TREATMENT OF LIMB FRACTURES DUE TO POLYTRAUMA

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Purpose: to improve the results of treatment of limb fractures due to polytrauma.

Materials and methods: The authors analyzed the treatment results of 35 patients with multiple and combined bone injuries of the lower limbs who were treated in the Tashkent Regional Branch of RNCEMP traumatology department for the period from 2021 to 2023.

Results: Application of external rod device (FAP: 2023 0097) in the treatment of patients in the acute period of polytrauma using minimally invasive technology of fixation of fractures enabled to ensure early stabilization of the condition of the patients, to obtain positive results (good and satisfactory results) treatment in 98% of cases.

Conclusions: the surgical treatment of patients with the use of a rod device using minimal invasive technology of fixation of fractures has demonstrated its high efficiency of technologies and the conclusion has been made about the need for a wide application of this approach.

Key words: polytrauma, multiple injury, external fixation devices, immersive osteosynthesis

Importance of the topic. Scientific development of surgical tactics for the treatment of polytrauma patients is an urgent problem of modern traumatology and orthopedics. Polytrauma is characterized by high mortality and is one of the three leading causes of death, leading to death from injuries under the age of 40 [1,2,3,4,5]. According to a number of researchers, the mortality rate in polytrauma ranges from 7.1% to 22.0% [Byalik E.I. 2002. Minasov T.B. 2009].

With polyherbs, the severity of the condition of the victims is due to shock, bleeding, damage to internal organs, and traumatic brain injury. Therapeutic tactics for injuries to the bones of the extremities, as well as surgical intervention, are the most controversial issues.

Thus, it is necessary to develop a system of early surgical treatment of fractures in victims with polytrauma, based on an objective quantitative assessment of the severity of the victim’s condition, which makes it possible to reliably determine the nature, volume and timing of surgical interventions, taking into account the type, type and location of the fracture. Requires the development and improvement of methods for surgical treatment of fractures of long bones and pelvic bones.

The purpose of the study is to improve the results of treatment of patients with polytrauma by improving the early surgical tactics of treating patients in the acute period of polytrauma using a minimally invasive method of extrafocal osteosynthesis with external fixation devices.

Material and methods. 35 patients with multiple and combined injuries of the bones of the extremities aged from 16 to 80 years, treated in the department of neurotraumatology in the Tashkent regional branch of the Republican Research Center for Emergency Medicine, traumatology department for the period from 2021 to 2023.

The average age was 37.3±13.4 years. About 82% of patients were of working age. There were 27 (77.2%) men, 8 (22.8%) women. Of the 35 patients, 23 (65.7%) had fractures of the limbs, and 12 (34.3%) had injuries to the pelvic bones. Multiple injuries were recorded in 21 (60%) patients. A total of 67 fractures were diagnosed in 35 patients. Fractures of the tibia (14 patients) and femur (7 patients) predominated. Fractures of the humerus, forearm, hand, and foot were observed in up to 10%. Open fractures of long bones were observed in 11 (31.4%) patients, closed fractures – in 21 (60%), a combination of open and closed fractures – in 8 (22%).

Osteosynthesis is introduced into the proximal and distal fragments of a long bone fracture (according to the positions for placing transosseous elements). After that, the bone rods (5) are fixed with the rod (1) of the apparatus in lanyards (2) with holes (3) using rod holders (6), nuts (4) and bolts (8) in the holes (7). Next, using a lanyard (2), the rotational displacement of the fragments is repositioned. By changing the length of the rod, they create compression or distraction of the fracture zone, which makes it possible to dosely eliminate the displacement of fragments. Eliminate displacement and insertion of bone fragments with possible damage to important anatomical structures, such as vascular and nervous structures. After eliminating the displacement of bone fragments, the device is stabilized. The device is removed after 3 months.

The developed osteosynthesis technique is used in trauma departments: the Republican Specialized Scientific and Practical Center for Traumatology and Orthopedics, the Surkhandara Regional United Hospital and the Termez Branch of the Scientific Center for Emergency Medical Care.

62 osteosynthesis operations were performed in 35 patients. Among the methods of osteosynthesis, extrafocal osteosynthesis with an external fixation device (external fixation device) was used on an emergency basis. Early operations (within the first day after stabilization of the general condition) on the segments of the musculoskeletal system were performed in 19 (57.1%) patients, of which PSO of an open fracture of the tibia and femur of 2-3 degrees and primary osteosynthesis with the Ilizarov apparatus in 2 patients (4 operations) and rod clinic apparatus

In 32 cases, external fixation devices were replaced with submersible structures during treatment. In case of fractures of the diaphyses of long tubular bones, in 24 cases these were pins with locking and in 7 cases, around and intra-articular fractures, various special plates with angular stability of screws were used.

