JOINTS OF THE UPPER LIMB

Prof. Amadi O. Ihunwo, PhD
School of Anatomical Sciences
Lecture Outline

• Review 3 types of joints
• Types of synovial joints
• Individual joints of Upper limb
Types of synovial joints

• Six (6) in numbers
• Based on
  – the shape of articulating surfaces and/or
  – type of movement permitted

Gray’s Anatomy 40th ed.
Types of synovial Joints...

- **Plane Joint**
  - Flat articulating surfaces.
  - Uniaxial
  - Gliding or sliding movement. E.g. acromioclavicular joint.

- **Hinge Joint (Ginglymus)**
  - Uniaxial
  - Flexion and extension e.g. elbow joint.

- **Pivot Joint**
  - Uniaxial
  - Rotation. e.g. atlantoaxial
Types of synovial Joints...

- **Condyloid Joint**
  - Biaxial with round or socket surfaces.
  - E.g. Knuckle (metacarpophalangeal)
  - Variation is ellipsoidal joint - oval & socket surfaces.

- **Saddle Joint**
  - Biaxial with concave & convex surfaces.
  - E.g. 1<sup>st</sup> carpometacarpal joint
Types of synovial Joints...

• **Ball & Socket Joint**
  – Multiaxial: spheroidal surface into socket.
  – Movements: Flexion, Extension, Abduction, Adduction, Medial/lateral rotation, circumduction
  – E.g. shoulder & hip joints.
Joints of Upper limb

- Sternoclavicular & Acromioclavicular Joints
- Shoulder (Glenohumeral) Joint
- Elbow Joint
- Proximal & Distal Radioulnar Joints
- Wrist Joint (Radiocarpal) Joints
- Intercarpal Joints
- Joints of the Hand
Sternoclavicular Joint

- Saddle type
- Fibrocartilaginous articular cartilage.
- Articular disc divides cavity into 2 and prevents medial displacement of clavicle. Also acts as shock absorber
- **Ligaments:**
  - Ant. & post sternoclavicular,
  - interclavicular
  - costoclavicular (strong and provides lateral reinforcement and limits elevation of clavicle)
- **Movements:** Flexion, Extension, Abduction, Adduction, Medial & lateral rotation
Acromioclavicular Joints

• Plane type
• Fibrocartilaginous cartilage with incomplete articular disc
• Ligament:
  – *Acromioclavicular
  – Coracoacromial (CA)
  – Coracoclavicular (conoid [C] and trapezoid [T] parts)
• Movement:
  – Gliding & sliding in anteroposterior direction
Elbow Joint

• Hinge
• Articular capsule also encloses proximal radioulnar joint
• Ligaments
  – Radial & Ulnar Collateral
• Movement:
  – Flexion and Extension
• Subluxation (‘pulled elbow’)
Elbow Joint Bursae

- Intratendinous
- Subtendinous (deep olecranon)
- Subcutaneous (superficial olecranon)
  - Student's elbow
Proximal Radioulnar Joint

- Pivot
- Capsule continuous with that of the elbow joint
- Ligament:
  - Annular
- Movement:
  - Rotation of head of radius in pronation & supination
Distal Radioulnar Joint

Pivot type
Articular cartilage is fibrocartilaginous

Ligaments:
Anterior & posterior

Movements:
Rotation of head of ulnar in pronation & supination
Wrist (Radiocarpal) Joint

- Condyloid
- Ligament:
  - Palmar and dorsal radiocarpal, ulnar & radial collateral
- Movements:
  - Flexion, Extension, Abduction (radial deviation), Adduction (ulnar deviation)
Intercarpal Joint

- Plane
- Ligaments:
  - Anterior, posterior, & interosseus
- Movements:
  - Gliding & sliding
Carpometacarpal & Intermetacarpal

- Plane except thumb (saddle)
- Ligament:
  - Palmar and dorsal carpometacarpal and intermetacarpal
- Movements:
  - Thumb (Flexion, Extension, Abduction -Adduction, Opposition (CMC of thumb), Circumduction
Metacarpophalangeal Joint

• Condyloid
• Ligaments
  – Palmar and dorsal Metacarpophalangeal, deep transverse metacarpal
• Movement:
  – Thumb (Flexion, Extension, Abduction - Adduction, circumduction (2\textsuperscript{nd} - 5\textsuperscript{th}))
Interphalangeal Joint

• Hinge
• Ligaments
  – Palmar and dorsal interphalangeal, collateral
• Movements:
  – Flexion and extension
X-type MCQ Question

Joints of the upper limb:

• a. glenohumeral joint most commonly dislocates superiorly and posteriorly.
• b. the inferior radioulnar joint is involved in pronation-supination.
• c. movements at the interphalangeal joints are flexion and extension.
• d. metacarpophalangeal joints are of the condyloid type.
• e. inflammation of the elbow joint bursa is common in the subcutaneous bursa.
Answer to MCQ Question

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