

# Fractures of the diaphysis of the radius and ulna

## Compound fractures of the radius and the ulna

- They occur from direct and indirect violence.

## Clinical signs and diagnostics

- Clinically present as typical symptoms of fractures, the ulna is easily palpable, there may be open fractures at the distal part of the forearm.
- X-ray in two projections.

## Treatment

### Conservative

- Only in non-dislocated fractures and in children.
- A high cast (a splint or a circular cast from the middle of the arm to the heads of the metacarpals, padding of the elbow socket, control of peripheral blood supply and innervation), while the elbow is in 90° flexion, in case of fractures in the upper half of the forearm in supination, in the lower half in pronation.
- Immobilization in plaster fixation for 12-16 weeks.

### Surgery

- All displaced or open fractures compartment syndrome, Galeazzi fracture and Monteggia fracture
- After surgical osteosynthesis, plaster fixation is required for a week:
  - Splint osteosynthesis (self-compressing splints)
  - Intramedullary nail osteosynthesis
  - External fixation – for severe damage to soft tissues, open fractures, temporarily for polytrauma.
- A special type are incomplete subperiosteal fractures in children (willow twig type), when the corticalis breaks on only one side - large angular dislocation, dolomite bone is necessary for repositioning, then conservative treatment.

## Isolated fractures of the radius and ulna

- They arise through the action of direct violence

## Clinical picture and diagnosis

- pain, edema, hematoma, change of configuration
- necessary x-rays in two projections showing adjacent joints to rule out simultaneous dislocation of the head of the adjacent bone (Monteggia fracture, Galeazzi fracture)
- in isolated fractures of one bone, the other bone often acts as a spacer and prevents the fragments from fitting correctly - the result is a post-joint self-compression splints (DCP) are the most advantageous

## Treatment

### conservative

- non-dislocated fractures of the ulna, non-dislocated fractures of the proximal 2/3 of the radius
- cast fixation for 8 weeks from MTC heads to arm, elbow flexion

### surgery

- Dislocated fractures of the ulna, Dislocated fractures of the proximal 2/3 of the radius, Dislocated and non-dislocated fractures of the distal 1/3 of the radius (muscle strain)
- splint, secured nail
- They arise through the action of direct violence.

# Monteggia fracture

- Fracture of the ulna with dislocation of the radial head ( tear of the lig. annulare with instability and dislocation of the radial head).

## Classification

- **according to radio** dislocation :
  - **Flexion** (10%) – the head of the radius is luxated dorsally
  - **Extension** (90%) – defensive fracture – the head of the radius is luxated ventrally

## Clinical picture and diagnosis

- Relief position – semiflexion + pronation, clinically pain, edema , hematoma, limitation of mobility
- The deep branch of the radial nerve may be damaged
- On X- ray (AP + LAT) - McLaughlin's sign - the axis of the diaphysis of the radius passes through the head of the humerus .

## Treatment

Always **surgery**

- Open reposition and ulna OSY splint (self-compression splint)
- Then revision of the head of the radius (reposition may be prevented by the interposed joint capsule) and suturing of the torn ligament. annular radii
- After surgery, plaster cast or orthosis for 14 days, then gradual rehabilitation (rotational movements after 3 weeks)

## Galeazzi fracture

- Fracture of the radius (distal 1/3) with dislocation of the head of the ulna and rupture of the ligaments of the distal radioulnar connection.

## Diagnostics

- X- ray AP (sometimes widening of the distal radio-ulnar joint, possibly breaking off the styloid process of the ulnae) and LAT ( **displacement of the distal ulna dorsally** ).

## Therapy

*Surgery*

- Osteosynthesis of the radius.
- Dislocation of the ulna usually resolves spontaneously (if not – transfixation with a wire or screw),
- After surgery, plaster fixation for 6 weeks to heal the ligaments of the distal radio-ulnar joint.

## Links

## Sources

- PASTOR, Jan. *Langenbeck's medical web page* [online]. [cit. 2010]. <<http://langenbeck.webs.com>>.



X-ray image of a Monteggia fracture of the right forearm.



Galeazzi fracture before osteosynthesis



Plate osteosynthesis with six screws and two Kirschner wires