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TO STUDY ANATOMICAL AND FUNCTIONAL DISORDERS IN GONARTHROSIS, TO SYSTEMATIZE THEM, AND TO DEVELOP A SET OF DIAGNOSTIC MEASURES

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Relevance. Deforming osteoarthritis of the knee joint is observed in 54.5% of patients suffering from diseases of large joints. Gonarthrosis affects people of working age in 86% of cases, and in 6.5%-14.6% it leads to disability. The incidence of osteoarthritis increases with age and reaches 97%-100% among people over 60 years of age. According to our data, gonarthrosis occurs in 50.6% of cases among degenerative-dystrophic diseases of the joints of the lower extremity and is bilateral in every sixth patient (16.6%). The progressive course of the disease leads to the appearance of limitations in patients in the spheres of life and a decrease in the quality of life, which determines the social significance of the problem. Currently, most researchers associate the appearance and development of deforming osteoarthritis with a disorder of microcirculation in the subchondral parts of the knee joint. It has been established that morphological changes in the structure of the subchondral bone precede damage to the articular cartilage. Microcirculation disorders in the subchondral articular sections are characterized by dilation and hyperemia of blood vessels, the formation of thrombosis and venous stasis with prolonged clearance of the contrast medium during intraosseous phlebography, fusion or layering of sinusoids, the appearance of vascular shunts, difficulty in venous outflow with increased blood pressure, which causes excruciating pain in gonarthrosis. At the same time, VCD is considered an integral physiological indicator of the state of intraosseous circulation, which changes during pathological processes and reflects the influence of general and local hemodynamic and neurogenic factors. X-ray and biomechanical studies have shown that an important role in the development and progression of the degenerative-dystrophic process in heterogeneous deforming osteoarthritis of the knee joint in the process of function belongs to disturbances in the distribution of load on the articular surfaces of the condyles of the femur, tibia and patella due to their incongruence or axial deformities of the limb. Chronic overload leads to damage to the articular cartilage against the background of impaired diffuse nutrition, exposing the subchondral layer of bone in areas of hyperpression. In areas of hyperpression, foci of cyst-like restructuring and reactive sclerosis are formed. The failure of the musculoskeletal structures that stabilize the knee joint provokes and exacerbates bone deformity.

Thus, vascular and biomechanical theories of gonarthrosis pathogenesis are the most widespread at the present stage. The severity of osteoarthritis is determined by structural changes, the degree of intraosseous hypertension, and the intensity of pain. Therefore, determining the role of VCD and its dynamics depending on the treatment methods is a prerequisite for studying this problem. Other well-known classifications of osteoarthritis are also based on an isolated or morphological analysis, or the clinical course of the disease, which makes it difficult to comparatively interpret the treatment results. The main disadvantages of modern assessment schemes for anatomical and functional disorders in deforming osteoarthritis of the knee joint presented in the literature are their complexity, high labor intensity with a significant amount of time spent on pathology assessment, a certain amount of subjectivity in the assessment of signs, as well as a separate assessment of the main anatomical and functional manifestations of pathology from the assessment of limitations in patients in various spheres of life (social, labor force, quality of life). Therefore, the development of an integrated pathology assessment scheme, including a combination of anatomical and functional disorders in gonarthrosis with a gradation of limitations in various spheres of life, is important and relevant. The low effectiveness of conservative therapy in severe degenerative-dystrophic changes in the knee joint forces surgeons to resort to surgical treatment. The arsenal of surgical treatment methods for deforming osteoarthritis of the knee joint is currently quite wide and diverse. Thus, the use of

