The University Of Jordan
Faculty Of Medicine
Anatomy Department

BONES OF THE UPPER LIMB

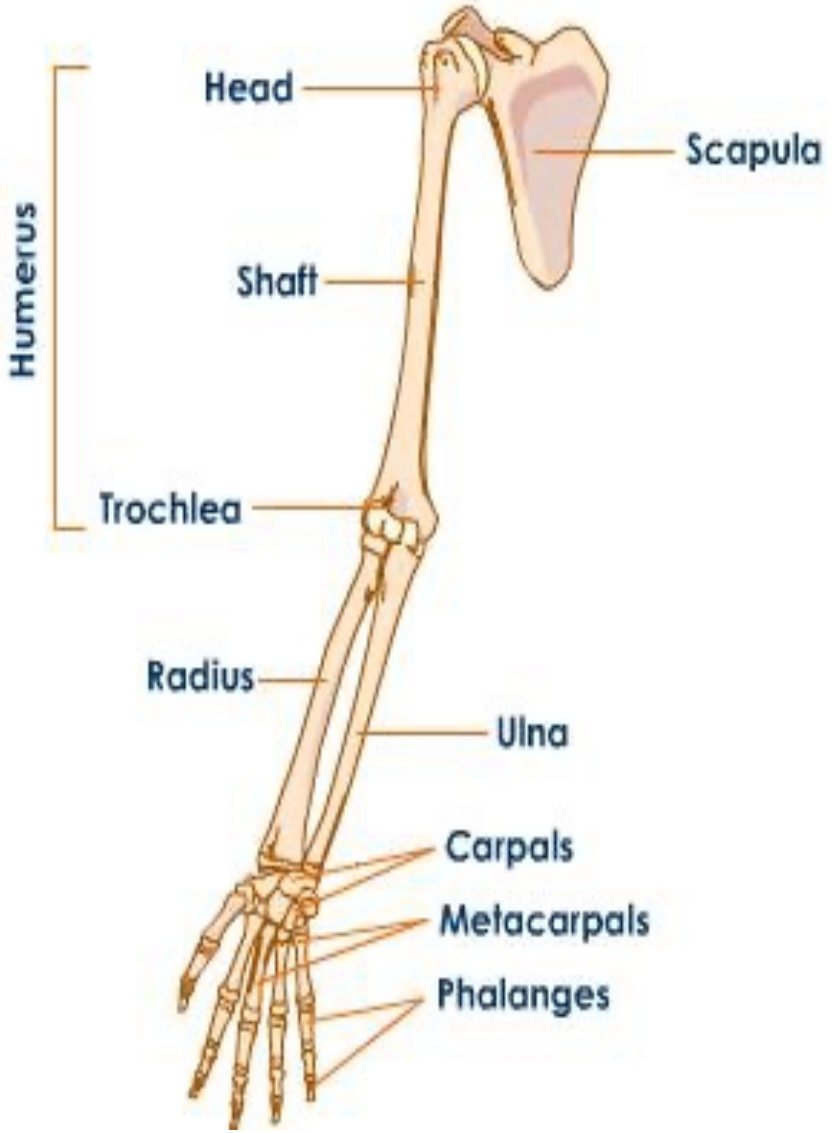
BY

DR. AHMED SALMAN

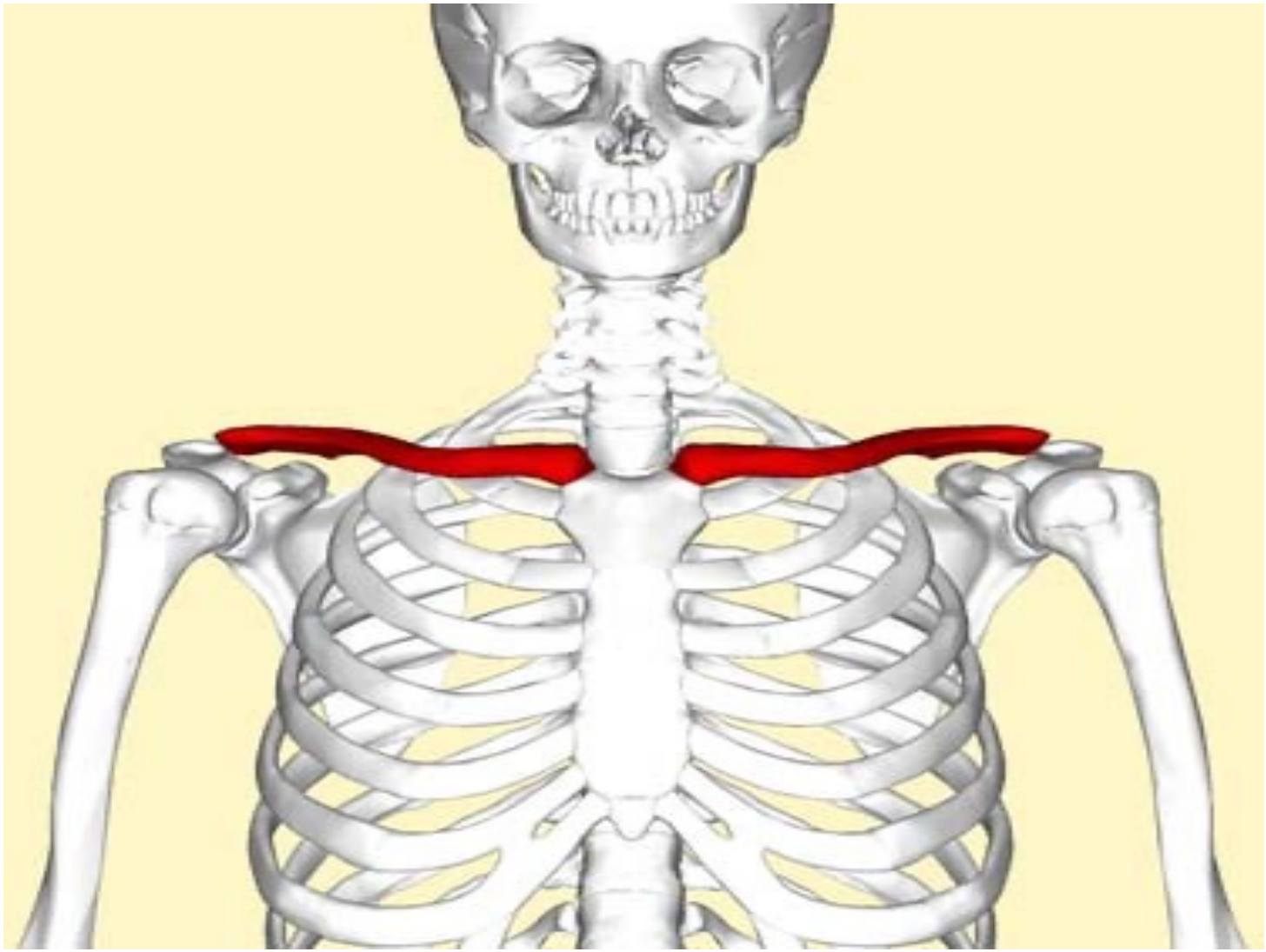
Associate professor of anatomy

The upper limb bones are

1- Clavicle
2- Scapula
3-Humerus
4-Ulna
5-Radius
6- Eight Carpal bones
7- Five Metacarpal
8- Fourteen Phalanges



Clavicle



It is a **long** bone which has ***2 ends*** and ***a shaft .***

It is different from long bone

1. It is the only long bone placed ***horizontally***
2. It has ***no medullary*** cavity

* The ***2 ends*** are medial or sternal end & lateral or acromial end.

- Its **medial end** part is **bulky**
- L**ateral** part is **flat**

***The shaft:**

- It has ***2 surfaces*** (upper & lower) & ***2 borders*** (anterior & posterior).
- Its ***medial 2/3*** is convex anteriorly and its ***lateral 1/3*** is convex posteriorly .
- Its ***lower surface*** show subclavius groove in the middle and conoid tubercle & trapezoid ridge laterally .

Function:

A. It ***transmits*** weight and forces from upper limb to the axial skeleton.

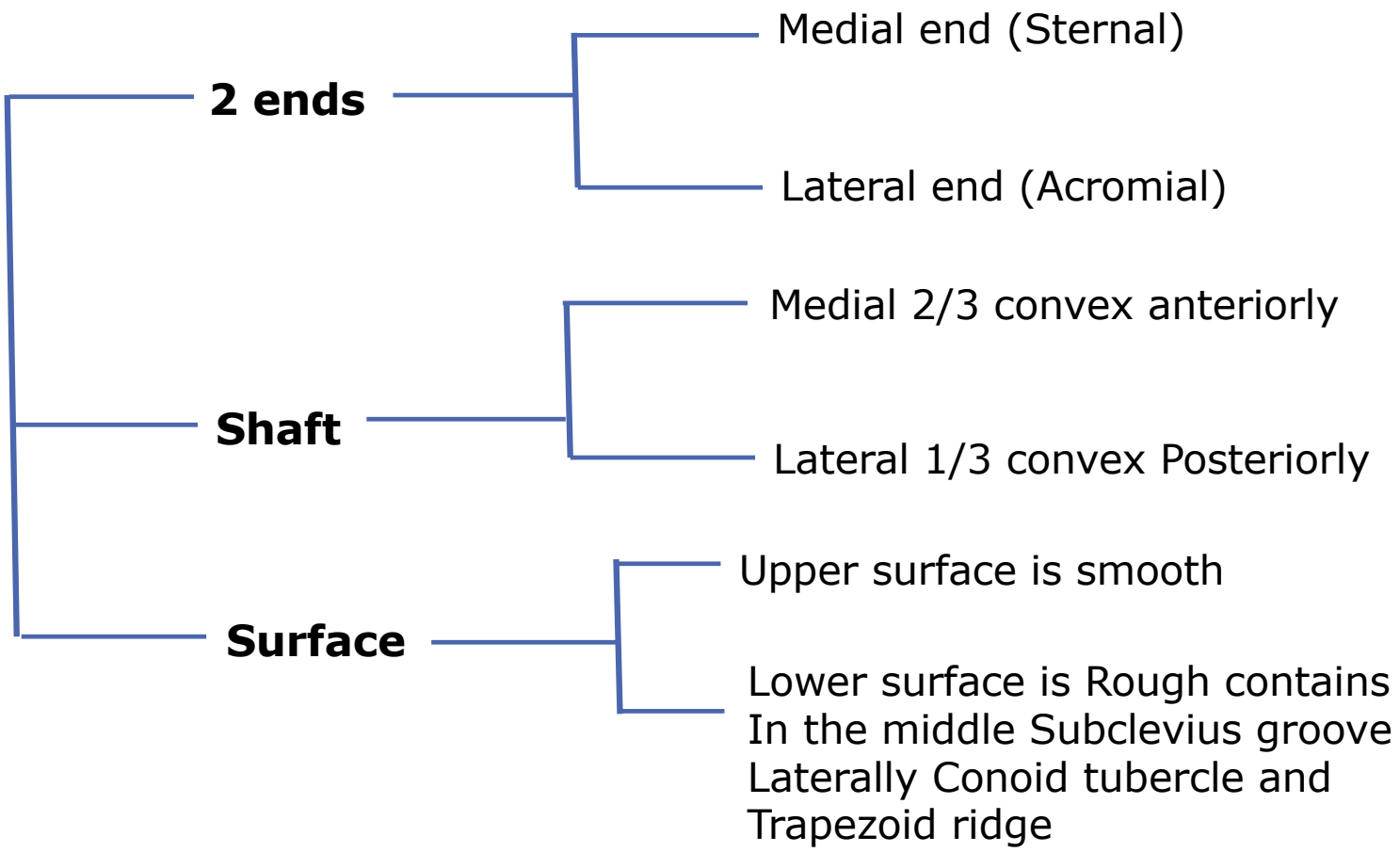
B. It ***protects*** the vessels and nerves running behind it.

