MINISTRY OF HEALTH OF UKRAINE

ODESA NATIONAL MEDICAL UNIVERSITY

Faculty *Medicine*
Department *Surgery, Radiological Diagnostics, Radiation Medicine, Therapy and Oncology*

APPROVED BY
Vice-Rector for Scientific and Pedagogical Work
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METHODOLOGICAL RECOMMENDATION FOR PRACTICAL CLASSES OF THE ACADEMIC DISCIPLINE

Faculty, course Medical 6th year

Academic discipline Surgery
(name of the discipline)

PRACTICAL CLASSES

Practical class № 1

Topic: "History of Surgery in Ukraine. Organization of surgical care in Ukraine. Ethics and deontology in surgery. New technologies in surgery. Modern methods of diagnosis and treatment"

Approved:
At the meeting of the Department of Surgery, Radiation Diagnostics, Radiation Medicine, Therapy and Oncology of Odesa National Medical University

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PRACTICAL CLASSES

Practical class № 1

Topic of the practical class:
1. “History of surgery in Ukraine. Organisation of surgical care in Ukraine.” - 2 hours.
2. ‘Ethics and deontology in surgery’ - 2 hours.
3. New technologies in surgery. Modern methods of diagnosis and treatment. 2 hours.

1 Relevance of the topic: The topic of the lesson is extremely relevant. It allows you to gain knowledge of the development of surgery in Ukraine, starting from ancient times, to trace the development of surgical science to the present day. It is important to substantiate the organisation of surgical care in Ukraine in connection with the national characteristics and social and living conditions prevailing in our country. The study of ethics and deontology in surgery is of great importance in the professional training of doctors. A patient who is indicated for surgery is psychologically very vulnerable. The doctor must be especially careful in the process of diagnosing, determining indications for surgery, and must take into account the patient's psychological state in order not to harm him or her with words. The relevance of the topic is determined by the need for a modern doctor, regardless of speciality, to be familiar with new surgical technologies, modern methods of diagnosis and treatment of surgical patients. When working with a patient, a doctor needs a clear understanding and assessment of his or her own capabilities in diagnosing and treating the patient. If these possibilities are limited, the doctor should know what more modern methods of diagnosis and treatment can be used for this patient and to which medical institution the patient should be referred for the final solution of diagnostic and treatment problems.

2. Objectives of the lesson.

2.1. Learning objectives.

1 topic - II level

2 topic - III level

3 topic - III level

‘2.2 Educational objectives are related to the education of Ukrainian doctors' patriotism, pride in Ukrainian surgical science, the formation of universal character traits of graduates in the process of communication with patients and colleagues.

3. Content of the **class**.

I. History of Surgery in Ukraine

The history of world surgery goes back many centuries. For example, in Assyria and Babylon, almost 2000 years before our era, some surgeries were performed with bronze knives. In ancient India, bleeding was stopped with a tight bandage and the wound edges were sutured together. The Indian method of skin plastic surgery has survived to this day. In addition, skull trepanation, laparotomy, and surgical interventions during childbirth were performed in India.

A brief outline of the development of surgery in Ukraine.

The term ‘surgery’ - cheirurgia - comes from two Greek words: cheir - hand and ergon - work, which means ‘handiwork’ in Ukrainian.

Old Ukrainian literary monuments show that surgery was held in high esteem by our ancestors.

In the times of Kyivan Ukraine-Rus' (9th - 13th centuries), the first professional doctors (so-called craftsmen) started to appear and provide medical care in large cities. Some of them had a special talent for treating wounds, fractures, and bleeding. Their knowledge was based on centuries of experience in folk empirical medicine.

Later, in the fourteenth century, when workshop medicine emerged, artisan doctors, who were already called ‘barbers’ at that time, were united into workshops. It was the workshops that became the basis for both the creation of the first hospitals and the school of medical personnel. Some barbers were very skilled in treating wounds, pulling teeth, performing amputations, stone removal operations, and especially in bloodletting, a very common treatment at the time. The largest workshops existed in Lviv, Kamianets-Podilskyi, and Kyiv.

In the fifteenth century, brotherhoods - organisations of the Ukrainian Orthodox bourgeoisie - emerged in Ukraine. They were engaged in educational activities and also organised fraternal hospitals, which, like schools, were maintained at the expense of parishioners. In the hospitals, they performed bloodletting, opened abscesses, pulled teeth, bandaged wounds, set dislocations, and made medical plasters.