The advantages of early surgical fixation of fractures of long bones of the extremities with an external fixation device include: low trauma, absence of intraoperative blood loss and a pronounced anti-shock effect. Early surgery on the bones of the extremities leads to a significant reduction in pain, early activation of the victim, a reduction in bed rest, and facilitates general and medical care for the patient.

The final synthesis of fractures of long bones of the extremities was carried out after normalization of the function of vital functions and body systems, usually within four weeks. At the second stage, osteosynthesis was used with locking pins without drilling out the medullary canal. During the period of compensation of the body

Concomitant trauma was noted in 14 (40%) patients, including 7 (20%) patients with skeletal bone trauma combined with TBI, 3 (8.6%) patients with chest trauma, 4 (11.4%)) - with trauma to the abdominal organs and retroperitoneal space.

Results and its discussion. All victims with combined and multiple trauma with signs of traumatic shock were hospitalized in the anti-shock ward, where they were immediately examined by the team on duty (traumatologist, anesthesiologist-resuscitator, surgeon, neurosurgeon, if necessary, related specialists were involved) and therapeutic and diagnostic measures were carried out in parallel with anti-shock therapy, taking into account the dominant damage. To make a diagnosis, we used the entire available arsenal of radiation research methods, carried out around the clock (computed tomography, EchoEg, radiography, ultrasound).

In case of multiple fractures of extremity bones in patients admitted to the emergency department in a state of shock, anti-shock measures come first. The entire range of diagnostic measures is carried out against the background of the fight against shock. When the victim is brought out of shock and the main clinical and laboratory parameters are normalized, surgical reduction of fractures is performed. At the same time, the reposition and stabilization of bone fragments is an important anti-shock measure, as well as the prevention of fat embolism and complications from the blood coagulation system: disseminated intravascular coagulation syndrome, thromboembolic complications. Once the general condition of the patient has normalized, in case of fractures of the diaphysis of long tubular bones, it is possible to switch to immersion osteosynthesis: replacing the external fixation device with pins with locking screws or external locking plates for low and periarticular fractures.

In order to ensure early loading and speedy restoration of the function of joints and limbs in general.

We have developed a rod apparatus for the treatment of long bone fractures

(FAP: 2023 0097. From 03/17/23). A rod apparatus for the treatment of fractures of long bones of extremities contains a rod (1), threaded throughout, on which four lanyards (2) with threaded holes (3), bone rods (5), rod holders (6) with holes (7) are installed) under the bar (1) and bone rods (5), nuts (4) for rigid fixation of the turnbuckles (2).

The rod apparatus for the treatment of fractures of long bones of the extremities is used as follows.

For the victim, after sterilization of all elements of the apparatus (Fig. 1-2) and spinal anesthesia, under image intensifier control, bone rods (5) are

A total of 46 operations were performed (in 27 patients), and one-stage operations during one anesthesia were performed on all segments of the limbs at once in 13 patients, in 14 patients - sequentially, with a break of 7-10 days in two stages.

Thus, 35 patients underwent a total of 62 operations, of which transosseous osteosynthesis accounted for 22 (35.5%) operations, submersible osteosynthesis - 9 (14%), BIOS - 20 (32.2%), the use of knitting needles and wires – 11 (18.3%). Of the 22 extrafocal osteosynthesis operations, the clinic rod apparatus was used in 16 cases, and the Ilizarov apparatus in 6 cases.

It should be noted that minimally invasive technologies for fixing fractures - BIOS - reduce the trauma of manipulation and facilitate the process of fixing fractures, which makes it possible to widely use them for osteosynthesis of musculoskeletal fractures in polytrauma.

In the surgical treatment of injuries to the pelvic ring, the following technologies were used: ANF, external osteosynthesis. External fixation devices were used as a temporary method in providing emergency care to victims with unstable pelvic injuries and shock. External devices were used as the final method of treatment in 3 patients. In 6 cases (with external blocking plates), the ANF was dismantled and external osteosynthesis was performed for low and periarticular fractures.

Early osteosynthesis of multiple fractures ensures maximum early mobilization of patients (which is especially important for elderly patients) and early start of restorative treatment.

Analysis of the data showed that the number of positive results in patients with polytrauma treated using two-stage surgical treatment of fractures of long bones of the extremities is greater than with surgical treatment of fractures in several stages.

Thus, the rational use of a system of two-stage surgical treatment of fractures of long bones of the extremities in patients with polytrauma, taking into account the severity, and the use of minimally invasive surgical techniques made it possible to avoid diagnostic errors and increase the number of positive results (good and satisfactory results) of treatment from 85% to 98%.