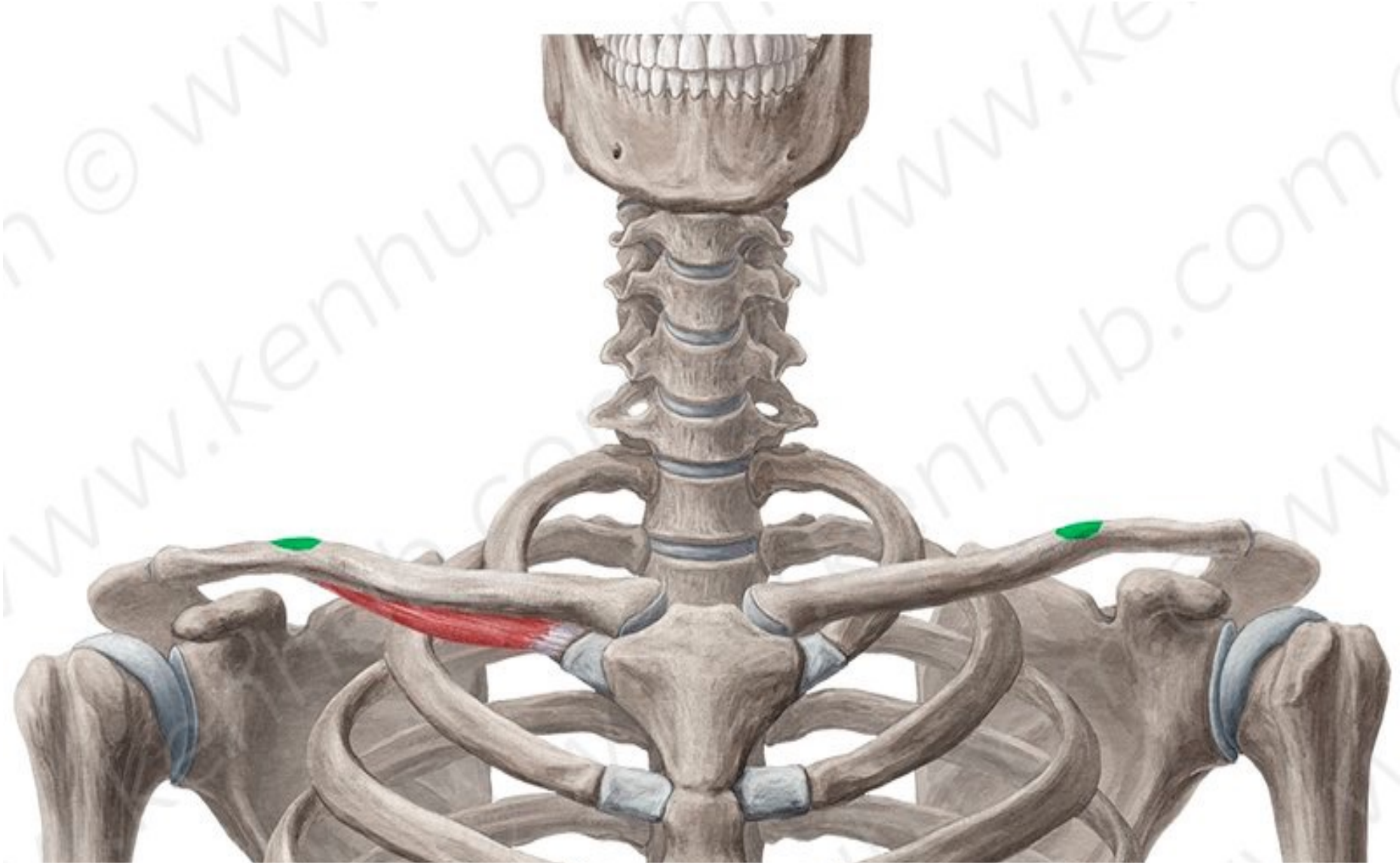
Applied anatomy:

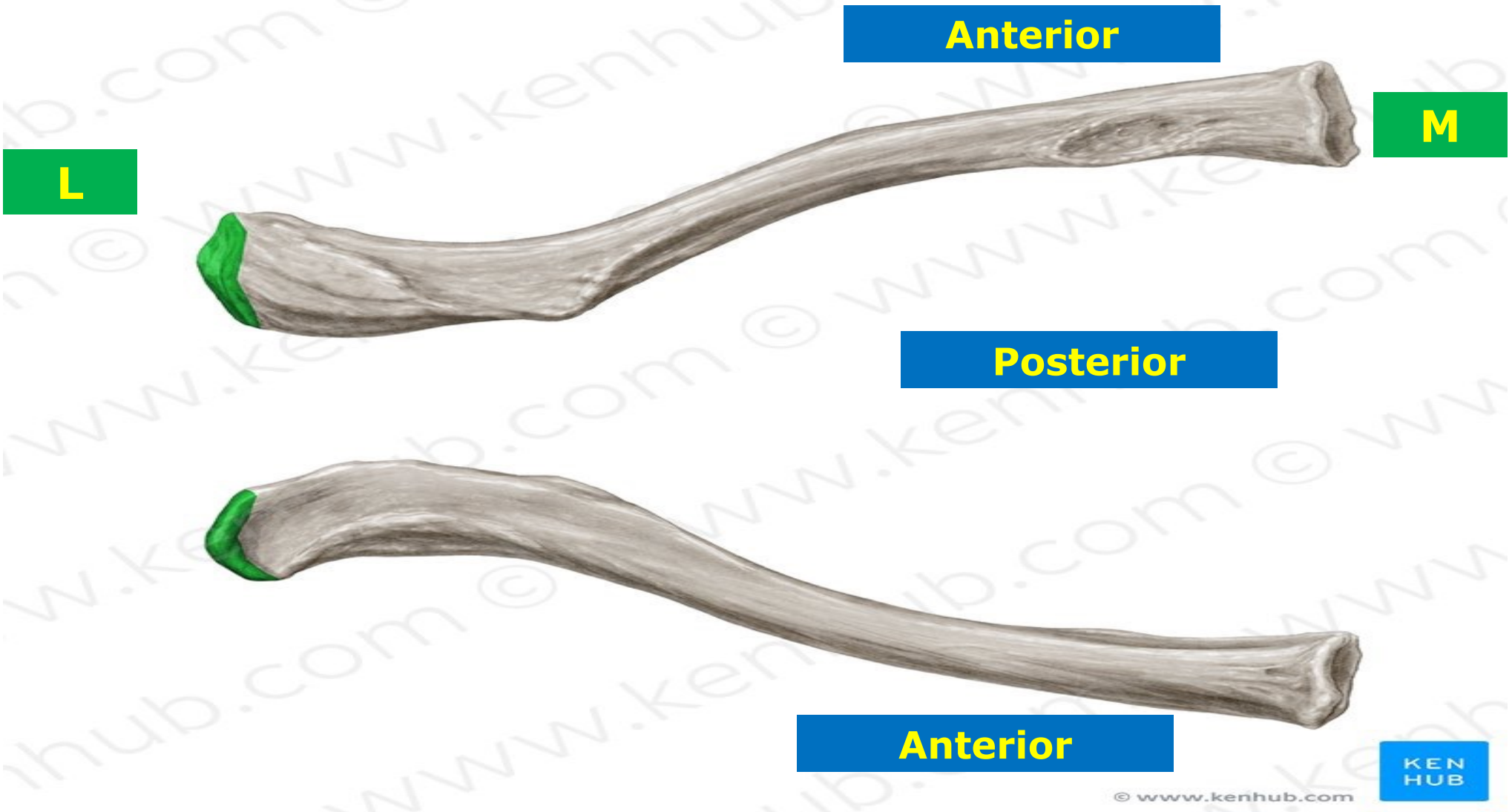
•It is the commonest bone to be ***fractured*** in the U.L.

•The middle 1/3 is the commonest site to be fractured.

