

EXTRICATION, IMMOBILIZATION, POSITIONING, TRANSPORT

MUDr. Ondřej Hrdý

MUDr. Petr Suk

Extrication

- **Move** the casualty **only if absolutely necessary** (danger, ABC, severe external bleeding), otherway management in actual position
 - Activation of Emergency service (Fireman, Police)
 - Asses ABC regularly in short period
 - Support the head in casualty with potential neck injury

Extrication – traffic incidents

Rautekúv manévr I.



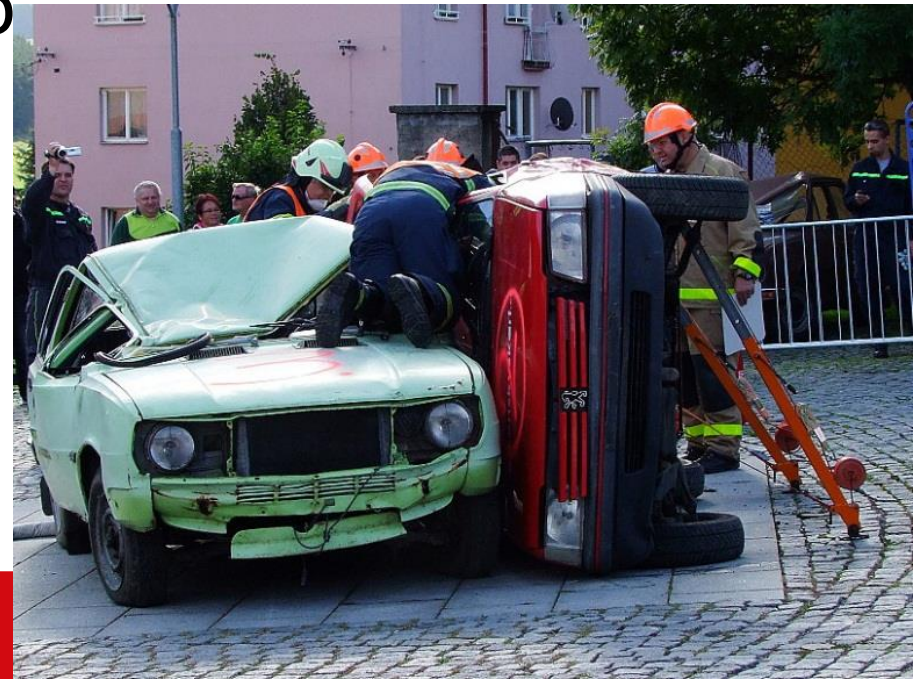
Rautekúv manévr II.



- Safety first
 - Park safely
 - Set up warning triangle
 - Make vehicle safe (switch off the ignition, disconnect the battery)
 - Stabilize vehicle
- Assume neck injury in every casualty
 - Best in more rescuers
 - Rautek maneuver (picture)
 - Take off helmet (0:27-1:54) (www.youtube.com/watch?v=mlfftUA7XY)
 - Manual In-line stabilization (MILS)

EXTRICATION – traffic accident

- If not necessary, wait for professionals (link 112)
- [vyproštění z vozidla](#) - video
- [vyproštění při poranění páteře](#) -video



Extrication - FIRE

- Warn people around, activate fire alarm, call 150
- Elements of fire – ignition, source of fuel, oxygen
 - Remove combustible materials
 - Cut of a fire´s oxygen (door, window, fire blanket)
- Leave the place
- Clothing on fire (stop the casualty, drop to the ground, roll along the groun (use blanket))
- Smoke and fumes
 - Stay (or move) low (clearest air), minimise smoke (block gaps under the door), open the window

Extrication – electrical incidents

- Your safety first !!!
 - Do not touch the casualty in contact with the electrical current
 - Turn off the source of electricity (switch off the current, remove the plugwrench the cable...)
 - Alternatively, move the source away (strand on some dry insulating material, push the casualty limb away (broom, plastic tube)
 - Pull casualty away (loop a rope around ankles or under arms)
 - High-voltage current – may jump up to 18m – power must be cut off before anyone approach

Extrication – water incidents

- Safety first
 - Conscious casualty – stay on dry land, hold out a stick (rope) for him to grab and help him from water
 - unconscious – if you´re trained and it is safe (low temperature, strong water flow...) swim to the casualty and ashore
 - If you cannot do this, call help and wait!
- Out of water - ABC
 - Shield him from the wind, prevent hypotermia (replace any wet clothing with dry one)
- Arrange transport to hospital anytime
 - Water intoxication, infection, hypotermia

