Submitted by Naila Mukhtar
ID Number 17673
Submitted to Mam Arooba sajjad

JOINTS OF UPPER LIMB

Joints of upper limb

1. The acromioclavicular joint
2. The sternoclavicular joint
3. The shoulder joint
4. The elbow joint
5. The radioulnar joint
6. The wrist joint
7. Joints of hands and finger

The acromioclavicular joint

- The acromioclavicular joint or AC joint , is a joint at the top of the shoulder . It is the juntion between the acromion [part of scapula that's foams the highest point of the shoulder] and the clavicle . It is a plane synovial joint .

Structure of acromioclavicular joint

- The acromioclavicular joint consist of an articulation between the lateral end of the clavicle and the acromion of the scapula .
- It has two atypical feactures

1. The articular surface of the joint are lined with fibro cartilage [as opposed to hyline cartilage].
2. The joint cavity is partially divided by an articular disc- a wdge of fibrocartilage suspended from the upper part of the capsule .

Joint capsule

- The joint capsule consist of a loose fibrous layer which enclose the two articular surface. It also give rise to the articular disc . The posterior aspect of the joint capsule is reinforced by fibers from the trapezius muscle. As would be expected of a synovial joint , joint capsule is lined internally by a synovial membrane . This secrete synovial fluid into the cavity of joint .

Ligaments

- There are three main ligament that strengthen the acromioclavicular joint .

1 Intrinsic

Acromioclavicular ligament – runs horizontically from the acromion to the lateral clavicle . It cover the joint capsule , reinforcing its superior aspect .

2 Extrinsic

Coniod ligament – run vertically from the coracoid processof the scapula to the coniod tubercleof the clavicle .

Trapezoid ligament– runs from the coracoid process of the scapula to the trapezoid line of Clavicle .

2 The sternoclavicular joint

- The sternoclavicular joint is a synovial saddle joint , that connectd the sternum with the clavicles . It is the only true joint which connects the appendicular skeleton of the upper limb with the axial skeleton of the trunk .
- The funtion of sternoclavicular joint is to cordinatethe movement of the upper limb with the core of the body . Thus allowing the upper limb to perform its full range of motion. Specifically the movement of the sternoclavicular jointare sorted into three degrees of freedom elevation – depression , protraction – retraction and axial rotation .

- Articular surface

Sternal end of clavicle , clavicular notch of sternum, superiorsurface of first costale cartilage ; intra articular fibrocartilaginous disc

- Ligaments

Intrinsic ligaments ; anterior and posterior

Sternoclavicular ligaments

Extrinsic ligaments; interclavicular and costoclavicular ligaments .

- Innervation

Medial suprascapular nerve , nerve to subclavius.

3 The shoulder joint

- Articulation

This occur between the rounded head of the humerus and the shallow pear shaped glenoid cavity of scapula.

The articular surface are covered by hyline articular cartilage. The glenoid cavity is depended by the presence of a fibrocartilaganous rim called glenoid labrum .

- Type ; synovial balland socket joint
- Capsule ; this sorrunded the joint and is attached
- Medially to the margin of the glenoid cavity outside the labrum.
- Laterally it is attached to the anotomic neck of the humerus .
- The capsule is thick and lax allowing a wide range of movement .

- Ligaments
- The glenohumeral ligament are three weak band of fibrous tissue that strenghens the front of the capsule
- The transverse humeral ligaments strenghen the capsule and bridges the gap between the two tuberosites
- The coracohumeral ligament stregthen the capsule above and streches from the root of the coracoid process to the greater tuberosity of the humerus .
- Accessory ligament
- The coranoid ligament extend between the coracoid process of the acromion
- The funtion is to protect the superioraspect of the joint
- Synovial membrane ; this line the capsule and is attached to the margin of cartilage covering the articular surface
- It foam a tubular sheet around the tendon of the long head of the biceps brachii .

The elbow joint

- The elbow joint is synovial joint found in the upper limb between the arm and forearm . It is the point of articulation of three bones
- The humerus of the arm
- The radius and ulna of the forearnm

The elbow joint is classfied structurally as a synovial joint . It is also classfied structrally as a compound joint ,

As there are two articulations in the joint .

- Synovial joint also called diarthroses , are free moveable joints .
- A fibrous capsule enclose the joint , and is lined internally by a synovial membrane . Synovial joint can be further catagorized based on funtion .
- The elbow joint is funtionally a hinge joint , allowing movement in only one plane .