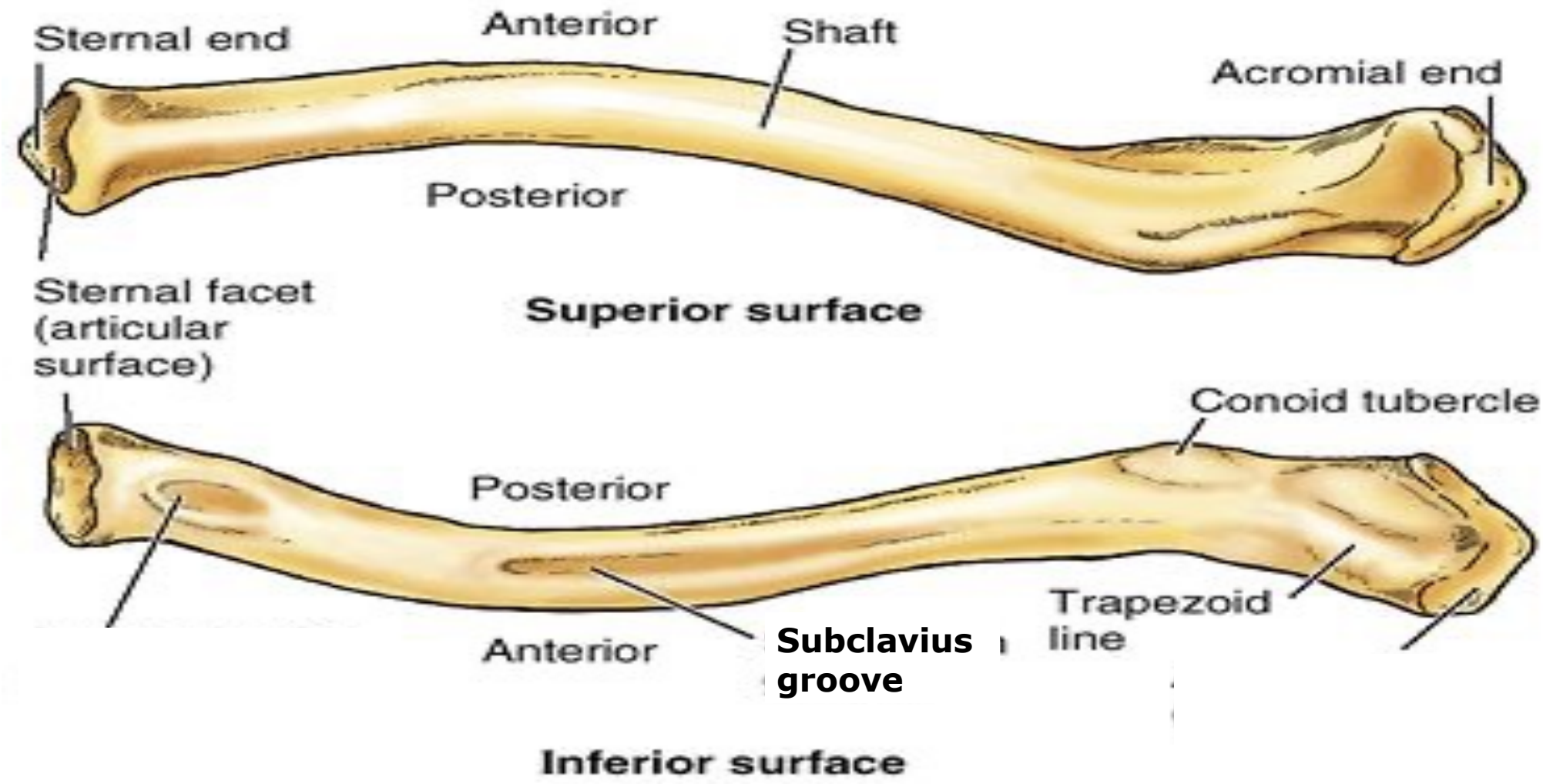
Clavicle

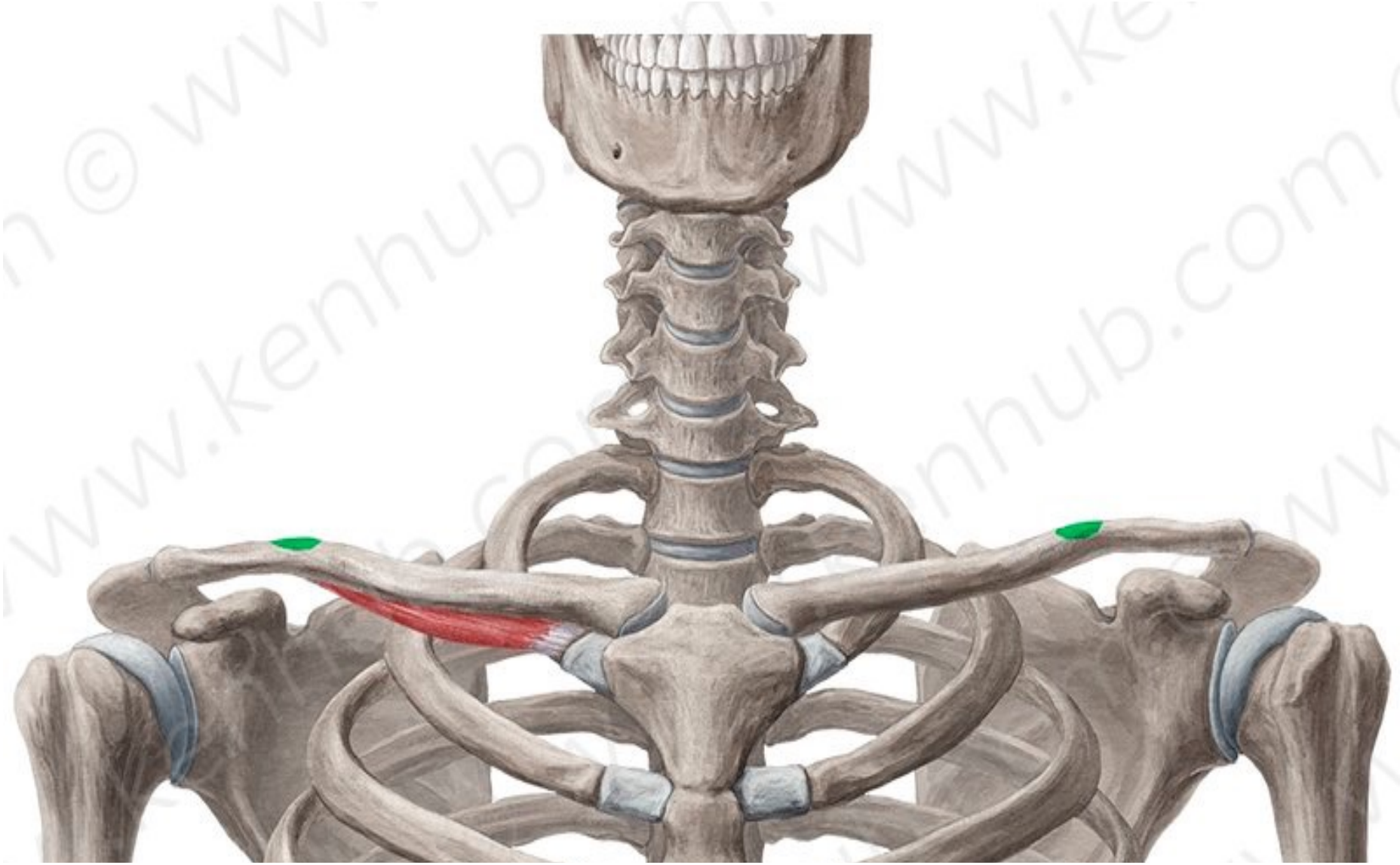

2 ends
Medial end (Sternal)
Lateral end (Acromial)
Shaft
Medial 2/3 convex anteriorly
Lateral 1/3 convex Posteriorly
Surface
Upper surface is smooth
Lower surface is Rough contains
In the middle Subclevius groove
Laterally Conoid tubercle and
Trapezoid ridge