IMMOBILIZATION

- WHY?
 - Prevention of further damage
 - analgesia
 - Minimalization of blood losses
- BE AWARE OF
 - Nerve and vessel damage (check pulsation and sensation distal from injury)
 - Skin damage

FRACTURES

- **Definition:** break or crack in a bone
- **Division:**
 - closed – without skin damage
 - open - **ANY** skin damage in the area of fracture (from abrasion to devastation injury)
 - Many other divisions
(stable x unstable, with or without deviation...)
- **Causes:** considerable force, exceeding bone elasticity
 - Pathological fracture: lower resistance due to pathological process (osteoporosis, tumors)

FRACTURES

- **Recognition:**

- Pain (deteriorating with move), tenderness
- Malfunction – i.e. inability to walk in femoral fracture
- Shortening, bending, or twisting
- Pathological move at the site of fracture
- Swelling, haematoma
- Coarse grating (crepitus) of the bone ends

- **Risk:**

- Blood losses (femur 2L, pelvis 5L)
- Nerve damage (typically n. radialis in humeral fr.)
- Fatty embolism (long bone fracture)
- Infection

FRACTURES

- **FIRST AID:**

- Immobilization – enough long splint, supporting the joints on both sides of the fracture
- Open fr. – cover the wound with clean dressing
- Stop severe bleeding

After primary treatment:

- Do not allow casualty to eat or drink (anaesthesia may be necessary)
- Do not move the fractured limb
- Arrange transportz to hospital

UPPER LIMB FRACTURES

Toe fracture

- management in sitting position, compare with uninjured limb
- remove any rings, keep the hand rised
- wrap in soft, non-fluffy padding, place it in elevation sling

Wrist and forearm fracture

- sitting position
- improvised splint across whole forearm and hand
- arm sling



- ZNEHYBNĚNÍ ZÁPĚSTÍ - video

UPPER LIMB FRACTURE

Humeral fracture

- Usually management in sitting position
- Suspect nerve and vessel damage
- Arm sling and broad-fold bandage around the chest and over the sling
- Call emergency



- ZNEHYBNĚNÍ PAŽE - video

UPPER LIMB FRACTURE

Collar bone fracture

- injured limb is usually lower than uninjured
- Sitting position
- Elevation sling with direction of hand to uninjured shoulder



LOWER LIMB FRACTURWE

FOOT and ANKLE

- Support the ankle in the most comfortable position, preferably raised
- „U“ splint with sling or bandage fixation
- Elevation and cooling to minimise pain
- Check peripheral circulation - if impaired, loosen the bandage
- Arrange transport by ambulance



- ZNEHYBNĚNÍ NOHY A KOTNÍKU - video

LOWER LIMB FRACTURE

LOWER LEG FRACTURE

- Place padding between the legs (ankle, knee)
- Support the uninjured leg by splinting it to the other leg
- Knotting on uninjured site
- Call ambulance



LOWER LEG FRACTURE

FEMORAL FRACTURE

- Neck of the femur – especially in the elderly, fracture can occur after minor injury, sometimes without severe pain
- Difference in leg length, inability to walk, rotation
- Same immobilization like in lower leg fracture



