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DEPARTMENT OF THE GENERAL AND OPERATIONAL SURGERY

WITH TOPOGRAPHICAL ANATOMY AND COURSE OF STOMATOLOGY

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Fractures of bones.

Dislocations. First aid.

Transport immobilization.

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The educational and methodological manual summarizes the literature data and long-term research of the collective of the department of general and operative surgery with topographic anatomy and the course of stomatology of the Institute of Medicine, Ecology and Physical Culture, Ulyanovsk State University.

The educational-methodical manual is intended for students of medical universities, clinical residents, surgeons, traumatologists, family practice doctors.

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Bone fractures

Violation of the integrity of the bone caused by violence or disease process is called a fracture (Fig.1).

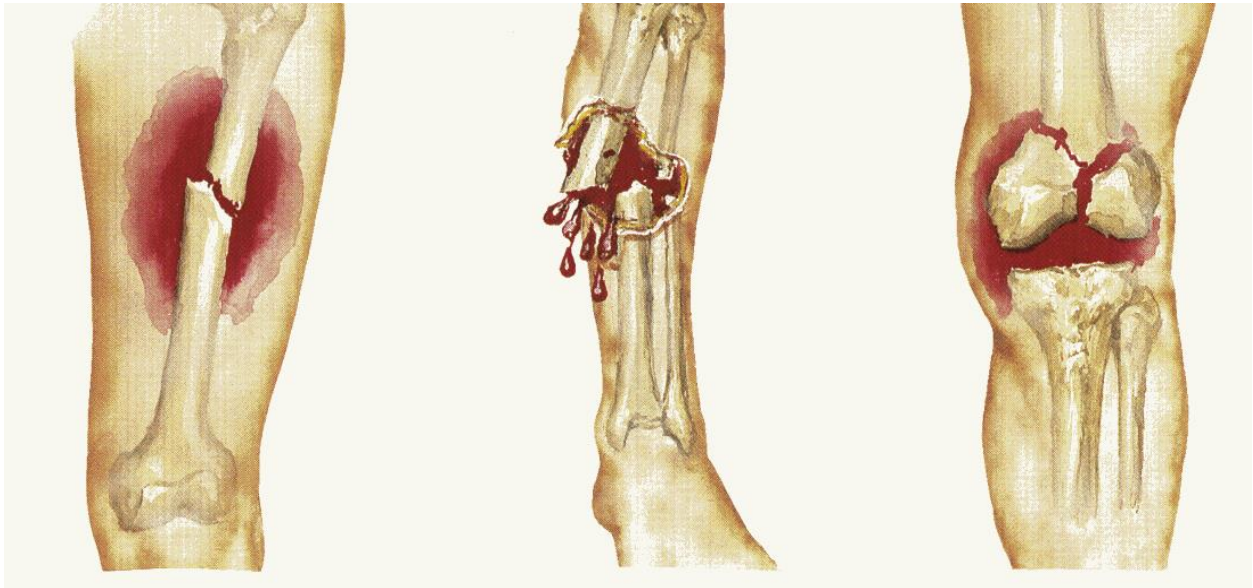


Fig.1. Type of bone fracture

By the number of fractures are single or multiple.

By complications - complications (damage blood vessels, nerves, bleeding, shock, osteomyelitis, abscess, hemothorax, pneumothorax, damage to internal organs, urethra, bladder, rectum, bone fractures of the pelvis) and uncomplicated.

Bone fractures are open and closed (Fig.2).



Fig.2. Open

Closed

Clinic and diagnosis of fractures.

Signs of bone fractures are divided into general and local. Common signs include shock and blood loss.

Symptoms of fractures depend on the type of the damaged bone (large or small bones, flat bones).

Local signs of fractures:

1. Deformation (Fig.3) ;
2. Pathological mobility;
3. Shortening of the limb;
4. Bone crunching (crepitus);
5. Pain;
6. Violation of the function;
7. Edema. The first four attributes are absolute indications of fracture.

When impacted, and subperiosteal (like green twigs), fractures, these symptoms may be absent.



Fig.3. Deformation

It should be noted that such symptoms as bone crunching and other signs of the absolute fracture especially should never be called, as it may aggravate the pain, cause shock, more bleeding, cause the displacement of bone fragments turn a closed fracture into an open, cause fat embolism fat marrow.

Modern technologies of treatment of fractures (osteosynthesis, hip replacement) can significantly simplify and solve the problem, it will be possible as a result of an earlier activation of patients.

When upper limb and shoulder girdle serious problems for the care of these patients, as a rule, does not arise.

Great difficulties in the care of patients have lesions in the lower extremities, vertebrae, pelvis and skull, as these patients during treatment should be in bed. The aim here is to prevent care of pressure ulcers, pneumonia, stiffness in the joints. Great difficulties arise when caring for the elderly, especially in the treatment they have such specific fractures as a hip fracture. Early activation of patients, breathing exercises, massage can avoid the above complications.

Dislocation

Dislocation is called a persistent shift of articular surfaces of the bones forming the joint in relation to each other (Fig. 4).

