OBJECTIVES

- By the end of the lecture the students should be able to :
- Identify and describe the muscles of the pectoral region.
  - Pectoralis major.
  - Pectoralis minor.
  - Subclavius.
  - Serratus anterior.
  - Action of these muscles
  - Clavipectoral Fascia
  - Blood & Nerve Supply
- Clinical Relevance

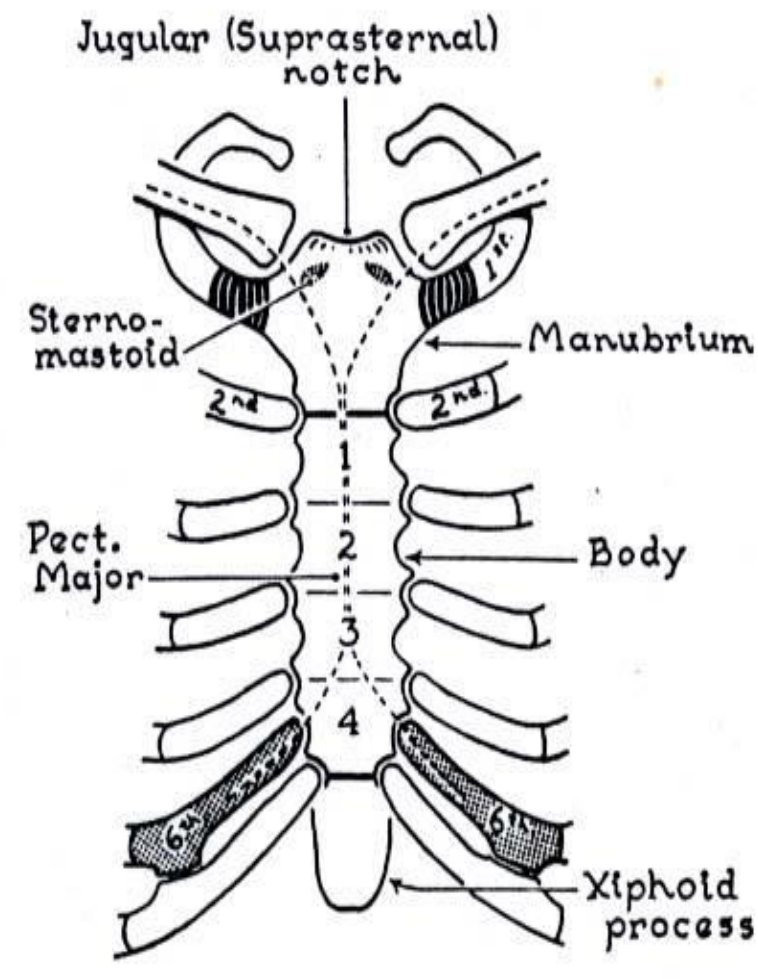
Pectoral region

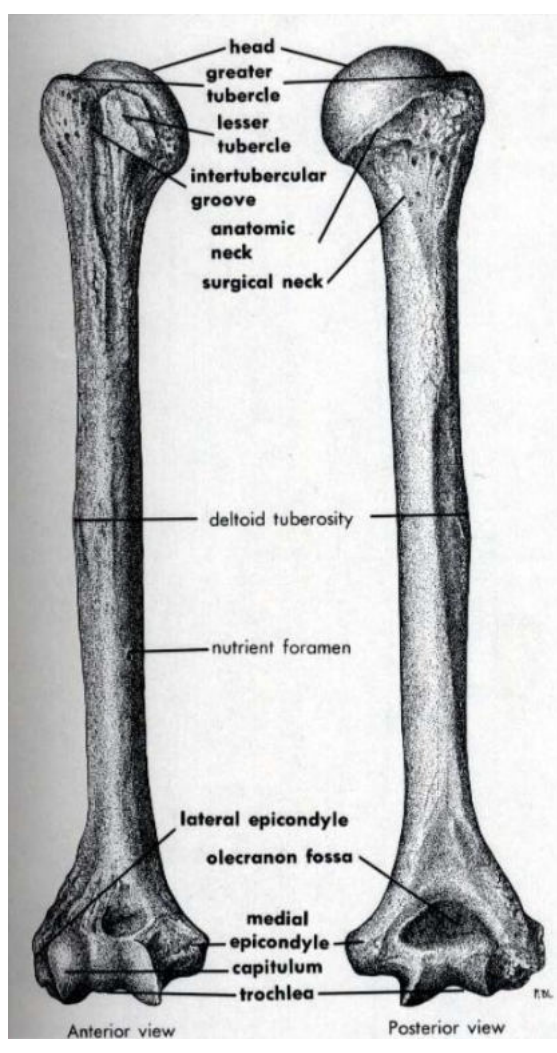
1. Bony landmark :

Sternum:

Jugular notch (body of T2)
Sternal angle of Louise (T4-5)
Xiphosternal joint (T9)

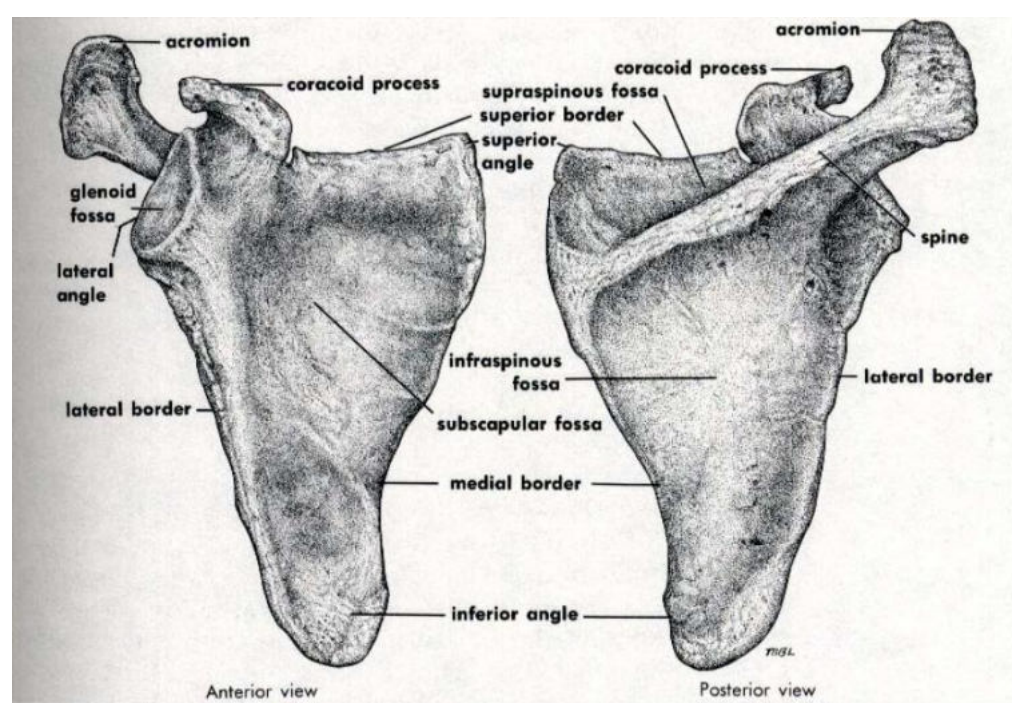
Ribs & costal cartilage





Humerus:

head



Scapular: acromian, coracoid process

Clavicle:

- **supraclavicular fossa**
- **infraclavicular fossa**

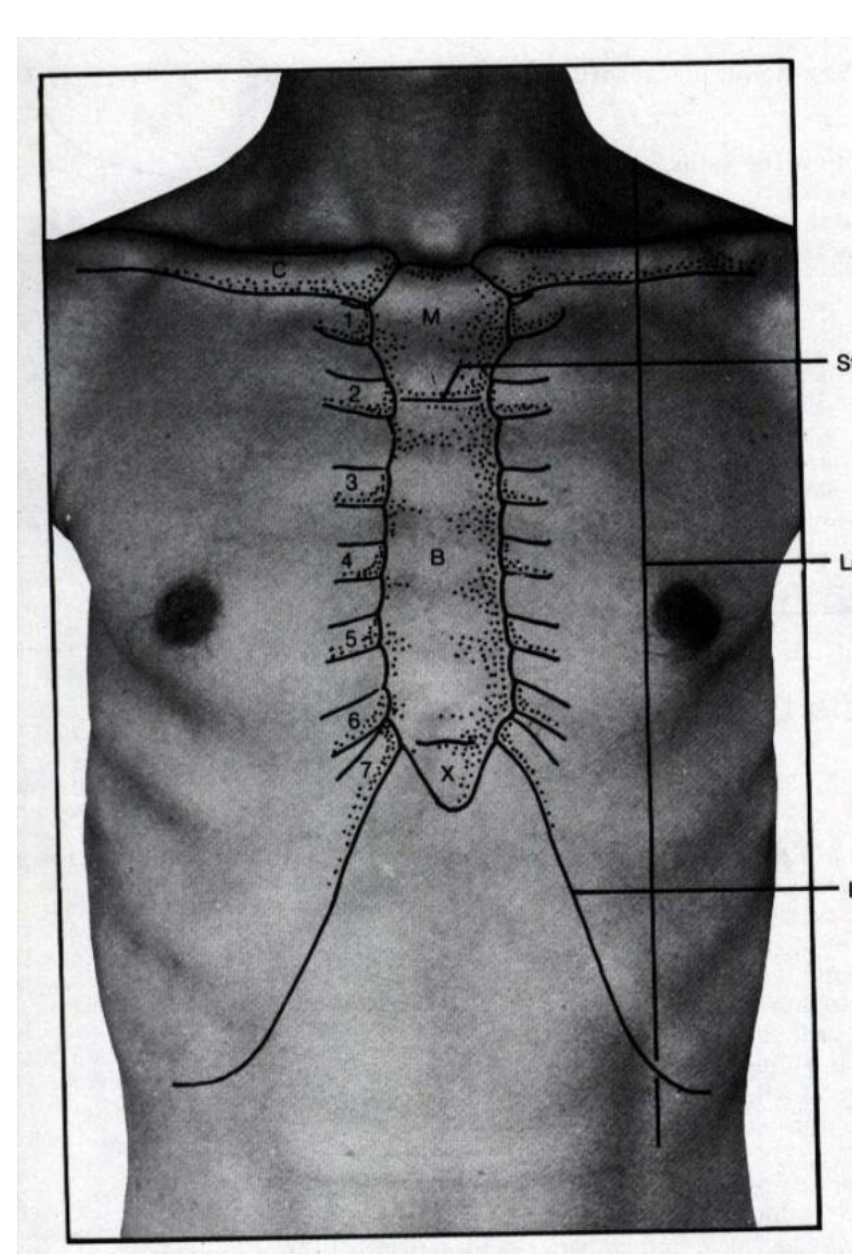
.2Superficial structure

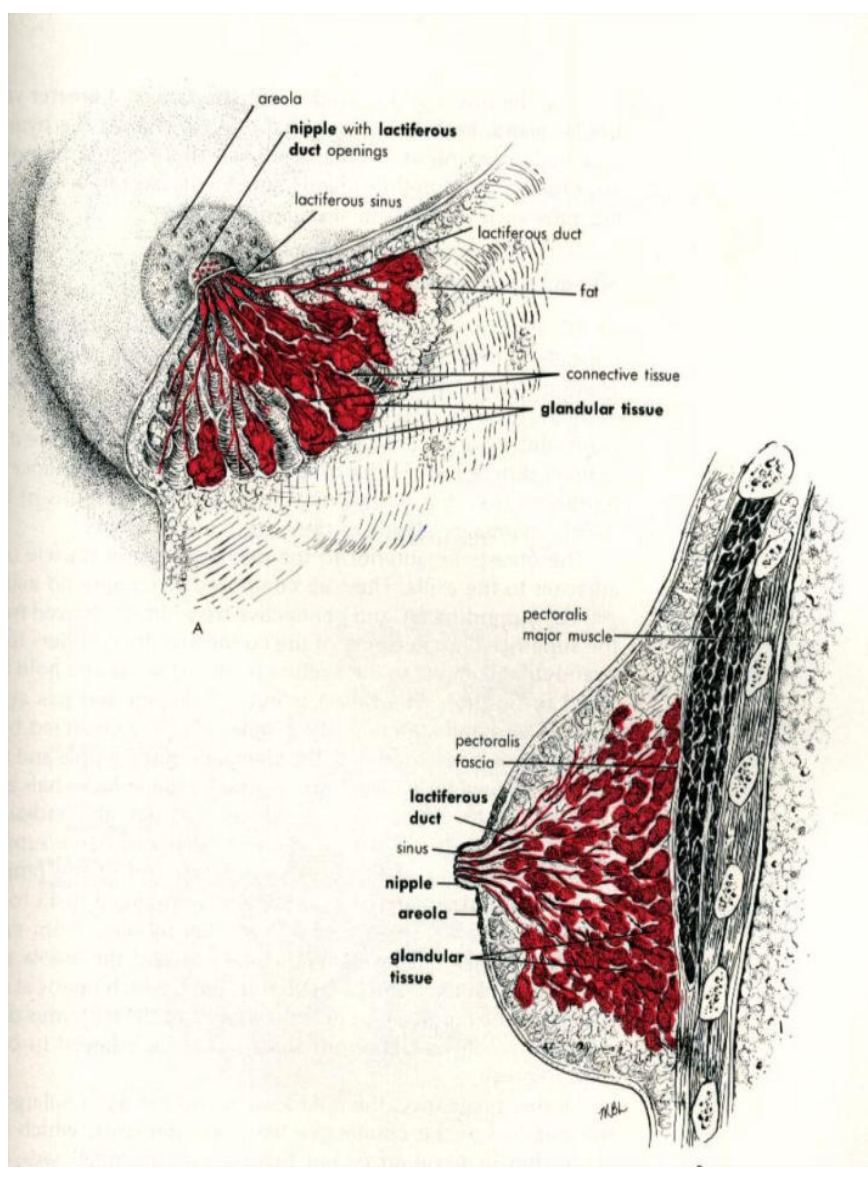
- skin & derivative of skin (breast)

Breast : nipple, areolar, mammary gland (F)

1. Surface Anatomy (position) :

Nipple – 4-5" from the midline, intercostal space 4
Breast – between rib 2-7



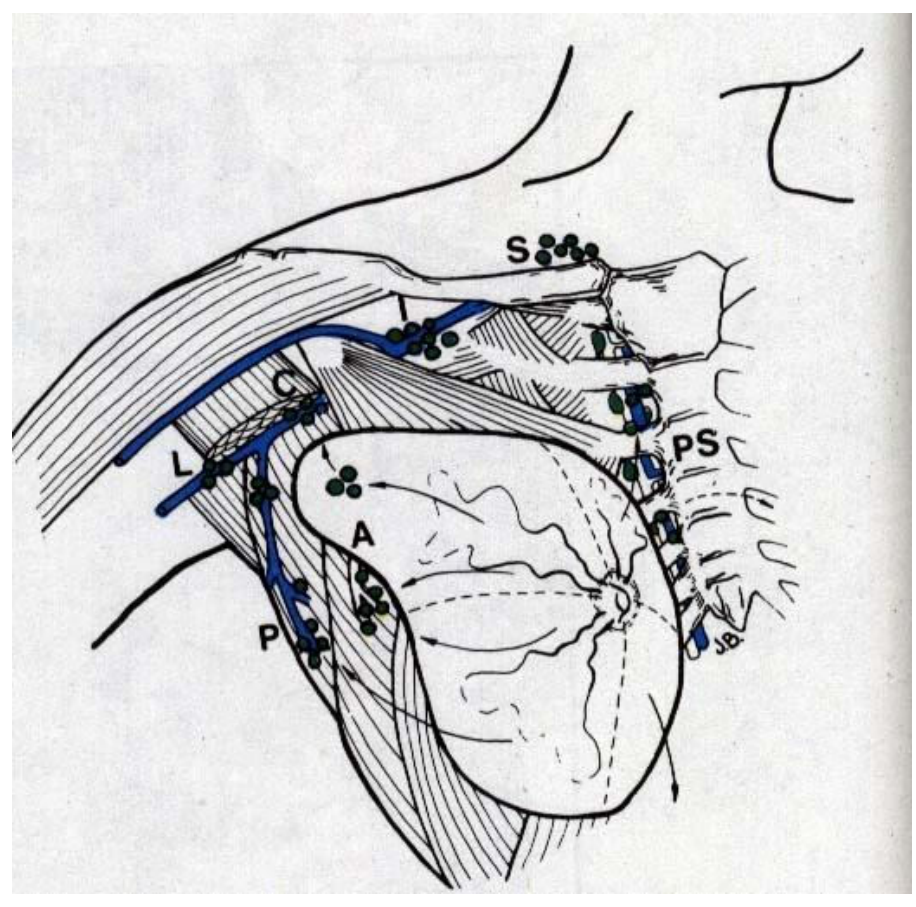


2. Components :
- subcutaneous fat, mammary gland
- Lactiferous duct
- Cooper's ligament (suspensory ligament)
- Retinaculum cutis fascia

The majority of the breast is in the superficial fascia, except the tail part (Tail of Spence) extends upward laterally into deep fascia at the lower border of pectoralis major.

