Elbow Joints & Cubital Fossa
Lecture Objectives

• Describe the type and the components of the elbow joint.
• List the ligaments associated with the elbow joint and their attachment.
• Describe the bursae in relation to these joints.
• Describe the stability of these joint.
• List the blood supply and nerve supply of the elbow joint.
• Describe the cubital fossa.
• List the content of the cubital fossa.
• Understand the clinical importance of the cubital fossa.
Elbow joint

- Trochlea and capitulum of humerus and trochlear notch of ulna and head of radius
- Hinge joint
- Flexion and extension
- Nerve supply: Branches from radial, ulnar, median and musculocutaneous
Elbow joint

- Articular Capsule
  - Attachments
Elbow Joint

- Synovial Membrane
  - Covers fat pads in fossae
  - Continuous with synovial membrane of the proximal radioulnar joint
Elbow Joint: Ligaments

• Radial annular ligament
  – Hold head of radius in place

• Collateral ligaments - maintain integrity of joint
  – Lateral (radial collateral) lig.
    • Triangular
    • Lateral epicondyle to anular lig.
  – Medial (ulnar collateral) lig.
    • Triangular with 3 bands
      – Anterior
      – Posterior
      – Transverse (oblique)
        » Between ulnar attachment of above 2 bands
Elbow Joint: Movements

**Flexors**
- Brachialis
- Biceps brachii
  (Brachioradialis)

**Extensors**
- Triceps brachii
  (Anconeus)
Elbow Joint: Movements

• Carrying angle
  – Between long axis of extended arm and forearm
  – About 170°
  – Male > Female
  – Disappear by flexion
  – Importance
    • Carrying objects
    • Swinging arm during walking
      ➢ Avoid hitting hip by forearms
Abnormality of carrying Angle

Cubitus varus  Normal  Cubitus valgus

Any variation of the angle that is more than 15° is known as cubitus valgus and less than 5° are called cubitus varus.
Elbow Joint: Bursae

- Bicipitoradial bursa
- Olecranon bursae
  - Subtendinous
  - Subcutaneous
Elbow Joint: Relations

- Ulnar nerve

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Proximal Radioulnar Joint

• Head of radius and annular ligament and radial notch of ulna
• Pivot joint
• Rotation: pronation and supination
• Nerve supply: Branches from radial, ulnar, median and musculocutaneous
Proximal Radioulnar Joint

- **Capsule**
  - Continuous with the elbow joint

- **Synovial membrane**
  - Continuous above with that of elbow

- **Relations**
  - Supinator muscle
  - Radial nerve
Proximal Radioulnar Joint: Movements

- Axis of rotation
  - Head of radius
  - Apex of the triangular articular disc

- Pronation
  - Pronator teres
  - Pronator quadratus

- Supination
  - Biceps
  - Supinator
  - More powerful
Radius: Subluxation & Dislocation
Arterial Anastomosis around the Elbow Joint

- Profunda a.
- Superior ulnar collateral a.
- Inferior ulnar collateral a.
- Radial and ulnar recurrent aa.
- Posterior interosseous recurrent a.
Relation of the Boney Structures of the Elbow

(A) Posterior view

- Medial epicondyle (site of ulnar nerve)
- Olecranon
- Lateral epicondyle
- Head of radius
- Head of ulna
- Ulnar styloid process
- Dorsal radial tubercle
- Radial styloid process
- Scaphoid and trapezium
- Pisiform
- Hamate
- Styloid process of 3rd metacarpal

(B) Extension: epicondyles and olecranon aligned during extension

(C) Flexion: epicondyles form triangle and align vertically with olecranon during flexion

Posterior view

Lateral view
Fracture of Olecranon
Cubital Fossa: Boundaries

- Triangular shape

- Laterally.... Brachioradialis m.
- Medially...... pronator teres m.
- The base..... Line between humeral epicondyles

Superior border: Imaginary line between the epicondyles

Medial border: Lateral border of the pronator teres

Lateral border: Medial border of the brachioradialis
Cubital Fossa

- Floor ...brachialis and supinator mm.
- Roof ...deep fascia and bicipital aponeurosis
Cubital Fossa: Content

- Biceps tendon
- Brachial a.
  - Branches
- Median n.
- Radial n.
  - Branches

➢ Relations
Cubital Fossa: Clinical Importance

Blood pressure

Biceps tendon reflex
Cubital Fossa: Superficial Veins

(A) Cephalic vein of arm

(B) Skins and subcutaneous tissue

- Brachial fascia covering biceps brachii
- Cephalic vein of arm
- Medial cutaneous nerve of forearm
- Basilic vein of arm
- Cubital lymph node
- Median cubital vein
- Medial epicondyle
- Median antebrachial vein
- Bicipital aponeurosis
- Antebrachial fascia
- Perforating vein
- Basilic vein of forearm
- Lateral cutaneous nerve of forearm
Cubital Fossa: Clinical Importance

IV injection