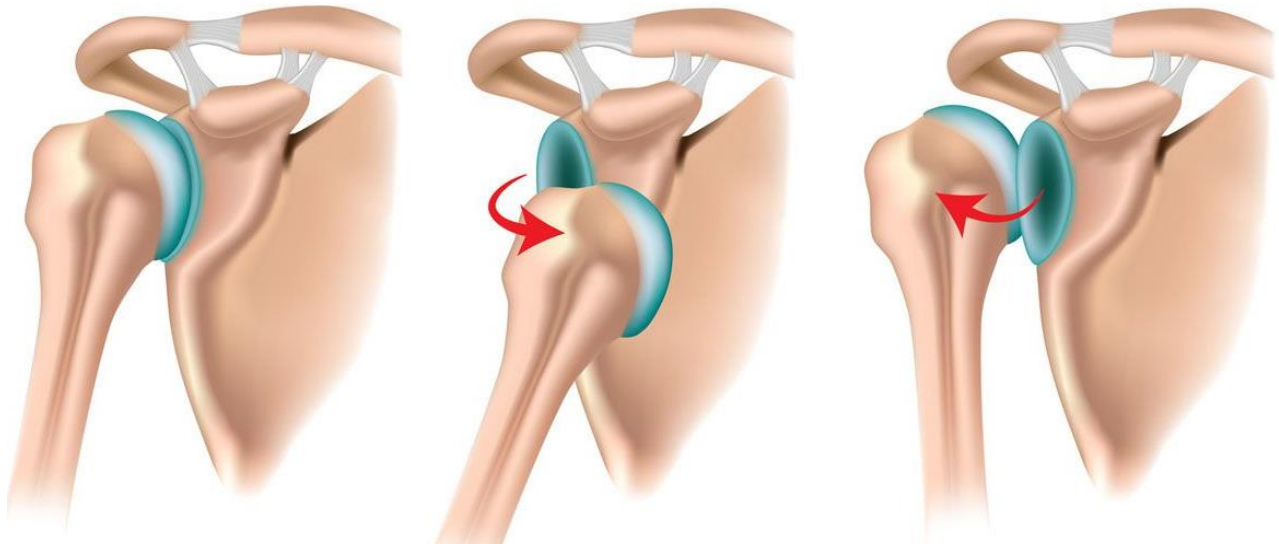


Fig.4. Norm, anterior dislocation, posterior shoulder dislocation

Dislocations origin are divided into acquired and congenital. Purchased - this often traumatic dislocations. Most often, there are dislocations in the shoulder joint. Attention is drawn to the fact that dislocations are called by name limb segment located below the joint. Dislocation of the shoulder joint called the dislocation of the shoulder, the hip - hip dislocation, etc.

Clinically marked pain, lack of movement in the joint, the shortening or lengthening of the limb, or any of its segment, the deformation of the joint, a spring resistance when attempting to joint movement.

The main method of diagnosis of bone fractures and dislocations is their X-rays (Fig. 5).



Fig.5. Dislocation of the elbow

The main treatment for dislocations is the correction and fixation

Transport immobilization

Immobilization - the creation of immobility (resting) areas of the body or limbs in their various injuries or diseases. There is a term from the Latin word immobilis - «fixed.»

Immobilization can be long or when immobilizing bandage applied to the period necessary for fracture healing and the healing of extensive wounds. It - medical immobilization. It is performed in specialized hospitals medical specialists: trauma surgeons, orthopedic surgeons, neurosurgeons and others. Transport immobilization is made on the spot medical professional in order self-help or any other person is not necessarily a medical officer and carried out for the time necessary to evacuate (transportation) patient from injury to hospital, where he will be provided with qualified and specialized surgery (trauma) help.

Transport immobilization can be improved or corrected nurses or doctor if the victim before the evacuation to hospital rushed to a medical center, clinic, health care part.

In cases where the first-aid for any reason, the immobilization of transport have not been performed, it should be carried out in the infirmary, clinic or in the emergency department of the hospital.

Carrying the victim, even for a short distance, even within the hospital (for example, from the front desk, to the surgery), without transport immobilization is dangerous and unacceptable.

For the first time the value of the transport and immobilization of the necessary functional properties of immobilization bandages were given our outstanding compatriot, the founder of the field surgery Pirogov. For the transportation he used starch immobilization bandages, and for medical - plaster.

Kramer in 1887 for transport immobilization suggested metal tire quickly gained widespread in the armies of all European countries and called on the name of the author (bus Cramer). Due to its appearance it became known as "stair rail."

Transport immobilization aimed at preventing these complications, injuries and illnesses:

- 1) the development of traumatic shock;
- 2) the transition to an open fracture closed;
- 3) the development of infection in the wound;
- 4) secondary bleeding from the wound;
- 5) damage to major blood vessels and nerve trunks;
- 6) the development of fat embolism;
- 7) Secondary damage to internal organs and central nervous system.

Basic rules of transport immobilization

Imposing a means of transport immobilization is necessary to observe the following rules.

1. Immobilization of the affected part of the body must be carried out as far as possible in the early stages of the injury or illness.

2. In severe injuries before applying the bandage or splint immobilizing the victim subcutaneously or intramuscularly injected anesthetic (morphine promedol) or non-steroidal anti-inflammatory drugs having a high analgesic effect (ketorol, Nise, take, baralgin et al.)

Area closed fractures can be anesthetized by administering 1-2% solution of novocaine to fracture or futlyarnoy blockade of 0.25% solution of novocaine at Vishnevsky.

3. Transport bus imposes usually over shoes and clothing. Stripping the victim causing additional injury, and should be avoided whenever possible. Before applying them to flexible tire is shaped corresponding to the contour of the limb. To this end, their model of the healthy limb.

4. In imposing tires on bare limb should protect bony prominences (ankle, iliac crest, epicondyles shoulder, etc.) with a cotton lining, as long compression of

these places hard tires or their parts can cause sores, which subsequently can complicate for fracture or extensive wounds.

5. With an open fracture wound, its edges are treated with antiseptic and aseptic bandage is applied first and then the bus.

If necessary, bandaging the wound should not undress wounded. It is recommended to cut the clothing section, adjacent to the wound, and above it in the form of the valve and put a bandage. Thereafter splint.

6. If the last application of a tourniquet is applied to the limb prior to immobilization and so that it can be removed without disturbing the immobilization. Tourniquet, do not cover the bandage, having over it tours bandage. Castle harness must be located in front and easily accessible.

7. A tire or the immobilizer unit are attached to the limb, in most cases throughout the bandages. The bandage should be tight enough to cover the limb without causing circulatory disorders in it.

8. When applying the metal tire of their pre-wrapped with gauze or cotton and ready cotton-gauze pads. It prevents the formation of pressure ulcers and in transit in the winter local frostbite cooled metal tires.

9. extremities with superimposed bus before transporting in cold weather should always be insulated to prevent frostbite.

10. For transport immobilization bone fractures of extremities capture joints above and below the fracture, and in fractures of the femur and humerus all joints.

11. immobilized joints during transport immobilization is given the average physiological position, while medical - functionally favorable position.

12. Metal stair tire modeled on the healthy limb.

Means of transport immobilization

The main means of transport is the bus immobilization.

According to the principle of action they are divided into fixed and distraction, ie acting on the principle of traction - Cramer bus (Fig.6). An example is a ladder fixing tires tire of distraction - Diterikhs bus (Fig.7).

