

Ministry of Health of Ukraine
Ukrainian Medical Stomatological Academy

APPROVED
at a meeting of the department
disaster medicine
and military medicine
«____» _____ 2020
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Head of Department

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**Methodical instructions
for independent work of students
during preparation for a practical (seminar) lesson
and in class**

| | |
|---------------------|------------------------------------------------------------------|
| Academic discipline | Training of reserve officers |
| Module № 1 | Pre medical care in extreme situations |
| Topic of the lesson | HOME CARE FOR FRACTURES, DISLOCATIONS, STRETCHES. PAIN SHOCK. |
| Course | 2 |
| Faculty | foreign students training specialty "Medicine", "Stomatology" |

1. TOPIC 7. HOME CARE FOR FRACTURES, DISLOCATIONS, STRETCHES. PAIN SHOCK.

Relevance of the topic:

Injuries today occupy the 3rd place in the structure of mortality after cardiovascular diseases and malignant neoplasms and come out on top as the cause of disability of young people. During hostilities and natural disasters, the frequency of injuries increases sharply, which is defined by the concept of "traumatic epidemic". Providing first aid to a patient with an injury is the professional responsibility of a physician of any profile. However, untimely or incorrect first aid tactics for a patient with a fracture can lead to complications.

2. Specific objectives:

- the cause and signs of soft tissue wounds;
- bandaging technique;
- technique of applying bandages for penetrating abdominal injuries;
- features of home care for open fractures.
- TIRE application technique
- Be able to rotate bones
- Be able to perform immobilization
- Use painkillers

Competences and learning outcomes, the formation of which is facilitated by the discipline (relationship with the normative content of training of higher education, formulated in terms of learning outcomes in the Standard).

In accordance with the requirements of the standard, the discipline provides students with the acquisition of competencies:

-integral: The ability to solve typical and complex specialized problems and practical problems in professional activities in the field of health care, or in the learning process, which involves research and / or innovation and is characterized by complexity and uncertainty of conditions and requirements. The ability of the individual to organize an integrated humanitarian educational space, the formation of a single image of culture or a holistic picture of the world.

-general: The ability to apply knowledge in practical situations. Ability to exercise self-regulation, lead a healthy lifestyle, ability to adapt and act in a new situation. Ability to choose a communication strategy; ability to work in a team; interpersonal skills. Ability to abstract thinking, analysis and synthesis, the ability to learn and be modernly trained. Definiteness and perseverance in terms of tasks and responsibilities.

-special (professional, subject): Ability to carry out medical and evacuation measures. Ability to determine the tactics of emergency medical care. Emergency care skills. Skills to perform medical manipulations.

Know the causes and signs of soft tissue wounds, penetrating and non-penetrating wounds of the skull, chest. of life. Protection of soft tissue wounds by bandaging. Bandaging technique for injuries of the skull, eye, ear, lower jaw. Features of chest injury, the concept of pneumothorax. Home care for open and intense pneumothorax. Specificity of bandages for penetrating abdominal injuries. Features of bandages in the presence of a foreign body in the wound.

Basic knowledge, skills, abilities necessary for studying the topic (interdisciplinary integration):

| Names of previous disciplines | Acquired skills |
|-------------------------------|-----------------|
|-------------------------------|-----------------|

| | |
|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Human anatomy</p> <p>2. Normal physiology</p> | <p>Anatomy of the head and neck, anatomy of the chest, abdomen, pelvis and limbs. Anatomy of the vascular system.</p> <p>Physiological bases of respiratory system functioning.</p> |
|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Tasks for independent work in preparation for class and in class:

1. Anatomical features of the musculoskeletal system.
2. Types of limb injuries (sprains, dislocations, fractures: open and closed), causes and symptoms.
3. Absolute signs of fractures.
4. Transport immobilization by regular and adapted means.
5. Features of home care for open fractures.
6. Pain, causes, pain scale.
7. Fighting painful shock.