PELVIC FRACTURE

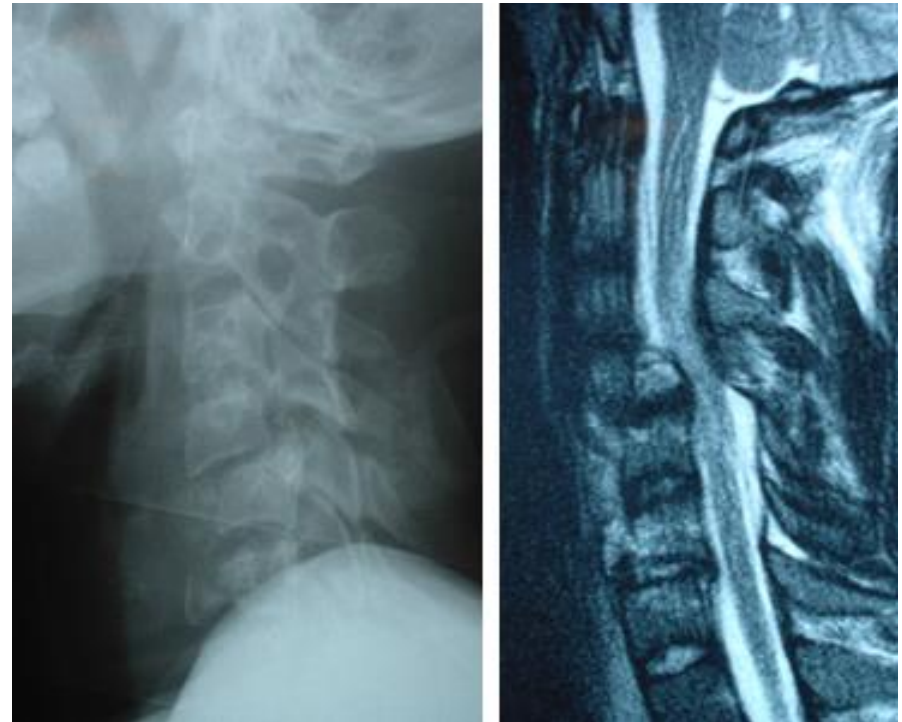
- Expect shock state everytime due to high blood loses
- Do not move the casualty if not absolutely necessary (pain, further damage, higher blood loses)
- Help the casualty lie down, keep her legs straight
- Place padding between knees and ankles, bandage both legs together
- Call for emergency



- ZNEHYBNĚNÍ BÉRCE, STEHNA, PÁNVE - video

VERTEBRAL FRACTURE

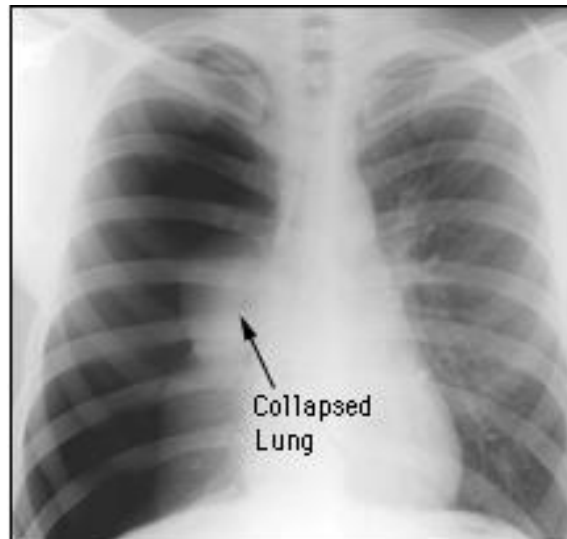
- Car accident, fall
- Local pain, deformity above fractured vertebra
- Assess spinal cord function (limb movement and sensitivity)
- Do not move the casualty if not necessary, use Rautek maneuver, better in more rescuers to prevent spine movement
- In neck fracture – risk of respiratory and circulatory failure
- Prevent head movement
- Call for emergency



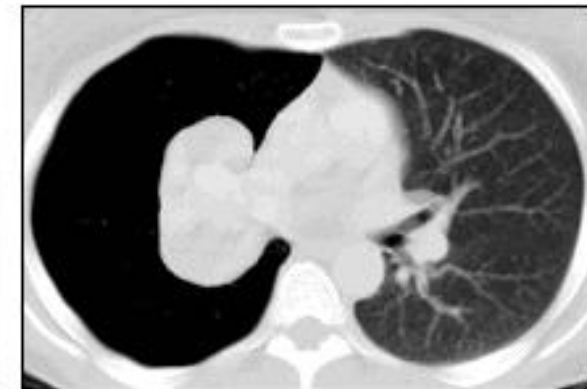
CHEST TRAUMA

- CLOSED
- OPEN (PENETRATING)