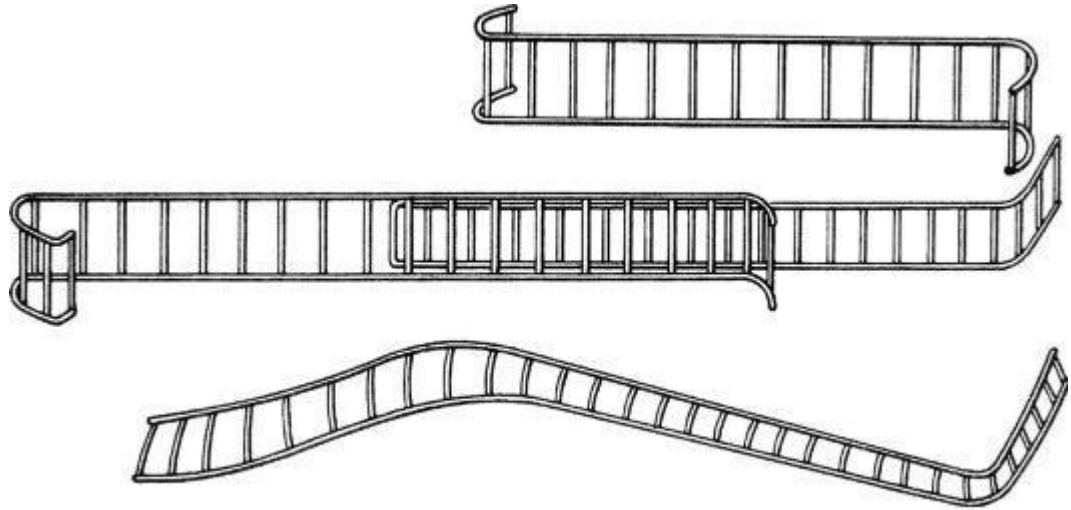


Fig. 6. Cramer bus

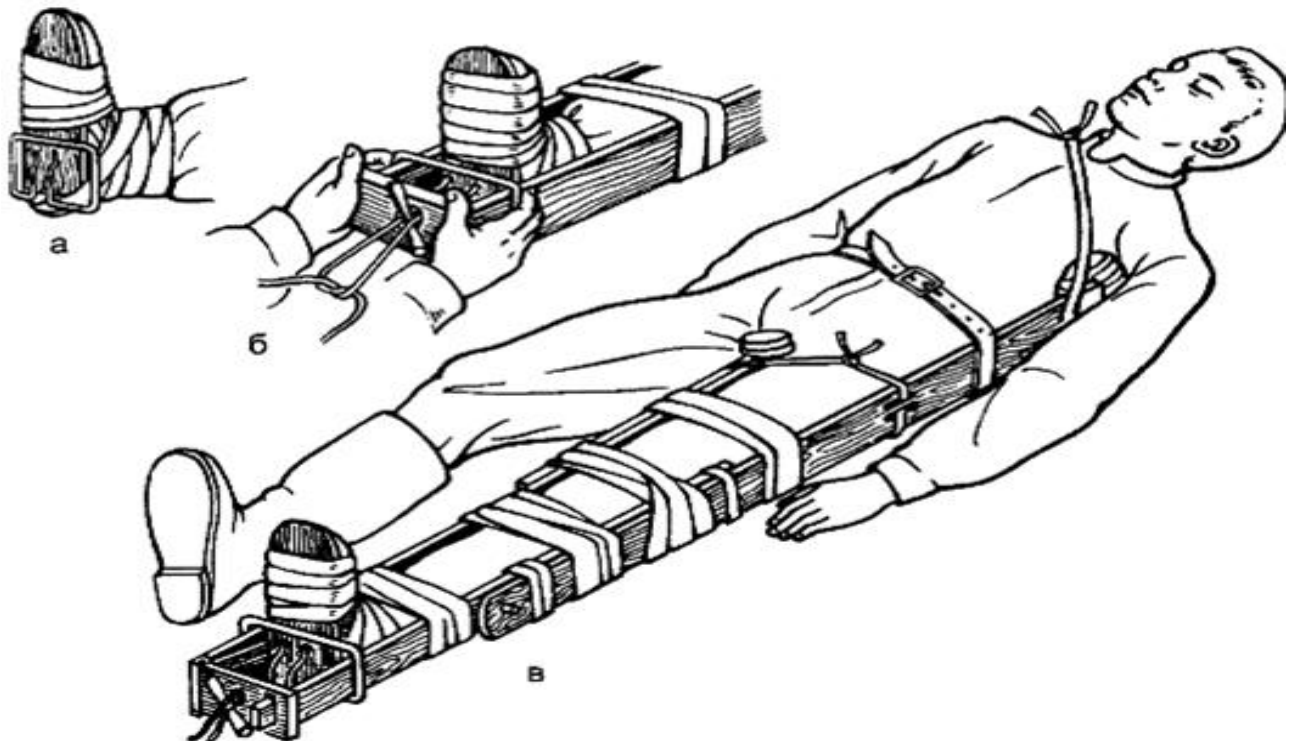


Fig.7. Diterikhs bus

There are means of transport immobilization standard, non-standard and improvised or primitive (improvised).

Standard bus transport - is immobilization, commercially available equipment for medical facilities, ambulances and first-aid. Standard tires are tires, plywood, stair, distraction-type Diterikhs, plastic tires, medical pneumatic stretcher Immobilizing vacuum.

Non-standard means of transport immobilization - a bus and devices, which are assessed in individual institutions or agencies, but not to release the medical industry and is not included in the standard set of tires (tire Elan, Petruhova et al.).

Improvised (primitive) tires manufactured improvised on the principle of fixation of tires.

Stair tires are available in lengths of 120 cm (weight 0.5 kg) and 80 cm (weight 0.4 g). The width of the tire, respectively, 11 and 8 cm. Frame ladder tire is made of wire with a diameter of 5 mm, a crosshair (ladder) - wire diameter of 2 mm. The width of the gap between junctions 3 cm.

Bus transportation for the lower limbs (Diterikhs) made of wood, folded has a length of 115 cm and weight of 1.6 kg. It belongs to the category of distraction tires. Bus consists of two sliding plank tires (Branche) of the form of crutches. plywood sole, a wooden stick, twist, and two canvas straps. Outdoor long jaws and the inner - short. Each Branche consists of two plates (upper and lower) with a width of 7.5-8 cm, superimposed on one another. Both trims the outer jaws longer than two bars internal jaws. Lower strap inner jaws has a metal bracket, so can slide on top of the bar, not looking up from her.

At the upper end of each strap has nakostylnik jaws. At the lower end thereof on the side surface of the nail-glued wooden fork. In addition, the upper limit of the outer jaws have two pairs of slits - one pair for nakostylnikom, and the second - are significantly lower. On the inside of the upper jaw of the strap has a pair of slots - for nakostylnikom. These slits are designed for fixing of cloth belts, for connecting the outer and inner interconnected Branche.