At this time, a number of higher education institutions appeared in Ukraine: colleges were opened in Ostroh, Lviv, and Kyiv. The Kyiv Collegium, established in 1632 by Petro Mohyla, was granted the status of an academy under Hetman Mazepa.

The organisation of surgical care in the Zaporozhian army was peculiar. During campaigns, the Cossacks treated themselves: they covered their wounds with a small amount of earth, which they rubbed on their palms with saliva. To get rid of fever, they would mix half a charge of gunpowder in a glass of vodka, drink this mixture and go to bed. The Zaporozhian army maintained a number of hospitals at its own expense, the most famous of which were Trakhtemyriv and Mezhyhiria.

In the eighteenth century, a number of hospital schools were established in the Russian state. One of them was in Ukraine, in Yelysavethrad. The students of these institutions were mostly from Ukrainian fraternal schools, colleges, and the Kyiv Academy. The best graduates were sent abroad to obtain a doctorate. The first nine doctors to receive the title of Doctor of Medicine in Leiden were Ukrainians, graduates of the Kyiv Academy.

Hospital schools paid a lot of attention to surgery. That is why some talented representatives of the Ukrainian people, despite the cruel anti-Ukrainian policy that was being pursued at the time, were able to rise to the top of surgical science. Here are a few names worth mentioning in this regard.

Iliia Buialskyi (1789 - 1864) was the son of a village priest from Chernihiv region. He was an excellent anatomist and a virtuoso surgeon. He published ‘Anatomical and Surgical Tables’ with a text on topography and operations on blood vessels and stone removal. The atlas was translated into all European languages. I.V. Buialskyi was the first to successfully perform a resection of the upper jaw. He ligated the ring artery twice, developed an original method of drainage of pelvic inflammatory processes through the foramen obturatorii, which is still named after him in surgery.

He introduced many different instruments into surgical practice, of which the Buialskyi spoon and curette are still used in surgical kits to this day.

The first major work on military field surgery, entitled ‘Military Field Medicine’ in 5 parts (1836 - 1837), was written by Yakym Charukivskyi (1798 - 1848), who was originally from Poltava region.

Pavlo Petrovych Pelekhin (Pelekh) (1842 - 1917) was a pioneer of antisepsis in Russia. A few months after the publication of the works of the English scientist Lister on antisepsis, Pelekhin went to England and studied this method with the author himself, and after returning home he published his first work on antisepsis, ‘The Success of New Ideas in Surgery in the Treatment of Wounds, Compound Fractures and Purulent Accumulations’. Using the antiseptic method, the scientist reduced the mortality rate from surgical interventions from 50-94% to 7%. In 1898, P.P. Pelekhin donated his family's savings to the Taras Shevchenko Scientific Society in Lviv to establish the ‘Petro Pelekhin Department of Surgery’ at the first Ukrainian university.

The names of prominent physicians are also associated with our region. For example, the bodies of two prominent nineteenth-century surgeons, Mykola Ivanovych Pyrohov (1810 - 1871), are buried on Ukrainian soil in the village of Vyshnia near Vinnytsia, and Mykola Sklifosovskyi (1836 - 1904), in the village of Yakivtsi in Poltava

Poltava region. Mykola Pyrohov was a surgeon of the pre-antiseptic era. His activities were mainly related to providing surgical care to the wounded during numerous military expeditions of the tsarist army. Like P.P. Pelekhin, M.V. Sklifosovskyi developed antiseptic and aseptic methods and introduced operations on the biliary tract, thyroid gland, gastric resection, and bone grafting. Mykola Vasyliovych was fluent in Ukrainian and spent the last four years of his life in the village of Yakivtsi, where he provided medical care to local residents in an outpatient clinic built at his own expense.

In the second half of the nineteenth century, surgical clinics at medical faculties in Kharkiv and Kyiv became real centres of surgical science. Thus, at Kharkiv University, the Department of Surgery was first established at the Department of Medical Sciences, and in 1835 - at the School of Medicine. In 1814, a small surgical clinic was opened at this educational institution. Petro Zahorskyi and Illia Buialskyi were honorary members of the Council of Kharkiv University, and Pavlo Shumlianskyi became the first professor of surgery. Pavlo Shumlianskyi (1750-1824) was born in Poltava region, studied at the Kyiv-Mohyla Academy, St. Petersburg Hospital School at the General Land Hospital, and in 1779 received the title of doctor, after which he worked in the army and studied abroad.

