Dear friends,

We present to your attention the first issue of our journal this year. It has a new format with the sections “Clinical Studies”, “Theoretical and Experimental Research”, “Case Reports” and “Literature Review”.

The “Clinical Studies” section of this issue includes seven publications. The section opens with the work of a team of authors from St. Petersburg (Kalita et al.), in which the authors assessed the results of limb salvage surgical treatment of injuries to the distal phalanx of the fingers and substantiated the algorithm for treating injuries of the fingers using an original technique. Based on the results obtained, the authors conclude that the proposed method improves the outcomes of reconstructive surgical interventions in the treatment of the defects of the nail phalange tip in three-joint fingers.

Galkin et al. (Moscow) used large clinical data to study the effect of maintaining hip joint isometry on the outcome during surgical approach by changing the method of treating external rotators in reconstructive operations in the management of traumatic destruction of the posterior parts of the acetabulum. Having analyzed the results, the authors underline that maintaining isometry in the hip joint allows for significantly better clinical outcomes in the treatment of this complex category of injuries.

Long-term results and complications of surgical treatment of 130 patients with Achilles tendon ruptures are discussed by authors from Moscow (Magnitskaya et al.). Based on the data obtained, the authors conclude that open Achilles tendon repair techniques have a greater risk of infectious complications but a lower likelihood of recurrent ruptures. Previous injections of hormonal drugs into the area of the calcaneal tendon, the use of augmentation tapes or autografts in calcaneal tendon repair increase the likelihood of infectious complications.

The experience of the Belgrade Children's University Hospital in lengthening and correction of limb deformities in 12 patients with severe fibular hemimelia is presented in the work of Lazović et al. (Serbia, Kurgan). Based on the outcomes, the authors concluded that the strategy of early foot and ankle reconstruction in children with severe fibular hemimelia followed by tibial lengthening at the age of 4-6 years was effective and could be used in a variety of clinical situations. In type 3C fibular hemimelia, the use of external fixation to correct the deformity and simultaneously lengthen the tibia in the first stage is an alternative reasonable strategy.

The authors from Uzbekistan (Urinbaev et al.) studied the effectiveness of surgical treatment of pseudarthrosis of the lateral condyle of the humerus in children using combined methods of osteoplastic surgery with the Ilizarov apparatus. The paper presents the experience of surgical treatment of 57 children with fibular bone grafts and various methods of limb fixation. The authors note the high effectiveness of the treatment as good results were achieved in 79.6 % of cases. There was only one case of poor outcome.

Stupina et al. (Kurgan) analyzed the pathogenetic and clinical significance of palmar aponeurosis fungal infection in Dupuytren's contracture. The surgical material was examined at the light-optical level and with scanning electron microscopy. Fungal infection of the palmar aponeurosis was detected in 20 out of 41 patients; various types of tissue reaction to the introduction of fungi into the palmar aponeurosis and the blood vessels perforating it were found. The authors have statistically proven the relationship between fungal infection of the aponeurosis and an increase in the frequency of early relapses of contracture. To increase the duration of the relapse-free period and, potentially, the life expectancy of patients, consultations with infectious disease mycologists and correction of modifiable risk factors for candidiasis are necessary.

Authors from Moscow (Ivanov et al.) compared different methods for determining “bone age” using radiographs of the hand in patients with active growth plates and anteromedial instability of the knee

joint. The data obtained by the authors as a result of the study showed a difference between chronological and bone age. It allowed them to conclude that it is necessary to assess bone age by planning surgical treatment of patients with open growth plates, as well as of predicted and target growth.

The issue continues with a problematic article by Mukhametov et al. (Ufa, Smolensk, Chelyabinsk, Yekaterinburg), dedicated to theoretical research in the field of bone graft substitutes and the use of a large variety of synthetic materials, including metals, polymers and ceramics. A detailed analysis of clinical trials of synthetic biomaterials based on hydroxyapatite and tricalcium phosphate, listed in registries and various databases, was carried out in order to identify the potential for clinical use, as well as possible side effects of CPC as a substitute for bone grafts. The authors pointed that the combination of hydroxyapatite and tricalcium phosphate has many advantages. Their separate use or in combination does not have any serious side effects.

Two articles in this issue focus on experimental developments. Tretyakov et al. (Republic of Belarus) conducted a pathomorphological assessment of the effectiveness of intra-articular application of soluble platelet factors for treatment of experimental osteoarthritis in 120 rats. Preliminary modeling of osteoarthritis was carried out using an original method. The study showed that intra-articular administration of modified PORFT/PRP (platelet-rich plasma) led to a pronounced therapeutic effect, manifested by an improvement in the morphofunctional state of the hyaline cartilage on the 6th day, in comparison with plasma and serum.

Malishevsky et al. (Tyumen) conducted a comparative analysis of the biomechanical properties of various types of suture material for producing tendon stitching in an experiment. The results obtained allowed the authors to conclude that polytetrafluoroethylene and nickel-titanium threads showed the best biomechanical properties for tendon repair in linear strength, good elasticity and low plasticity of the suture material. There were no significant differences between polypropylene and braided polyamide threads.

The clinical case report presented in this issue concerns the problem of soft-tissue reconstruction of the palmar surface of both hands after thermal injury in a child aged two years and four months. The patient underwent surgery: excision of scars, skin grafting of both hands with a vascularized fasciocutaneous flap from the radial artery basin. Twelve years after surgical treatment, the patient had all types of restored grip in both hands. Both hand had acceptable aesthrtics.

Five review articles that conclude the issue are devoted to the analysis of the prospects for the use of implants made of zirconium ceramic materials in traumatology and orthopedics (Volokitina et al., Yekaterinburg), the use of mesenchymal stem cells and exosomes in the treatment of bone defects (Greben et al., Moscow), risk factors in formation of a failed distraction regenerate as a complication of distraction osteosynthesis, and its prevention and treatment (Novikov et al.; Kurgan, Tyumen), problems of using internal osteosynthesis for ankle fractures with distal syndesmosis rupture (Gafurov et al., Uzbekistan).

The issue closes with the work of the authors from Stavropol and St. Petersburg (N.N. Grigorieva and G.A. Airapetov), devoted to the mechanisms of development of pathology of the musculoskeletal system after COVID-19 infection. Having analyzed a large amount of literature, the authors conclude that COVID-19 infection has a negative impact on the musculoskeletal, endocrine and immune systems resulting in the risk of degenerative diseases of the musculoskeletal system and infectious complications in the early postoperative period in patients that undergo interventions due to orthopedic pathology.

Dear readers, we hope that you will gain new knowledge that would be useful in your daily work. We invite you to cooperate and submit your papers. We will be glad if you can share the results of your research and the use of innovative diagnostic and treatment methods with colleagues.

A.V. Burtsev, MD
Chief Editor of Genij Ortopedii