- RIB FRACTURE
- PNEUMOTHORAX
 - closed
 - open
 - tension



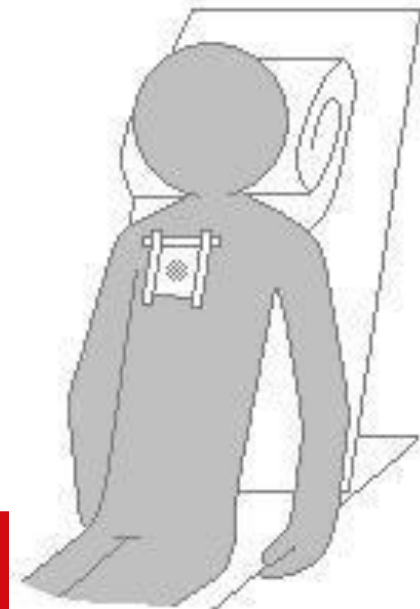
Right lung pneumothorax - Radiograph



Right lung pneumothorax - CT

PNEUMOTHORAX

- Sitting position
- Cover and seal the wound from three sides (one way valve)



ABDOMINAL TRAUMA

- **CLOSED** - expect parenchymal organ damage with internal bleeding
- **OPEN - PENETRATING**
 - Do not remove any foreign bodies
 - Never repond protruded organs
 - Call for emergency

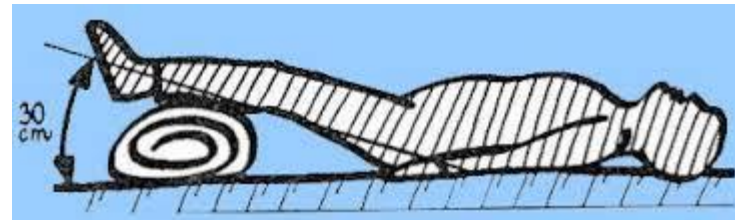
POSITIONING

- Rautek (recovery) position

[Rautekova a stabilizovaná poloha](#)

Polohy vleže na zádech

- **Poloha vleže na zádech s nepodloženou hlavou a nataženými končetinami na tvrdé podložce** Používá se při resuscitaci, poranění páteře
- **Poloha vleže na zádech s podloženou hlavou** Používá se u při postižených při vědomí, základní vyetřovací poloha.
- **Poloha vleže na zádech s nepodloženou hlavou a podložením dolních končetin o 15 až 30 cm** Používá se při začínajícím a rozvíjejícím šoku. - **PROTIŠOKOVÁ POLOHA**
- **Poloha vleže na zádech bez podložení hlavy a se zvednutím dolních končetin do 90°** Používá se při šoku nebo při velkých ztrátách krve. -
- **Autotransfúzní poloha** Používá se u postižených při velkých ztrátách krve. Postižený leží na zádech a horní a dolní končetiny jsou zvednuty v 90° úhlu.



Poloha na břicho s podložením čela a ramen

Používáme při krvácení z úst, obličeje, při popáleninách **zad**, u úrazů na sakrální krajině u postižených s plným spontánním dýcháním.

Poloha vsedě s oporou zad a hlavy

Postižený je při vědomí. Používá se při poranění obličeje, hrudníku (otevřeného i zavřeného) a poranění horních končetin. U poranění dolních končetin – hlezno, pata, Achillova šlacha, prsty nohy.

Poloha na boku se skrčenými dolními končetinami a mírně podloženou hlavou

Úlevová poloha při náhlých příhodách břišních. Postižený si obvykle sám tuto polohu zvolí jako nejlépe snesitelnou •

TRANSPORT

Improvised x Medical

(if any doubt, call ambulance)

Primary (from the place of accident to hospital)

Secondary (between hospitals)

TRANSPORT

- [transport](#) - video

MAJOR INCIDENTS

DEFINITION:

Presents a serious threat to the safety of a community, or may cause so many casualties that it requires special arrangements from the emergency services

- Declaration is responsibility of the emergency services
- Special organisation in the place of accident
- **Triage** – special system to assess casualties, all casualties undergo primary survey, then they are divided into subgroups with different priority (every casualty after primary survey is equipped with colored mark)

Czech republic

START protocol – assessing vital function

- Ventilation
 - Circulation (pulse on art. Radialis)
 - Consciousness
1. immediate treatment
 2. Can „wait“ – spontaneous respiration, palpable pulsation, arousable
 3. Minor trauma
 4. Death

- POSITIONONG

- Rautek position

- IMMOBILIZATION

- Immobilization of upper limb HK
 - wrist
 - Arm sling
- Immobilization of lower limb
 - ankle – „U“ splint
 - Fixation of both legs (slings)

- EXTRICATION

- Rautek maneuver + neck fixation
- MILS

**Thank you for
attention**