Anterior
M
L
Posterior
Anterior
© www.kenhub.com
KEN HUB

Right clavicle





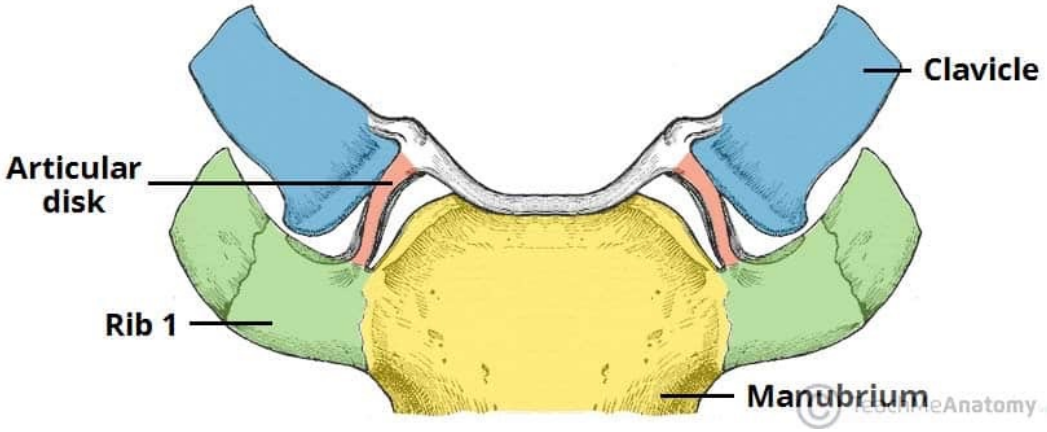
Articulation of clavicle

1-Sternoclavicular joint

Articulating Bones

Sternal end of the clavicle with sternum

Type : Synovial plane

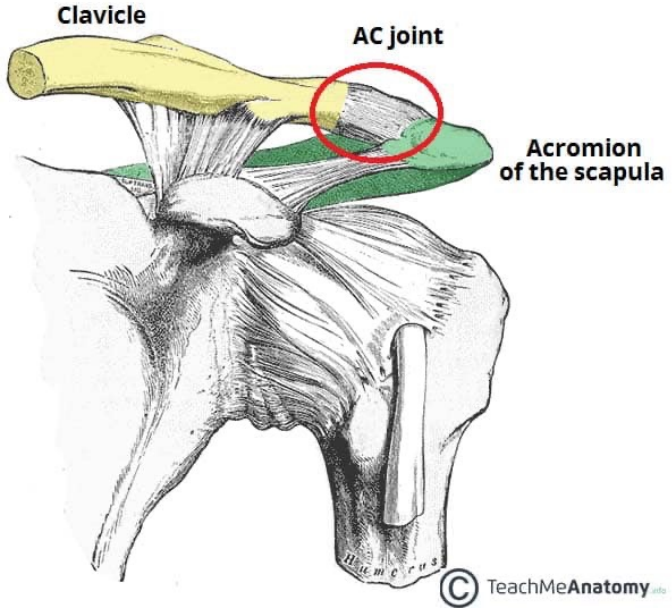


2- Acromioclavicular Joint

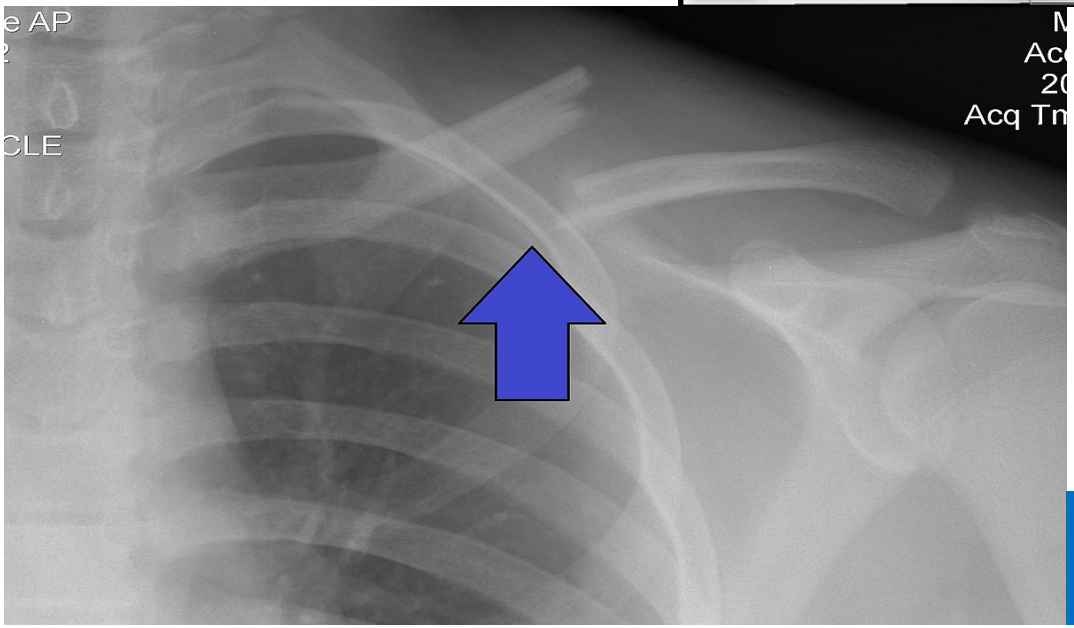
Articulating Bones

Lateral end of the clavicle with acromion

Type : Synovial plane

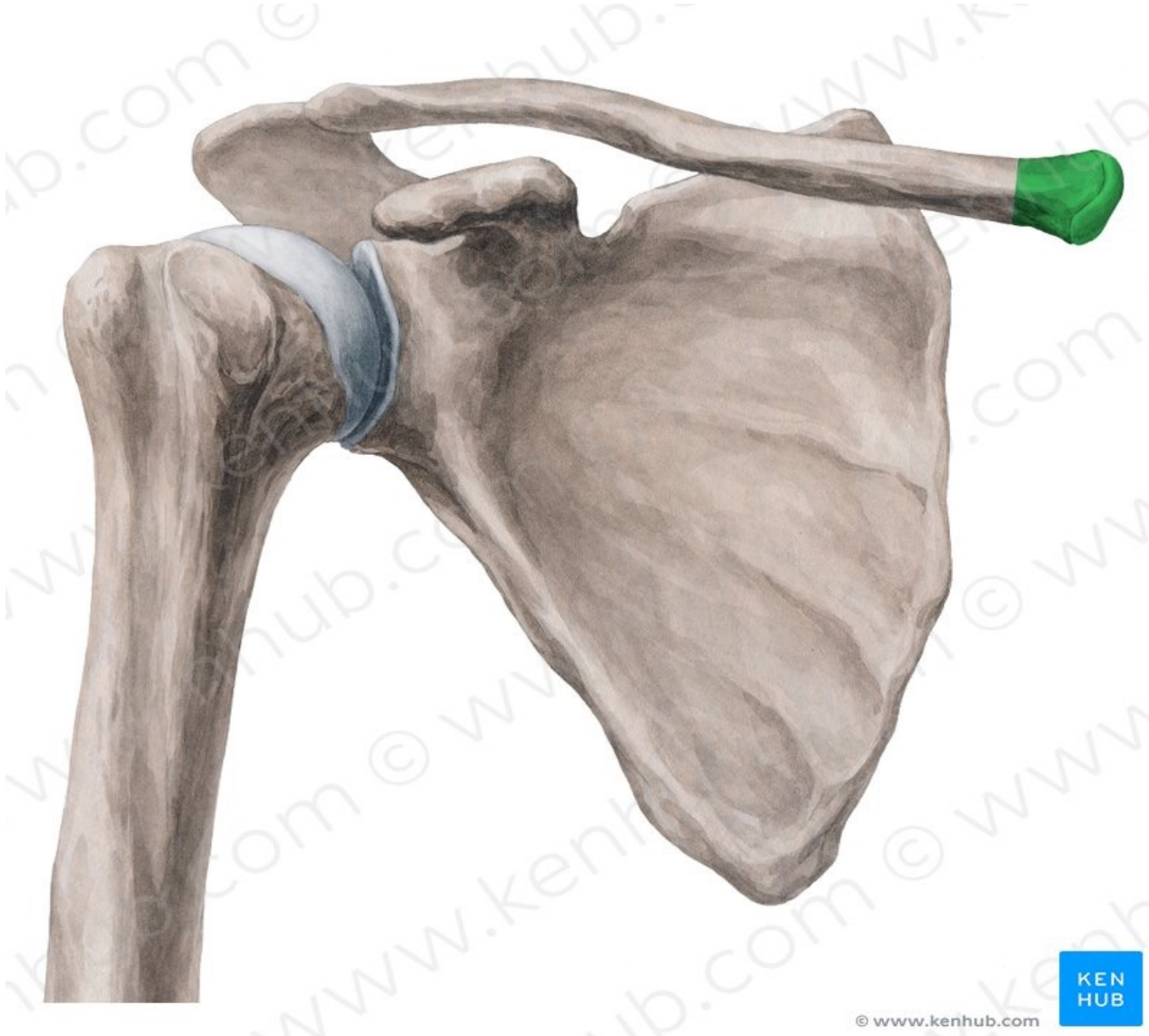


X ray Normal Clavicle



X ray Fracture Clavicle

Scapula



It is a **flat** bone, lies in an **oblique** plane on the postero-lateral aspect of the upper part of **chest** wall

It has:

I) 2 surfaces:

1- **Anterior (ventral or costal) surface**: forms the subscapular fossa.

2- **Posterior (Dorsal) surface**: presents

A. Spine of scapula

B. Acromion process (has medial & lateral borders)

C. Supraspinous fossa & **infraspinous fossa** connected through **spino-glenoid notch.**

II) 3 borders:

A. Medial

B. Lateral

C. Superior border (which presents the **supra-scapular notch** and lateral to it is the **coracoid process**).

III) 3 angles :