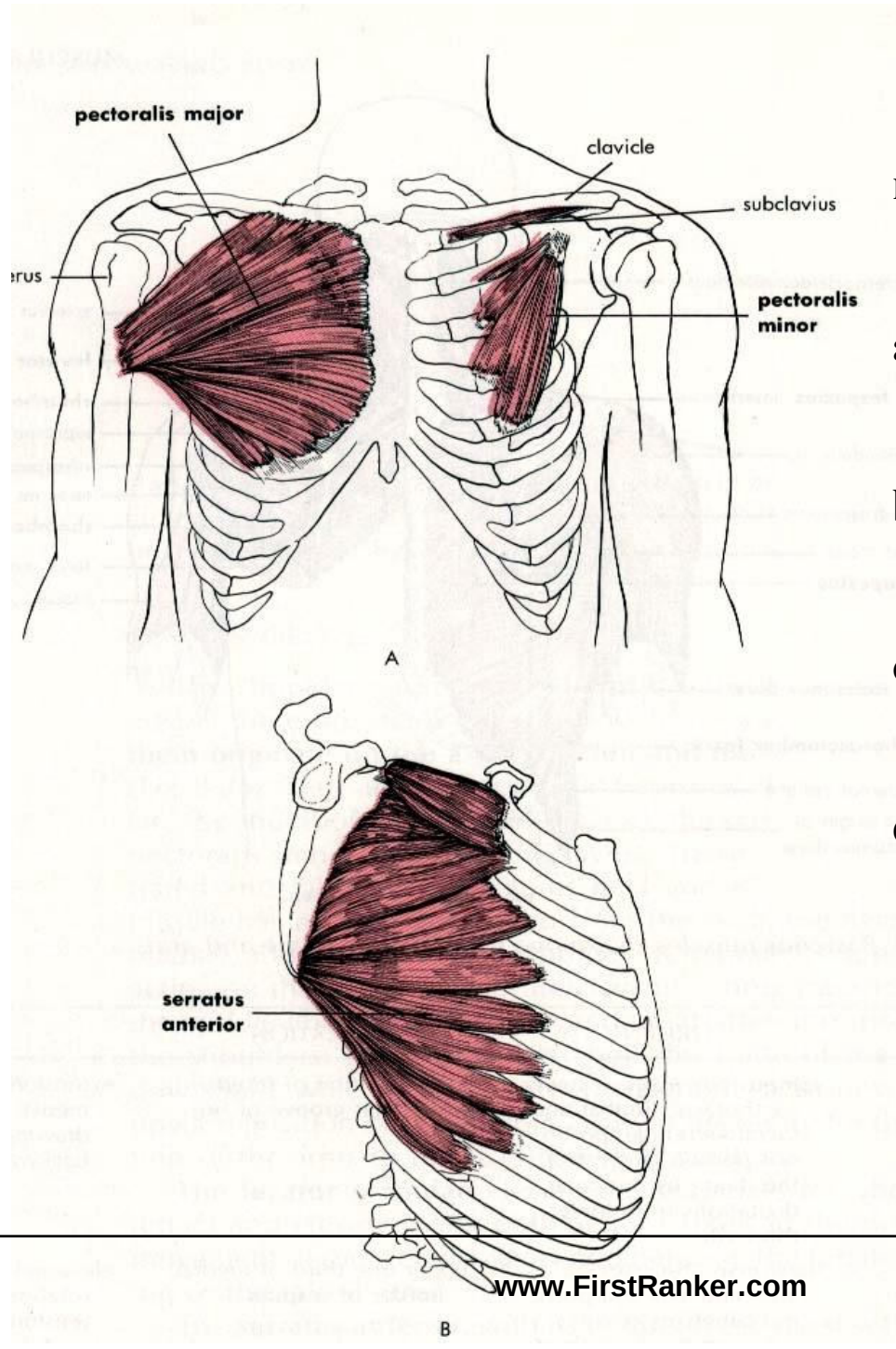
2/3 of the gland lies on pectoralis major

1/3 of the gland lies on serratus anterior



Deltopectoral Triangle
-deep fascia separating deltoid and pectoralis muscles

- **Platysma** = superficial muscle, thin plate, extends from the mandible to the clavicle



3. **Muscles of pectoral region**

a. Pectoralis Major

b. Pectoralis Minor

c. Serratus Anterior

d. Subclavious

Pectoralis major

Origin

Anterior sternal half of the clavicle;

Manubrium and Sternum upto sixth costal cartilages

Cartilages of all the true ribs,

Aponeurosis of the abdominal external oblique

Insertion

By a bilaminar tendon into the lateral lip of the bicipital groove of the humerus

Innervation

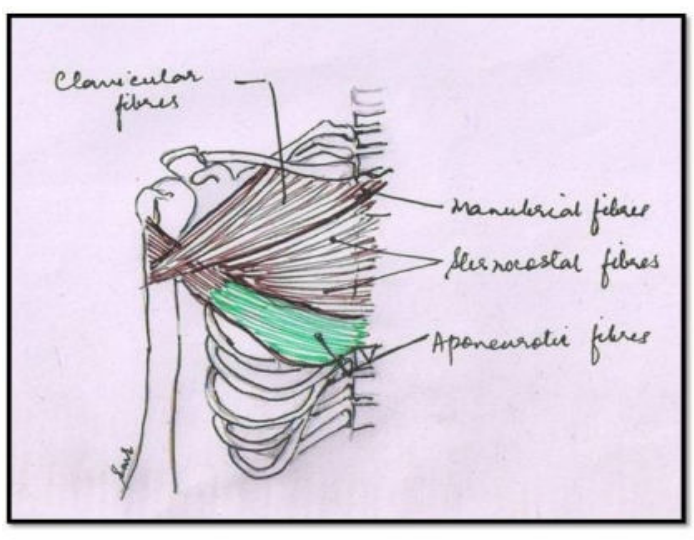
Medial and lateral pectoral nerves

Actions

Flexion of the humerus,

A**dduction** of the humerus and

Medial rotation of the humerus.



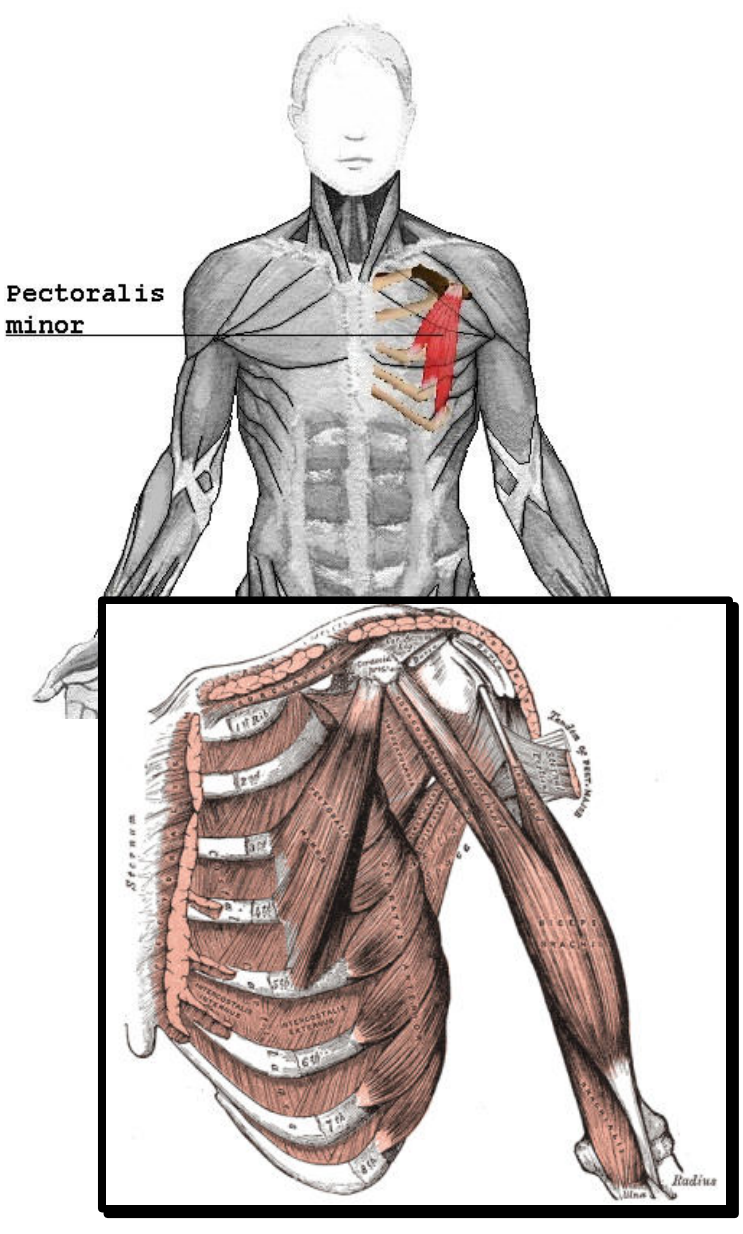
Origin and Bilaminar insertion of Pectoralis Major

Clavicular part : flexion, adduction, and medial rotation of the humerus.

Sternocostal part extension of the flexed arm as in climbing.

It aids in deep inspiration.

Pectoralis minor



Origin

¬It **arises** from the upper margins and outer surfaces of the **third, fourth, and fifth ribs,**

¬ **Inserted** into the medial border and upper surface of the **coracoid process** of the scapula.

Innervation

Medial and lateral pectoral nerves

Actions

¬**Protracts the scapula** with serratus anterior

¬**Depresses** the shoulder with the rhomboids and levator scapulae

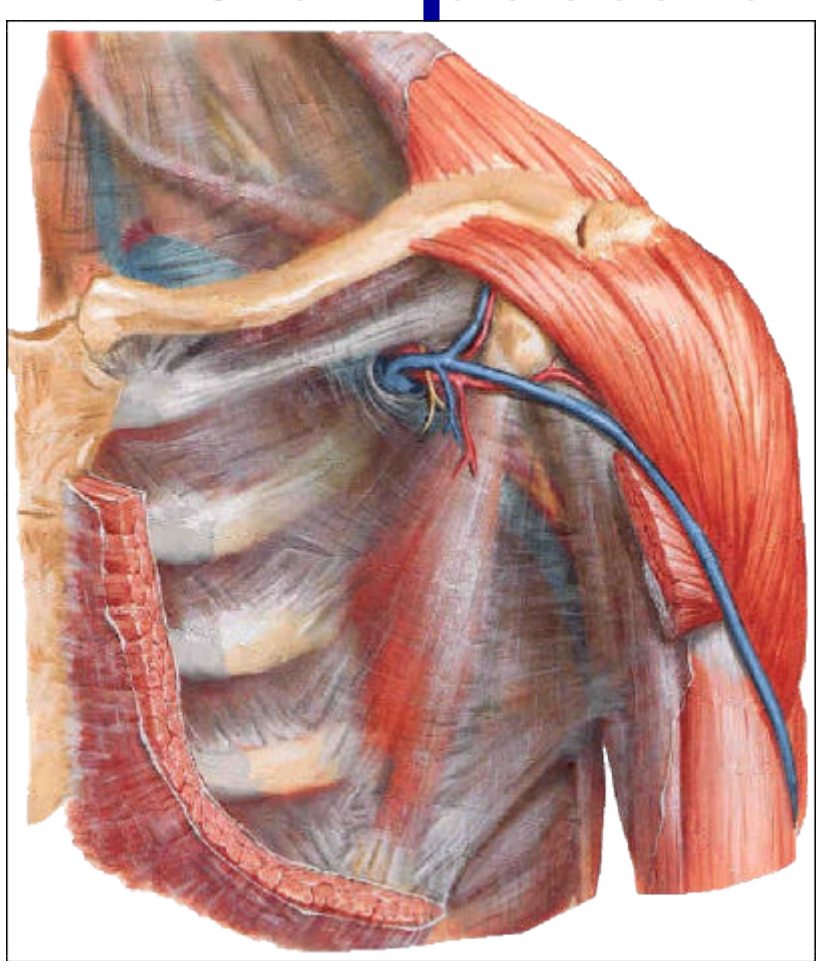
Important

¬**The pectoralis minor muscle is covered by the clavipectoral fascia.**

¬**The medial pectoral nerve pierces the pectoralis minor .**

¬**Axillary artery is divided into three parts by pectoralis minor.**

Clavipectoral fascia



Encloses subclavius and Pectoralis Minor.