On the bottom bar in the middle of the outer jaws has a number of holes - sockets for the wooden nail-peg. The lower end of the jaws cut. The same holes are drilled in the bottom bracket inner jaws. The lower end of the inner jaws attached hinges rectangular plate - cross bars, which made the bottom of the cut, and in the middle - a hole with a diameter of 2.5 cm. Crossbar bordered by a metallic frame and moves on hinges, like a sash window or door.

The plywood base tire on a bottom surface closest to the heel has a wire frame which extends on both sides of the plywood sole in the form of rectangular tabs. The lower edge of the frame is bent by a few soles. At the site of attachment to the base of the plywood frame is bent in two hangers.

Wooden stick, twist length of 7-8 cm has a recess in the middle.

Using the bus, first pushing the upper and lower outer straps and inner jaws tire to the desired length. Connect the strap jaws each with a wooden nail-peg and strengthen the connection piece of bandage encasing produce wool nakostylnikov and the inner surface of both Branche. Pribintovyvayut plywood sole to the foot vosmiobraznoy bandage. The lower ends of the outer and inner tire Branche carried out through the appropriate staples plywood sole and the lower end is inserted into the groove of the outer jaws movable crossbar inner jaws. Thereafter, the tire is applied to the side surfaces of the lower limb, and the outer jaw of the - to the side surface of the trunk. Nakostylnik inner jaws should rest in the groin, crotch region and the outside - in the axillary region. The tire is attached to the body with special belts made of cloth, trouser belt, scarf or gauze bandages. Cord, fastening soles, is passed through a hole in the movable portion of the inner jaws in the loop of his stick-stick twist. Produce affected limb gently stretching arms length and reached the position of the limb is fixed spin, shortening the length of the cord by twisting. Wooden twist to cling to the edge of the tension of the outer jaws.

The time required for splinting - 10-15 minutes.

Bus transport plastic designed to immobilize the upper limbs, legs and feet. It is a strip of plastic, reinforced with an aluminum wire. On each side edge of the tire punched holes that are necessary for the cord for fixing the tire.

The tire has three sizes:

Type I - width 115 mm, length 900 and 1300 mm;

Type II - width 100 mm, length 900 and 1300 mm;

Type III - width 85 mm, length 750 and 1100 mm.

The kit includes the tire itself tire cord curtain 1500 mm long with depressed ends.

Tire Type I is designed to immobilize the leg and forearm splint for immobilization of type II upper limb and III - to immobilize the upper or lower limbs in children.

When applying plastic transport bus configuration immobiliziruemoy bent limb and at a predetermined angle in the large joints. Litter gasket is required. The end of the cord is introduced into the hole on the extreme edge of the tire and fasten. The other end of the cord through the hole successively carried out at the edge of the tire according to the type of lacing. Additional pribintovyvaniya bus to the limb is not required.

Upper limb immobilized bus, hung on a scarf or braid.

Medical pneumatic tire (SIT) represents a removable device made from a transparent plastic shell polymer bilayer.

The bus consists of the following elements: a two-layer film coating sealed - camera, fastener, valve device with a tube for injecting air into the chamber.

Medical pneumatic tire produced in plastic bags in three sizes:

Type I - for the hand and forearm, the mass of 0.25 kg;

Type II - for the feet and legs, weight of 0.3 kg;

Type III - for the knee and hip, weight 0.4 kg.

Apply medical pneumatic tire as follows:

1) the tire is removed from the package;

2) open the zipper and gently feed bus deployed under the damaged area;

3) close the zipper;

4) open valve the air guide device by turning the tube in the direction counter-clockwise;

5) the tire is inflated by mouth or pump to the elastic state, and then close the valve by rotating the tube in a clockwise direction.

When the working pressure in the chamber to 40-45 mmHg tire rigidity becomes necessary for the implementation of transport immobilization, blood circulation is not affected limb. The transparency of the shell allows the observation of the state of the final, and radiolucent material of construction of the shell allows you to perform X-ray examination without removing the tires.

To remove the tire from it deflated and open the zipper. Before reusing the tire wash with warm soapy water and dried.

The tire must be protected from punctures. Serviced (puncture camera) should be carried out with adhesive tape.

Immobilization in the head and neck injuries

Standard tires (ladder) are used for the manufacture of a special bus for the head - tires Bashmakova (Fig. 8).

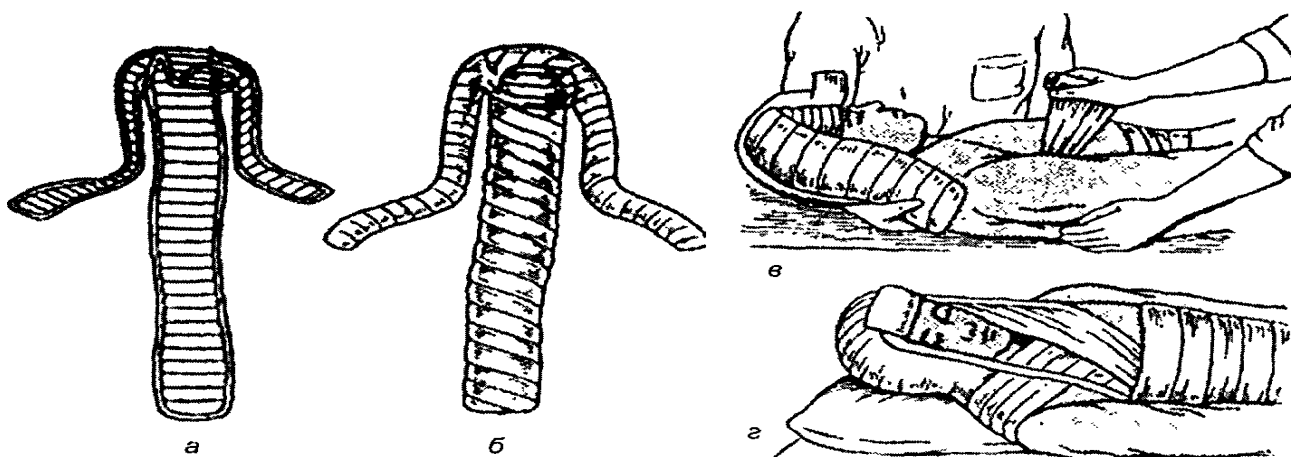


Fig. 8. Tires Bashmakova

A military doctor suggested K.M.Bashmakov this bus during the Great Patriotic War, and it was widely used at the front in providing care for the wounded in the head, neck and spine.

