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115-years Anniversary Sytenko Institute of Spine and Joint Pathology, National Ukrainian Academy of Medical Science

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The Institute was created in accordance with the decision of the 31st Congress of Mining Workers of the South of Russia and was founded in Kharkiv on 8 June 1907. At that time, it was called the Medical-Mechanical Institute and was the first orthopedic and traumatological institution in Ukraine. Its foundation was a vital necessity, since the rapid development of industry was accompanied by a sharp increase in injuries and mutilations among workers. Most often, there were injuries to the limbs and spine.

At that time, it was a medical and expert institution, treating workers of the coal, mining ore and mining industry of the Donetsk and Slobozhan regions with spinal injuries and complex fractures of the limbs. The famous orthopedist-traumatologist Professor K. F. Wegner (1907–1925) was appointed as its first director. He developed and introduced into medical practice the methods of functional treatment of long bone fractures. It was at the Medical-Mechanical Institute that permanent skeletal traction and submerged osteosynthesis, proposed by K. F. Wegner, were used for the first time in the country.

During the First World War, the institute treated severe open and gunshot fractures of the bones of the limbs. Treatment methods developed for this purpose are used in many infirmaries.

In 1920, the Institute came under the authority of the People's Commissariat of Health and changed its name to the First State Ukrainian Medical and Mechanical Institute; its main task was the treatment of war invalids with the consequences of gunshot injuries of the musculoskeletal system, children with congenital and acquired developmental disabilities musculoskeletal system, numerous patients with bone and joint tuberculosis.

In November 1925, the institution was reorganized into the Ukrainian Clinical Institute of Orthopedics and Traumatology. The outstanding scientist Professor M. I. Sytenko became its director and



Fig. 1. State Institution Professor M. I. Sytenko Institute of Spine and Joint Pathology of the National Academy of Medical Sciences of Ukraine today

turned it into a large research, medical and preventive institution. Mykhailo Ivanovych created a unique system of orthopedic and trauma care for patients. On his initiative in November 1929, for the first time in the country, in the city of Kharkiv, compulsory examination of newborn children by an orthopedic doctor was introduced in order to detect orthopedic diseases. M. I. Sytenko proposed a method of treating congenital dislocation of the hip in children, based on his proposal, the country's first children's orthopedic dispensary was created, which became a model for similar institutions throughout the former USSR.

The first country's specialized journal *Orthopedics, Traumatology and Prosthetics* has been published since 1927, on the initiative of Professor M. I. Sytenko, and we still have the opportunity to read it today.

One of the most important areas of work of the institute from the first days of its work was examination and rehabilitation treatment of the disabled.

M. I. Sytenko used this experience to develop a system of medical and social rehabilitation of the disabled. In 1934, a research station for retraining and employment of the disabled was opened at the institute, and in 1936 it was repurposed into an orthopedic labor dispensary.

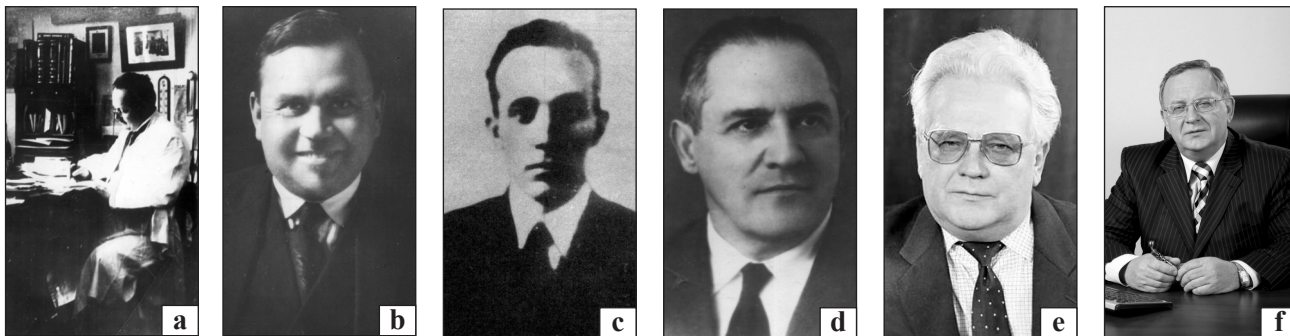


Fig. 2. Directors of Professor M. I. Sytenko Institute: a) Professor K. F. Wegner, b) Professor M. I. Sytenko, c) Ya. G. Dubrov, d) Professor M. P. Novachenko, e) Academician O. O. Korzh, f) Professor M. O. Korzh

On the initiative of Professor M. I. Sytenko in 1934, the first biomechanics department in the country was opened at the institute, which was headed by Professor L. P. Nikolaev. It began to conduct studies of static, kinematic and kinetic characteristics of patients with injuries and diseases of the musculoskeletal system, which made it possible to theoretically substantiate and develop new methods of reconstructive and restorative operations for musculoskeletal disorders.

After his death in January 1940, the institution headed by him was named after Professor M. I. Sytenko in honor of the scientist's huge contribution to the development of domestic orthopedics and traumatology.