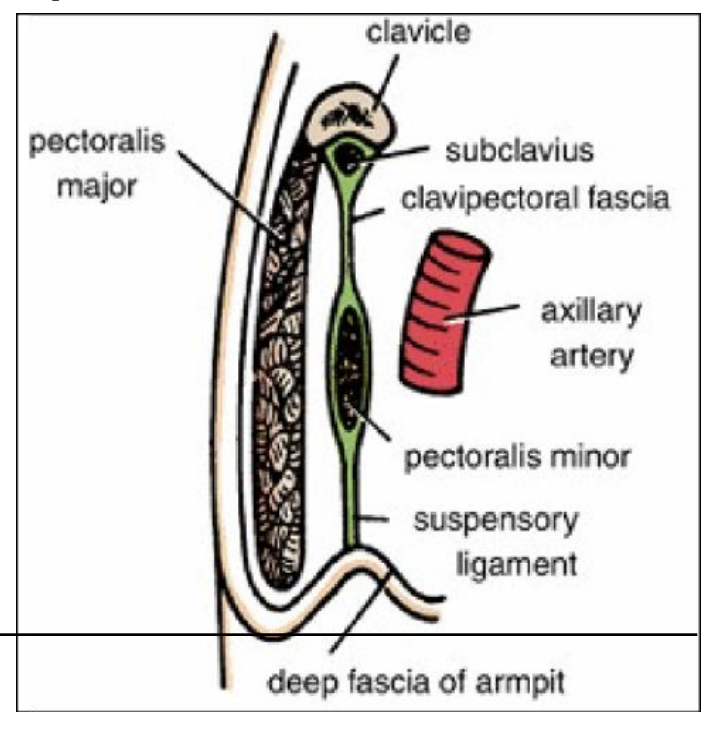
It is pierced by :

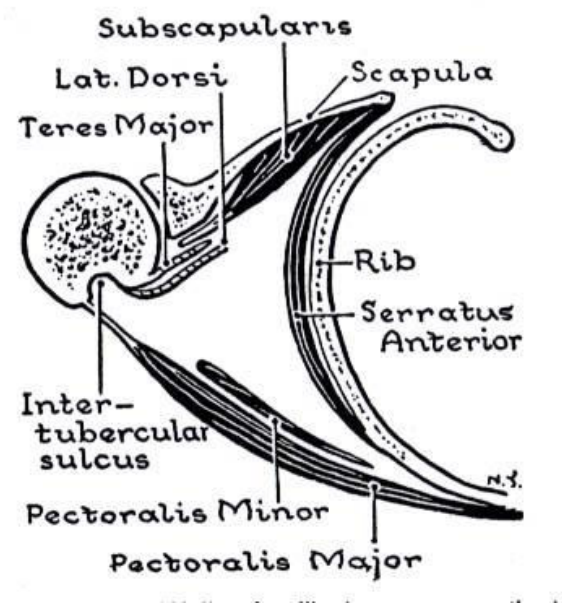
¬**Lateral pectoral nerve.**

¬**Thoraco- acromial artery**

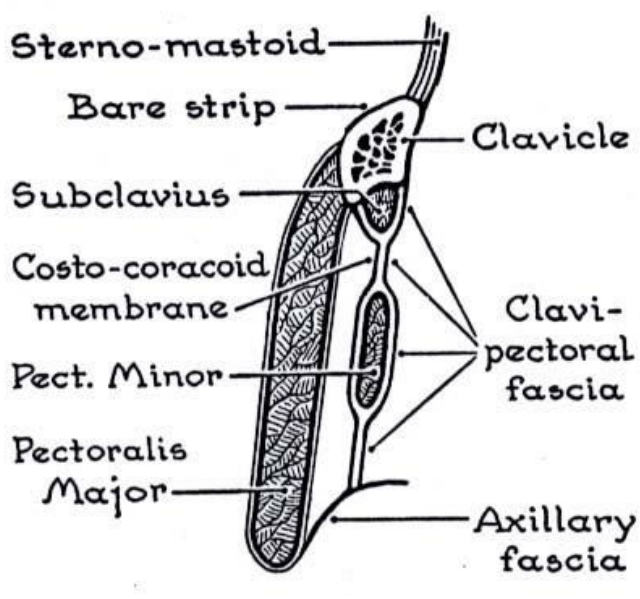
¬**Cephalic vein.**

¬ **Lymph nodes from pectoral region to apical group of axillary lymph nodes**



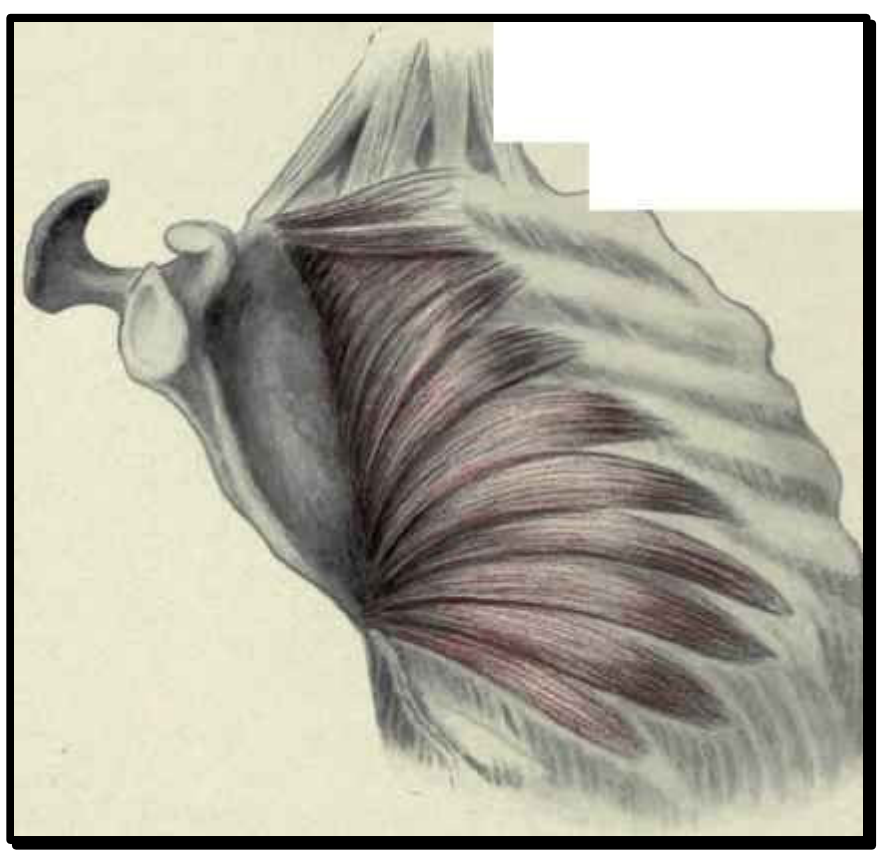


PectoralGirdle : clavicle, scapular, ribs



Clavipectoral fascia / Costocoracoid membrane
- deep fascia separating the pectoralis and the subclavious

Serratus anterior



Origin

Arises from ribs 1 to 8, to be inserted into the medial border of the scapula.

Insertion

- **Medial border of the scapula** between the superior and inferior angles.
- 1st and 2nd digitations to upper angle of scapula.(C5)
- 3rd and 4th digitations to medial border on costal surface upto the inferior angle.
- Lower 4 digitations to inferior angle of scapula.

