Elbow Joints

& Cubital Fossa

These notes are from the book because the record wasn’t clear

The elbow joint occurs between the trochlea and capitulum of the humerus and the trochlear notch of the ulna and the head of the radius, its Hinge joint which means it can do: flexion and extension.

Capsule:

Anteriorly: it is attached above to the humerus along the upper margins of the coronoid and radial fossae and to the front of the medial and lateral epicondyles. below to the margin of the coronoid process of the ulna and to the anular ligament, which surrounds the head of the radius.

Posteriorly: it is attached above to the margins of the olecranon fossa of the humerus and below to the upper margin and sides of the olecranon process of the ulna and to the anular ligament.

Synovial membrane: lines the capsule and covers fatty pads in the floors of the coronoid, radial, and olecranon fossae; it is continuous below with the synovial membrane of the proximal radioulnar joint.

Ligaments:

The Radial annular ligament encircles the head of the radius, stabilizing it in the radial notch.

Collateral ligaments - maintain integrity of joint:

The lateral ligament: is triangular and is attached by its apex to the lateral epicondyle of the humerus and by its base to the upper margin of the annular ligament.

The medial ligament: is also triangular and consists principally of three strong bands: the anterior band, which passes from the medial epicondyle of the humerus to the medial margin of the coronoid process;
the posterior band, which passes from the medial epicondyle of the humerus to the medial side of the olecranon;

the transverse band, which passes between the ulnar attachments of the two preceding bands.

Movements: The elbow joint is capable of flexion and extension.

Flexion is performed by the brachialis, biceps brachii, brachioradialis, and pronator teres muscles. Extension is performed by the triceps and anconeus muscles.

It should be noted that the long axis of the extended forearm lies at an angle to the long axis of the arm. This angle, which opens laterally, is called the carrying angle and is about 170° in the male and 167° in the female. The angle disappears when the elbow joint is fully flexed.

Abnormality of carrying Angle: 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

A bursa is a membranous sac filled with synovial fluid. It acts to cushion the moving parts of a joint, preventing degenerative damage. There are many bursae in the elbow, but only a few have clinical importance:

Subtendinous – between the olecranon and the tendon of the triceps brachii, reducing friction between the two structures during extension and flexion of the arm.

Subcutaneous – between the olecranon and the overlying connective tissue

bicipitoradial bursa is a bursa located between the distal tendon of the biceps brachii muscle and the anterior part of the tuberosity of the radius.[1] It partially or completely wraps around the biceps tendon.

Elbow joint relations

Anteriorly: The brachialis, the tendon of the biceps, the median nerve, and the brachial artery. Posteriorly: The triceps muscle, a small bursa intervening. Medially: The ulnar nerve passes behind the medial epicondyle and crosses the medial ligament of the joint. Laterally: The common extensor tendon and the supinator.

Proximal radioulnar joint

It is between the circumference of the head of the radius and the anular ligament and the radial notch on the ulna, pivot joint.

Capsule: The capsule encloses the joint and is continuous with that of the elbow joint.
Synovial membrane: This is continuous above with that of the elbow joint. Below it is attached to the inferior margin of the articular surface of the radius and the lower margin of the radial notch of the ulna.

Relations- anteriorly: Supinator muscle and the radial nerve

Posterolply: Supinator muscle and the common extensor tendon

Movements

The movements of pronation and supination of the forearm involve a rotary movement around a vertical axis at the proximal and distal radioulnar joints. The axis passes through the head of the radius above and the attachment of the apex of the triangular articular disc below.

Pronation is performed by the pronator teres and the pronator quadrates

Supination is performed by the biceps brachii and the supinator.

Supination is the more powerful of the two movements because of the strength of the biceps muscle. Because supination is the more powerful movement, screw threads and the spiral of corkscrews are made so that the screw and corkscrews are driven inward by the movement of supination in right-handed people.

Radial head subluxation, also known as pulled elbow or nursemaid’s elbow, is one of the most common upper-extremity injuries in infants and young children who present to the emergency department, it results from a quick pull on a child’s arm

Radial head dislocation occurs when the radial head is displaced from its normal articulation with the ulna and the humerus.

The cubital fossa

is a skin depression in front of the elbow, and the boundaries can be seen and felt; the brachioradialis muscle forms the lateral boundary and the pronator teres forms the medial boundary.

The floor of the cubital fossa is formed proximally by the brachialis, and distally by the supinator muscle. The roof consists of skin and fascia, and is reinforced by the bicipital aponeurosis. Within the roof runs the median cubital vein, which can be accessed for venepuncture

The tendon of the biceps muscle can be palpated as it passes downward into the fossa, and the bicipital aponeurosis can be felt as it leaves the tendon to join the deep fascia on the medial side of the forearm. The tendon and aponeurosis are most easily felt if the elbow joint is flexed against resistance
The **brachial artery** can be felt to pulsate as it passes down the arm, overlapped by the medial border of the biceps muscle. In the cubital fossa, it lies beneath the bicipital aponeurosis, and, at a level just below the head of the radius, it divides into the radial and ulnar arteries.

In the cubital fossa, the **Radial nerve** is located between the Brachioradialis and the Brachialis muscles.

It gives off the deep branch of the radial nerve and continues as the superficial radial nerve. The deep branch supplies the extensor carpi radialis brevis and the supinator in the cubital fossa and all the extensor muscles in the posterior compartment of the forearm. The superficial radial nerve is sensory and supplies the skin over the lateral part of the dorsum of the hand and the dorsal surface of the lateral three and a half fingers proximal to the nail beds.

The **ulnar nerve** is also in the area, but is not in the cubital fossa; it occupies a groove on the posterior aspect of the medial epicondyle of the humerus.

**Cubital Fossa: Clinical Importance**

**Blood pressure**

The brachial pulse can be felt by palpating immediately medial to the biceps tendon in the cubital fossa. When measuring blood pressure, this is also the location in which the stethoscope must be placed, to hear the korotkoff sounds.

**Venepuncture**

The **median cubital vein** is located superficially within the roof of the cubital fossa. It connects the basilic and cephalic veins, and can be accessed easily – this makes it a common site for venepuncture.

**Biceps tendon reflex**

Biceps reflex is a reflex test that examines the function of the C5 reflex arc and the C6 reflex arc, the test is performed by using a tendon hammer to quickly depress the biceps brachii tendon as it passes through the cubital fossa.

> "There are no incurable diseases, only the lack of will.

> There are no worthless herb, only the lack of knowledge."

- Ibn Sina