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Musculo-Skeletal Block

Lecture: 4 **Date: 19/1/2025**

Common fractures of the upper limb

Module staff:
Dr. Falih Waheed
Dr. Ahmed Ibrahim
Dr. Raed Jasim
Dr. Rafid Mousa
Dr. Mohammedbaker Abbas
Dr. Ahmed Hazem
Dr. Khalil Ibrahim

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Learning Objectives (LO):

1.Recognize the specific features of the common fractures of the upper limb.

2.Perform radiological diagnosis of fractures, seeking advice where necessary.

3.initiate the management of the more common fractures.

4. Recognize the indications for surgical intervention.

5.Identify the complications of fracture including vascular injury in the upper limbs.

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Fractures of the distal humerus in adults

Supracondylar fractures: rare in adults.

Condylar fractures: intraarticular affect elbow joint: T-shaped or Y-shaped break.

Treatment:

- Undisplaced fractures: splintage
- Displaced: Open reduction and internal fixation.
- **Complications:**
  - Vascular injury
  - Nerve injury the median or the ulnar nerve
  - Elbow Stiffness most common.
  - Heterotopic ossification.

Fractured capitulum

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- Articular fracture which occurs only in adults.
- falls on the hand, with the elbow straight.
- X-ray: In the lateral x-ray view the capitulum in front of the lower humerus. CT scan is invaluable.
- **Treatment**
- Undisplaced fractures arm in a sling.
- Displaced fractures should be treated by operative reduction and fixation.
- If this too difficult, the fragment is best excised.

Dislocation of the elbow

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- A fall on the outstretched hand.
- In 90% of cases posteriorly or posterlaterally.
- Provided there is no associated fracture, reduction will usually be stable and recurrent dislocation unlikely.

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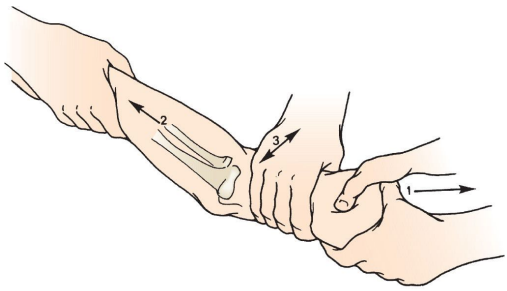
Dislocation of the Elbow

- under anaesthesia, pulls on the forearm while the elbow is slightly flexed. With one hand, sideways displacement is corrected, then the elbow is further flexed while the olecranon process is pushed forward. Unless almost full flexion can be obtained, the olecranon is not in the trochlear groove. After reduction, the elbow should be put through a full range of movement to see whether it is stable.
- Splintage for 1 week and sling for 3 weeks.



Fracture–dislocation ‘terrible triad’

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- Is combination of radial head fracture, coronoid fracture and medial collateral ligament injury – terrible refer to severe instability and poor outcome in these cases.
- Associated fractures will need internal fixation, if elbow remains unstable the ligaments need repair.
- **Complications :**
- Vascular injury :The brachial artery.
- Nerve injury: The median or ulnar nerve.
- Stiffness Loss of 20–30 degrees of extension.
- Heterotopic ossification.
- Osteoarthritis.

‘Pulled elbow’

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- In young children the elbow may be injured by a sharp tug on the wrist.
- The child is in pain; the elbow is held in extension. There are no x-ray changes.
- What has happened is that the radius has been pulled distally and the annular ligament has slipped up over the head of the radius.
- A dramatic cure is achieved by forcefully supinating and then flexing the elbow; the ligament slips back with a snap.

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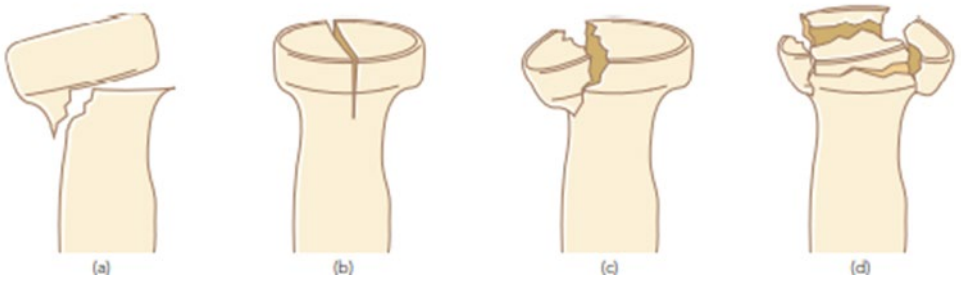
Fractures proximal end of the radius

A fall on the outstretched hand with the elbow extended.

