

УДК 617.3-051Ноб(477)(045)

DOI: <http://dx.doi.org/10.15674/0030-59872024189-92>

## The life and creative path of Mykola Petrovych Novachenko (to the 125<sup>th</sup> anniversary of his birth)

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In this jubilee year — 125 years since his birth — as a sign of deep respect and importance in the historical aspect, it is appropriate to remember the outstanding orthopedist-traumatologist, scientist and surgeon, talented organizer, excellent teacher Mykola Petrovych Novachenko, Doctor of Medical Sciences, Professor, Honored Scientist of Ukraine Corresponding member of the Academy of Medical Sciences of the USSR.

Mykola Petrovych was born on 17 December 1898 in the village of Buryn of Sumy region in the family of a middle-class peasant. His father worked at a local sugar factory. Mykola Petrovych received his primary education at a parish school and a school at a sugar factory. Then he studied for 8 years at Kharkiv gymnasium, after which in 1917 he entered the medical faculty of Kharkiv University.

In 1922, M. P. Novachenko, after graduating from the university, worked as a resident at the 1<sup>st</sup> Ukrainian State Medical and Mechanical Institute (now Professor M. I. Sytenko Institute of Spine and Joint Pathology of the National Academy of Medical Sciences of Ukraine) [1]. His formation as a surgeon and scientist took place in these walls. His teachers were outstanding scientists of that time: professor of anatomy V. P. Vorobyov, founder of domestic orthopedic traumatology, Professor K. F. Wegner, famous Kharkiv pediatric orthopedist M. G. Zelenin, radiologist Professor A. Yu. Shterman and others [2].

At the institute, Mykola Petrovych made his way from resident, senior assistant to chief physician, deputy director for scientific work, and in 1943 he became its head [1].

He took an active part in scientific research on the problems of conservative and surgical methods of treatment of fractures, paid special attention to the issues of bone tissue regeneration, conducted experimental research in this direction, the results of which were numerous scientific publications. In



Fig. 1. Photo by M. P. Novachenko

December 1935, by decision of the Central Qualification Commission of the People's Commissariat of Health, M. P. Novachenko was awarded the academic degree of candidate of medical sciences without a dissertation defense [1].

One of the important stages of M.P. Novachenko's scientific research was the problematic issues of transplantation — bone allografts, as well as their regeneration processes.

Continuing scientific developments, M. P. Novachenko proved that during the transplantation into the human body of a bone devoid of periosteum and even a superficial compact layer, the source of regeneration in a periosteal bed is the blood vessels of the person (recipient) and established that the success of bone grafting depends on the presence in the transplant of "fresh" constituent parts of the bone and, first of all, bone marrow. In addition to autoplasty, allo- and heteroplasty can be used, and significantly better results can be obtained during bone transplantation without periosteum [6].

In total, 33 scientific works of Mykola Petrovych were devoted to the problems of regeneration and transplantation of bone tissue. His research on the mentioned problems made a great contribution to medical science, enriched it with new knowledge

about the processes of bone fusion, and provided a theoretical basis for the development of new technologies of allo- and autoplasty. In 1940, M. P. Novachenko successfully defended his doctoral thesis on the topic “Vascularization of transplanted bone (experimental research)”, in 1941 he was awarded the academic title of professor [1].

Mykola Petrovych also paid great attention to the problems of treating fractures of the human musculoskeletal system. In 1940, he published the article “Apparatus for skeletal traction”, and in co-authorship with F. O. Elyashberg the monograph “Constant traction”, which summarized the institute’s many years of experience in the treatment of patients with long bone fractures by the method of skeletal traction. It was the first domestic training manual for orthopedists-traumatologists, surgeons and medical personnel, in which the indications for skeletal traction, instruments and devices for the use of this technique, as well as the issue of analgesia, the technique of imposing both skeletal traction on the upper and lower limbs, were covered in detail, as well as bandages after stretching and adhesive stretching. This manual became a reference book for many generations of orthopedic traumatologists, so in 1960 it was supplemented and republished by the authors [7].