Action

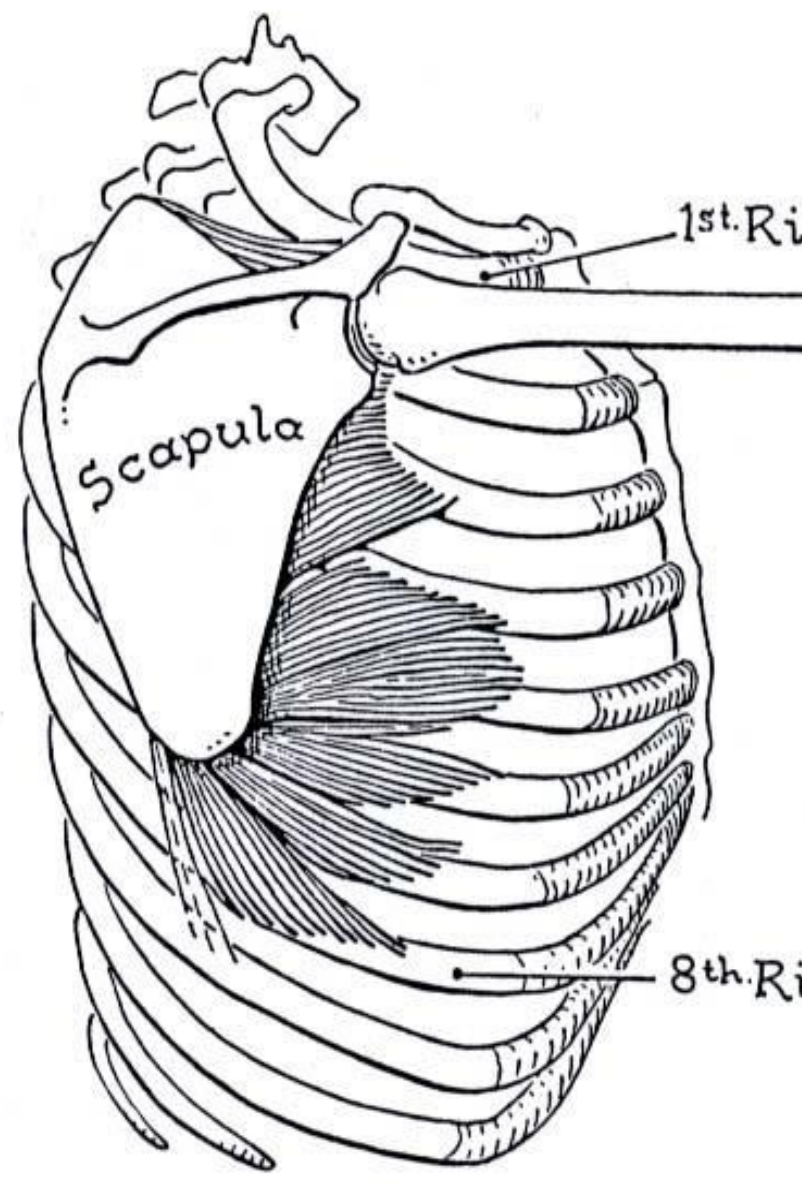
Protraction of the scapula along with pectoralis minor.

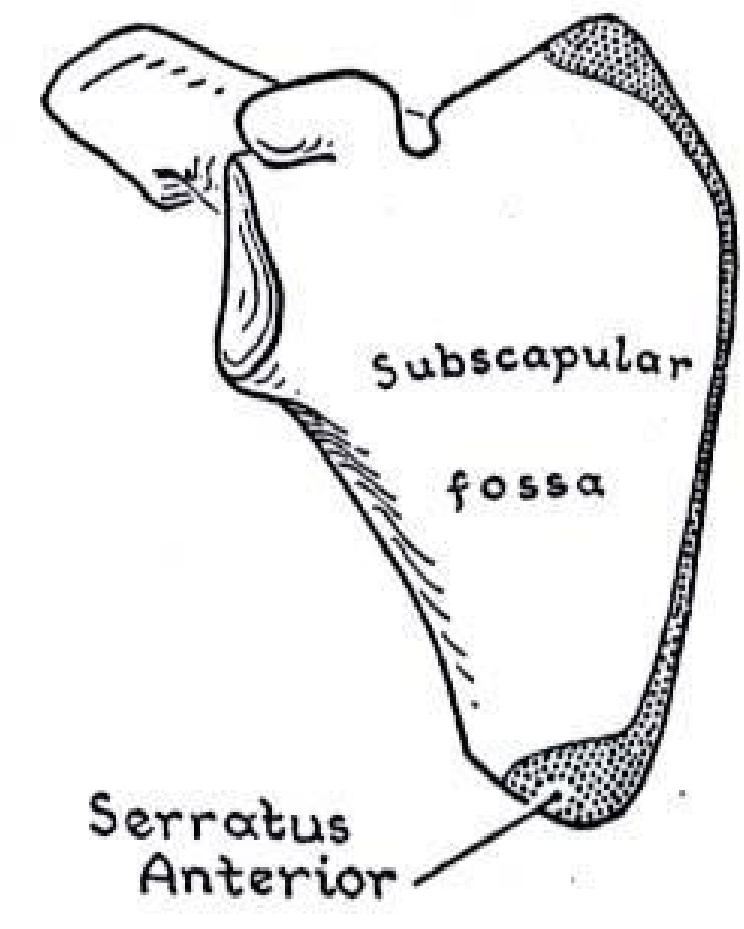
- The fibres inserted on inferior angle rotate scapula laterally and upwards in **overhead abduction** with trapezius.

Assists in respiration.

Innervation

long thoracic nerve(Nerve of Bell)





-Blood supply to the pectoral region

1. **Axillary artery**

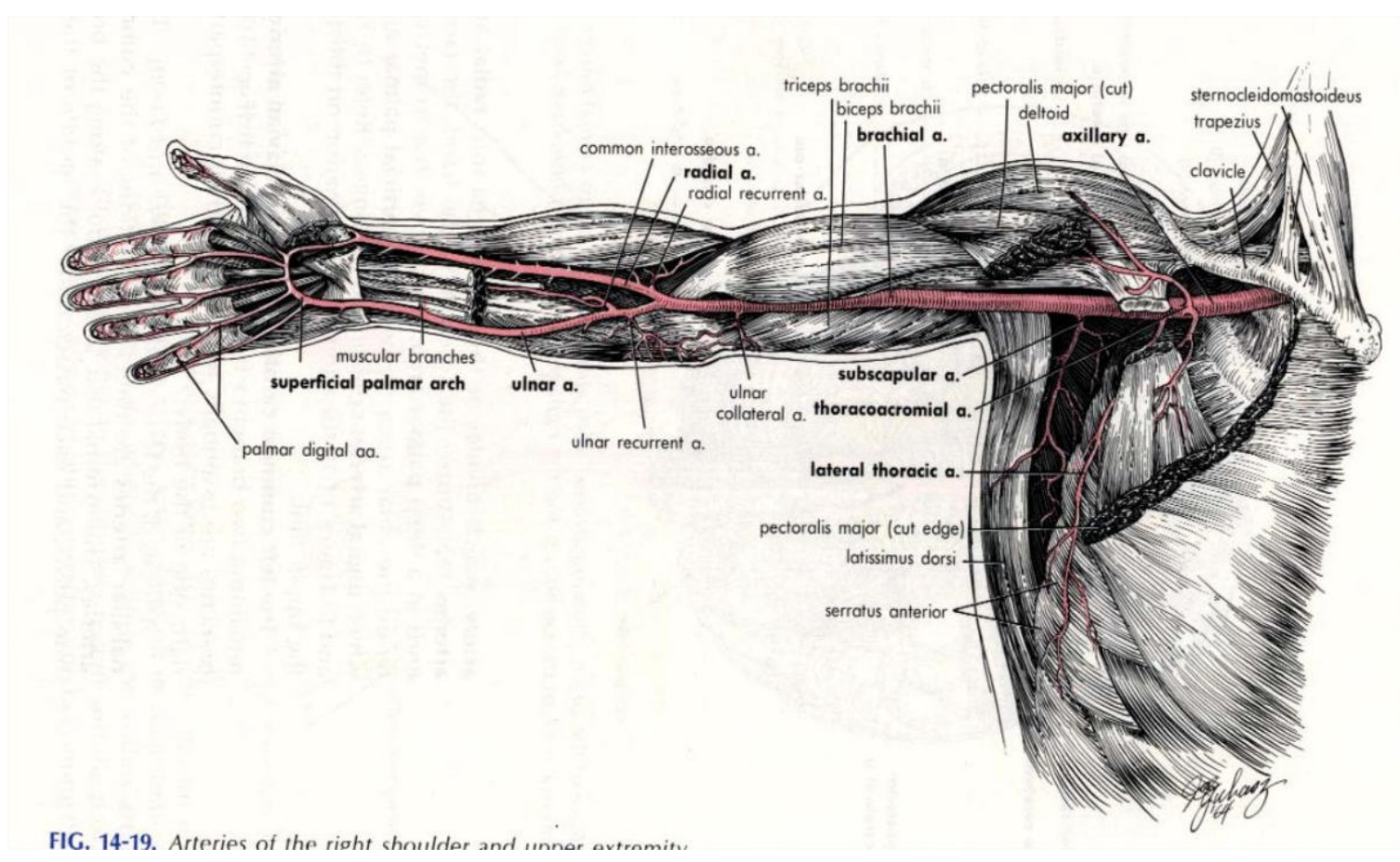
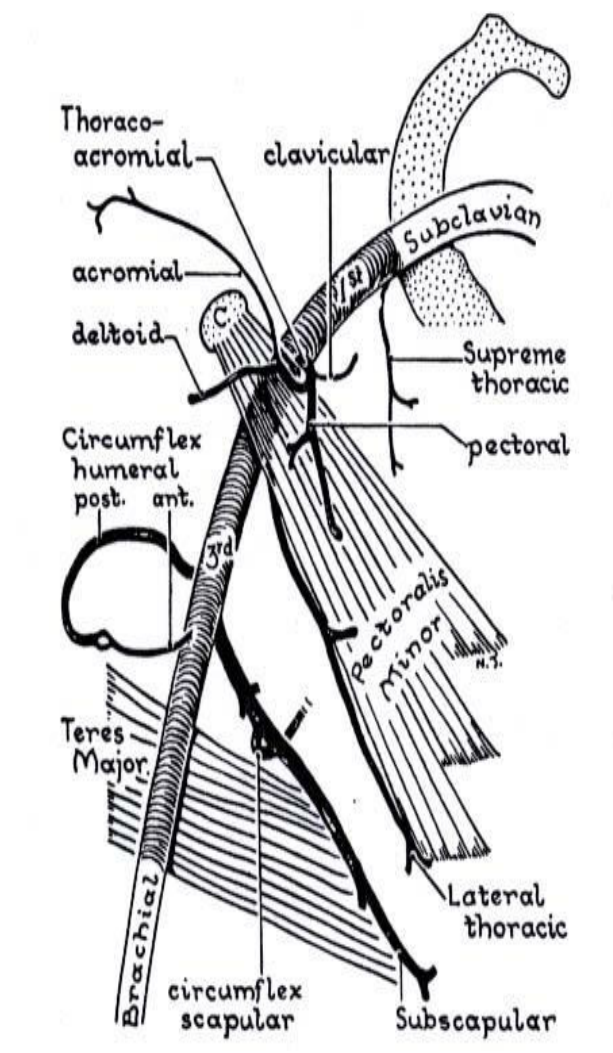