The list of the basic terms, parameters, characteristics which the student should master at preparation for employment:

| Term | Definition |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Stretching | <p>Damage to ligaments, muscles, tendons and other tissues without violation of their anatomical integrity. Muscle strain most often occurs as a result a blow or a failed step when a person stumbled. stable displacement of the articular surfaces of the ends of the bones beyond them anatomical integrity and physiological mobility, which causes dysfunction joint.</p> |
| Dislocation (luxatio) | <p>Signs of dislocation are: joint pain, deformation of its contours, dysfunction joint, palpation determines an empty joint fossa with a change in the shape of the joint. violation of bone integrity.</p> |
| Fracture | <p>The main signs of fracture include: pain, swelling, hemorrhage, appearance abnormal mobility in the fracture area, deformation of the bone or limb, shortening limbs due to displacement of fragments, inability to move in full. In case of incomplete fractures of one of the two bones of the forearm or lower leg may have some of the following symptoms be absent. At open fractures in a wound the ends of fragments are quite often visible.</p> <p>Large bone fractures and open fractures are often complicated by development traumatic shock due to pain and blood loss. it is ensuring the immobility of the bones at the fracture site.</p> |

Applying a bandage. PPIs, sterile bandages, improvised means (clothes, shirts, etc.) are used as dressings. The bandage should be large and tightly covering the abdomen.

If there is a foreign body protruding from the wound, the bandage is applied carefully around the wound, without displacing the foreign body.

After applying the bandage, it is fixed on the healthy side, away from the wound. To better secure the bandage, you can use an improvised support bandage from the tools at hand (tie, clothes, etc.). At the same time it is fixed on the opposite side from the PPI node.

It is strictly forbidden to give food or water to victims with abdominal injuries, only moisturizing the lips is possible.

At damage of abdominal organs victims feel strong thirst, constantly ask to drink. It is necessary to make sure that the victim could not get drunk on his own (take away and put out of reach a flask of water), because it is difficult for him, despite the ban, to control his actions.

WARNING! Wounded with abdominal injuries are strictly forbidden to eat, drink, take pills.



Fig. 2. Applying a bandage for abdominal injuries

REMEMBER!

Internal organs that have fallen out of the wound should never be inserted into the abdominal cavity! This is firstly painful, and secondly it will lead to additional infection.

The internal organs that have fallen into the wound should be isolated from the external environment, the gauze aseptic bandage should be constantly moistened to avoid drying. When it dries, the gauze sticks tightly to the intestine, which in the future, when you try to make a bandage, will damage it over a large area. It is desirable to moisten the bandage with sterile saline solutions, but in their absence it is permissible to use ordinary water.

To protect the internal organs that have fallen out of compression, a cotton gauze (or made of clothing) ring is placed on the anterior abdominal wall, which surrounds and protects the viscera, and only on top of this ring tightly but not tightly (to avoid compression and necrosis of the viscera) a circular bandage is applied.

Damage to the pelvis and pelvic organs

Combat injuries of the pelvis are divided into gunshot wounds (bullet, shrapnel wounds, mine injuries, explosive injuries) and non-gunshot wounds (open and closed mechanical injuries, non-gunshot wounds). Pelvic injuries from the experience of armed conflicts in recent decades account for up to 5% of sanitary losses of the surgical profile. In local wars, the share of open and closed pelvic injuries increased - in the case of an explosion in armored vehicles, in the blockages of fortifications, falls from a height, collisions with vehicles.

At gunshot wounds of a pelvis entrance openings can be:

1. On the anterior abdominal wall;
2. In the lumbar region;
3. In the buttocks, perineum, inner or outer surface of the upper third of the thigh.

Features of the clinical course:

severe pain; great blood loss; infectious complications.

Life-threatening consequences of pelvic injuries:

active bleeding; growing intra-pelvic hematoma; active external bleeding.