- Ligaments
- Ulnar collateral ligament
- Radial collateral ligament
- Annular ligament
- Quadrate ligament

- Blood supply
- Proximal to elbow joint – ulnar collateral artery
- Radial collateral artery
- Middle collatreal artery
- Distal to elbow joint – radial recurret artery
- Ulnar recurret artery

- Movements of Elbow joint
- Flexion – biceps brachi
- brachialis
- Brachioradialis muscle
- Extension – triceps brachi muscle

The radioulnar joint

- The radioulnar joints are two locations in which the radius and ulna articulate in the forearm ;
- Proximal radioulnar joint

Located near the elbow . It is articulation between the head of the radius and the radial notch of ulna .

- Distal radioulnar joint
- Located near the wrist . It is an articulation between the ulnar notch of the radius and the ulna head .

- Proximal radioulnar joint

The proximal radioulnar joint is located immediately distal to the elbow joint , and is enclosed within the same articular capsule.

It is formed by the articulation between the head of the radius and the radial notch of ulna.

The radial head is held in place by the annular radial ligament , which foams a collar around the joint . The annular radial ligament is lined with a synovial membrane, reducing friction during movement . Movement is prouduced by the head of the radius rotating within the annular ligament .

There are two movement possible at this joint

- Pronation

Produced by the pronator quadratus and pronator teres

- Supination

Produced by the supinator and biceps brachii

- Interosseous membrane
- The interosseous membrane is a sheet of connective that joins the radius and ulna together between the radioulnar joints .
- The connective tissue sheet has three major funtions
- Hold the radius and ulna together during pronation and supination of the forearm
- Acts as site of attachment for muscles in the anterior and posterior compartments of forearm
- Transfer forces from radius to ulna

- Distal radioulnar joint

The distal radioulnar joint is located just proximally to the wrist joint . It is an articulation between the ulnar notch of the radius and the ulnar head .

Like the proximal radioulnar joint this is a pivot joint, allowing for pronation and supination . The ulnar notch of the radius slides anteriorly over the head of the ulnar during such movements

- Pronation

Produced by the pronator quadratus and pronator teres

- supination

Prouduced by the supinator and biceps brachii

The wrist joint

- Articulation
- Above; the distal end of the radius and the articular disc
- Below ; the scaphoid, lunate and triquetral bones
- Capsule ; the capsule enclose the joint and I attached ;
- Above ; to the distal end of the radius and ulna
- Below ; to the proximal row of the carpal bones
- Type ; synovial ellipsoid joint

Ligaments of wrist joint

- The medial ligament ;
  - Origin ; ulnar styloid process
  - Insertion ; triqetrum dorsally and pisiform palmary
  - Provide medial stability

- The latral ligament ;
  - Origin ; styloid process of the radius
  - Insertion; scaphoid and trapezium
  - Provide latreral stability

- Anterior ligament

Most important ligament for controlling motion and wrist stablity

Origin ; anterior surface of distal radius

Insertion ; courses obliquely and medially to split into

- The radiocapitate ligament
- The radiotriquetrum ligament
- The radioscaphoid ligament

- posterior and dorsal ligament

- Origin ; posterior surface of the distal radius and styloid process
- Insertion ; lunate and triquetrum

- Synovial membrane the lines of the capsule and is attached to the margin of the articular surface .
- Nerve supply

- Anterior interosseous nerve
- Deep branch of radial nerve

Joint of the hand and fingers

- Intercarpal joint
- Between the individual bones of proximal row of the carpus
- Between the individual bones of the distal rows of carpus
- And finally the midcarpal joint , between the proximal and distal rows of the carpal bones.
- Capsule ; the capsule sorrunded each joint
- Ligaments ; the bones are united by strong anterior , posterior and interossous ligaments .

Carpometacarpal and Intermetacarpal joints

- The carpometacarpal and intermetacarpal are synovial plane joints possesing anterior posteriorand interosseous ligaments . They have a common joint cavity .
- A small amount of gliding movement is possible

- The Thumb

Articulation

- Between the trapezium and the saddle shaped base of the first metacarpal bone .
- Type ; synovial saddle shapped joint
- Capsule ;The capsule sorround the joint
- Synovial membrane ; this line capsule and forms a separate joint cavity .
- The interphalangeal joint

Are synovial hinge joints that have a structure similar of that of the metacarpophalangeal joints

- They are
- Proximal interphalangeal joint
- Distal interphalangeal joint

- The end …..