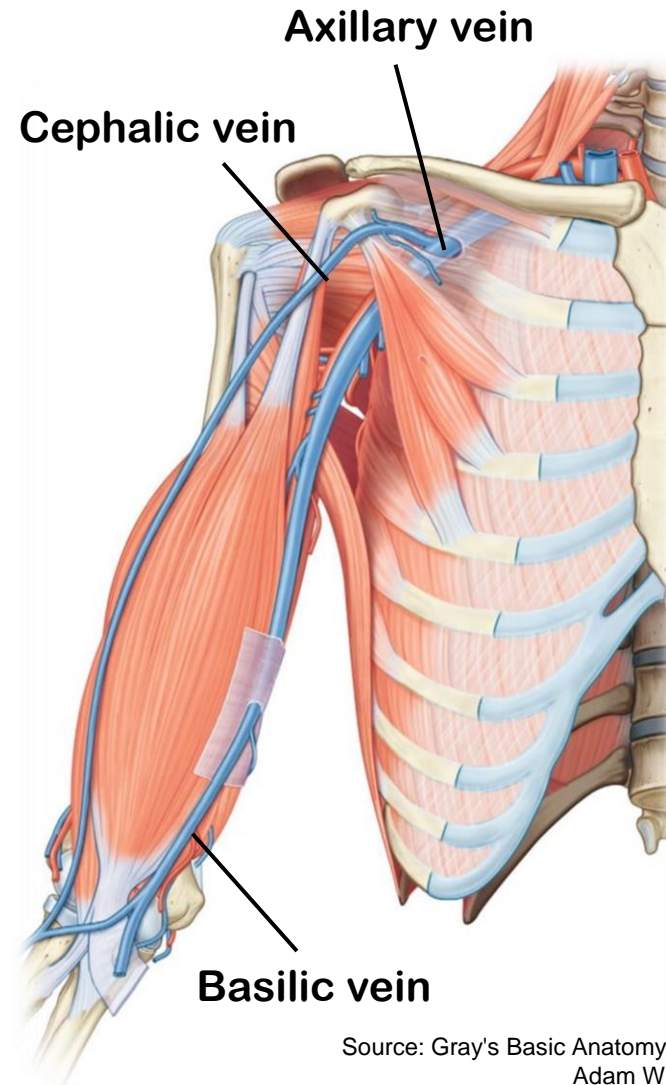
End:

At the outer border of the 1st rib by forming the subclavian vein.

It runs medial to the axillary artery.

Tributaries:

- Tributaries corresponding to the branches of the axillary artery.
- Cephalic vein at its upper part.
- The two venae comitantes of the brachial artery (brachial veins).



Source: Gray's Basic Anatomy - Richard L. Drake, Wayne Vogl, Adam W.M. Mitchell

Axillary lymph nodes

Number:

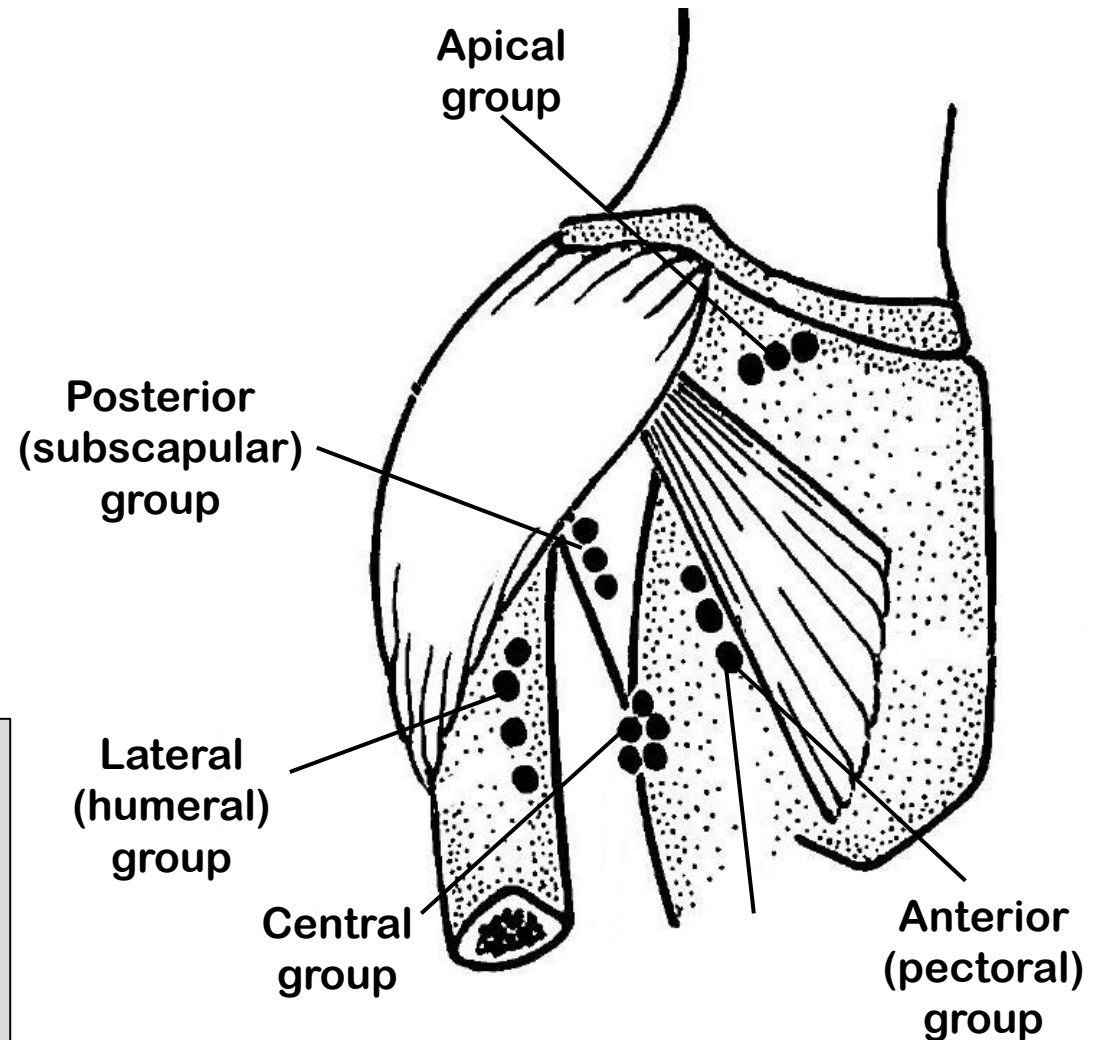
20 to 30

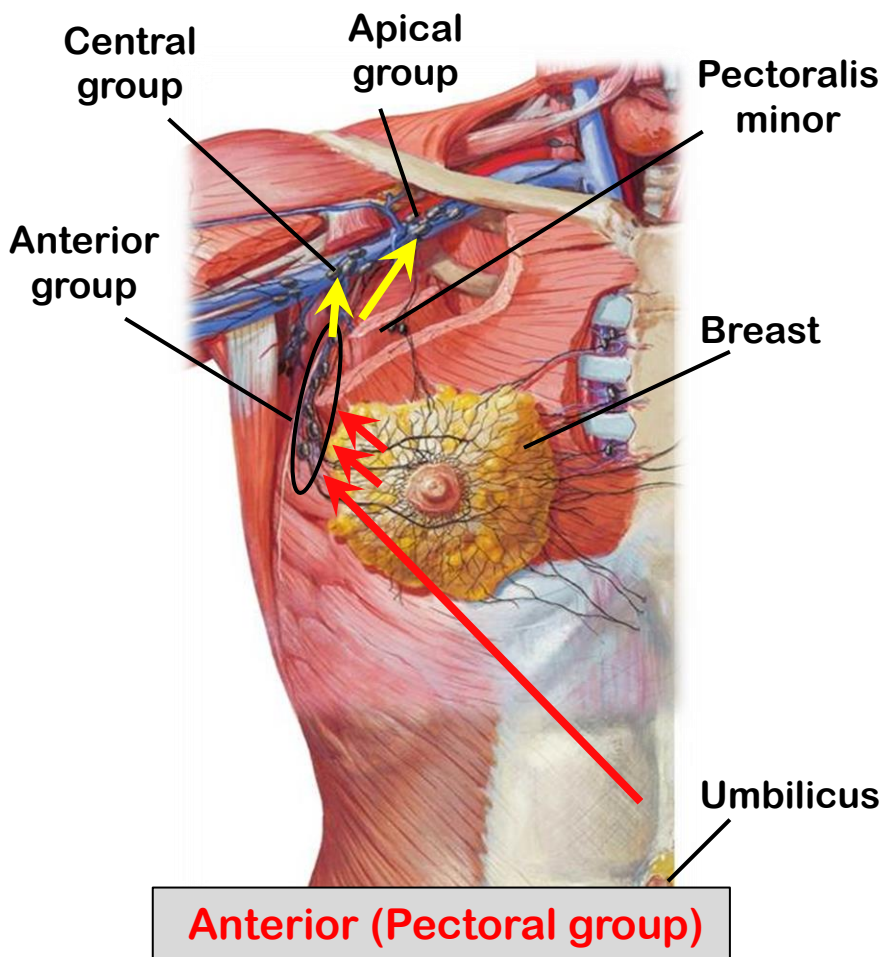
Site:

They are arranged in 5 groups in relations to the wall and apex of axilla:

1. Anterior (pectoral) group.
2. Posterior (subscapular) group.
3. Lateral (humeral) group.
4. Central group.
5. Apical group.

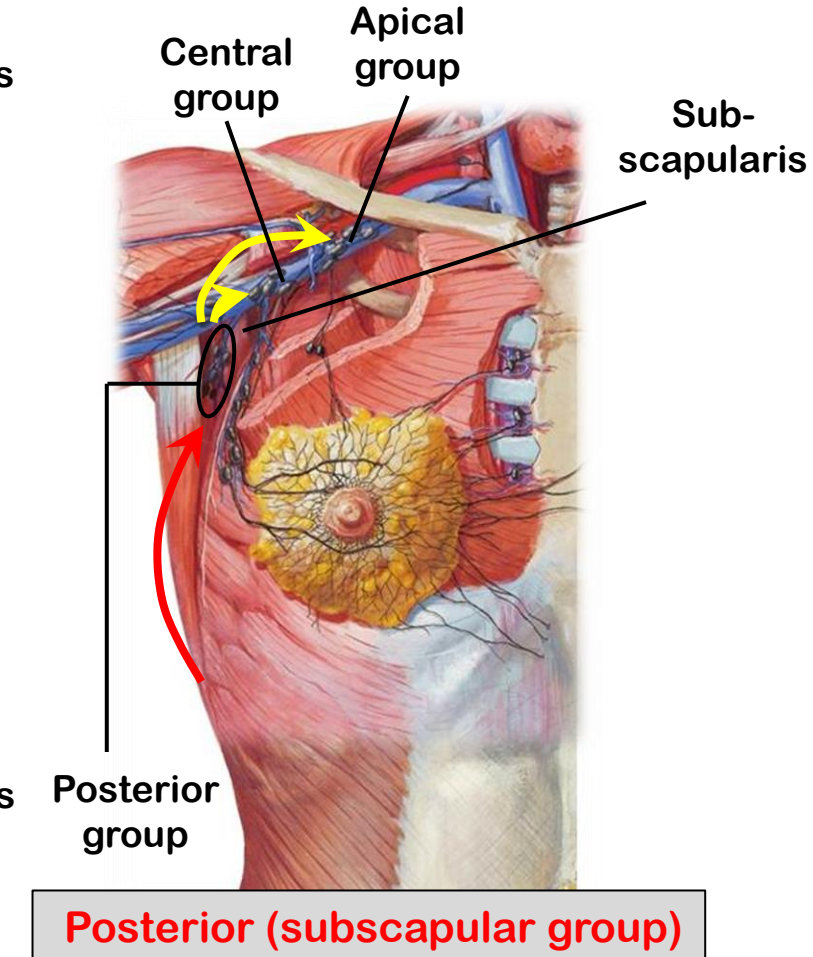
In cases of suspected breast cancer, axillary lymph nodes examination is mandatory. Breast cancer send lymphatic metastasis to axillary lymph nodes. In case of mastectomy (surgical breast removal) axillary lymph nodes must also be removed.