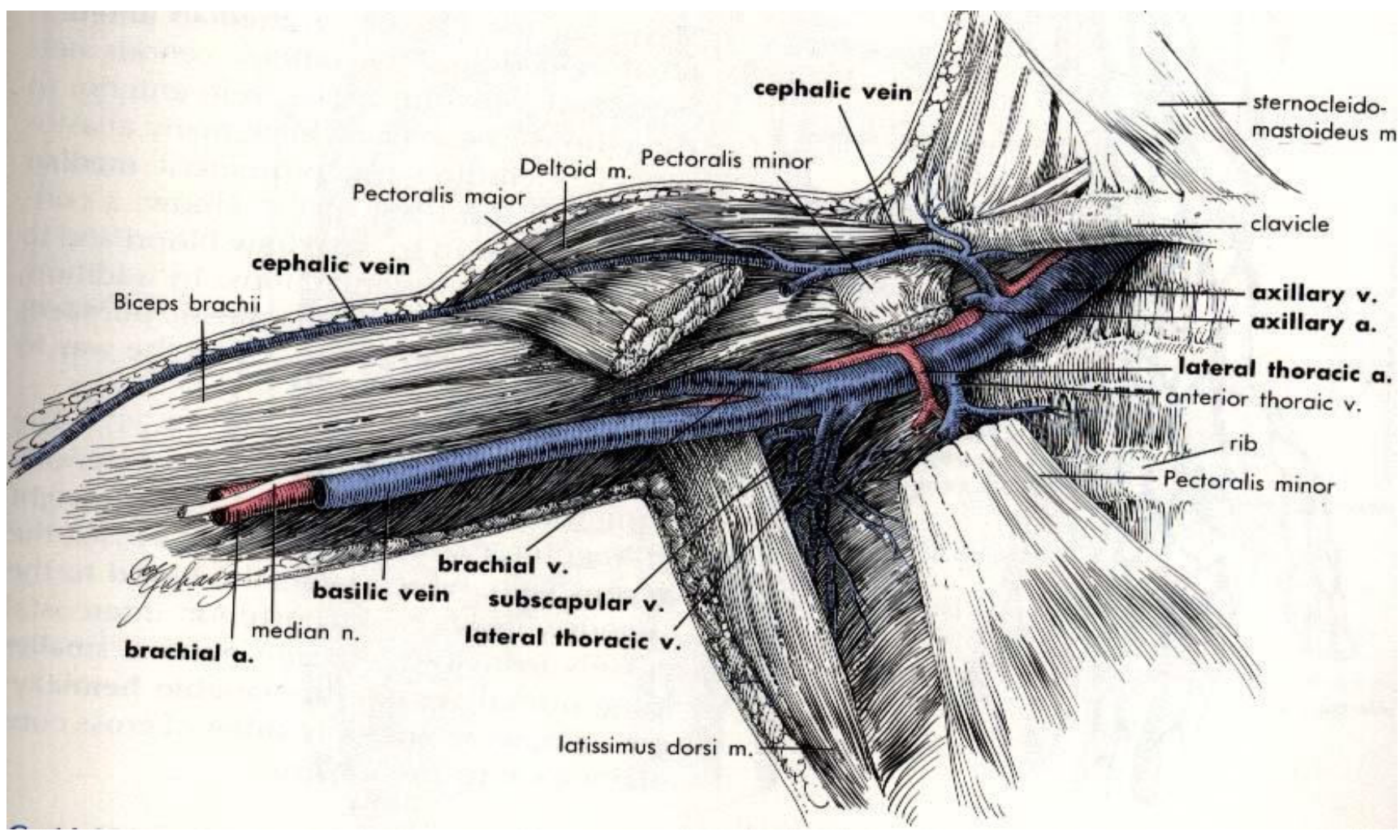
FIG. 14-19. Arteries of the right shoulder and upper extremity.

2. **Perforating branches of the internal thoracic a.**

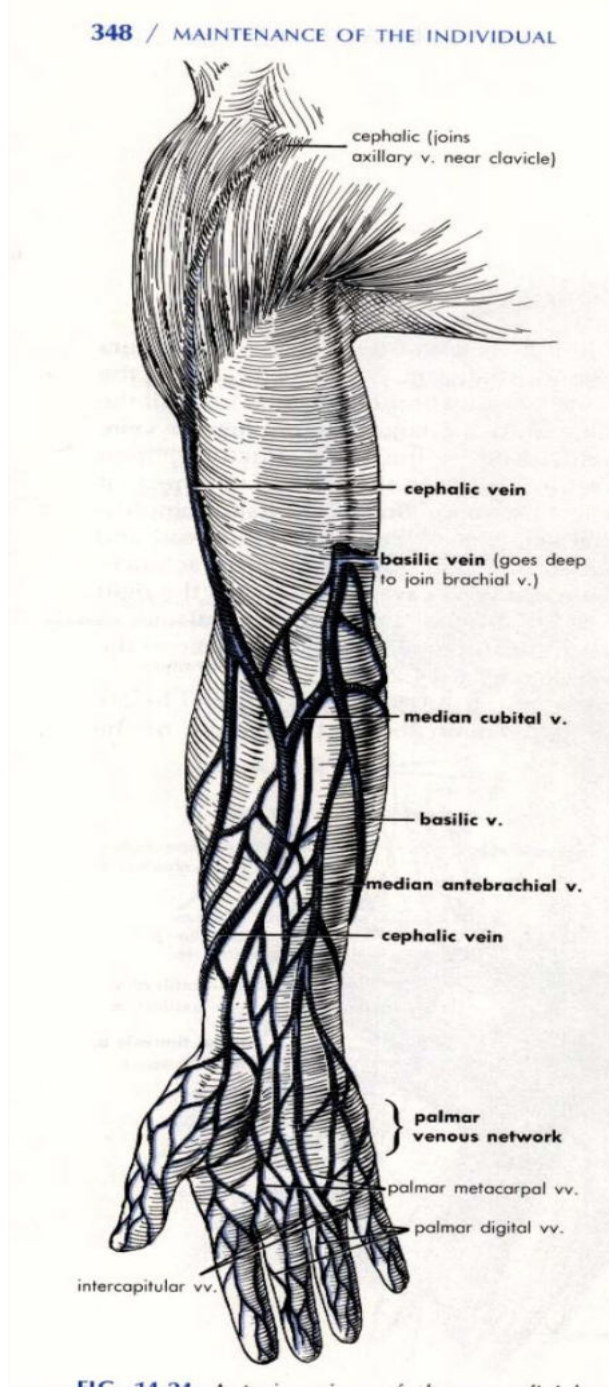


1. **Axillary artery** :
divided into 3 parts
First part :
Supreme thoracic a.
Second part :
1.Thoraco-acromial trunk
Acromial branch
Pectoral branch
Clavicular branch
Deltoid branch
2. Lateral thoracic a.
Third part :
give branches to supply head of humerus and scapular regions

Venous drainage at the pectoral region



.1 Deep veins - **axillary v.** <= from the muscles



.2 Superficial veins
- cephalic v. (from upper limb) at the deltopectoral triangle, it pierces the clavipectoral fascia (or infraclavicular fossa) into the ***axillary v***.

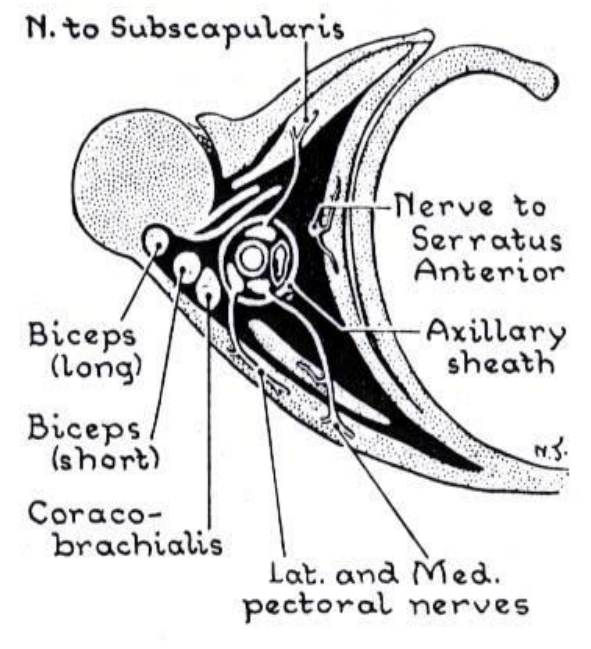
-from mammary gland, it drains into deep veins => **internal thoracic v**. and **lateral thoracic v**.