From June 1941, with the beginning of the war, to December 1943, M. P. Novachenko worked as a chief surgeon in a number of military hospitals, where he performed not only extensive medical and pedagogical work, but also continued scientific research [1]. He developed new and original methods of reconstructive and restorative operations in the wounded with limb injuries and bone defects. Mykola Petrovych successfully performed restorative operations on the proximal part of the femur, reconstructive operations for unstable knee and supracalcaneal joints, as well as after gunshot injuries to the musculoskeletal system. Along with this, he organized rehabilitation treatment of the wounded after surgical operations in hospitals [8, 9].

In 1943, after the liberation of Kharkiv, M. P. Novachenko was appointed chief surgeon of Kharkiv Military District and director of the institute [1]. He did a great job of restoring the structure of the institute, which returned to Kharkiv from evacuation. Within a short time, Mykola Petrovych restored the institute’s scientific reference points in all regions of the Left Bank of Ukraine, gathered in the institute leading specialists from Professor M. I. Sytenko Institute who worked in hospitals of various regions, and together they continued scientific research [8].



**Fig. 2.** Photo of Professor M. P. Novachenko (first row in the center) with employees of the institute, 1944

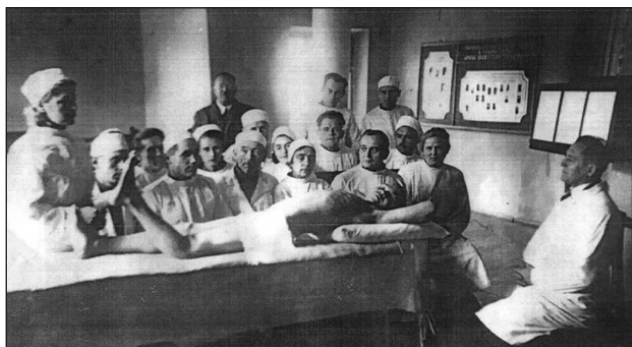
The range of scientific interests of Prof. M. P. Novachenko was very broad, he contributed to almost all sections of orthopedics and traumatology, wrote 135 scientific works, a textbook for students of medical institutes “Fundamentals of Orthopedics and Traumatology”, nine chapters in the multi-volume publication “Surgery”. He also initiated a multi-volume international publication on orthopedics and traumatology and wrote 12 chapters for it [2].

As director, M. P. Novachenko paid great attention to theoretical research, which is the basis for applied developments. The scientist’s analytical mind, deep knowledge, and talent allowed him to predict promising areas of scientific research at the institute: bone alloplasty and reparative regeneration, reconstructive and restorative operations in the case of bone and joint defects, operations in the case of tumors and tumor-like bone diseases [8, 9].

Mykola Petrovych actively researched the problems of traumatology of the musculoskeletal system, diagnosis and treatment of bone and joint tuberculosis, diseases of the musculoskeletal system in children, organization of specialized orthopedic and traumatological care. He developed the technologies of reconstructive and restorative operations on the hip joint in the case of a pathological dislocation secondary to tuberculous or infantile coxitis, tumors, bone-joint tuberculosis, osteomyelitis, and poliomyelitis [2, 8, 9].

In the post-war years, Mykola Petrovych studied the issue of surgical treatment of bone and joint tuberculosis, more than 5 thousand patients with this disease were treated at the institute.