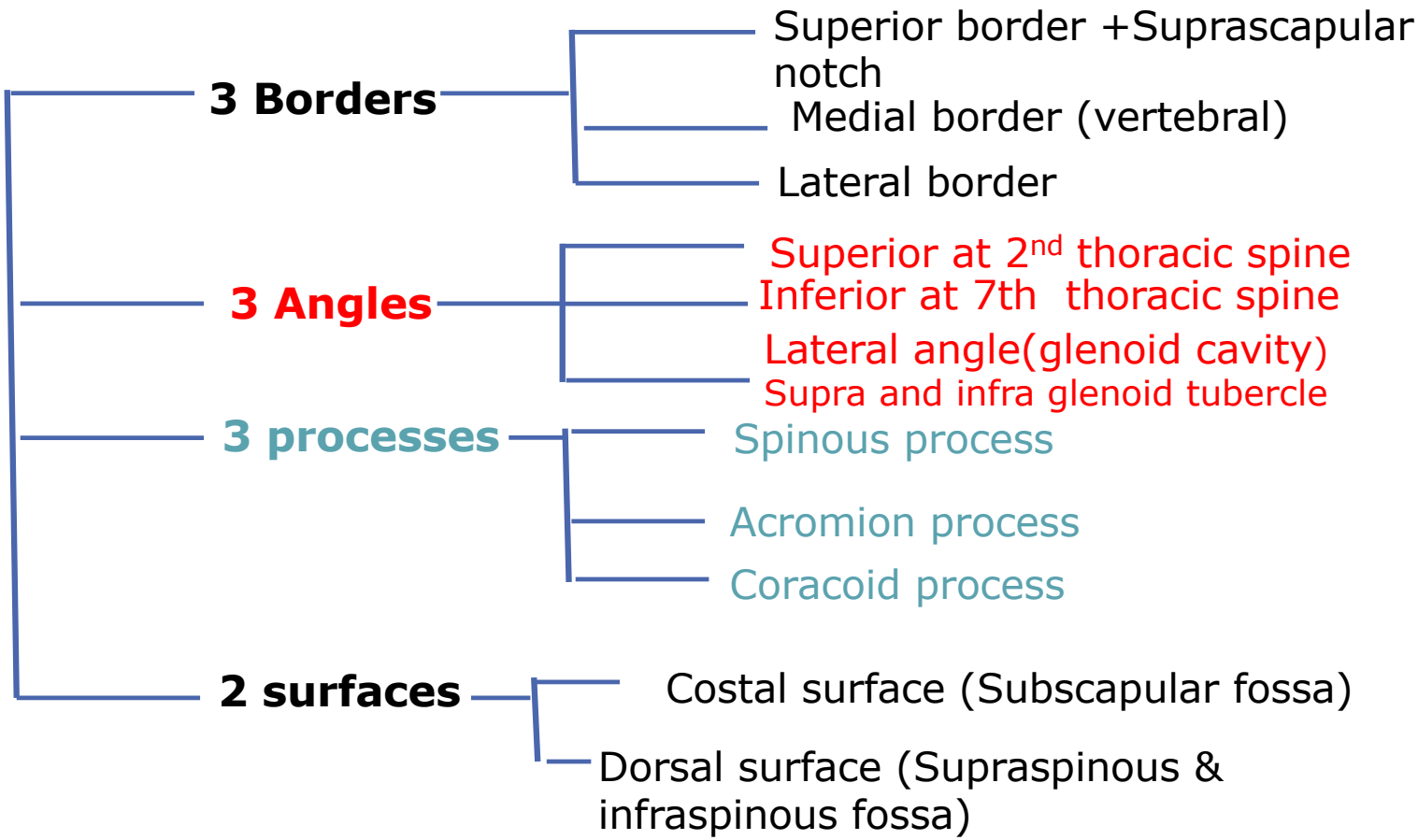
A. Inferior at 7th Thoracic spine

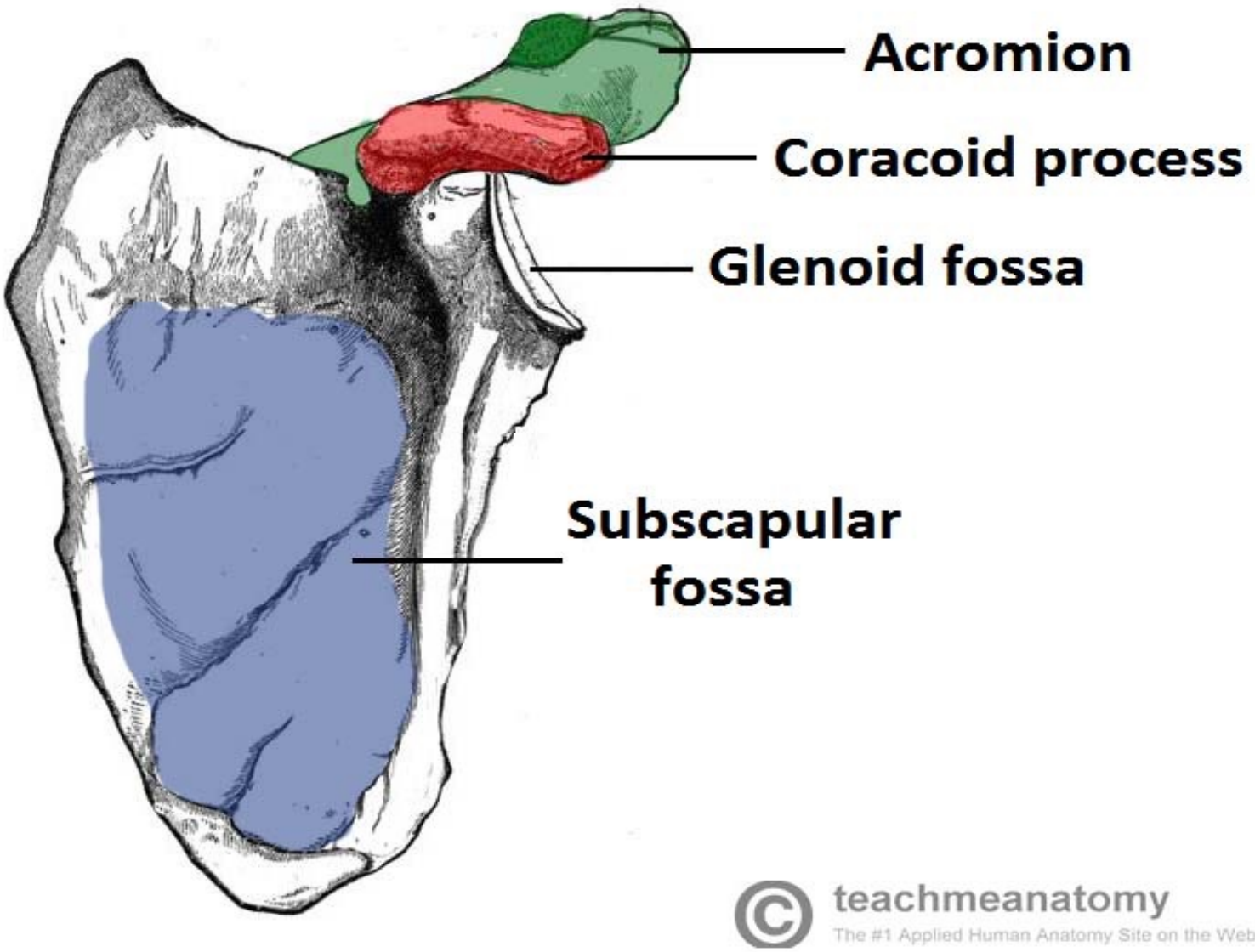
B. Superior at 2nd thoracic spine

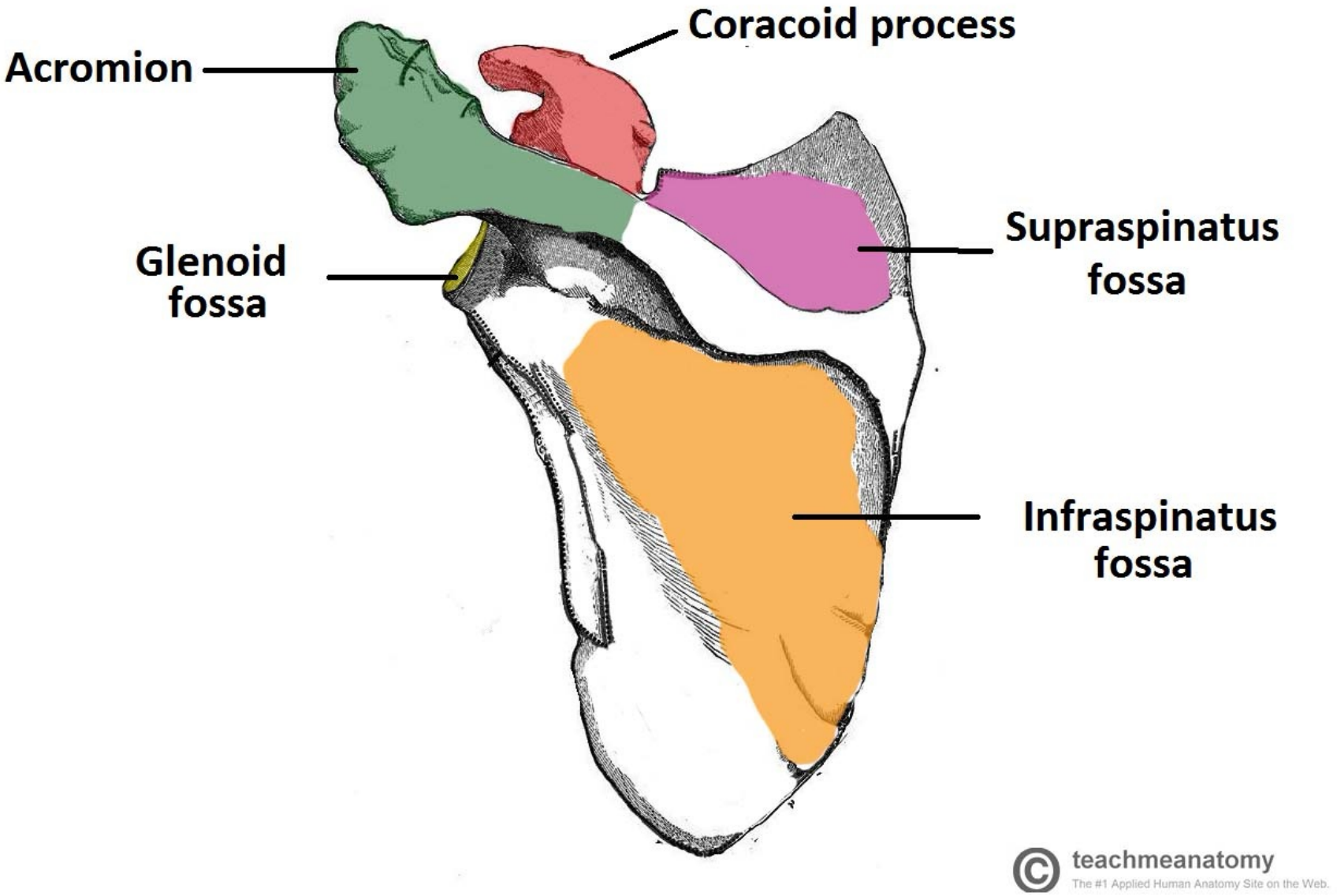
C. Lateral (presents the **head** , **neck** and **glenoid cavity) .**

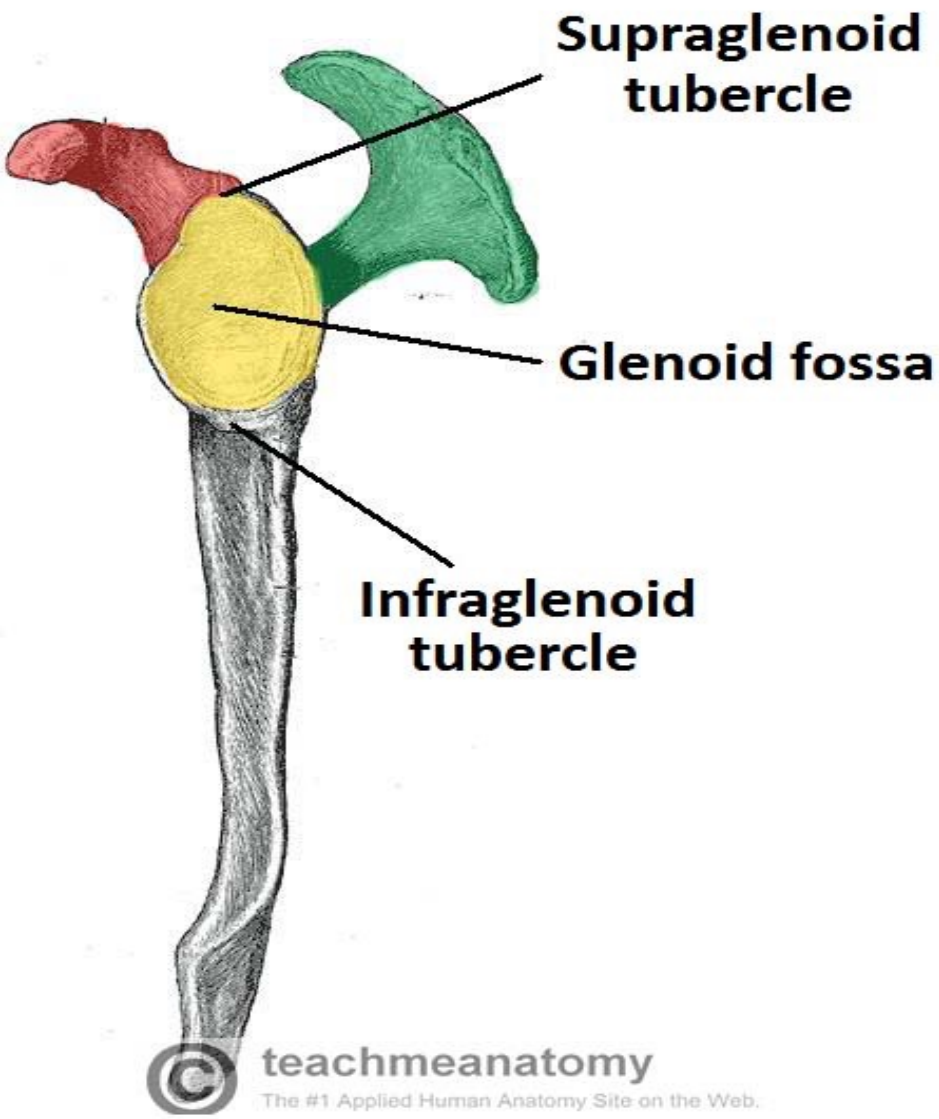
There are supraglenoid tubercle above the glenoid cavity and infraglenoid tubercles below the glenoid cavity .