First simulate a stair rail (length 120 cm) along the contours of the head, neck and shoulder girdle in the form of the Greek letter Ω (omega). Second ladder bus same length model according to the contours of the head along the midline on the back of the neck and back. Then, both sides of the tire associated with each other, wrapped with cotton and bandages, administered by the affected bus so that his head hit the annular portion of the tire and pribintovyvayut it to the victim. Splint should be at least two people, one holding the victim's head and lifts her second - puts and fixes the tire. Consumption of materials: Stair bus 120 cm - 2 pcs., Unbleached cotton - 250 g, bandage 20 cm \times 7 m - 6 pcs.

Elan Bus (non-standard) is made of plywood, it consists of two identical halves, held together by metal hinges. In the unfolded state is a silhouette of the head and trunk, the tire easy to fold and when folded takes up little space and is convenient for transportation. Bus length 60 cm, width 40 cm. The top of the tire to the occipital region of the head, has an oval (115 \times 85 mm) of the recess, the edges of which packed cotton-oil-cloth roller 3-4 cm thick. The hinges are attached to the rear side of the tire, and roll - on the front. At the bottom and side edges of the tire has a 6 slot-like openings for ribbons or belts, fixing the tire to the body.

The side openings carried out two cloth strips of 1 m long to fix the tire around the shoulder. The ends of these bands (ribbons) link on the chest or if belts, fastened them to buckle. The bottom two slots are used for tape length of 1.5 m, which fixes the bus to the body.

Enclose the rear tire under the back and head. Under the occipital region enclose cotton-gauze pads 20 x 20 cm. Below the neck, to the back of the neck placed ball of cotton wool. The tire is attached to a head bandage (10 cm wide). Elan splint

should be in a prone position. Around the same way, with head and neck injuries, and applies the pneumatic tire Gindin.

For immobilization in fractures of the cervical spine, extensive soft tissue injuries and acute inflammation of the neck. In addition to the above mentioned non-standard tires used tire, the proposed AP Petruhovym consisting of two metal parts, headrests and backrests. In addition, the bus is equipped with halter, typically used for stretching the head, two canvas belts and mattress-cover.

Primitive immobilization in injuries of the neck and the cervical spine is made of cotton-gauze collar Schanz (Fig. 9).



Fig. 9. Collar Schanz

Thick cotton-gauze pads or a thick layer of gray wool, and in their absence any soft material (handkerchiefs, sheets, towels, etc.) Is applied to the neck and strengthen bandage. Bandaging performed under tension, but not squeezing the organs of the neck, so as not to interfere with free breathing.

The width of the layer of wool depends on the length of the neck, it must be such that the edge of the "collar" propped up his head, having the support points the chin, jaw and occiput.

Transport immobilization in injuries of thoracic and lumbar spine

Standard bus for immobilization in fractures of the thoracic and lumbar spine are Immobilizing vacuum stretchers.

To immobilize them placed in expanded form near the victims and check for a removable bottom with fasteners victim. Carefully shift the patient to a stretcher, fix it straps, removable head, put his head under a cushion. Cord held in the holes, fix the rubber-tissue envelope around the body. Then, attach the pump and pumped out of the cavity rubber-fabric jacket air. The time necessary for creating a negative pressure of 500 mmHg - 8 min.

Stretcher acquire certain rigidity that is sufficient for a good spine immobilization. If necessary, create an elevated position affected his head should be maintained at the desired position during operation of the pump. Transferring the victim carried out 4 nurses for a long distance and 2 - in loading for transport.

Standard tires - ladder and plywood - can be used to immobilize the spine without immobilizing stretchers vacuum. To do this, tires stacked in the longitudinal direction, connect with each other and strengthen the three short cross tires. On the stair tire prior to application to the victim should be put litter pads. On plywood spacers bus litter placed on the side facing the body of the patient.

Available tools (wooden slats, narrow boards) can be used in the same way.

To injure the victim less, boards or tires initially firmly bind with each other, then carefully shift them victim and is secured bandages or strips of any material. In the presence of the board is allowed to lay and fix the victim on it. This position is possible and carried a short distance, and long transportation.

You can use conventional stretcher with tarpaulins, if you put them on a sheet of plywood (the width of the stretcher), or one or two wide boards. In this case, the victim must be laid in the supine position. Under the lumbar curvature of the spine, it is desirable to put a small cushion.

In an extreme case, to immobilize fractures at the thoracic and lumbar spine, you can use the usual soft stretcher, but to lay the victim in this case should be in the prone position.

Transport immobilization in injuries of the upper extremities

Transport immobilization for fractures of the humerus is performed using standard ladder tires in 120 cm in length (Fig. 10), it must capture all the injured limb on the back of its surface from the fingertips to the inside edge of the opposite blade.

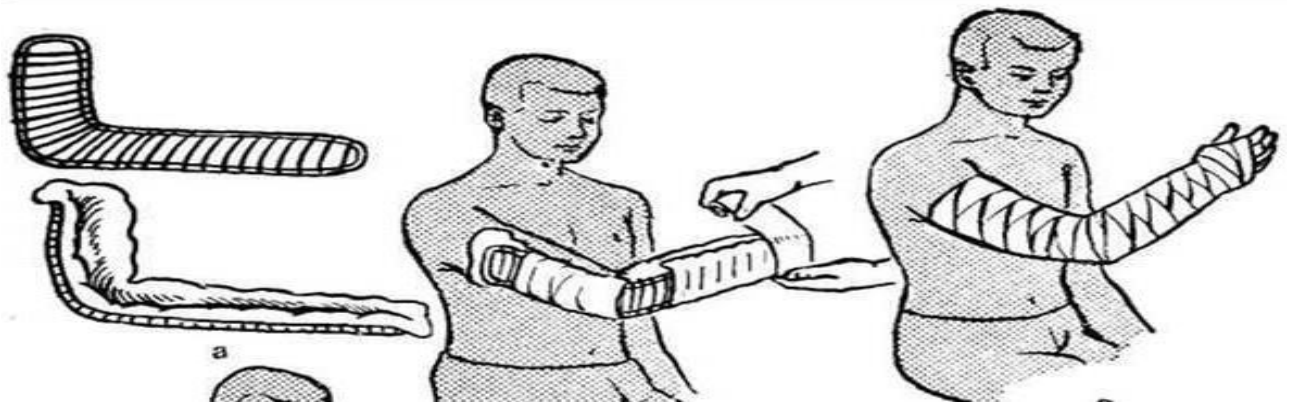


Fig. 10. Immobilization of the upper limb

Pre tire in the following manner:

- Wrapped her gray wool strengthening last bandage;
- To the proximal end of the bus tie gauze ribbon length 75 cm for fixing the end of the bus by tying ribbons around the shoulder joint intact limb;
- At a distance from the inner edge of the blade opposite to the olecranon is bent at right angles to the bus;

Imposes further immobilizing bandage modeling tire makes to himself: puts in the corner formed by the tire your elbow (right or left hand, depending on which side of the victim is damaged), captures second hand tires from the other end of the bus, and bends it to back so that the end of the bus reached the opposite inner edge of the blade and thus turns a bend tire configuration corresponding to the bending of the shoulder and back.