Nerve Supply of the pectoral region

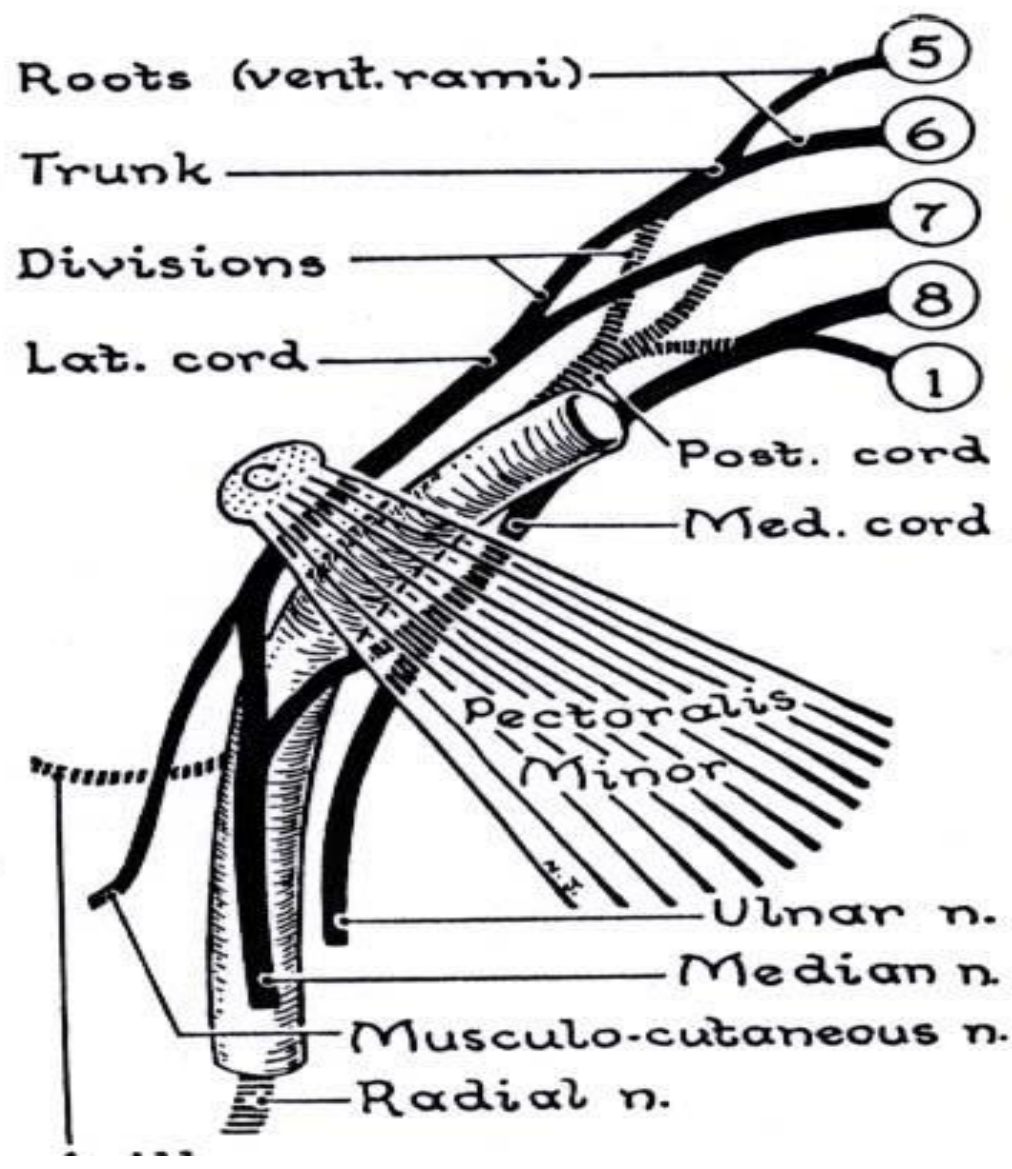
.1 - medial & lateral pectoral nerve (terminal branches from the cords of the **Brachial plexus (C5-8 & T1)**

- nerve to subclavius (a branch from upper trunk of the **Brachial plexus**)

- long thoracic nerve (nerve roots from C5-6-7 of the **Brachial plexus**)

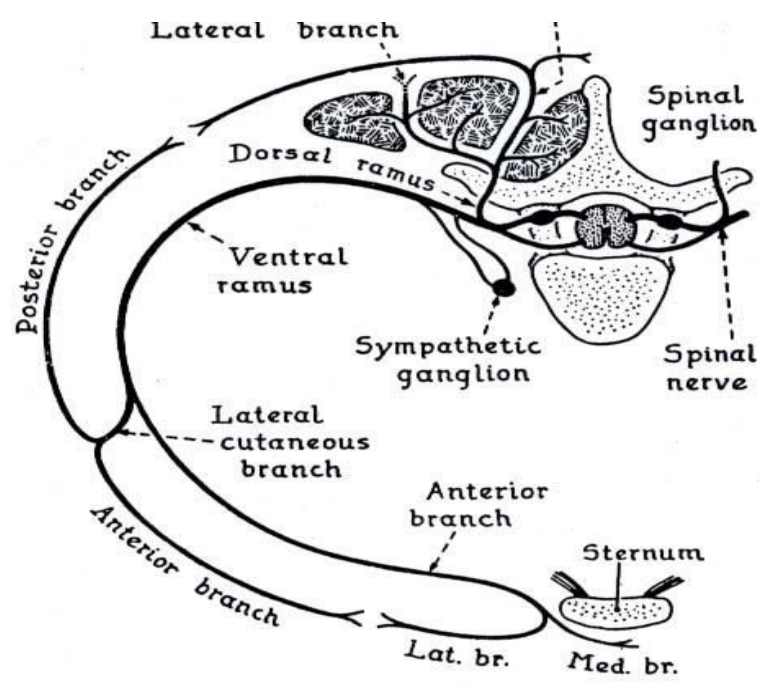


Brachial plexus (C5-8 & T1)

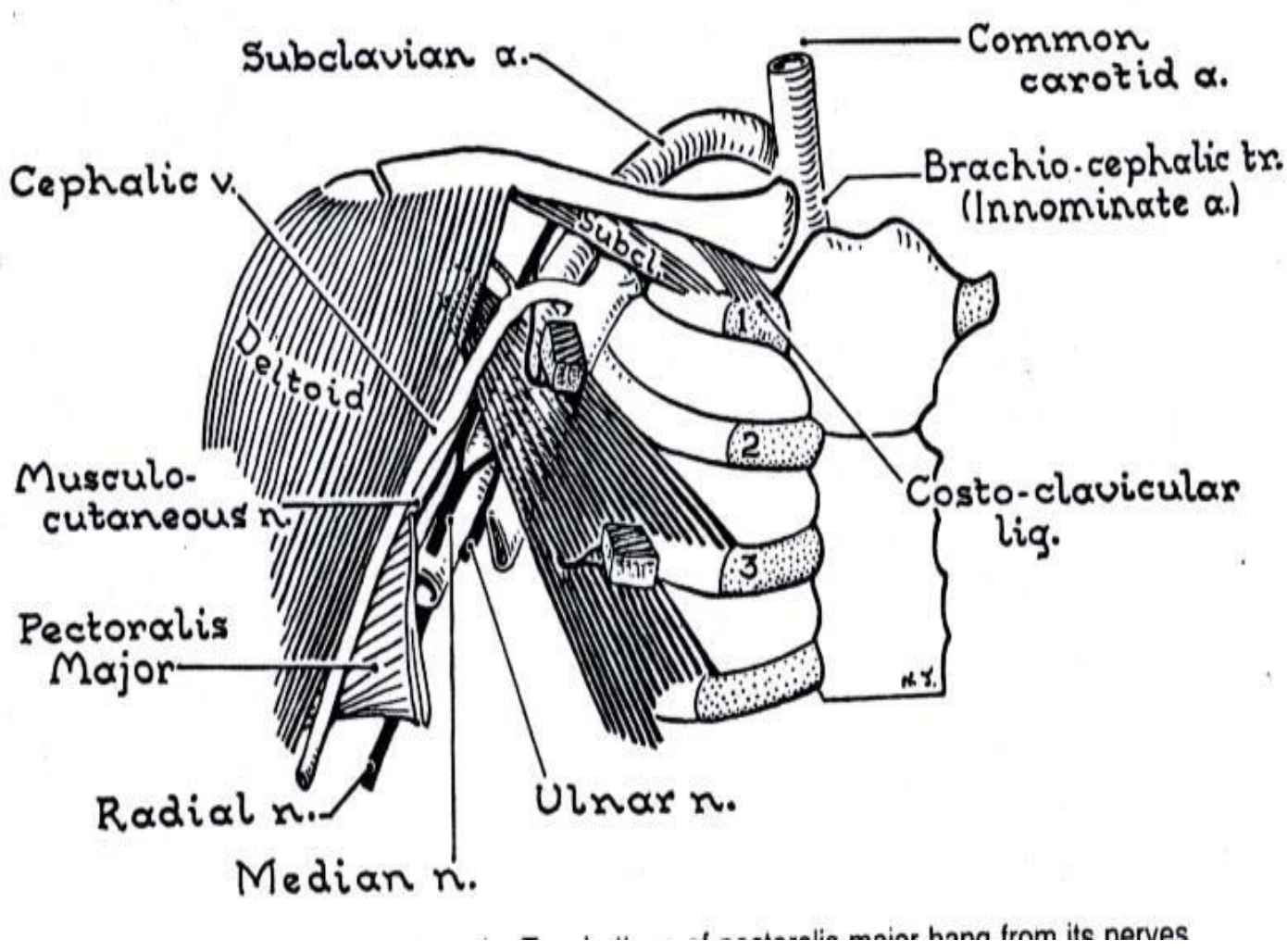


.2 Spinal n. / Sensory (cutaneous) n

- Supraclavicular nerve (C3-4, medial, intermediate & lateral branches)
- Intercostal nerve T3-7 (anterior & lateral cutaneous branches)