arthroscopic techniques has been used in the diagnosis and treatment of joint diseases. However, the possibility of widespread use of arthroscopic treatment methods is limited mainly by the initial stages of the disease. A number of orthopaedists speak in favor of single-condyle or total knee arthroplasty, especially in older age groups. According to orthopaedists who are actively involved in endoprosthetics, it should be postponed to a later age period. Against the background of the increasing interest in endoprosthetics for gonarthrosis, works are increasingly appearing in the literature in which orthopedists return to proven biological methods of treating pathology. In their opinion, a well-chosen high osteotomy for gonarthrosis makes it possible to prolong the remission period of the patient's well-being and not expand the indications for joint replacement, even in severe gonarthrosis. Revascularization with simultaneous drainage and decompression of the subchondral articular sections and the bone marrow cavity of the tubular bones formed the basis for the treatment of patients with deforming osteoarthritis of the knee joint through the use of various tunneling and osteoperforation techniques. However, an analysis of the literature data has shown that among the variety of technical implementation of tunneling, there is no pathogenetically sound system for their use, depending on the severity and severity of the pathology. In addition, there is insufficient technical support for these operations. Therefore, unsatisfactory results of treatment of patients with gonarthrosis after joint tunneling reach 16.7% of cases. Fixation of bone fragments after correction of deformity is carried out by various bone and intraosseous metal structures. The positive effect of corrective osteotomy in the treatment of deforming gonarthrosis is associated by domestic and foreign orthopedists with a high bone cross-section near its subchondral sections, which leads to improved microcirculation, reduced VCD, uniform redistribution of load on articular surfaces with the creation of biological and biomechanical conditions for the regeneration of articular cartilage, reducing reactive changes in the synovial environment of the joint and ensuring, ultimately as a result, the analgesic effect of the operation. At the same time, an analysis of the literature data shows that the technical implementation of traditional types of corrective osteotomies is highly traumatic due to massive dissection of soft tissues. In cases of "plus" osteotomy, bone allografts, autotransplants from the iliac crest and from the diaphyseal part of the tibia are used to fill the wedge-shaped tibial defect formed after angular correction of the deformity, which increases the volume of the operation and its severity. Complex types of osteotomies in 14%-21.3% of cases are accompanied by an intraoperative fracture of the "plateau" of the tibia. The instability of bone fragments during their fixation with braces reaches 30%, which requires the use of bulkier bone clamps, the immediate application of a plaster cast or a transosseous fixation device. Insufficient fixation ability of osseous-intraosseous metal structures in 3.7%-8.3% of cases is manifested by delayed consolidation in the osteotomy area, in 3.6%-12.5% of cases - by loss of correction with the formation of intractable pseudoarthritis of the tibia. Deforming gonarthrosis: controlled metered correction of angular deformation, rigid fixation of bone fragments, early functional load. However, the design features of the external fixation devices provided only for the angular reversal of bone fragments with the formation of a wedge-shaped distraction regenerate or their fixation in a corrected position. The complex cross-section of the shaped osteotomies did not allow to eliminate the rotational component of the deformity, to completely center or ventralize the distal fragment of the tibia. In addition, there is information in the literature about the loss of deformity correction in 23.5% of cases in patients with deforming osteoarthritis of the knee joint who were treated with the Ilizarov apparatus. Unsatisfactory treatment outcomes in patients with deforming gonarthrosis after the use of traditional types of corrective surgery and their modern modifications using transosseous osteosynthesis currently range from 4% to 27%, and errors and complications reach 8.3%-31.3%.

There is insufficient information about the role and significance of decompression-drainage operations in the rehabilitation system of patients with heterogeneous gonarthrosis. In addition, the etiopathogenetic effectiveness of these operations and their modifications using the Ilizarov apparatus has not been substantiated. These facts indicate the high medical importance of the problem of treating gonarthrosis. Therefore, it was necessary to clarify the tactics and technology of decompression drainage operations in the treatment and rehabilitation process of patients with gonarthrosis. It is necessary to clarify the most optimal types of surgical interventions and their combinations, depending

on the anatomical and functional changes in pathology. There are not enough works in the literature devoted to the role of intraosseous pressure in the genesis of the excruciating pain "resting syndrome" in deforming arthrosis. Information about the range of digits of the VCD is very variable. Issues of increasing the technical accuracy of correcting disorders of the biomechanical axis of the limb using devices for transosseous osteosynthesis developed on the basis of the Ilizarov apparatus require further development. It is necessary to study the tactics of managing the postoperative period when using new and modified methods of surgical treatment of deforming osteoarthritis of the knee joint, to clarify preventive measures and methods of treatment of possible complications. The study of topical issues of orthopedics on this issue will improve the effectiveness of rehabilitation of patients with degenerative and dystrophic diseases of the knee joint. The above provisions have determined the purpose of this study. A rehabilitation system for patients with heterogeneous gonarthrosis has been developed using decompression-drainage operations, depending on the stage of the process and anatomical and functional disorders. A method of sonographic diagnosis of Baker's cyst has been developed to clarify the structural organization of synovial formations in the knee joint area. The study of the dynamics of VCD in the early postoperative period made it possible to evaluate the effectiveness of the developed operations in terms of revascularization, decompression and drainage of the subchondral articular sections and the medullary cavity of the tibia. Devices for standardization of subchondral tunneling are proposed, allowing to increase the technical accuracy of the operation and its biological effect. The expediency of supplementing corrective osteotomy with subchondral tunneling of the opposing articular sections is substantiated.

Conclusion. Types of simultaneous operations for gonarthrosis have been developed depending on anatomical and functional disorders and concomitant joint pathology. Based on the study of the treatment results, the effectiveness of the developed rehabilitation system for patients with gonarthrosis was revealed, based on the differentiated use of decompression-drainage surgery techniques, which made it possible to substantiate practical recommendations for the use of a set of surgical measures, identify complications and develop measures to prevent them. The developed technical support tools for surgical interventions helped simplify and standardize the performance of operations and reduce their injury rate. The use of the proposed methods of decompression-drainage operations, taking into account anatomical and functional disorders and the severity of the disease, has improved treatment outcomes and reduced the number of complications.

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