The tire is put on the victim's injured shoulder and create the correct, most physiological position: the withdrawal of the shoulder 300 forward; the ends of gauze ribbon tied to the proximal end of the tire to strengthen the proximal end of the bus, both of its ends knotted around a healthy upper extremity of the shoulder joint. Armpits invest roll of cotton wool.

To preserve natural position I (large) fingers in his opposition to the other, in the interval between I and II toes have to put cotton or gauze roll. The tire should be fixed to the body with bandages and limbs, imposing on the wrist to the root of the limb bandage spiral and fixed to the chest bus spica bandage on the shoulder joint or cruciform bandage on his chest.

To better secure the bus connect both ends of the bandage segment and limb itself hung on the scarf or bandage on the cut.

Immobilization of injuries at forearm, hand and fingers

Standard tires used in the forearm injuries: medical pneumatic tires, stair and plastic.

Medical pneumatic tire is used its first type: first open the lock the tires, and then fed a plastic bag under the limb, grabbing his forearm and hand, close the lock and inflated tire. The limb straighten the elbow.

Stair rail length of 80 cm is bent at an angle of 900 at the elbow wrapped with cotton bandage.

For fractures and extensive soft tissue injuries in the forearm ladder a bus from the middle of the shoulder to the fingertips. The brush must be rotated in the palm side of the trunk, i.e. it must be mounted perpendicular to the palm surface of the tire that creates a parallel position of the bones of the forearm relative to each other. Thereafter it is fixed at dorsiflexion at the wrist joint. From the palm of embedded cotton-gauze roll to hold the fingers in position polusgibaniya. Pribintovyvayut bus all over the limb and then hung on her scarf or bandage on the

segment. About immobilization also produced in injuries brush, but the elbow bus is not captured.

Plastic tire impose as well as a ladder. In this case, softening wool layer of the tire is needed.

Transport immobilization in injuries of the pelvis and hips

Standard tire - Immobilizing vacuum stretchers. Stretcher disclose straighten removable head, gently shift it affected and fix the holder. Under rubber cloth bag to evacuate air therefrom enclose transversely a roller at the knee. After this stretcher laces slightly lift the body and is evacuated from the rubber bag fabric. After giving the necessary rigidity of the stretcher roll is removed and cease to support the torso.

If there is no vacuum in the stretcher immobilizing fractures of the pelvis of the victim is laid on a stretcher (preferably rigid), a pressure bandage applied to the pelvis by a wide bandages, towels, or sheets. The lower limb is folded in the hip and knee angle and diluted in 45° side. Under knees enclose roller clothes of the victim or pillows, blankets and so on, creating the so-called frog position.

Best standard tire damage in the hip, thigh and heavy intraarticular fractures of the knee is a distraction Diterikhs bus. Equipment splint described above.

In the absence of bus Diterikhs ladder should be used Kramer bus. It is used as follows: two buses linked together lengthwise by bending the lower end of one of them at a distance of 20 cm from the edge in the transverse direction. This lengthened the tire is designed for application on the outer surface of the injured limb and the lateral surface of the body to the axilla. One stair rail prepared for placing on the inner thigh. The fourth bus must be otmodelirovana so that there is a recess for the heel, calf muscle groups and a small angle of flexion of the knee and podstopnik. This tire is superimposed on the rear surface of the limb. All tires carefully wrapped with cotton, put on a limb and strengthen bandage.

Plastic tire applied in the same manner. Securing the tires can do in this case bandages.

Medical pneumatic tire (type III for the hip and knee) is used as follows. It is removed from the bag, open locking fastener and the limb under carefully fed so that the knee was in the middle of the length of the tire. After closing the lock, open the valve the air guide device, turning it on one turn, inflated tire.

Improvised means immobilized apply in the absence of standard tires. It can be rack, ski, bundles of firewood and other items of sufficient length to allow immobilization in three joints affected limb: hip, knee and ankle.

If possible stack should be set at an angle of 90° and apply the gasket of soft material, especially in the area of bony protrusions.

However, there may be situations when there will be no available tools for transport immobilization, and then to apply autoimmobilizatsiyu - the method of fixing the "foot to foot":

- 1) the injured limb in two or three places associated with the healthy leg;
- 2) the injured limb to a healthy stack so that the damaged area podpyatochnaya legs lying on the front surface of the ankle healthy leg. In this case, it achieved the most physiological position of the limb, and with gentle straightening healthy leg comes easy extension of the length of the affected limb. In this position, they fasten limb bandage, towel, belt or any long piece of soft material. At the first opportunity immobilization, made by receiving "foot to foot", it should be replaced by a standard bus. Immobilization configured using improvised means, is replaced by a more perfect only in the case of unfitness, as the process of replacement of immobilizing bandage is quite traumatic for the victim and can cause worsening condition and complications.

Immobilization of injuries at the shin, foot and toes

The easiest and fastest way to immobilize the leg and foot is the imposition of a pneumatic tire to the leg and foot. This bus (Type II) is superimposed on a naked

shin and foot, as well as clothing and footwear. Uncover full zipper, the bus is supplied by limb. At the same time, be sure to put the heel to the corresponding groove of the tire. Zip closed and inflate the tire with air.

Standard stair rails immobilization is as follows (Fig. 11): on the back of the leg and plantar surface of the foot stack stair rail, pre-bent so that the stop was at an angle 90° to the axis of the leg and there was a convex curve of respectively a calf and thigh area of the heel. The upper end of the bus should reach mid-thigh. Additionally, with the outer and inner sides limbs overlaid on the same bus. Tires stacked with bedding and padding pribintovyvayut.