*Dermatome at the pectoral region: C3-4, T3-7



Applied aspect

- Serratus anterior is called the **Boxer's muscle** since it is responsible for pushing and punching movements.
- Paralysis of this muscle results in a **"winged scapula"** ,results in protrusion of the scapula on the affected side when the patient is asked to push against the wall with both arms extended.
- **Winged scapula** occurs in **lateral thoracic nerve paralysis**

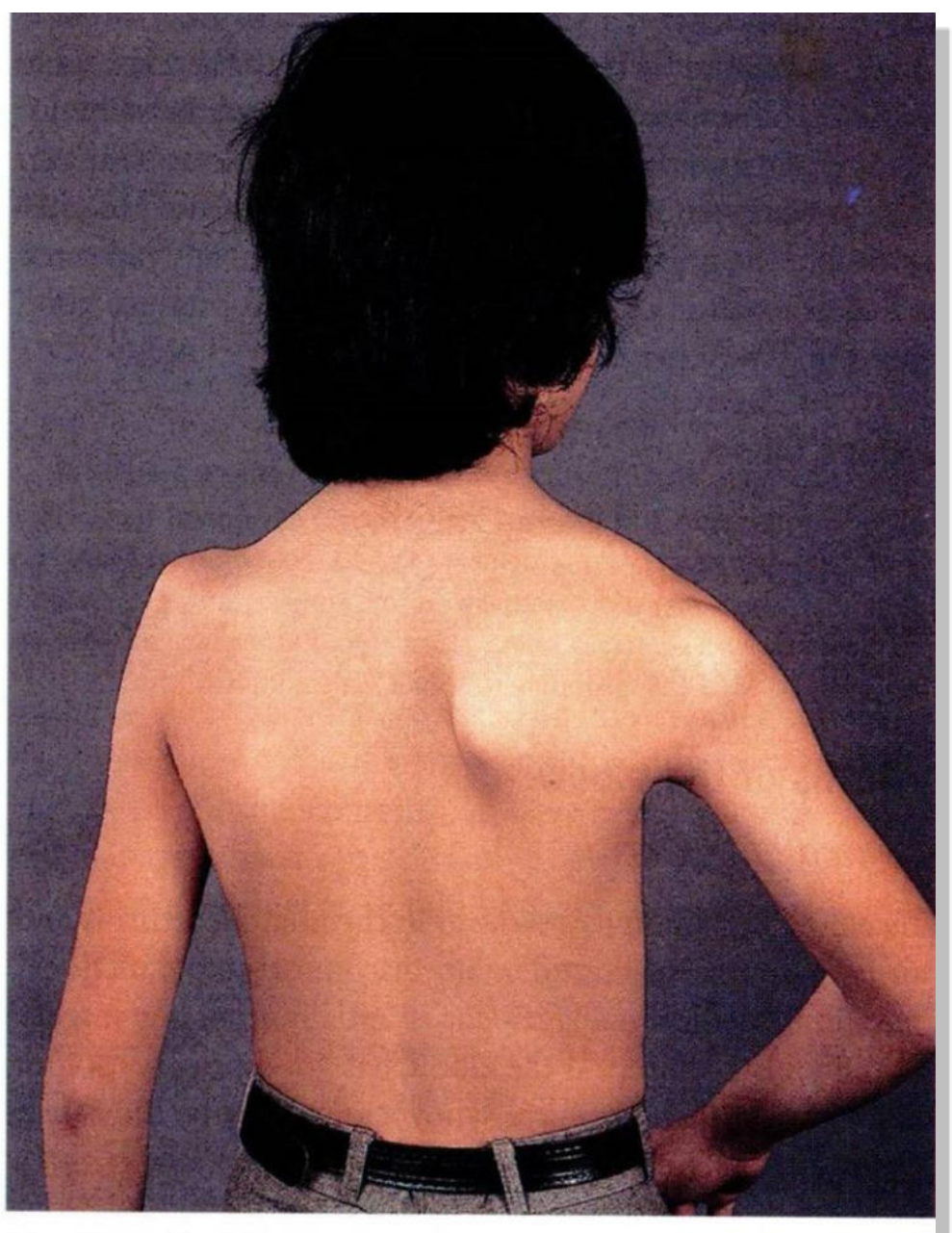
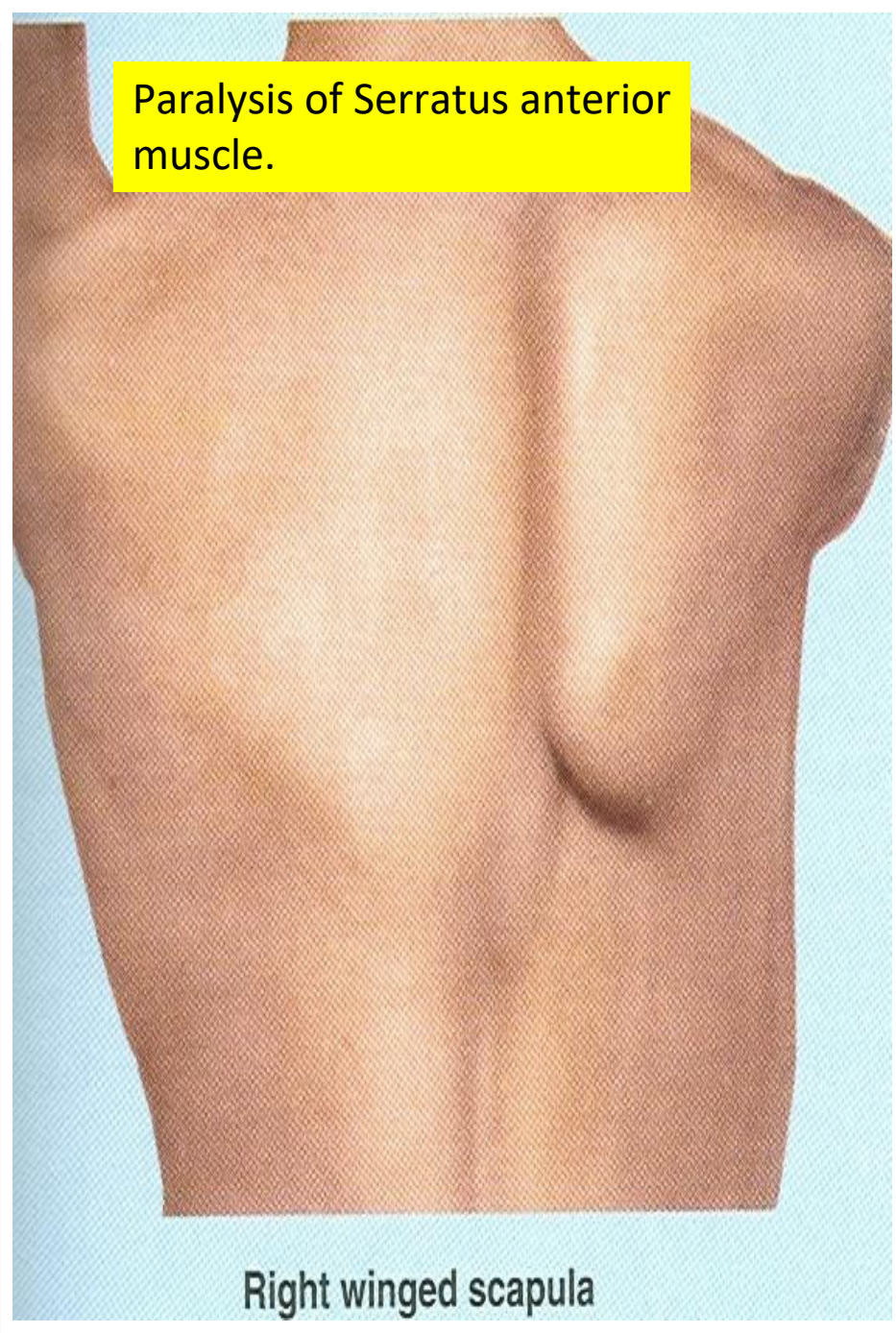


Fig. 22.15 Multidirectional voluntary dislocation of the shoulder. This 9-year-old boy can voluntarily dislocate his shoulder posteriorly.



Clinical Relevance

.1Chest wall – heart /lung sound

.2Clavipectoral fascia

- protection of the vessels and nerves underneath

-limit spreading of the abscess from upper limb to the neck

.3Fracture of clavicle

-common site is at 1/3 from the lateral

-Poland Anomaly

-Cardiac Catheterisation- Basilic vein

1. Which one of the following muscles performs adduction of the arm ?
   a. Pectoralis minor.
   b. Pectoralis major. ⟸
   c. Subclavius.
   d. Serratus anterior.

2. Serratus anterior is innervated by :
   a. Thoracodorsal nerve.
   b. Long thoracic nerve. ⟸
   c. Axillary nerve.
   d. Radial nerve.

3. Which one of the following muscles contributes in rotation of the scapula above the head?
   a. Pectoralis major.
   b. Pectoralis minor.
   c. Serratus anterior. ⟸
   d. Teres major.

4. Which one of the following do not pierces clavipectoral fascia?
   a. Lateral Pectoral Nerve.
   b. Lymph Nodes.
   c. Cephalic Vein.
   d. Lateral thoracic artery. ⟸

5. Nerve to subclavius is a branch from which part of brachial plexus?
   a. Roots.
   b. Divisions.
   c. Cords.
   D. Trunks. ⟸