In adults this may fracture the head of the radius; in children, it is more likely to fracture the neck of the radius.

The wrist also should be examined to exclude a concomitant injury of the distal radioulnar joint.



Treatment

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- In children: up to 30 degrees of radial head tilt and up to 3 mm of transverse displacement: a collar and cuff for 1 week. Displaced: closed or open reduction.
- **The head of the radius must never be excised in children**.
- Adults: Undisplaced fractures: collar and cuff for 2 weeks. Displaced: open reduction and fixation with small screws.
- Comminuted fractures can be excised, it should be replaced by a metal prosthesis.

Fractures of the olecranon process

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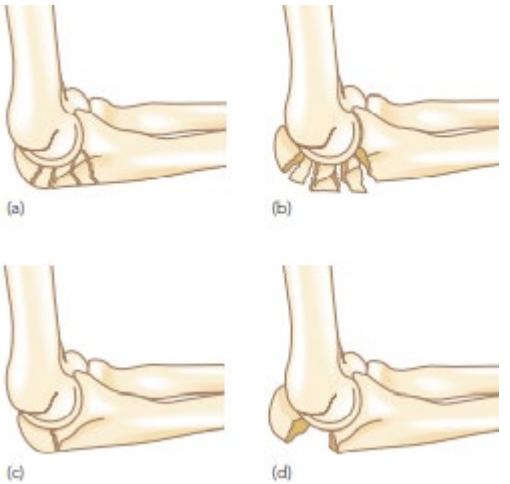
- **Two types of injury:**
- (1) a comminuted fracture due to a direct blow or a fall on the elbow: bruises over the elbow, intact triceps
- (2) Transverse fracture, due to traction when the patient falls onto the hand while the triceps muscle is contracted: palpable gap and the patient is unable to extend the elbow.



Treatment

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- undisplaced transverse or comminted: immobilizing the elbow in a cast in about 60 degrees of flexion for 1 week; then exercises are begun.
- Displaced: Operative treatment.
- Complications:

  Stiffness.

  Non-union.

  Osteoarthritis.

Fractures of the radius and ulna

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- Children achieve reduction by manipulation if fail so operative and fixation by intramedullary pins or plate.
- Adult operative fixation by plate.
- **Complications:**
  - Nerve injury intraoperatively in proximal radius fracture.
  - Compartmental syndrome.
  - Delayed union and nonunion.
  - Complications of plate removal. (refracture).

Monteggia fracture – dislocation of the ulna

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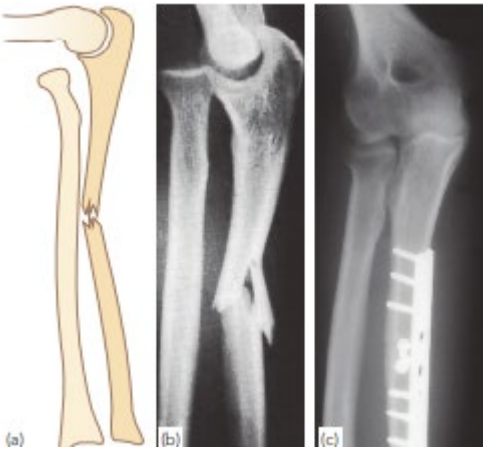
- a fracture of the shaft of the ulna associated with disruption of the proximal radioulnar joint and dislocation of the radiocapitellar joint.
- Treatment operative plate and screw, specially in adult, **restore the length of the ulna (quite necessary)** lead to reduced dislocated head of radius.
- Complications: Unreduced dislocation limits both elbow flexion and forearm rotation.