In 1940–1941, the Institute was headed by Ya. G. Dubrov.

In 1941–1943, during the Second World War, an evacuation hospital No. 3348 was established on the basis of the Institute, which exclusively treated seriously wounded people with injuries of the musculoskeletal system. The institute resumed its activities in September 1943 under the name Professor M. I. Sytenko Ukrainian Research Institute of Orthopedics and Traumatology. Professor M. P. Novachenko was appointed as the director. Since then, under his leadership, experimental and morphological work in clinical orthopedics and traumatology, the study of bio- and patho-mechanical features of the musculoskeletal system, the development of new means of combating industrial, agricultural, transport, sports and other types of traumatism were rendered.

In 1965, by decision of the Council of Ministers of the former Ukrainian SSR, the Institute was reorganized into Professor M. I. Sytenko Kharkiv Institute of Prosthetics, Orthopedics and Traumatology, the main institution for problems of prosthetic repair. During those times, the solution to the problems of improving the organization and improving the quality of providing prosthetic and orthopedic

care to the population was started. Academician O. O. Korzh became the director, heading the Institute until 1996. Under his leadership, fundamental and clinical research began to be conducted, which made it possible to substantiate, develop and implement a number of reconstructive and restorative operations for scoliosis, hip joint impairments in adults and children. During this period, the problems of osteogenesis after bone fractures, the use of corundum ceramics in reconstructive and restorative operations, the contingent of disabled people who use prosthetic and orthopedic products were studied, the designs of prostheses and their manufacturing technologies were developed, and the methods and levels of limb amputations were substantiated. O. O. Korzh was the first in the country to propose and implement express prosthetic repair on the operating table after amputation of a limb, which has not lost its relevance even today.

In 1974, the Institute was repurposed into Professor M. I. Sytenko Kharkiv Institute of Orthopedics and Traumatology and the previously created department of prosthetics and prosthesis construction was transferred to the Ukrainian Central Research Institute of Expertise of Working Capacity and Labor Organization of Disabled Persons of the Ministry of Social Security. It was headed by Professor D. O. Yaremenko, an employee of Professor M. I. Sytenko Institute and a student of Academician O. O. Korzh. In 1976, the Ukrainian Research Institute of Prosthetics, Prosthesis Construction, Expertise and Rehabilitation of the Disabled was established. Professor D. O. Yaremenko organized the institution's clinical, scientific, research and development work at a high level.

Since September 1996, Professor M. I. Sytenko Institute has been headed by Professor M.O. Korzh. In 2000, the Institute became part of the National Academy of Medical Sciences of Ukraine and received the name Professor M. I. Sytenko Institute

of Spine and Joint Pathology of the National Academy of Medical Sciences of Ukraine, and in 2007 it became the State Institution Professor M. I. Sytenko Institute of Spine and Joint Pathology of the National Academy of Medical Sciences of Ukraine.

The main directions of the Institute's scientific activity are experimental and theoretical research in the field of orthopedics and traumatology, orthopedic problems of spine disorders, orthopedic arthrology and endoprosthetic repair, orthopedic oncology, spine and joint traumatology.

Currently, the Institute is the main center in Ukraine for the treatment of spine disorders. In 1976, the country's first department of vertebrology was created, and in 2001, the scientific department of instrumental and minimally invasive spine surgery was established. Today, the Institute is intensively developing new promising areas of operative and conservative treatment of patients with spine disorders, in particular, specialists are studying the peculiarities of the use of the so-called dynamic fixators in the surgical treatment of spine diseases, developing technologies for the treatment of scoliosis and spondylolisthesis, percutaneous denervation of arcuate joints for spondyloarthrosis. The technology of minimally invasive surgical treatment of patients with osteochondrosis, with compression fractures of vertebrae due to osteoporosis was developed and put into practice. Fundamental research is being conducted on the use of cell therapy, transplantation of autologous cells of a damaged intervertebral disc, the study of the causes and development of transient lumbar pain in the spine, the influence of paravertebral muscles on the results of spondylodesis.

New methods of surgical interventions for spinal tumors have been developed and implemented into clinical practice, the use of implants made of hydroxylapatite and corundum ceramics to replace defects of affected vertebrae and bones, a unique system of correction of skeletal deformation in children and adults has been substantiated.

The Institute has designed and put into clinical practice for the first time in Ukraine a corrective corset for the treatment of scoliosis, a special instrument and a surgical method for the treatment of scoliotic disease. In the last decade, owing to the technical improvement of implants, polysegmental structures have been developed and used to fix the spine in children, which «grow» together with the patient. In 2008, for the complex work «Development and implementation of the latest surgical technologies in the case of diseases and injuries of the spine», the State Prize of Ukraine in the field of science and

technology was awarded to Professor M. O. Korzh, Professor V. O. Radchenko, Professor G. Kh. Gruntovsky, Professor O. I. Prodan, Doctor of Medical Sciences A. O. Mezentsev.