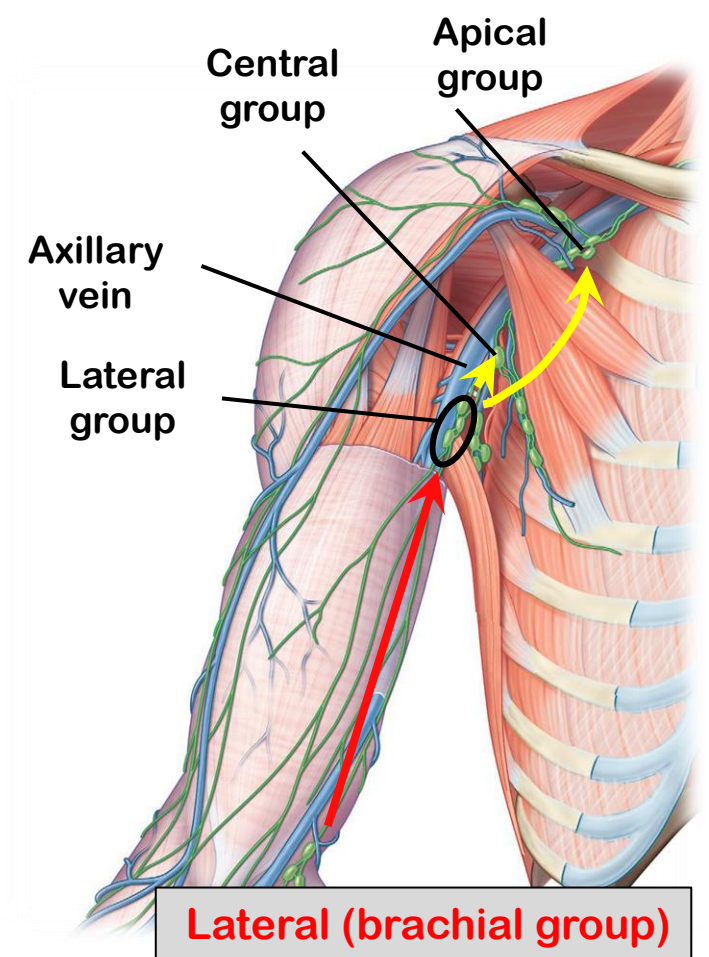
Afferent:

- Central part and lateral quadrant of the breast.
- Anterolateral wall of the trunk above the level of the umbilicus



Afferent:

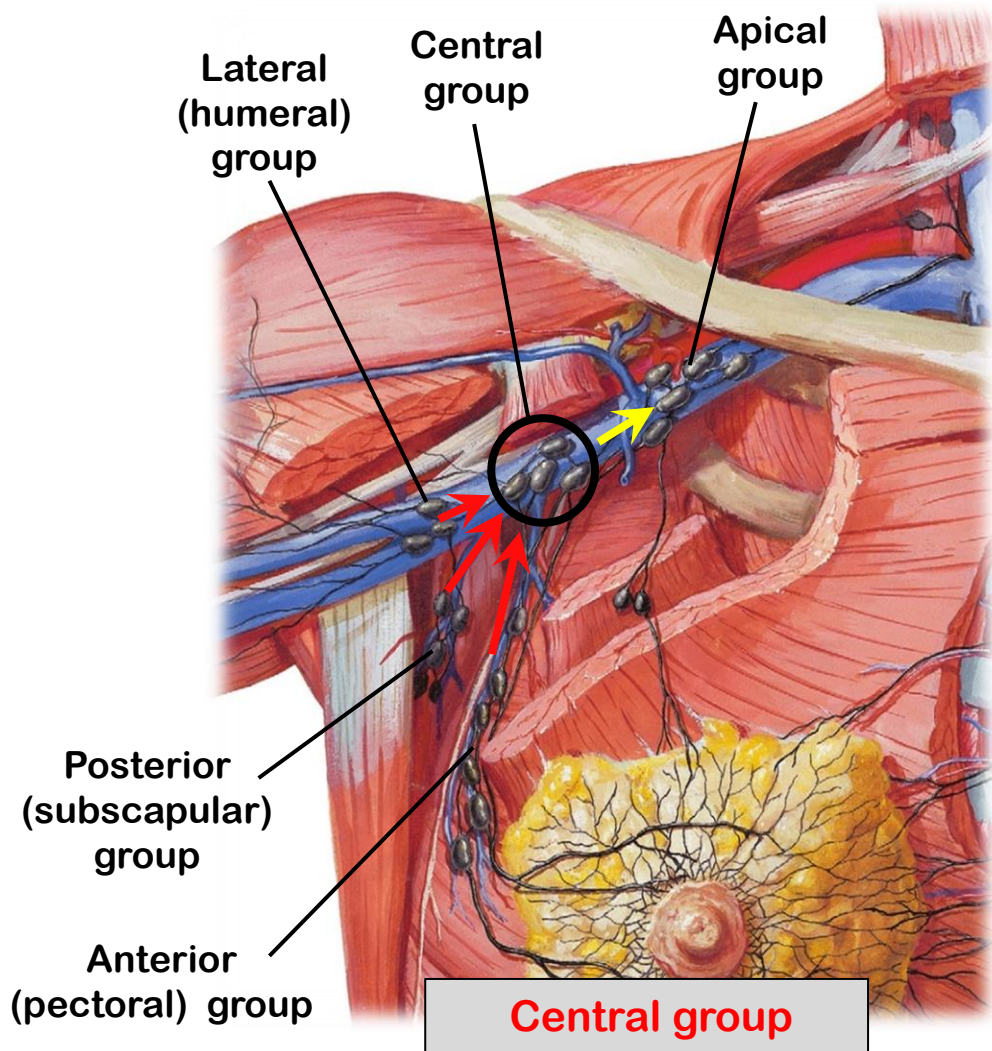
- Posterior wall of the trunk as far as the iliac crest.
- The back of the shoulder region.



