

Wrist and hand fractures

Among them we include:

- fractures of the os scaphoid;
- luxation of the carpal bones;
- metacarpal fractures;
- dislocation of the metacarpophalangeal joints;
- fractures of finger joints.

Fractures of the os scaphoid

- It is caused by direct force during dorsiflexion of the hand.

Classification

- Fracture of the tuberculum scaphoid (distal pole) – an extra-articular fracture that heals well.
- Break-off of the proximal end - poor vascular supply - heals with a flap or avascular necrosis.
- Fracture of the body - the most common, according to Russ it is divided into:
 - Horizontally inclined
 - Transverse (stable);
 - tertiically slanted.

Clinical picture and diagnosis

- Clinically, there is tenderness on palpation in the foveola radialis and on pressure on the long axis of the thumb.
- X-ray AP, L i in dorsiflexion and ulnar duction (**navicular quartet**).
- The fracture may not be visible immediately after the injury (if the pain continues with a negative finding (diagnosed as wrist distortion), we repeat the X-ray after 2-3 weeks of immobilization).
- The most reliable diagnosis is CT.

Treatment

Conservative

- For non-dislocated fractures, immobilisation with a circular cast from the elbow to the heads of the metacarpals, including the thumb (wrist in ulnar adduction, thumb in abduction) for at least 6 weeks.
- Then X-ray - if the fracture is not healed, immobilisation should be extended to 8-12 weeks.

Surgical

- In fractures of the proximal pole and middle part;
- Osteosynthesis with a Herbert screw.

Complications

- Avascular necrosis of the fragment
- Hip joint - We treat hip joint surgically - compression osteosynthesis, cortico-spongiograft from the iliac blade or palliative resection. Styloideus radii (relieves pain);
- Arthrosis of the radiocarpal joint.

Luxation of carpal bones



Scaphoid fracture



Treatment after wrist fracture surgery

Wrist Distortion

- Denotes an injury mechanism (indirect) in which painful distension of the capsule and collateral ligaments occurs (clinically, pain, palpable findings on the bones and their ligaments).
- Fracture of the carpal bones must be ruled out on the X-ray (it may not be immediately apparent, therefore plaster fixation is indicated for more significant physical findings), otherwise the joint must be immobilized and cooled.
- After a week, a control X-ray is performed to definitively rule out/confirm a fracture.

Wrist dislocation

- There is a dislocation of the carpal bones with rupture of the ligaments, it may be associated with a fracture of the scaphoid or proc. ulna styloid.
- On the X-ray, it is manifested by the expansion of joint spaces above 2 mm.
- Treatment with traction repositioning and plaster fixation for 6 weeks.
- Unstable dislocations and fractures solved by osteosynthesis, instabilities based on fibrous injuries require ligament reconstruction.
- **Isolated os lunate dislocation:**
 - Extrusion of the lunate ventrally (most often) or dorsally (rarely), by severing the ligaments, the lunate is deprived of contact with the radius, it can be combined with a fracture of the os scaphoid (*De Quervain's fracture*).
- **Perilunate luxation of the carpus:**
 - The connection of the lunate with the radius is preserved, the distal row of carpal bones luxates backwards, the proc may be broken off at the same time. ulna styloid.
- **Transscapho-perilunate dislocation:**
 - Perilunate dislocation associated with a scaphoid fracture.
- **Peritriquetrum-lunate dislocation.**
- **Isolated os hamatum dislocation.**
- **Radiocarpal luxation:**
 - shearing forces causing ruptures of the radiocarpal ligaments, fractures of the proc. styloideus radii or ulnae, marginal fractures of the radius (reverse Barton).

Clinical picture and diagnosis

- Pain, pathological contour of the wrist, restriction of movement;
- Os lunate can press on the median nerve - pain in the innervation area;
- On the X-ray in the AP, the trapezoidal shape of the lunate is changed to a triangular one, LAT empty concavity of the lunate (in case of os lunate dislocation, the radius axis – capitatum axis is preserved and the lunate is luxated volarly, rarely dorsally, in perilunate dislocation the radius – os lunatum axis is preserved and the rest the carpus is luxated dorsally).

Treatment

- It consists in immediate reposition (after 24 hours it is necessary to operate) - in short-term general or block anesthesia (brachial plexus block).
- Reposition by hyperextension and traction, then converting into flexion and pushing the lunate back to its original position.
- If the reposition is not stable, the lunate is transfixed with a K-wire, the os scaphoid fracture is best fixed with a compression screw.

Metacarpal fractures

- They are caused by direct force on the dorsum of the hand, axial force (blow with a fist), open fractures in cutting wounds.

Classification by localization

- base fractures;
- diaphyseal fractures (according to the fracture line – spiral, oblique, transverse, comminutive);
- subcapital fractures;

- head fractures (intra-articular);

Boxer's fracture - subcapital fracture of the V. metacarpal.

Bennett's fracture - fracture of the base of the first metacarpal with dislocation in the carpometacarpal joint (pull abductor pollicis longus).

Rolland's fracture - a Y-shaped fracture of the base of the first metacarpal.

Clinical picture and diagnosis

- pain, edema, hematoma;
- X-ray (appropriate oblique projections - overlapping metacarpals).

Treatment

Conservative

- for non-dislocated or well-replaced fractures;
- the rotational deviation of the metacarpal axes is important (it cannot be seen on an X-ray) – the nails must be level when the fingers are flexed;
- immobilization with plaster, metacarpophalangeal joints in flexion (release of collateral ligaments in case of subcapital fractures);
- fractures in the area of the base of the 1st metacarpal are repaired by traction in semi-abduction and opposition, in this position they are also plastered.

Surgical

- irreparable, unstable and intra-articular fractures (K-wires, screws, plates);
- for comminuted fractures, external mini-fixator, suture of torn ligaments.

Links

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