Employees of the institute have developed a number of new methods and original operative interventions for the treatment of patients with tuberculosis of the hip and knee joints. Mykola Petrovych devoted to this problem a number of scientific articles and



**Fig. 3.** Photo of M. P. Novachenko among employees and students of the institute — holding a clinical conference on bone tuberculosis (1953)



**Fig. 6.** Photo of M. P. Novachenko with employees and students. From left to right — O. Ya. Goncharova, O. P. Skoblin, V. F. Trubnikov, O. O. Korzh (1960)



**Fig. 4.** M. P. Novachenko discusses the plan of operations. From left to right — chief physician Yu. Yu. Kolontai, senior operating nurse M. E. Polegaeva and head of the anesthesiology department A. Yu. Pashchuk (1965)



**Fig. 5.** Photo of M. P. Novachenko at the bedside of a patient (1957)

the monograph “Surgery of bone-joint tuberculosis”, written in co-authorship with O. O. Korzh (1967), describing the role and significance of the surgical method during the treatment of bone-joint tuberculosis, proposed methods of treatment of tuberculosis of the joints and spine, indications and features of operative treatment of adults and children [10].

Mykola Petrovych was a talented surgeon, he brilliantly performed the most complex surgical inter-

ventions. Colleagues and numerous students noted his high surgical skill, flawless technique, careful treatment of tissues, and creative ingenuity [2].

From Mykola Petrovych, they learned clinical thinking, surgical skill, scientific analysis of observations, organizational principles, sensitive attitude towards patients.

He trained and educated many young orthopedic trauma scientists, 20 doctoral theses and 63 candidate theses were defended under his leadership. His students were such well-known orthopedic traumatologists as academician O. O. Korzh, Professors M. S. Bondarenko, T. A. Revenko, V. F. Trubnikov, Yu. Yu. Kolontai, O. P. Skoblin and others.

From 1926, Mykola Petrovych taught part-time at the Ukrainian Institute for the Advancement of Doctors. Until 1934, he was an assistant, then an associate professor (1934–1940), professor, head of the department (1940–1966) [1].

Professor M. P. Novachenko was the initiator and organizer of the III, IV and V congresses of orthopedic traumatologists of Ukraine (1947, 1959, 1965), as well as the First All-Union Congress of orthopedic traumatologists in Moscow (1963) [2].

From 1955 to 1966, Mykola Petrovych was the chief editor of the journal “Orthopaedics, Traumatology and Prosthetics”, and also headed Kharkiv Society of Orthopedic Traumatologists (1940–1966).

In 1952 for outstanding scientific achievements and significant contribution to the development of health care, Professor M.P. Novachenko was awarded the title of Honored Scientist of Ukraine, in 1957 he was elected a corresponding member of the Academy of Medical Sciences of the USSR.

He enjoyed great authority among foreign colleagues as well. In 1959, he was elected an Honorary Member of the Bulgarian Society of Orthopedic Traumatologists, in 1961 of the Czechoslovak Medical



**Fig. 7.** Photo of the director of the institute, prof. O. O. Korzh and employees of the institute together with employees of the Buryn hospital (1974)

Society, and in 1965 of the International Society of Orthopedic Traumatologists (SICOT) [1].

The life of Mykola Petrovych ended on 16 October 1966 in the city of Kharkiv, but the memory of Professor M. P. Novachenko is preserved within the walls of the Institute, to which he devoted his entire life. His students and followers include Academician O. O. Korzh, Professor M. S. Bondarenko, Candidate of Medical Sciences F. E. Elyashberg — compelling articles were written in 1968 and 2007 about the main milestones of his life and scientific activity [2, 9]. The museum of the institute has a lot of expositions dedicated to the activities of Professor M. P. Novachenko, the library stores his scientific works, which are studied by young scientists. In the village of Buryn, Sumy region, in the homeland of M. P. Novachenko, a local hospital bears his name, with which the institute constantly maintains creative ties.

During his relatively short life (68 years), Mykola Petrovych made a significant scientific and practical contribution to the development of modern orthopedics and traumatology, his scientific works encouraged his students to continue developing the ideas

of their teacher in the field of orthopedics and traumatology. All this successively contributed to the formation of Kharkiv school of orthopedic traumatologists.

The life path and creative contribution of Mykola Petrovych is an example for young scientists at the current stage of the development of science and clinical practice.

**Conflict of interest.** The authors declare no conflict of interest.

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The article has been sent to the editors 15.12.2023

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