Galeazzi fracture – dislocation of the radius

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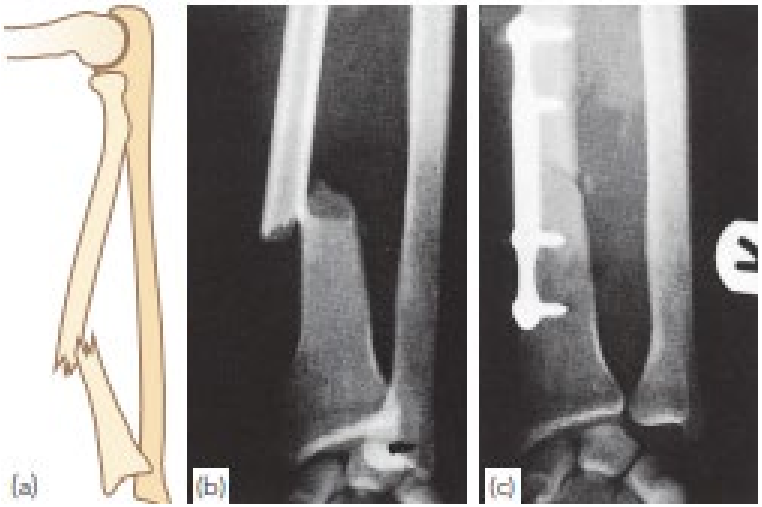
- The counterpart of the Monteggia injury is a fracture of the distal third of the radius and dislocation or subluxation of the distal radioulnar joint.
- As with the Monteggia fracture, the important step is to restore the length of the fractured bone.



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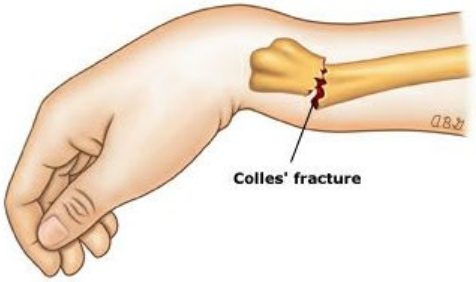
Fractures of the distal radius in adults

- It is the most common of all fractures in older people, the high incidence being related to the onset of osteoporosis.
- Patient is usually an older woman gives a history of falling on her outstretched hand.
- Displaced fractures produce a distinctive dorsal tilt just above the wrist – so-called 'dinner-fork deformity' (Colle's Fracture)
- Volar displaced fracture: the distal fragment is angulated or displaced volar: 'Smith's fracture'
- Displaced fractures must be reduced under anaesthesia.
- The fracture usually unites in about 5 weeks and exercises begun.



Comminuted and unstable Colles' fractures

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- Surgery: percutaneous K-wire fixation, external fixation, plates.
- **Complications**:
  - Circulatory impairment.
  - Nerve injury The median nerve.
  - Malunion is common.
  - Associated radioulnar and carpal injuries.
  - Tendon rupture; the extensor pollicis longus tendon.
  - Joint stiffness: shoulder, elbow and fingers.
  - Complex regional pain syndrome.(Sudeck's atrophy)

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Fracture-subluxation of distal radius (Barton's fracture)

- A split of the volar or dorsal edge of the distal radius with anterior (volar) or Posterior (dorsal) subluxation of the wrist.
- It is intraarticular fractures: often need perfect reduction and rigid fixation to ensure joints movements as early as possible to reduce the risk of stiffness.

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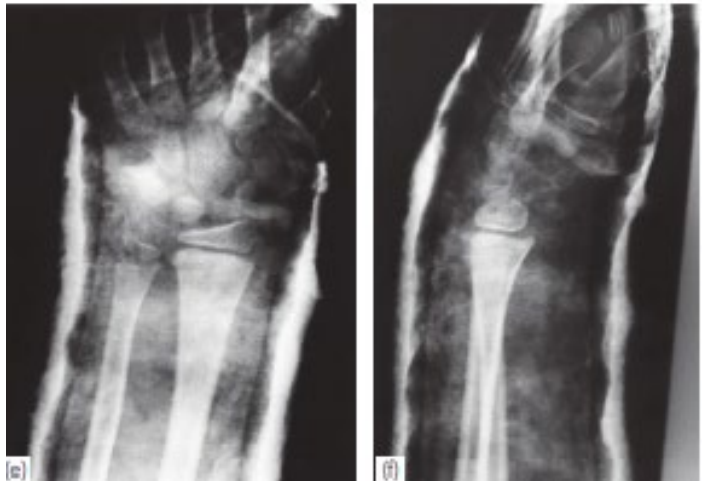
Distal forearm fractures in children

- ‘juvenile Colles’ fracture’.
- ‘dinner-fork deformity’.
- reduced, under anaesthesia.
- Some degree of angulation can be accepted.
- If the fracture unstable can be stabilized with percutaneous K-wire.
- **Complications**
- Forearm swelling
- Malunion



Thank you