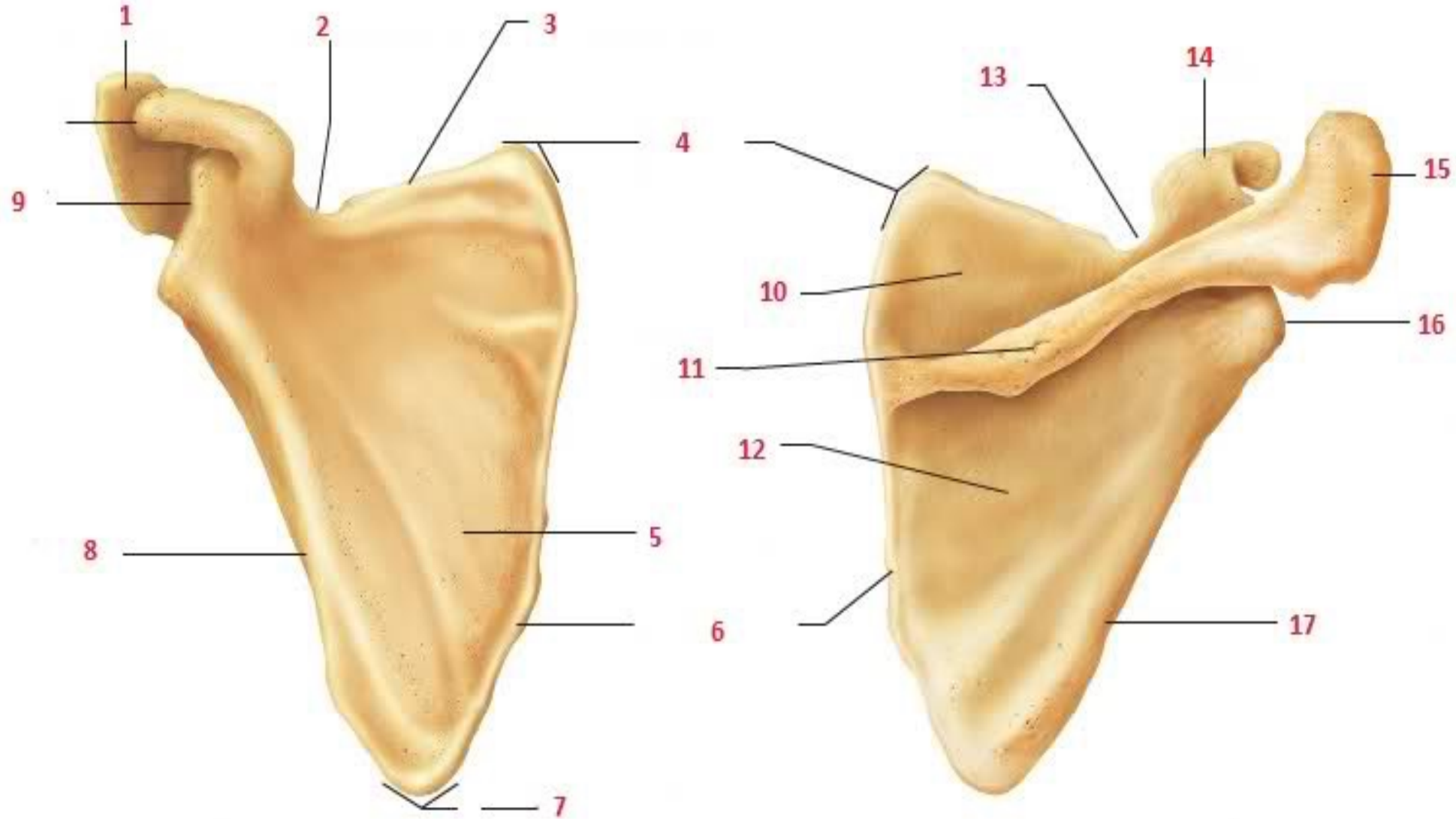
Scapula

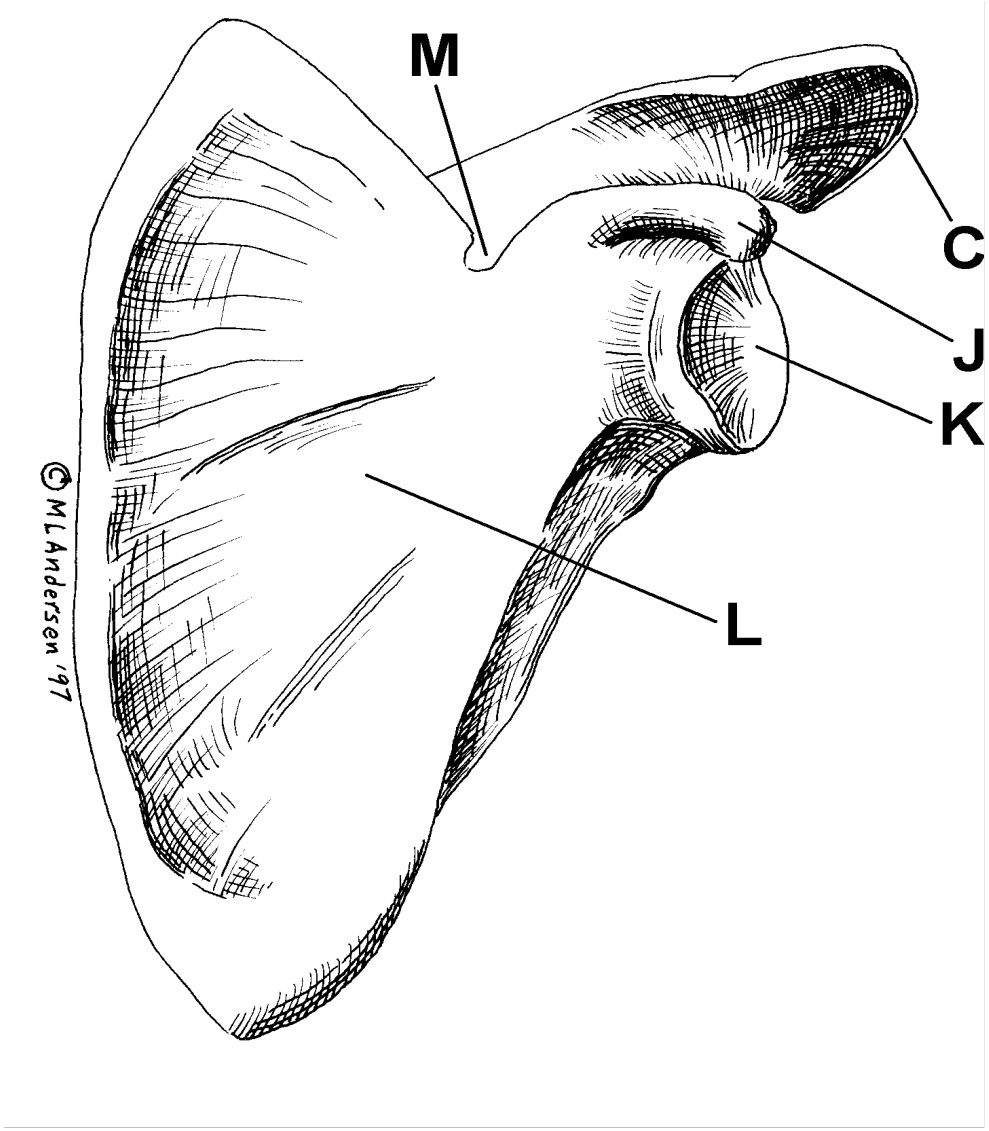

3 Borders
Superior border +Suprascapular notch
Medial border (vertebral)
Lateral border
3 Angles
Superior at 2nd thoracic spine
Inferior at 7th thoracic spine
Lateral angle(glenoid cavity)
Supra and infra glenoid tubercle
3 processes
Spinous process
Acromion process
Coracoid process
2 surfaces
Costal surface (Subscapular fossa)
Dorsal surface (Supraspinous & infraspinous fossa)

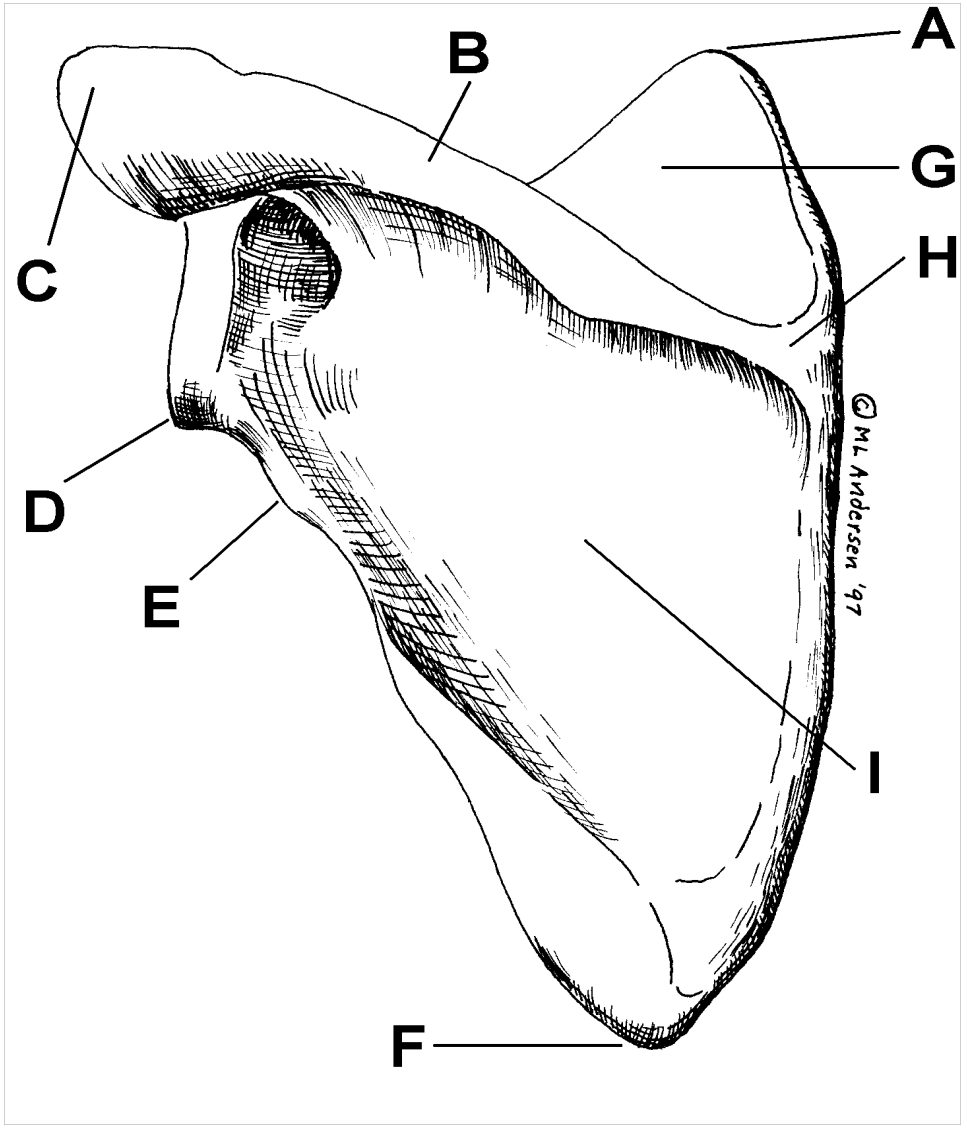


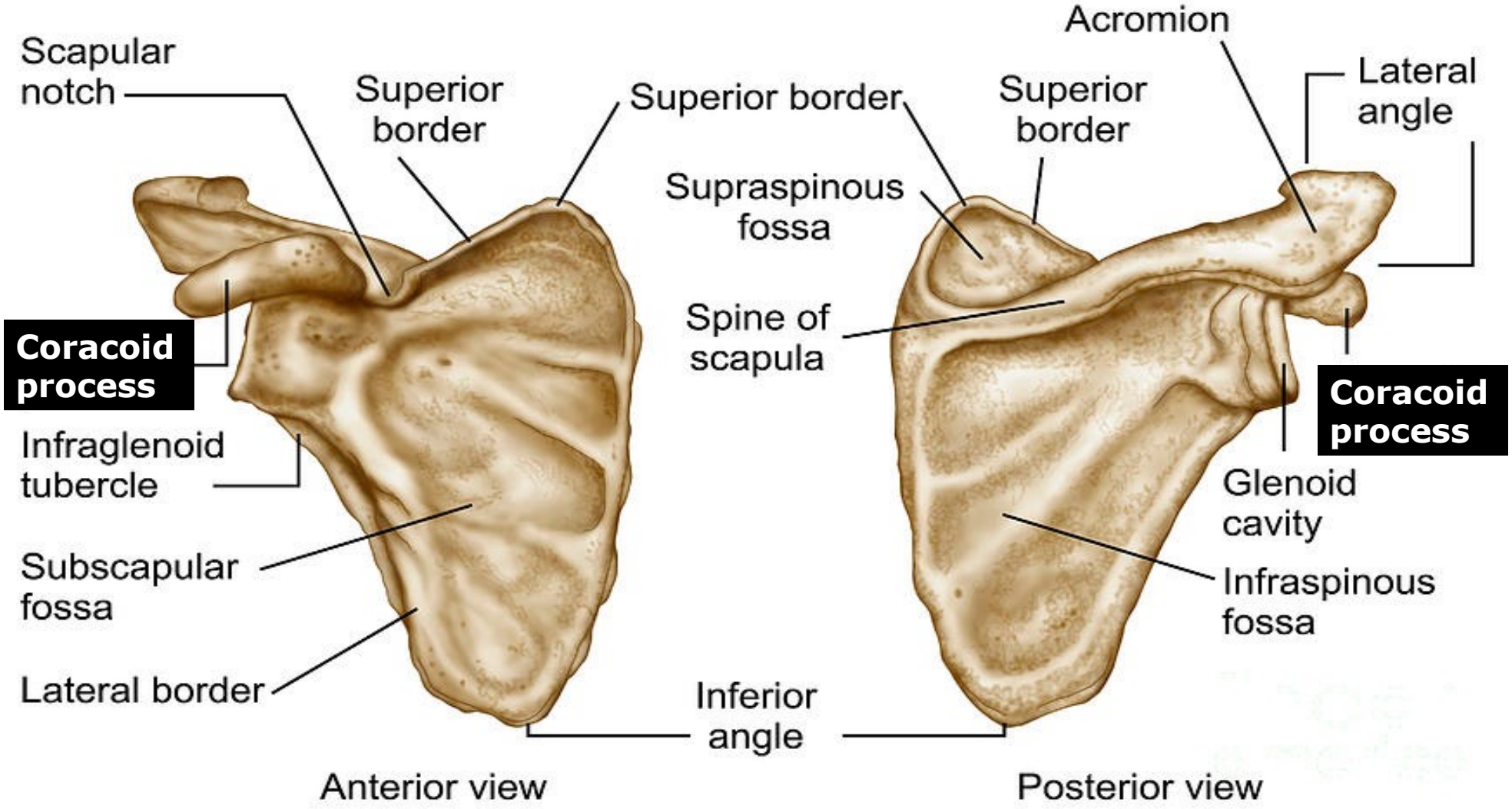



Supraglenoid tubercle
Glenoid fossa
Infraglenoid tubercle
teachmeanatomy
The #1 Applied Human Anatomy Site on the Web.