Afferent:

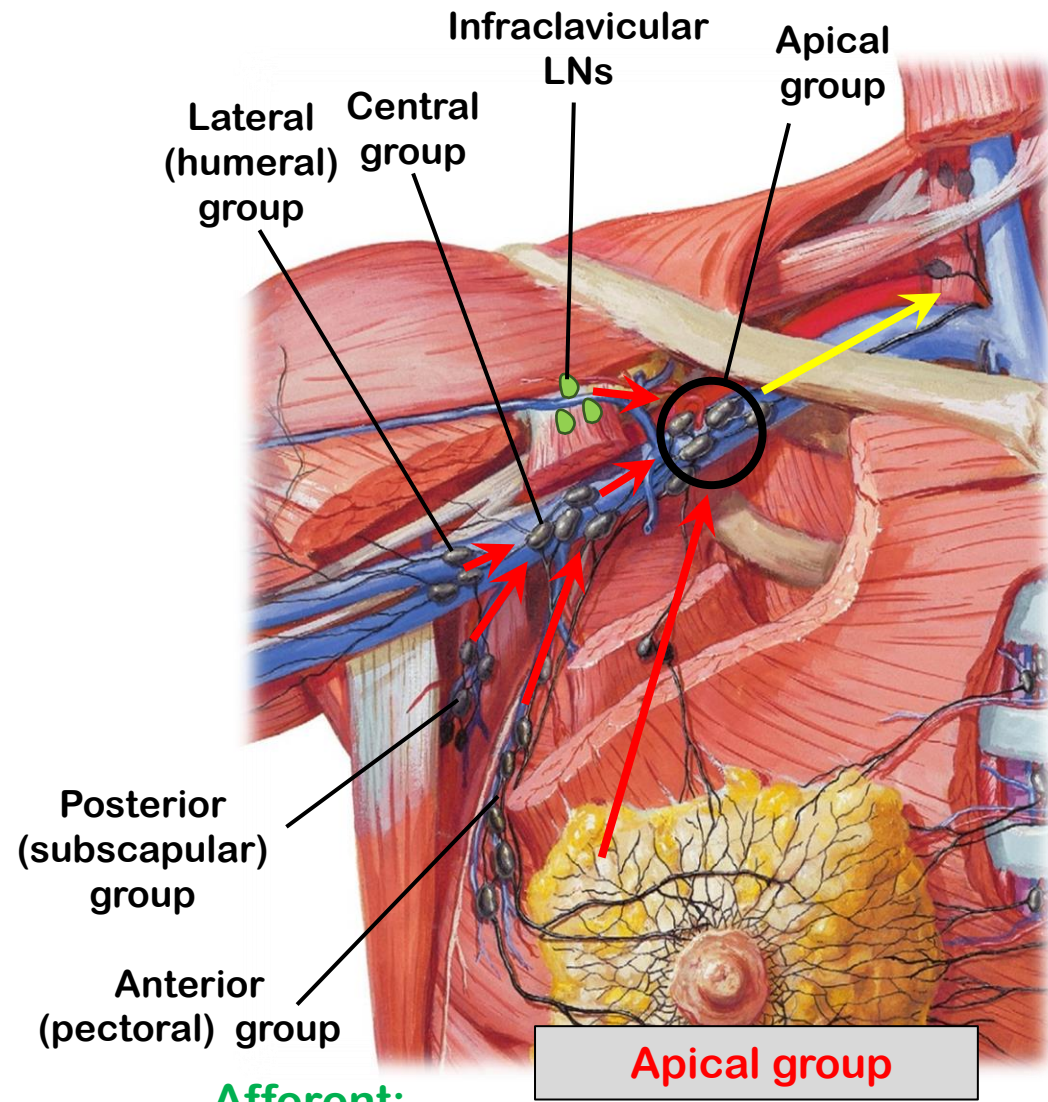
- The whole of the upper limb except the areas drained by the lymphatics accompanying the cephalic vein.