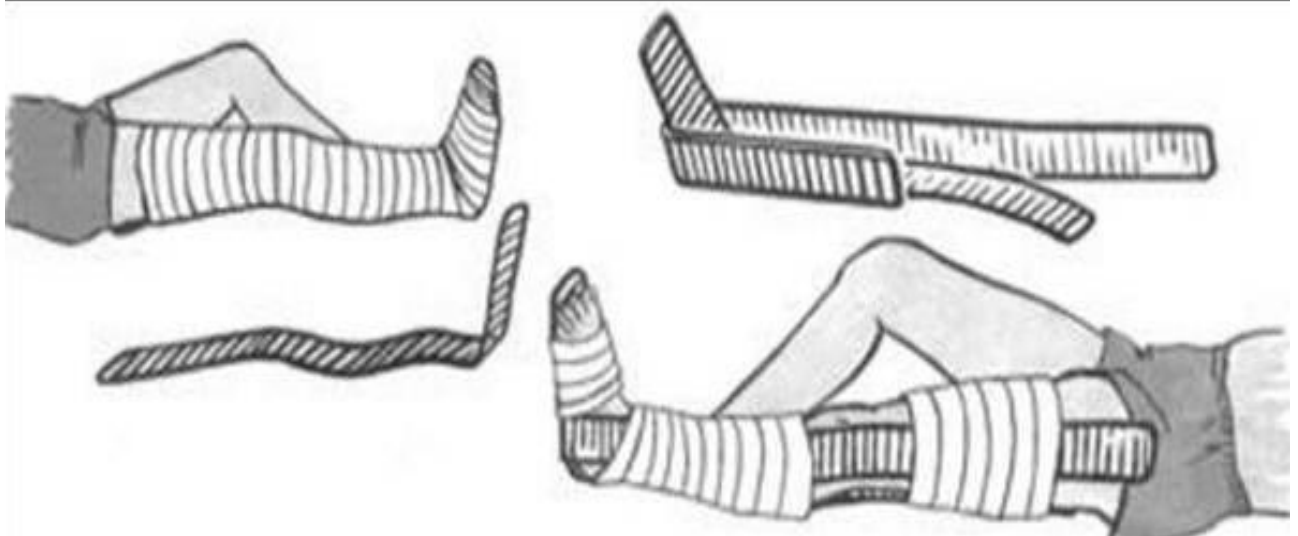


Fig. 11. Cramer tire

Plastic bus can be superimposed as well as a ladder, by placing it on the back surface of the pre otmodelirovav as was recommended above, and adding a second plastic tire on the front surface of the tibia. Fix the tire cord in the lower leg.

For fractures of the ankle, bones of the foot and toes often enough overlay short ladder bus from the bottom of the knee to the toes. In this case, only one tire located at the back of the leg and the plantar surface of the foot. The latter should be in a position at right angles to the leg and is fixed in this position. Bends tires in the heel and calf muscle are modeled in the same way as in the imposition of the tire on the shin.

Methodical instructions

After a theoretical analysis of general issues clinics and diagnostic fractures and dislocations of bones under the guidance of the teacher examines the patient with the appropriate pathology, as well as held view radiographs. Then the students familiarize themselves with the means of transport immobilization: ladder tires Cramer Diterikhs tires, tires, plywood, plastic, pneumatic.

After that the students each other under the control of the teacher practiced methods of transport immobilization for fractures of the humerus, forearm, hand, thigh, lower leg, feet, spine, pelvis.

Control tests

BONE FRACTURES

001. Fracture of the clavicle should be differentiated

1. with clavicle dislocation
2. with a fracture of the surgical neck of the shoulder
3. with a dislocation of the head of the shoulder
4. with a detachment of the biceps tendon of the shoulder

002. In fractures of the distal end of the humerus,

1. Axillary nerve
2. Radial and ulnar nerves
3. musculocutaneous nerve
4. The median nerve

003. The emergency measures for the fracture of the distal end of the humerus are

1. Novocain blockade and application of a cast bandage
2. application of skeletal traction
3. manual fracture repositioning
4. administration of antibiotics
5. transfusion of blood substitutes

004. With fractures of the neck and head of the radius, the branch is damaged

1. radial nerve
2. The ulnar nerve
3. The median nerve

005. The most common types of fractures of the distal end of the forearm include

1. fracture of the beam in a typical location of Collis
2. Beam fracture in a typical Smith site
3. fracture of the ulnar bone
4. fracture of the styloid process of the radius
5. Correctly 1) and 3)

006. To diaphyseal fractures of the forearm bones are

1. fracture of the Monteja
2. Holeazzi fracture
3. Maligny fracture
4. All listed
5. only 1) and 2)

007. If fractures of the radius in a typical place may be damaged

1. the long extensor of the thumb
2. Extensor of the index finger
3. The long flexor of the thumb
4. short radius extensor of the hand
5. long extensor of the hand

008. At fractures of a radial bone in a typical place as an immobilization it is used

1. Back gypsum langet
2. circular plaster bandage to the elbow joint
3. Circular plaster cast to the lower third of the shoulder
4. Palmar gypsum langet
5. Back and palm gypsum langet

009. The fracture of the carpal scaphoid bone includes

1. swelling of the wrist
2. tenderness in flexion and extension of the hand
3. painfulness with the radiation reduction of the brush
4. soreness when pressing on the head of the third metacarpal bone
5. soreness when pressing on the area of the "anatomical snuffbox"

010. Aseptic necrosis of the femoral head can develop due to:

1. hip joint injury
2. hip dislocation
3. hip fracture
4. All of the above
5. only 1) and 2)

011. Fractures of the condyles of the femur should be differentiated

1. with knee joint injury
2. with a rupture of ligaments of the knee joint
3. with an epicondyloid fracture of the thigh
4. with a patellar fracture
5. All types of injuries listed

012. Of the patella fractures, the most common

1. longitudinal fractures
2. transverse fractures
3. comminuted fractures

013. It is not a sign of fractures of the pelvic bones

1. symptom of the "stitched heel"
2. symptom "Volkovitch" - the position of the "frog"

3. The Trendelenburg symptom - the lowering of the lower gluteal fold on the healthy side of the pelvis when standing on the diseased limb
4. Symptom of Lorrae - pain when dilating the wings of the pelvis
5. Verneuil symptom - pain in squeezing the pelvic wings

014. To suspect a fracture of phalanges of toes is possible on the basis of

1. local pain
2. diffuse soreness
3. Pain strengthening with axial load
4. crepitation
5. Correctly 1) and 3)

015. At fractures of pelvic bones are most often damaged

1. prostate in men and ovaries in women
2. urethra (prostatic part of it)
3. distal part of the urethra
4. urinary bladder
5. Correctly 2) and 4)