Diagnosis of pelvic fractures:

1. Larrey's symptom;
2. Verneil's symptom;
3. Pain when pressing on the pubic joint;
4. Symptom of "stuck heel";
5. Pain when pressing on the large spit of the thigh;
6. Pain during passive movements in the hip joint.

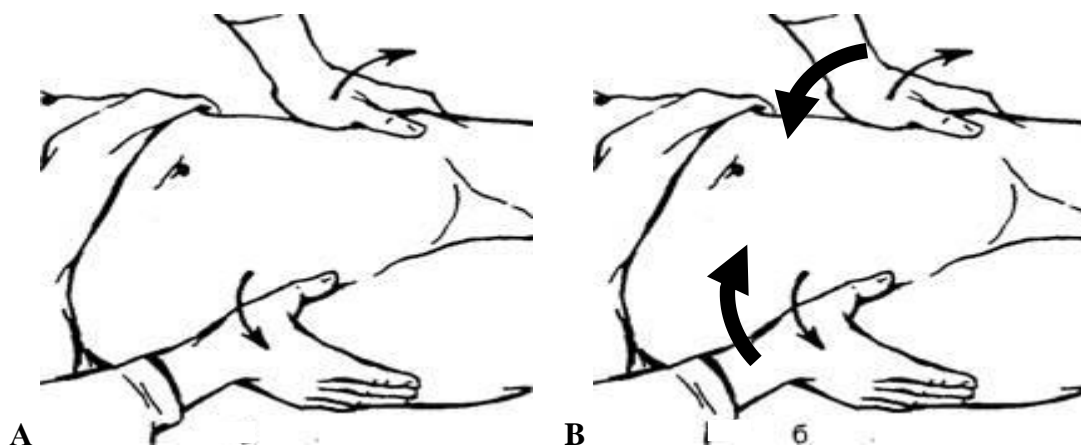


Fig. 3. Diagnosis of pelvic fractures
A) Larrey's symptom B) Verneil's symptom

When assessing soft tissue damage, the nature of the injury, the course of the wound canal, and the extent of the damage are determined. Damage to large blood vessels and nerve trunks, pelvic bones and pelvic organs must be ruled out. Gunshot fractures of the pelvic bones are often "window" in nature, may be accompanied by instability of the pelvic ring.

Diagnosis in the field is to assess the location of the inlet and outlet openings, the presence of pain in the projection of possible fractures and bleeding. Fractures of the iliac bones are recognized by the sensation of pain when pressing on their wings (symptoms of Larry, Verneil).

At a fracture of pubic bones the sensation of pain when pressing on them is observed. A typical symptom of a "stuck heel": the injured person cannot lift the outstretched leg, because the resulting muscle tension displaces bone fragments and increases the pain in the fracture area. Pain in the hip joint when pressing on the large spit of the thigh, when tapping on the heel of the extended limb indicates a fracture of the acetabulum.

The presence of blood in the finger examination of the rectum indicates the displacement of bone fragments, damage to the intestine (blood remains on the finger), the induction of the anterior wall - on the hematoma of the pelvis.

Home care for pelvic injuries is carried out according to the algorithm of home care for pelvic injuries ").

Wound dressings, wound tamponade, adequate analgesia.

Evacuation on a rigid stretcher (Talon) in a position comfortable for the wounded. If possible, tighten (immobilize) the pelvis with service or improvised tires (Fig. 69).

Antibiotics are administered intravenously (ceftriaxone).

After cessation of external bleeding, plasma substitutes (0.9% NaCl, gecodes) are administered to restore BCC. Infusion by jet, into two veins.

Complete anti-shock therapy is effective after the final cessation of bleeding. At an unstable fracture of pelvic bones blood loss makes 2-2,5 liters. Wounds should not be sutured, as there is often a need for repeated surgical procedures.

