

Humeral head fractures

Fracture of the head of the humerus occurs most often in older patients (in young people, the shoulder joint is more likely to luxate, in children it is more likely to be epiphyseolysis of the head).

AO classification

- A** – extra-articular two-fragmented
- B** – extra-articular three-fragmented
- C** – intra-articular

Classification according to Neer

According to number of fragments

They correspond to 4 anatomical zones

- Head
- Greater tubercle
- Lesser tubercle
- Diaphysis

According to number of fragments

They correspond to 4 anatomical source

- head
- Greater tubercle
- Lesser tubercle
- diaphysis

According to their dislocation

i.e. displacement over 1 cm or deflection over 45°

- **I** – No dislocation (any number of fragments)
- **II** – two-fragment with dislocation
- **III** – three-fragment with dislocation
- **IV** – four-fragment with dislocation

Classification according to Zeman

- anatomical neck fracture
- surgical neck fracture
- fracture of the greater tubercle
- fracture of the lesser tubercle
- anterior luxation fractures
- posterior luxation fractures

According to the dislocation

- According to the dislocation of the fragment

Dislocated fragments

- Rupture of the *greater tubercle* – supraspinatus tendon tear (rotator cuff)
- Rupture of the *lesser tubercle* – subscapularis tendon tear medially
- Fracture of the surgical neck – pull of the distal fragment medially (pectoralis major)

If both cusps are broken off with a neck fracture, the head is at risk of avascular necrosis (in general, the head is at risk in intra-articular fractures, which have a worse prognosis than extra-articular)

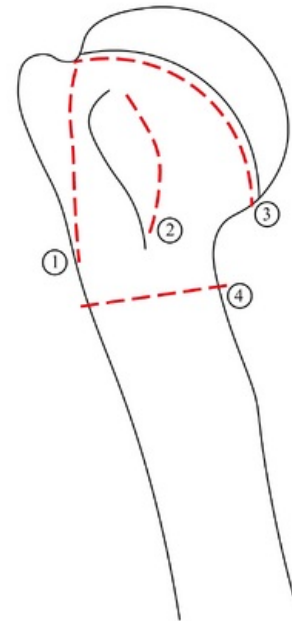
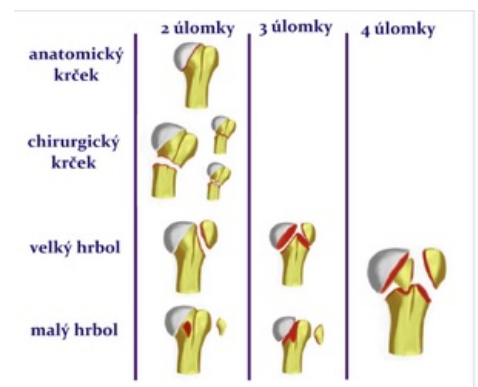


Diagram of fracture lines of the humerus: 1. break-off of the greater tubercle 2. break-off of the lesser tubercle 3. anatomical neck 4. surgical neck



Neer's classification

Clinical picture and diagnosis

- changes in configuration of the shoulder, edema , antalgic posture, limited movement, crepitation of fragments, runaway hematomas, in case of luxation fractures, an empty socket of the shoulder joint

Diagnostics

- it is necessary to examine the innervation (injury of the axillaris nerve during neck fractures) and the pulse on the radial artery
- x-ray in two projections

Therapy

Conservative (mainly in type A)

- not dislocated, dislocated stable after reduction
- immobilization in abduction for 3-4 weeks (Desault bandage with axilla padding, abduction splint - 30° forearm flexion and 60° abduction, hanging plaster, scarf sling)
- early rehabilitation

Surgery (type B and C)

- closed irreplaceable or redeployable nonretinable, open and luxation fractures, fractures complicated by injury to blood vessels and nerves:
 - closed reduction and MIO (e.g. intramedullary osteosynthesis according to Hacketal)
 - open reduction and plate osteosynthesis (T-plate, PHILOS – proximal humeral internal locking system)
 - secured nail (PHN – proximal humeral nail)
 - screws, K-wires, traction cerclage in multifragmentary fractures
 - CKP in comminuted fractures with risk of avascular necrosis of the head

Specific treatment solutions

- tuberosity fractures - non-dislocated: rest in a sling for 7 days, dislocated: screws or traction cerclage
- neck fractures - non-dislocated immobilization in Desault for 3-4 weeks (in the young, where there is no such risk of shoulder stiffness), hanging cast for 4-6 weeks in the elderly (allows early swinging movements in the shoulder), plate osteosynthesis (PHILOS) during surgical treatment or PHN
- multifragment head fractures – surgical treatment with osteosynthesis (screws, K-wires), possibly CCP

Links

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- Bones of upper upper limb
- Fractures of the humerus

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