016. Signs of damage to the Achilles tendon are

1. Sharp pain in the area of 1-5 toes of the foot
2. Sharp pain in the Achilles tendon
3. Restriction of plantar extension, to stand on foot, impossible to walk
4. limb function is not broken
5. diastase at the site of damage to the tendon, tissue westernization during palpation, sharp pain in the Achilles tendon, the limitation of plantar flexion of the foot and walking on the toes is impossible

017. Directly at the cervix of the fibula

1. tibial nerve
2. peroneal nerve
3. tibial and peroneal
4. The femoral nerve
5. sciatic nerve

018. The main vessels and nerves of the popliteal fossa are

1. femoral artery, tibial and peroneal nerve
2. popliteal vein, tibial nerve, popliteal artery
3. tibial and peroneal nerves, popliteal vein
4. Popliteal artery, popliteal vein, tibial and peroneal nerves

019. Damage to the patellar ligament is manifested

1. Violation of the function of flexion of the lower leg
2. prolapse of ankle extension
3. acute pain along the anterior surface of the upper third of the tibia, under the patella
4. knee instability
5. Acute pain below the patella, violation of extension of the tibia, soft tissue defect between the patella and tuberosity of the tibia

020. At an internal ankle fracture

X-rays of the tibia in the upper third are made to identify a fracture

1. internal condyle of the tibia
2. The outer condyle of the tibia
3. the head of the fibula or its upper third
4. Correctly 1) and 2)
5. There is no correct answer

TRANSPORT IMMOBILIZATION

001. As a transport immobilization in case of a fracture of the clavicle,

1. fixation with a roller in the axillary region
2. fixation without a roller, but in a dezo bandage
3. fixation by the rings of Delbe
4. Any of the listed ways

002. Fixation of the upper limb with a fracture of the distal end of the humerus during transportation of the patient is carried out

1. the tire of Cramer
2. the TSITO bus
3. With the Dezo bandage
4. plaster cast by Weinstein

003. When transporting a patient with a fracture of the diaphysis of the shoulder, the most rational application is

1. soft bandage Dezo
2. Dezo plaster cast
3. Cramer tires
4. gypsum bandages according to Weinstein
5. Thoracobrachial gypsum dressing

004. At fractures of bones of an elbow joint at transportation of the patient it is necessary:

1. Dezo's bandage
2. Cramer bus fixation
3. fixation on the CITO bus
4. fixing by the Sitenko bus
5. thoracobrachial bandage

005. In the case of a fracture of the scaphoid bone, immobilization is performed

1. gypsum lint
2. a circular dressing from the middle third of the shoulder to the fingertips
3. A circular dressing from the upper third of the shoulder to the fingertips
4. a circular dressing from the upper third of the forearm to the fingers with fixation of the main phalanx of the 1st finger

006. The amount of first aid for stretching ligaments of large joints includes all of the above except

1. Anesthesia
2. Immobilization
3. Apply pressure bandage and heat to the joint area
4. cold on the joint

007. When providing first aid to patients with severe traumatic brain injury at the scene and during transportation to the hospital, the doctor must do all of the above except:

1. to restore breathing, patency of the upper respiratory tract, to make intubation of the trachea
2. produce a lumbar puncture
3. to carry out blood transfusion
4. to carry out an indirect cardiac massage

008. Transportation of victims

with open damage to the sagittal sinus area is carried out

1. in the supine position on the back
2. in a lying position on the side with a raised head
3. in a semi-sitting position
4. in the position on the abdomen
5. in a position on the back with a raised head

009. For transport immobilization with a craniocerebral trauma a tire

- 1) Belera 2) Elanskogo 3) Vinogradova 4) Diterikhsa

010. The main vessels and nerves of the popliteal fossa are

1. femoral artery, tibial and peroneal nerve
2. popliteal vein, tibial nerve, popliteal artery
3. tibial and peroneal nerves, popliteal vein
4. Popliteal artery, popliteal vein, tibial and peroneal nerves

011. The severity of the trunk during walking and standing is transferred

1. forward to the head of metatarsal bones and back to the calcaneus
2. on toes
3. only on the heel bone
4. only on the head of metatarsal bones

012. The signs of fracture of the calcaneus are

1. pain in the calcaneus, flattening of the arch of the foot, deformation of the ankle, lowering of the apex of the ankles on the side of the calcaneus fracture
2. deformation of the ankle joint, displacement of the inner ankle up
3. ankle hemarthrosis, flattening of the inboard arch of the foot
4. pain in the area of the calcaneus, no deformation of the ankle

013. Mortality for multiple and combined injuries in the first hours after the injury is due to

1. shock and blood loss
2. severe craniocerebral trauma
3. pulmonary embolism
4. Fatty embolism

014. In the complex of measures for rendering assistance to the victims with multiple and combined injuries at the prehospital stage includes all the following, except:

1. assess the severity of the victim's condition with the definition of the leading damage
2. stopping external bleeding and immobilization of the damaged segment
3. restoration and maintenance of the functions of the cardiovascular and respiratory systems
4. blood transfusion therapy
5. Fast transportation to a specialized hospital

015. Emergency immobilization of long tubular bones at multiple and combined damages warns occurrence

1. shock
2. Fat embolism
3. multi-organ failure
4. True 1) and 2)
5. True 2) and 3)

ANSWERS

BONE FRACTURES

1 - 1

2 - 2

3 - 1

4 - 1

5 - 5

6 - 5

7 - 1

8 - 5

9 - 5

10 - 3

11 - 5

12 - 2

13 - 3

14 - 5

15 - 5

16 - 5

17 - 2

18 - 2

19 - 2

20 - 3

TRANSPORT IMMOBILIZATION

1 - 1

2 - 1

3 - 3

4 - 2

5 - 4

6 - 3

7 - 2

8 - 3

9 - 2

10 - 2

11 - 1

12 - 1

13 - 1

14 - 4

15 - 4

Literature

1. A guide to practical exercises on general surgery. In English. General surgery. The manual / Ed. VC. Gostishcheva - Publisher GEOTAR-Media, 2015. - 220 p.)

2. General surgery [Electronic resource]: a textbook / VK Gostishchev. - 5 th ed., Pererab. and additional. - M.: GEOTAR-Media, 2015. - <http://www.studmedlib.ru/book/ISBN9785970432143.html>

3. General surgery [Electronic resource]: a textbook / Petrov S.V. - 4 th ed., Pererab. and additional. - M.: GEOTAR-Media, 2012. - <http://www.studmedlib.ru/book/ISBN9785970422816.html>

4. Petrov S.V. General surgery: a textbook. - Publisher of GEOTAR-Media, 2016. - 832p.