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The best means of transporting victims with severe pelvic injuries are pneumatic stretchers. If there are none, the transport is carried out on standard stretchers, tying the knees together and placing an improvised roller under them. In the absence of burdens resort to immobilization by improvised means, using boards, countertops, knocked down boards, etc.

The wounded with a fracture of the pelvis is placed with his back on a solid shield, a wide board, door or sheet of plywood, under his knees put a sleeping bag or blanket so that the lower extremities were bent at the knees and slightly apart. In this position, the limbs are fixed with a strut and bandages.



Fig. 4. Immobilization of the pelvis by improvised means

Spinal injuries

Any spinal cord injury is a severe injury to the musculoskeletal system. In addition, a fracture of the spine is often combined with damage to other anatomical structures, including the spinal cord and vascular-nervous plexuses. These injuries can lead to disability and in some cases pose a serious threat to life.

Spinal injuries occur with excessive bending or unbending, falling from a height, diving in a shallow place, during car accidents and landslides, mine explosions and gunshot wounds.

Spinal fractures are heterogeneous in the mechanism of development, severity and clinical manifestation.

Possible causes of spinal cord injury (rule of three "B"):
water, driver, height.

Spinal fractures by location:

cervical department; thoracic department; lumbar region; buttocks; coccyx.

Spinal fractures due to damage to anatomical structures:

vertebral bodies; vertebral arches; articular processes; transverse processes; spinous processes.

Spinal fractures by mechanism:

compression; fragmentary or explosive; wedge-shaped.

Spinal injuries can be closed or open.

A fracture can be combined with damage to the spinal cord or roots. In these cases, various neurological disorders develop. And the higher the injury, the more severe these violations. If the fracture of the lumbar region is accompanied by paralysis of both legs, then the above spinal cord injuries turn off the function of all limbs, abdominal press, pelvic organs.

Signs of a spine fracture:

pain, visible deformation of the spine, swelling of soft tissues in the projection (location) of injured vertebrae, skin lesions - wounds, abrasions, paresthesia (tingling, burning, crawling ants).

Assistance to victims of spinal injuries has characteristic features, primarily related to the need to prevent secondary displacement of the vertebrae with spinal cord injury (see the algorithm for providing home care in case of suspected spinal cord injury).

Assistance to victims with suspected damage to any part of the spine, as well as their transportation is carried out only in a supine position and on a hard surface.

A group of at least 3 people is needed for proper care. Prior to the arrival of the paramedics, the victim should be calmed down and examined.

It is forbidden to move the victim. You need to ask the victim to move his arms and legs a little and check the sensitivity with a light pinch. Moves, feels - so the spinal cord is not affected.

All wounded with suspected spinal injuries are subject to immobilization and transportation is carried out on a shield, rigid or vacuum stretcher.

All victims with spinal injuries, and especially if a cervical spine injury is suspected, undergo additional immobilization with a special Schantz collar. This collar repeats the contours of the neck, and when properly applied completely immobilizes the neck. The collar is applied by 2 people - one fixes the head, the other gently brings the collar under the neck.