1
2
3
4
9
8
5
7
13
14
15
10
16
11
12
6
17


M
C
J
K
L
© ML Andersen '97


A
B
G
C
H
D
E
I
F
© ML Andersen '97


Scapular notch
Superior border
Coracoid process
Infraglenoid tubercle
Subscapular fossa
Lateral border
Anterior view
Superior border
Supraspinous fossa
Spine of scapula
Inferior angle
Acromion
Superior border
Lateral angle
Coracoid process
Glenoid cavity
Infraspinous fossa
Posterior view

Articulation of Scapula

1- Shoulder Joint

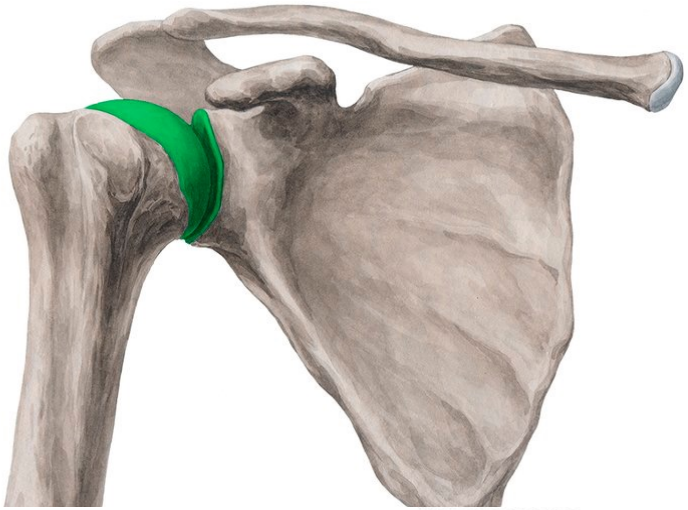
Articulating Bones

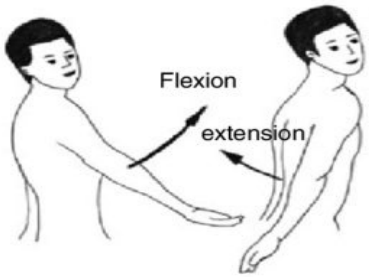
Head of humerus with glenoid cavity

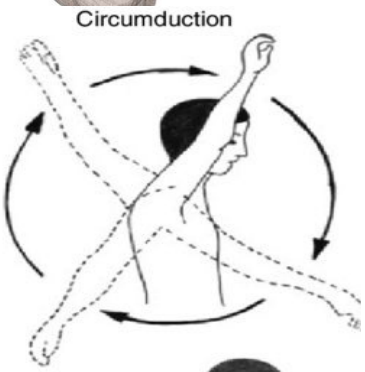
Type : Ball and socket synovial plane

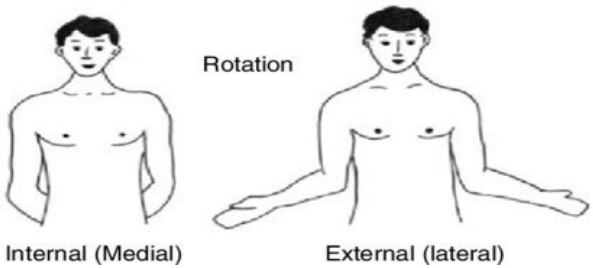
Moverments Of shoulder OR arm

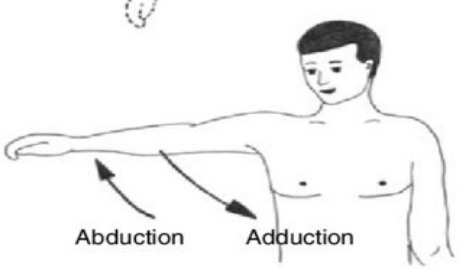
1. Flexion and extension
2. Abduction and adduction
3. Medial and lateral rotation
4. Circumduction











Humerus

★ it is a **long bone**

★ It is the bone of the **arm**

★ It has of **upper & lower ends and a shaft** .

I) Upper end : It consists of

A. Head

B. Greater tuberosity (tubercle)

C. Lesser tuberosity (tubercle)

D. Inter-tubercular (bicipital) groove. which is located in front of upper part of the shaft

The grove has lateral lip , medial lip and floor

F. Surgical neck

G. Anatomical neck.

II) Shaft:

- It has :

a- Three surfaces :

1- Antero-medial surface

2- Antero-lateral surface : **shows** the deltoid tuberosity

3- Posterior surface : shows spiral or radial groove .

b- Three borders :

1. **Anterior border**
2. **Medial and lateral borders** forming medial & lateral **supracondylar ridges** respectively.

III) Lower end:

It consists of

A. 2 epicondyles (medial & lateral)

B. Trochlea (medially for articulation with trochlea of ulna)

C. Capitulum (laterally for articulation with head of radius)

D. Three fossae (**radial** & **coronoid** fossae anteriorly and **olecranon** fossa posteriorly).

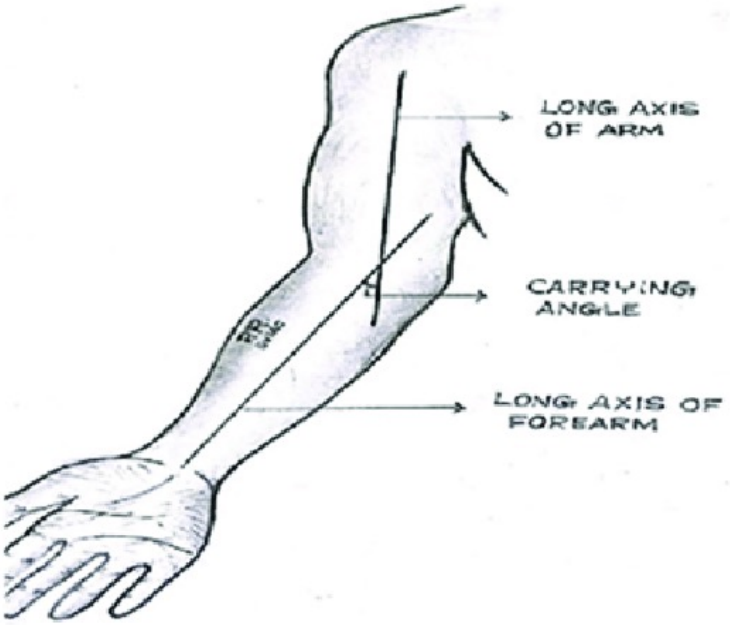
★ Carrying Angle :

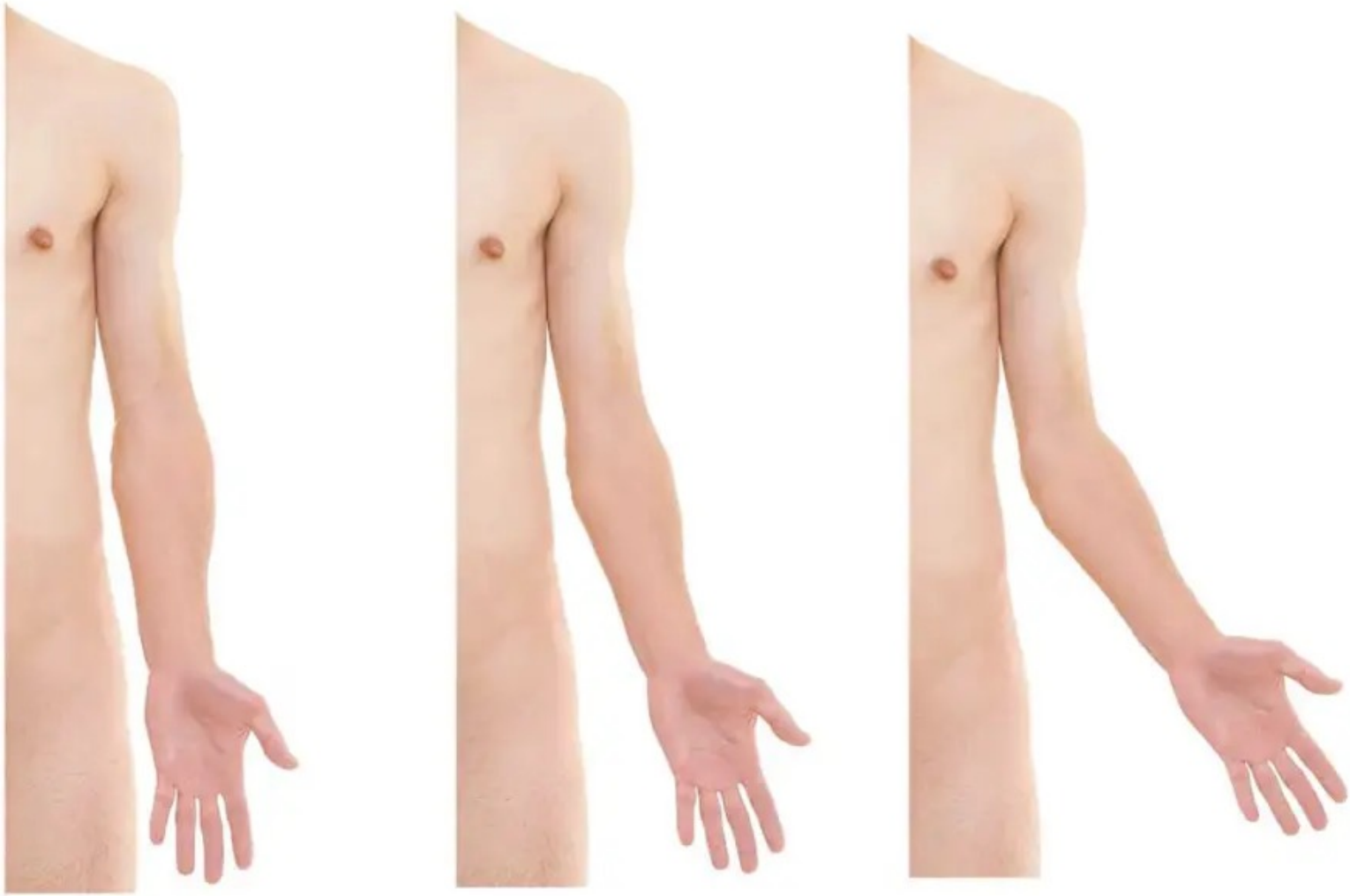
- It is the angle between the long axis of humerus and the long axis of extended supinated forearm.
- This angle allow free movements of upper limb away from the pelvis .
- It is Helping in carrying objects.
- Normal range is 5-15 degree

