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METHODS OF TIMELY TREATMENT OF FRACTURES OF THE PROXIMAL HUMERUS

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Аннотация*: Treatment of fractures of the proximal humerus is an urgent problem. This is due to the rather high frequency of such fractures and the likelihood of developing persistent functional disorders. In the general structure of injuries, fractures of the proximal humerus make up about 4-5 %, of all humerus fractures — 80 %. Fractures are more likely to occur as a result of an indirect injury, when falling on the arm. In individuals over 60 years of age, fractures of the proximal humerus make up 17 % of all fractures [8] and, as a rule, occur against the background of osteoporosis and ocmeon osteopenia.*

Ключевые слова: *fracture of the proximal humerus, osteosynthesis.mental ones, taking into account the displacement of fragments, damage to the articular surface and allocation of a group of fractures and dislocations.*

The study is basedon an analysis of the results of treatment of 72 patients who had fractures of the proximal humerus in the period from 2021 to 2022. Among them, 30 men (32.3 %) and 42 women (67.7%). The median age was 41 years for men and 62 years for women. To diagnose fractures, a thorough clinical and X-ray examination was performed, as well as other instrumental and laboratory studies to determine the concomitant pathology in patients. It should be noted that performing an X-ray examination only in the anteroposterior projection may lead to underestimation of the injury and diagnostic errors. For a more accurate determination of the nature of the fracture, X-ray examination is necessary in the axial projection, if possible, or in the transthoracic projection. If necessary, direct radiography is performed in the internal rotation position. In difficult cases, computed tomography or magnetic resonance imaging is indicated to identify damage to the articular surface of the shoulder head. For the treatment of patients with fractures of the proximal humerus in the trauma department, both conservative methods were used — in 5 (8.8 %) patients, and operative methods — in 57 (91.2 %) patients. Methods of operative fracture stabilization were as follows: open reposition, transossal fixation with spokes in 3 patients, closed reposition, percutaneous fixation — in 5 patients, LCP-plate osteosynthesis — in 5 patients, T-plate osteosynthesis — in 6 patients, L-plate osteosynthesis - in 38 patients. The criteria forchoosing thetreatment method were the patient's state of health and functional activity, the nature of his work before the injury, the quality of bone tissue, the type of fracture and the degree of displacement of fragments, and the size of fragments. In our work, we used the classification of C. S. Neer, 1970, according to which fractures of the proximal humerus are divided into two -, three-and four-fold fractures.

The article describes the experience of treating 72 patients with fractures of the proximal humerus. Indications for conservative and operative methods of treatment are formulated. The results are analyzed. An algorithm for treating fractures of the proximal humerus has been developed. The need for a differentiated approach to treatment is shown, depending on the nature of the fracture, the state of bone tissue, functional activity and general condition of the patient. Key words: fracture of the proximal humerus, osteosynthesis mental ones, taking into account

the displacement of fragments, damage to the articular surface, and the allocation of a group of fractures and dislocations [6]. According to statistical data, 80 % of patients with proximal humerus fractures can be treated conservatively with good results [5]. Indications for conservative treatment are: stable two -, three -, and four-fragment fractures with a displacement of up to 1 cm in width and an angle of abduction of up to 45°, unstable fractures in elderly patients with osteoporosis, osteopenia, severe concomitant pathology, and low functional activity. It should be noted that the specified permissible values of fragment displacement can be discussed separately in certain cases. So, for example, in persons with high functional requirements, the permissible angle of deformation can be reduced to 30°, and the separation of the tubercle with a displacement of more than 0.5 cm is also subject to surgical treatment. The results of conservative treatment obtained by us are quite satisfactory and correspond to the functional requirements of patients. Criteria for evaluating treatment outcomes were: achievement of consolidation, severity of pain syndrome, volume of movement in the shoulder joint. Good results were obtained in 80 % of patients treated conservatively. They have no pain, and the lead volume has recovered to an average angle of 160°. Negative results of conservative treatment are also possible. We observed 1 case of formation of a false humeral neck joint, which required surgical treatment later. The main factor predisposing to non-fusion and the formation of a false joint is premature motor activity in the presence of persistent instability of fragments. One of the most frequent complications is the formation of persistent adductor contracture of the shoulder joint. This is facilitated by immobilization with the absence of upper limb abduction, which leads to an adhesive process of the Riedel pocket, and unreasonably long fixation periods without early movements. Therefore, at the outpatient stage, protocols for conservative rehabilitation of patients with fractures of the proximal humerus should be used. When choosing an operative method for stabilizing fragments, it is necessary to focus on X-ray data, the state of bone tissue, and the number of fragments in each specific case. Closed percutaneous fixation with knitting needles can be performed in patients with two-fragmented proximal fractures of the shoulder with good bone density, if the appropriate equipment is available — an electron-optical converter. Open reposition with fixation of fragments with T -, L-shaped plates is indicated in patients with two -, three-fragment fractures in good condition of bone tissue.

In the presence of osteoporosis, osteopenia in patients with three-or four-fragment fractures, osteosynthesis by proximal shoulder plates with angular stability (LCP) is indicated. The advantages of using such plates are obvious. These include stable fixation of the fracture, reducing the probability of secondary displacement of fragments due to lysis of fragments. This allows you to start developing your movements earlier. The results of surgical treatment of fractures of the proximal humerus were evaluated according to the previously considered criteria. Fusion of fractures after 8 weeks was observed radiologically in 49 (85.9 %) patients. Good results were obtained in 46 (80.7 %) patients: consolidation was achieved, sufficient function with a shoulder abduction angle of 90° or more, and no pain. There were no cases of non-fusion or infectious complications among the observed patients. Avascular necrosis of the head of the humerus was observed in 1 patient (1.75%). Such complications are sometimes found in comminuted proximal shoulder fractures [7]. Three-and four-fragment fractures at the level of the anatomical neck are unfavorable [4]. In this case, a four-fragment fracture of the shoulder was accompanied by complete devascularization of the head fragment. To prevent the development of avascular necrosis, it is necessary to operate on patients at the earliest possible time [1] and the surgical technique should be minimally invasive, using low-traumatic fixators [4]. If the method of osteosynthesis is violated, impingement syndrome may develop with the

appearance of adductive contracture and pain. In order to prevent this complication, it is necessary to install the proximal edge of the plate 5-8 mm distal to the top of the large tubercle. In cases of multi-comminuted fractures, when there are indications for surgical treatment, but stable fixation is impossible, conservative treatment or endoprosthetics of the shoulder joint should be resorted to [2, 3. Treatment of fractures of the proximal humerus is possible using both conservative and surgical methods. 2. When choosing a treatment method, it is necessary to take into account the patient's characteristics, the state of bone tissue, and social activity. 3. Careful implementation of recommendations at the outpatient stage, timely X-ray monitoring, cessation of immobilization and physiofunctional treatment are important factors in preventing the development of functionaldisorders.

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