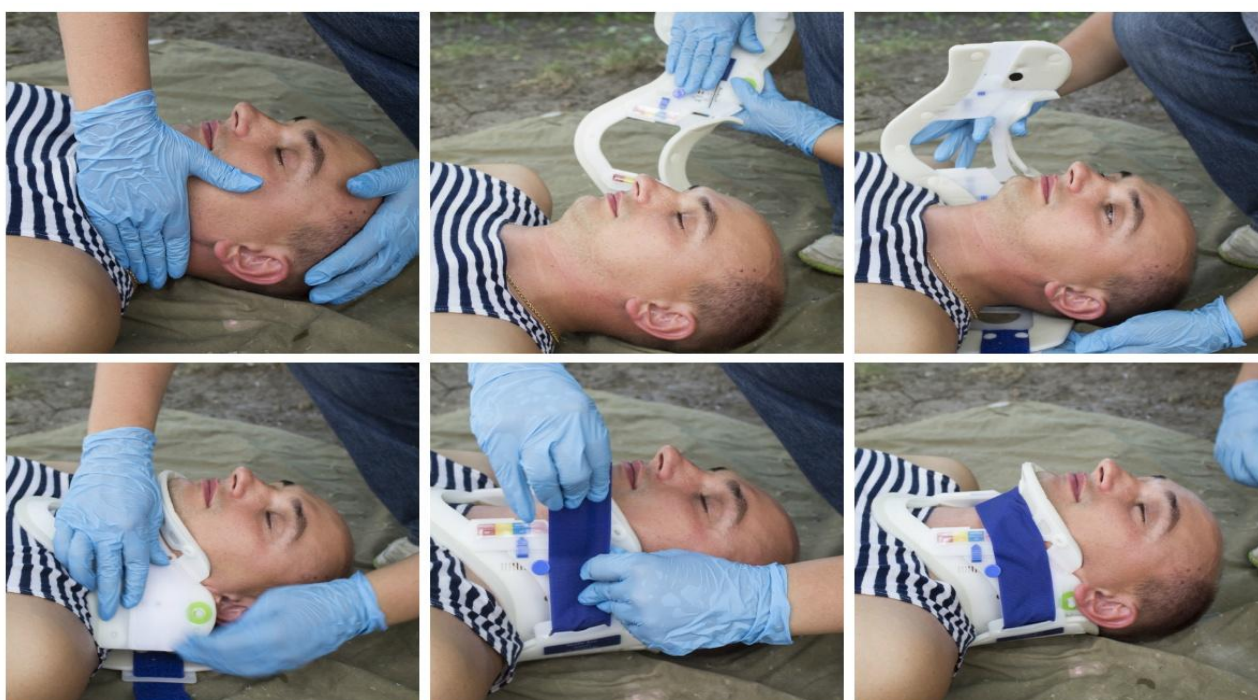


Fig. 5. The technique of applying the collar of the Chance

In the absence of a Schantz collar, we use the tools at hand: clothes, shoes, a massive cotton gauze neckband, plastic bottles, etc.

The algorithm for providing home care in case of suspected spinal cord injury is given below.

Providing assistance to victims with neck injuries

Domestic extended care before the arrival of the unit of paramedics is to calm the victim, in the unnatural position of the head or neck fix them with a collar Schantz (Fig. 31), SAM tire (Fig. 65) or improvised means (heavy objects: stones, shoes filled with sand, stones, etc.).

Technique of laying the victim with a spinal cord injury on a stretcher

A wide board or door longer than the victim's height is used for transportation. The stretcher or shield must have a flat hard surface. Carefully tie his arms (at waist level) and legs to prevent sudden movements and displacement of the wounded person's body. If the victim is in a supine position, a roller is placed on the stretcher under the waist.

Stacking is carried out, as a rule, by four persons.

Numbers "2, 3 and 4" squat on one knee on one side of the shield. Number "1" is on the opposite side. The first three people gently move their hands under the victim, and the number "1" helps them in this. When ready, number "2" gives the command. All persons simultaneously, carefully lift the victim by 20 cm. Number "1" slides the shield, making sure that the roller is under the victim's waist, and then again helps the rest. Number "2" team controls the placement of the victim on the shield.