Abnormalities of Carrying Angle

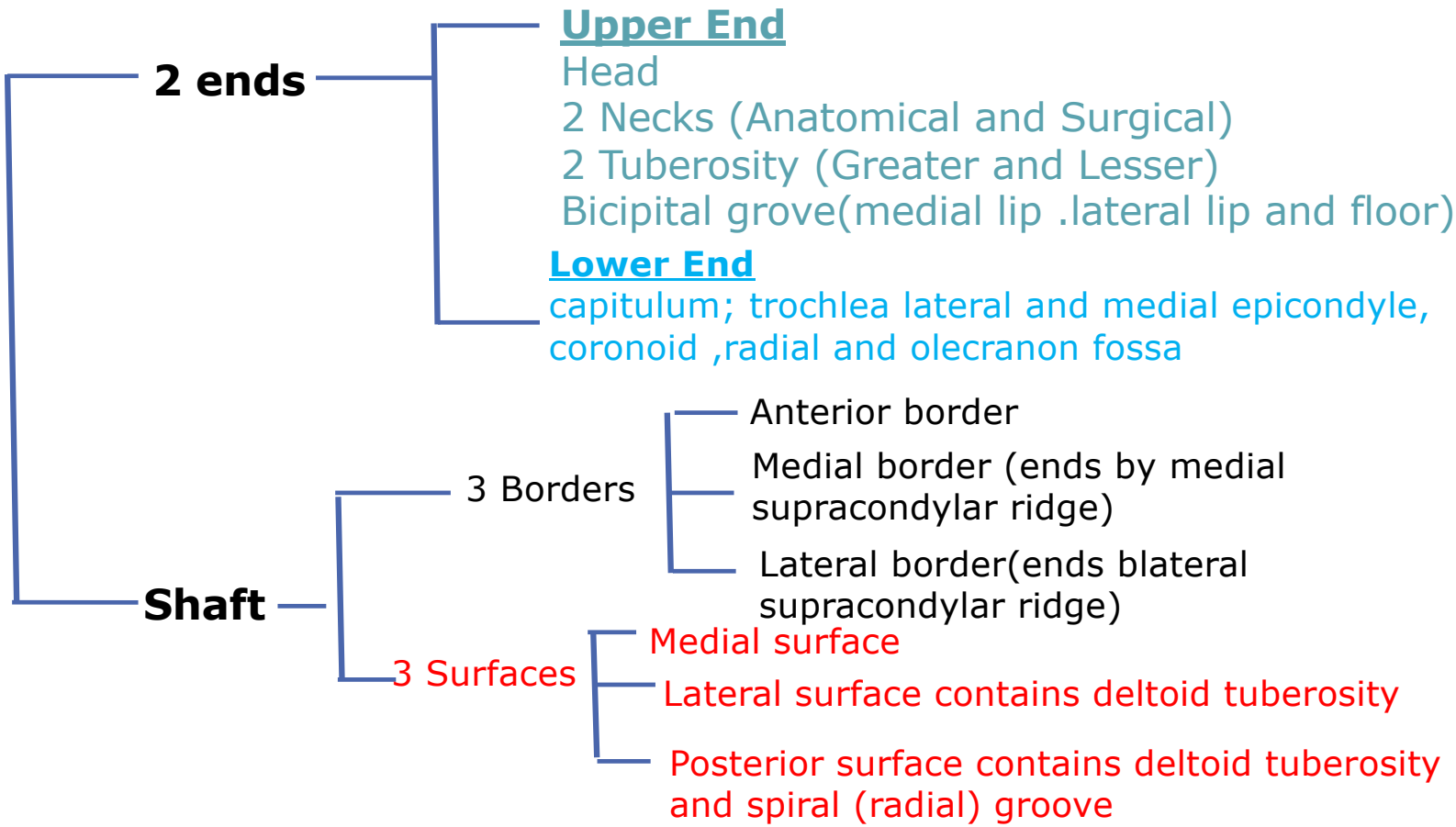
Decreased angle below 5 degree is **Cubitus Varus**

Increased angle above 15 degree is **Cubitus Valgus**



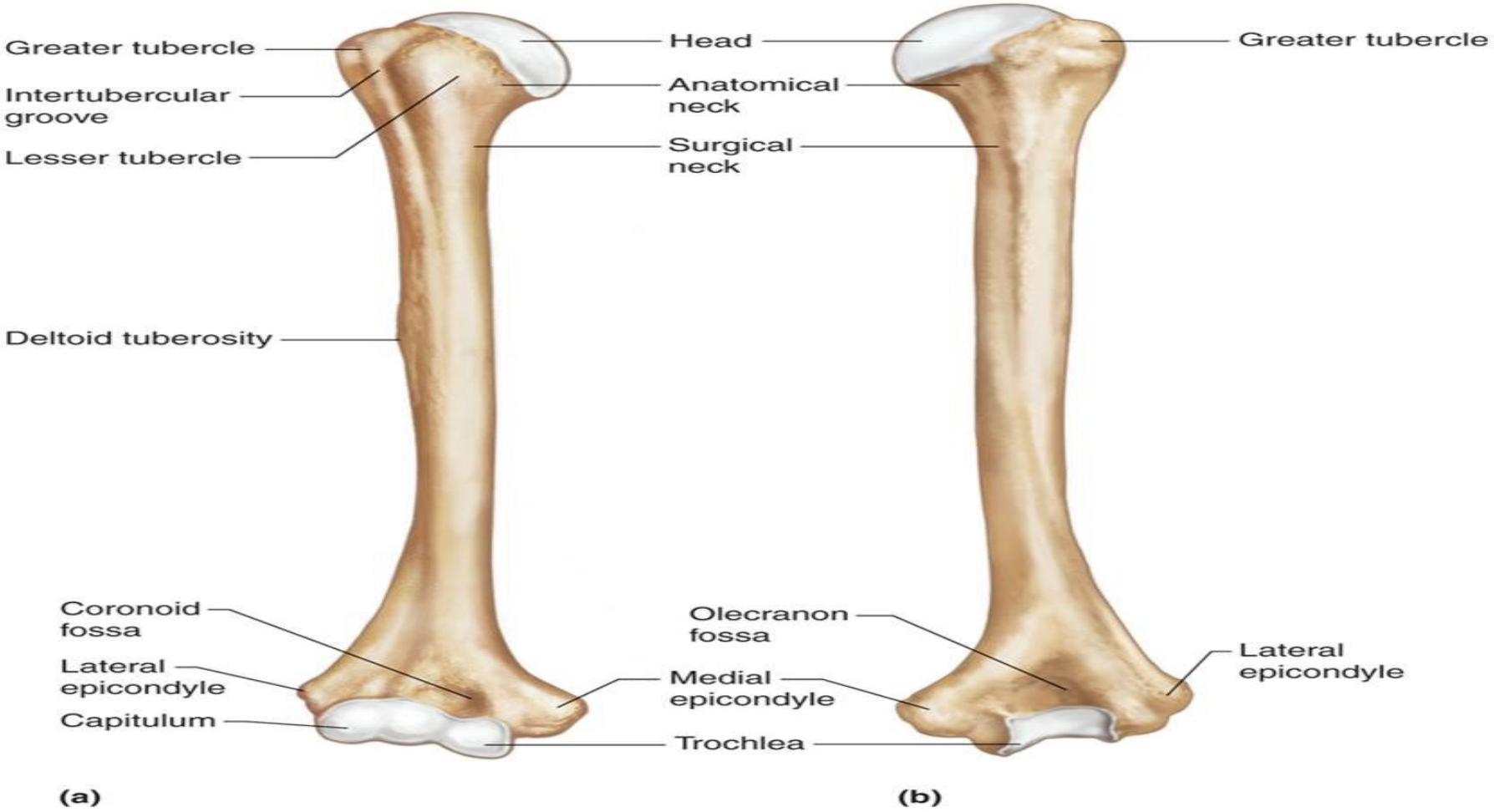

Cubitus varus
Normal
Cubitus valgus

Humerus


2 ends
Upper End
Head
2 Necks (Anatomical and Surgical)
2 Tuberosity (Greater and Lesser)
Bicipital grove(medial lip .lateral lip and floor)
Lower End
capitulum; trochlea lateral and medial epicondyle, coronoid ,radial and olecranon fossa
Shaft
3 Borders
Anterior border
Medial border (ends by medial supracondylar ridge)
Lateral border(ends blateral supracondylar ridge)
3 Surfaces
Medial surface
Lateral surface contains deltoid tuberosity
Posterior surface contains deltoid tuberosity and spiral (radial) groove

(a) Anterior view

(b) Posterior view



Articulation of humerus

1- Elbow Joint

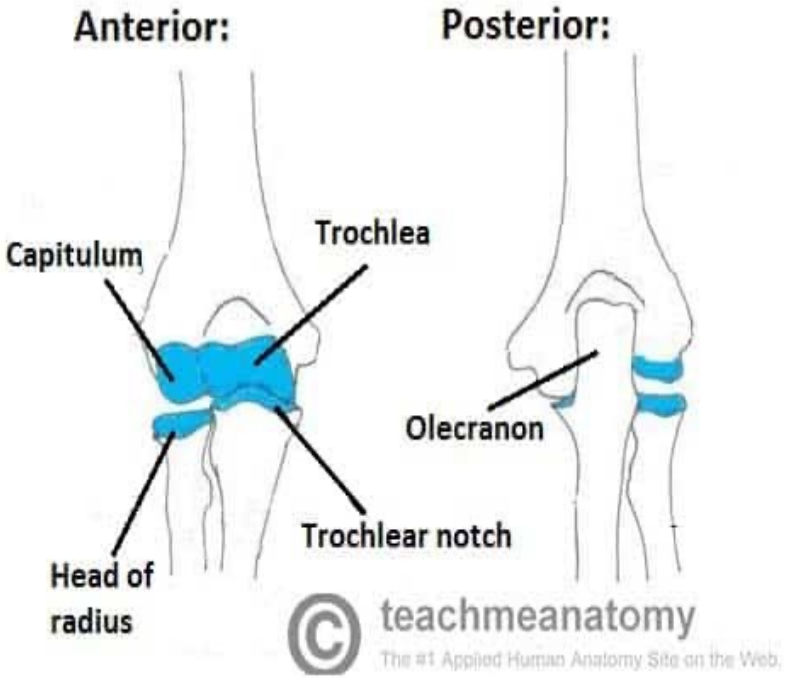
Articulating Bones

Trochlea and capitiulum of the humerus and trochlear notch of the ulna and head of the radius

Type : Hinge Synovial plane

Movement of the elbow or forearm

Flexion and extension



X ray Normal

X ray Fracture

THANK YOU