In recent years, the Institute has created fundamentally new technologies for the treatment of injuries and diseases of large joints and tools for their implementation, modular systems of endoprostheses for replacing bone defects after tumor removal, a system of using devices for external transosseous fixation on a rod and needle-rod basis.

Reconstructive and restorative operations are carried out for the severe consequences of gunshot injuries to bones and joints, injuries and diseases of the pelvis, bone tumors, endoprosthesis using modern designs of endoprostheses of the hip, knee, shoulder and elbow joints, decompressive and stabilizing surgical interventions for severe forms of scoliosis in various parts of the spine and chest using new technologies.

Owing to the achievements of outstanding scientists and specialists of the institute who worked within its walls in different years (K. F. Wegner, M. I. Sytenko, V. D. Chaklin, M. P. Novachenko, L. P. Nikolayev, F. Ye. Elyashberg, O. P. Kotov, V. O. Marks, O. V. Nedrigailova, B. Y. Shkurov, K. F. Yelenevskyi, E. I. Lytsytskyi, O. O. Korzh, M. O. Korzha, M. I. Khvyshuk, M. V. Andruson, E. Ya. Pankov, N. V. Dedukh, M. I. Kulish, V. A. Filipenko, L. D. Horydova, S. D. Shevchenko, B. I. Simenach, G. Kh. Gruntovsky, V. O. Radchenko, O. I. Prodan, D. O. Yaremenko, O. E. Vyrva, S. O. Khmyzov, O. A. Tyazhelov, and many others), the Sytenko School of Orthopedics, Traumatology and Prosthetics has been founded, which is widely known both in Ukraine and abroad.

Today, the institute employs 480 staff members, including 23 Doctors of Medical Sciences, 7 Professors, 51 Candidates of Medical, Biological and Pharmaceutical Sciences and 2 Doctors of Philosophy (PhD), including 2 laureates of the State Prize of Ukraine (Professor M. O. Korzh, Professor V. O. Radchenko), 4 Honored Workers of Science and Technology of Ukraine (Professor M. O. Korzh, Professor V. O. Radchenko, Professor V. A. Filipenko, Professor S. O. Khmyzov), 2 Honored Doctors (Professor O. E. Vyrva, Professor V. I. Makolinet) and an Honored Health Worker (O. B. Teslenko). Today, the glorious traditions of Kharkiv orthopedic traumatologists are continued by Professors M. O. Korzh, V. O. Radchenko, V. A. Filipenko, O. E. Vyrva, V. O. Tankut, O. A. Tyazhelov, S. O. Khmyzov; Doctors of Medical Sciences O. P. Baburkina, S. E. Bondarenko, A. I. Zhigun, V. O. Kutsenko, M. V. Lizogub, E. M. Matelyo-

nok, A. I. Popov, K. O. Popsuyshapka, A. G. Skidanov, V. O. Staude, I. F. Fedotova; Candidates of Medical Sciences V. V. Baev, O. O. Barkov, Ya. O. Golovina, T. M. Grashchenkova, O. A. Dynnyk, G. V. Kikosh, I. V. Kotulsky, O. P. Marushchak, O. V. Palkin, O. O. Pidgayska, D. V. Prozorovsky, K. K. Romanenko, O. V. Tankut, O. G. Chernyshov, I. V. Shevchenko; Candidates of Biological Sciences N. O. Ashukina, G. M. Demyanenko, D. R. Dupliy, F. S. Leontyeva, V. E. Maltseva, O. A. Nikolchenko and others. For their significant contribution to the development of medical science, young scientists Ya. A. Doluda, O. O. Pidgayska, and O. V. Tankut were awarded the Prizes of the President of Ukraine in different years.

The staff of the institute were repeatedly awarded for their significant contribution to the development of medical science in the field of orthopedics and traumatology, the provision of highly qualified specialized assistance to patients and the training of scientific personnel: an honorary certificate of the Cabinet of Ministers of Ukraine in 2007 and 2017, a certificate of the Verkhovna Rada of Ukraine in 2013, the honorary award of Kharkiv Regional Council «Slobozhanska Slava» in 2007, the medal of the National Academy of Medical Sciences of Ukraine in 2007 and 2017.

An important area of activity of the institute is cooperation with international organizations of orthopedic traumatologists: AAOS, EFFORT, International Society of Orthopedic Surgery and Traumatology (SICOT), International Society of Minimally Invasive Spine Surgery (ISMISS) and others. Many employees of the institute are members of these organizations, which contributes to increasing the authority of the institution in the world scientific community.

Every year, since 2002, international symposia «Minimally invasive and instrumental surgery of degenerative diseases of the lumbar spine» have been held on the basis of the institute with the participation of leading specialists from Europe, the United States of America, Asia, and Africa.

In 2017–2019, employees of the institution participated in the framework project of the European Union «Erasmus+», which involved scientists from Israel, Spain, Croatia, and Poland.

In our strenuous times, the institute has created a combat trauma department, providing the necessary medical care to the injured.

The staff of the institute welcomes its anniversary full of creative plans for the future and continues to conduct scientific research on current problems of orthopedics and traumatology.

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