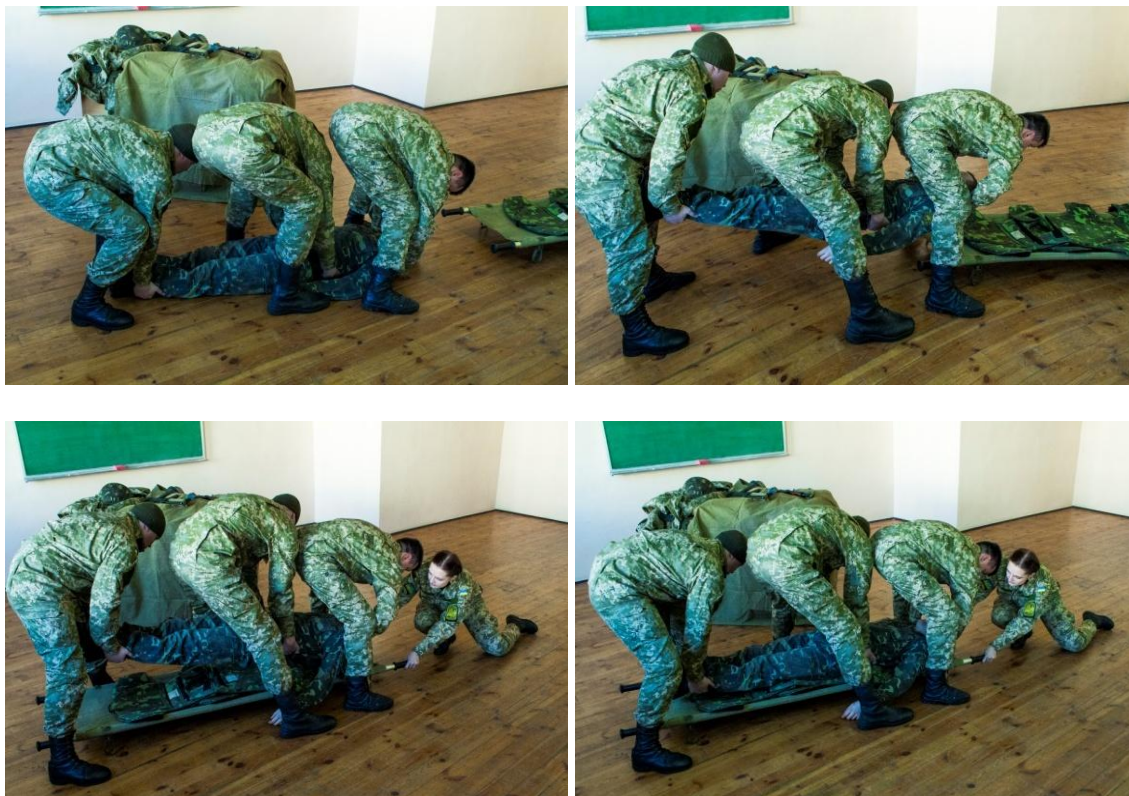


Fig. 6. Laying the victim with a spinal cord injury on a stretcher

At position of the wounded face down it is not turned over, transported, having put under a breast the platen.

If the injured person needs to be taken out of the place where it is not possible to put him on hard stretchers at once, soft stretchers can be used. At the same time it is necessary to put the victim on a stomach having put under his shoulders the platen from clothes so that the main end was summed up.

WARNING!!!

Wounded on suspicion of spinal cord injury is prohibited:

plant; to force to stand up, to walk; to transport in a sitting position; to try independently to correct the deformed backbone; to pull for hands, for legs; to carry out stretching (traction) of any department of a backbone; to feed, to water. If evacuation will be carried out less than 1 hour, it is better not to carry out anesthesia.

REMEMBER!

Spinal movements, especially flexion, can lead to additional damage to the spine and spinal cord. The number of transfers of the victim should be minimized.

If all these requirements are met, the risk of complications of a spinal fracture at the prehospital stage will be minimized. The consequences of some mistakes made in the prehospital stage, in the future it will be impossible to eliminate even the most effective treatment.



Fig. 7. Fixation of a neck by means of the SAM splint

If the victim is face down, carefully, supporting the head, lift it by the shoulders and put a roller under the neck (with the back of the head lying on the ground).

It is forbidden to turn the victim with a neck injury if he is face down. Immobilization should be performed in the same manner as above, without placing a roller under the neck.

Technique of laying the victim with a neck injury on a shield (board).

