

Open Fractures

Open fractures are fractures with a broken skin cover, which occur mainly in bones covered only by a thin cover of soft tissues.

There are two types of skin opening:

- piercing the skin **from the inside** with a fragment;
 - less severe, most often diaphyses on the lower leg, the surrounding tissues are usually not more severely damaged;
- damage to the skin **from the outside** by direct tissue injury;
 - for high energy trauma;
 - **we sterily cover such an injury at the site, record the extent of the damage, do not remove the cover at the ambulance** (high risk of nosocomial infection), wait until the place of definitive treatment (in the hall);
 - the rule of treatment within 6 hours after the injury applies.

Classification

Currently, the **Tscherne** classification is accepted :

- in the first place, it determines the prognosis of the injury with respect to soft tissue injuries;
- the letter G indicates closed fractures (geschlossene) and O open (offene).

Degrees of injury:

- - **G 0** – fracture resulting from indirect violence without damage to soft tissues;
 - **G I** – superficial contusion of the skin cover with surface abrasion;
 - **G II** – deep contaminated abrasion, demarcated skin and muscle contusion, caused by direct external force, considerably dislocated;
 - **G III** – complicated contusion of the skin and soft tissues, compartment syndrome , decollement, mostly comminutive;
 - **O I** – small wound with skin contusion, puncture with a bone fragment;
 - **O II** – wound (approx. 2 cm) with limited contusion of skin and tissues, small contamination;
 - **O III** – heavily contaminated wound, extensive contusion of tissues, nerve and vascular lesions;
 - **O IV** – total or subtotal amputation ;
 - subtotal amputation – accompanied by interruption of anatomical structures, mainly large vessels, complete ischemia of the periphery;
 - total amputation – tissue damage is such that not even a quarter of the circumference of the limb is preserved.
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Closed fracture type G II

Therapy

First Aid

- prevent further tissue damage;
- we gently reposition the limb by pulling on the periphery;
- disinfection , sterile covering, immobilization;
- in case of bleeding , we will apply a pressure bandage, record the time data.

In the hospital

- stabilization of the general condition, anti-shock treatment;
- we do not remove the cover, we obtain information about the wound from the PP provider;
- we check vaccination against tetanus , we apply tetanus toxoid (TAT 0.5 mg), and globulin (TEGA) in case of heavy contamination;
- already in the clinic we also apply ATB to aerobes and anaerobes;

- if we do not detect an allergy , the method of choice is PNC-G 5 million units, 2 g of oxacillin;
- alternative in case of allergy – clindamycin with gentamycin;
- then x-ray , possibly sono , angio ...;
- the maintenance procedure must be performed within 6 hours after the injury;
- whether to save or amputate tells us roughly the MESS score (certain points for the type of injury, age, shock , extent...).

Operation

- cleaning the wound in the vestibule - we remove the cover for the first time;
- we clean the wound - mechanically, then - hydrogen peroxide, chloramine, physiological solution;
- we transport to the hall, then we proceed as for another fracture;
- we always drain the fracture site;
- removal of necrotic tissue (debridement);
- tissue vitality is assessed according to the 4Cs (contractility – muscle contraction, color – color, consistency – tissue quality, capillary bleeding);
- collection of 3 microbiological samples;
- we do not sew the fascia, there is a risk of compartment syndrome .

Links

Related Articles

- Types of fractures and their dislocations
- Fracture healing disorders
- Compartment syndrome
- Crush syndrome

Source

- BENEŠ, Jiří. *Questions from Orthopedics and Traumatology* [online]. [feeling. 2011-01-28]. < <http://jirben2.chytrak.cz/> >.