Efferent: Apical, posterior and lateral LNs drain to central and apical groups of axillary LNs



Afferents: From anterior, posterior & lateral groups.

Efferent: To apical group of axillary LNs.



Afferent:

- All the other groups of axillary LNs.
- Directly from the upper & peripheral part of the breast.
- Infra-clavicular LNs.

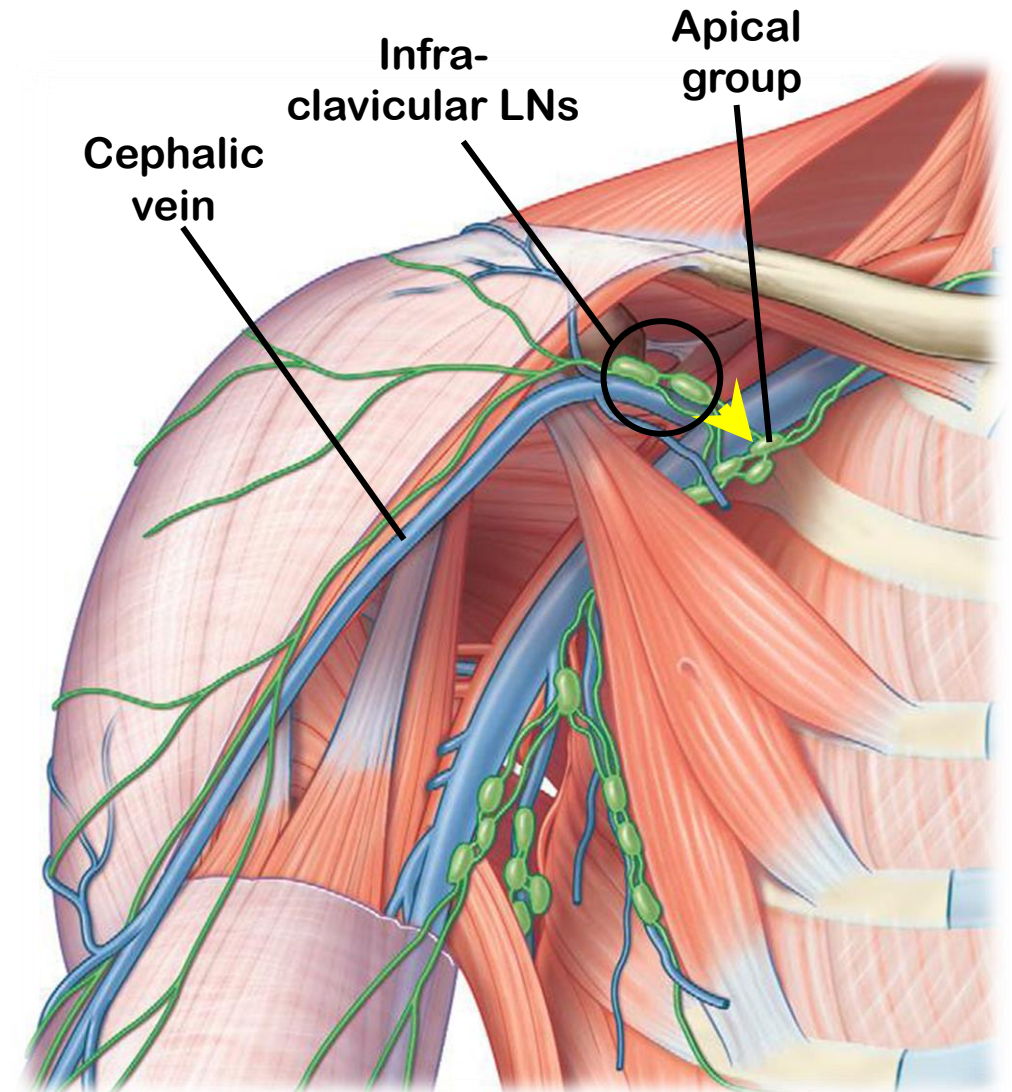
Efferent: Subclavian lymph trunk.

Infra-clavicular LNs

Infra-clavicular LNs:

Afferents: Few lymph vessels from the lateral side of upper limb.

Efferent: To apical group of axillary LNs.





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Thank you