Assistance is provided by two people, and the movement of the head and torso of the wounded with a neck injury should be carried out simultaneously. Next to the injured it is necessary to put a wide board, 20 cm longer than the height of the wounded. Number "1" supports the victim's head and neck, number "2" kneels on the board (to prevent it from slipping) and, supporting the victim by the shoulders and thighs, carefully places him on the board.

If the victim is face down, number 1 supports his head and neck, while number 2 gently flips him on his back and places him on the board. After that it is necessary to put a roller under the neck and immobilize the head (neck) with the help of improvised means. Then the board is placed on a stretcher and the victim is transported.

In the final part of the lesson, the teacher summarizes the lesson, answers questions and checks how the staff of the unit understood the above material.

Materials for self-control:

1. TESTS:

1. How to transport a victim with a pelvic fracture?
 1. on his back with his head down;
 2. on the side with a bent lower limb;
 3. * on the back with bent legs at the knees, hips, legs turned outward;
 4. on the back with bent legs at the knees and hips;
 5. on the abdomen.
2. How to transport the victim without consciousness (coma):
 1. on the side;
 2. * on the back with the head turned to the side;
 3. on the abdomen with the head turned to the side;
 4. in a semi-sitting position;
 5. in a standing position.
3. With a shoulder injury the victim is evacuated:
 1. on foot;
 2. lying with a roller on the healthy side;
 3. lying on your back;
 4. * in a sitting position;
 5. on the abdomen.
4. Absolute signs of fracture are:
 1. bleeding, shock, skin damage, pain;
 2. pain, bleeding, skin damage, limb deformity, limb shortening;

3. * deformity of the limb, shortening of the limb, crunch at the fracture site, pathological mobility;

4. pain, bleeding, loss of consciousness, swelling, abnormal mobility, crunchiness;

5. swelling, pain, bleeding, deformity of the limb, inability to move the limb.

5. Dieterichs tire (for transport immobilization) consists of:

1. 2 boards, twist, foot part;

2. 2 crutches, a stick, a foot part;

3. * outer, inner crutches, twist, sole;

4. 3 boards, wand, straps, twist;

5. 3 boards, crutches, straps.

6. In the case of prolonged compression syndrome in the presence of crushed tissues spend:

1. rubbing the limb, heat;

2. limb immobilization, cold;

3. * imposition of a tourniquet, immobilization of an extremity;

4. rubbing the limb, immobilization of the limb;

5. immobilization of the limb, the imposition of a twist.

7. At an open fracture of the upper third of a shoulder with arterial bleeding after the imposed plait transport immobilization is carried out:

1. from the fingertips to the shoulder joint;

2. from the radial wrist joint to the shoulder joint;

3. * from the fingertips to the spine;

4. from the radial wrist joint to the spine;

5. from the fingers to the shoulder of the healthy side

8. The victim T., 35 years old, was taken to the hospital's admission department after 30 minutes after a car accident. On examination, the doctor found: severe subcutaneous emphysema on the neck, face and right half of the chest. Facial skin and mucous membranes are cyanotic. The veins of the neck are tense. At a palpation of a thorax on the right crepitation of bone fragments is accurately defined. Breathing on the right is not listened to. What damage can you think of in this case?

1. * rib fracture and closed pneumothorax

2. Fracture of the ribs

3. Open pneumothorax

4. Chest injury

5. Closed pneumothorax

9. After the fall, the victim K. felt pain in the upper part of the chest, the function of the upper extremity was impaired, and deformation was noticeable in the area of the clavicle. What kind of damage?

1. * fracture of the clavicle

2. Fracture of the humerus

3. Dislocation of the shoulder joint

4. Closed chest injury

5. Closed pneumothorax

10. A 60-year-old man fell on his right arm, there is pain, bleeding, bone fragments are visible in the wound. What are the first aid measures?

1. * anesthesia, bandaging, limb immobilization

2. applying a bandage

3. surgical treatment

4. reaming of bone fragments, bandaging

5. hospitalize in a medical institution

Literature

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