In 1789, he defended his thesis for the degree of Doctor of Medicine at the University of Strasbourg on the topic ‘De proxsma topicae inflammations causa’, since 1970 he was a lecturer at medical and surgical schools in St. Petersburg and Kronstadt, and since 1795 he was a professor of pharmacology and surgery at the Moscow Medical and Surgical Academy. In 1805, he was elected Professor of Surgery and Dean of the School of Medicine at Kharkiv University in 1805.

P.Shumlianskyi's scientific works were devoted to various issues of operative surgery, in particular, to the reduction of dislocations, prevention and treatment of infectious diseases, study of mineral waters of Poltava province, etc.

From 1821 to 1833, the Department of Surgery at Kharkiv University was headed by M. I. Yellinskyi.

Mykola Yelinskyi (1789 - 1834) was born in Ukraine, graduated from the Medical Faculty of Kharkiv University in 1817, and then worked at the St. Petersburg Medical and Surgical Academy, where he improved his knowledge of surgery and anatomy. In 1821, he was elected professor of surgery at the School of Medicine of Kharkiv University (in 1830-1833, he also served as rector of the university).

M. Yellinskyi was a talented lecturer and an outstanding surgeon who was very popular. He significantly improved the teaching of surgery at Kharkiv University, organised an outpatient clinic, was the first to involve higher education students in practical exercises, trained many surgeons, significantly increased the volume of surgical interventions, and created a number of scientific works. For instance, M.Yellinskyi wrote the first manual on desmurgy in two volumes, which presented the latest achievements of desmurgy and traumatology of that time, in particular, detailed description of the use of plaster in the treatment of fractures.

In 1858, Wilhelm Grube (1827-1898) became the head of the Department of Surgery at Kharkiv University. He was an Estonian by birth and graduated from Jyväskä (Tartu) University in 1850. He worked at the Department of Surgery for almost 40 years.

In his 'Essays and Observations from the Elective Surgical Clinic', the scientist reported that he had used carbolic acid as early as 1865; it is also necessary to mention his merits in the use of anaesthesia during operations. Thus, in 1871, V.F. Grube performed the first operation under nitrous oxide anaesthesia in Kharkiv and published a number of works on the use of chloroform and morphine in the 1980s.

In 1870, V.Grube ligated the vessels in a chest wound with damage to the internal thoracic artery and sutured the wound connecting the pleural cavity to the external environment.

In the 60s of the nineteenth century, the scientist began to work on the development of methods of surgery for hydrocephalus and brain hernias, as well as on the treatment of the wounded.

Professor A.Pidriz was an outstanding Ukrainian surgeon of the nineteenth century who devoted his life to Kharkiv University.

Apollinariy Pidriz (Podrez) (1852-1900) was born in Kharkiv region. In 1875 he graduated from the Medical Faculty of Kharkiv University, in 1878 he defended his doctoral thesis, and then worked as a resident at a military hospital in Kharkiv. In 1884, Apollinariy Hryhorovych was elected as a private associate professor, in 1887 - as an extraordinary professor, and in 1890 - as an ordinary professor and head of the surgical propedeutic clinic of Kharkiv University. Since 1894, the scientist has been in charge of the hospital surgical clinic.

A.Pidriz was an outstanding surgeon, urologist, specialist in military field surgery, and the founder of a number of complex surgical interventions. For example, he was the first in the world to remove a foreign body from the heart in 1897, the first in Ukraine (and in Russia) to perform a successful splenectomy, wrote the first textbook on urology in Ukraine , and proposed original methods of colostomy, gastroenterostomy, treatment of urinary tract narrowing, mucosal suturing, intra-abdominal connection of the ureter to the bladder, etc. In addition, the scientist worked

on issues of neurosurgery, bone and joint tuberculosis, and military field surgery. In general, A.Pidriz is the author of more than 50 scientific publications.

Mykola Trinkler (1859-1925), a student of M. Grube, graduated from the School of Medicine of Kharkiv University in 1883, worked at the Department of Surgery, and in 1889 improved his knowledge at the E. Bergmann Clinic in Germany, where he defended his doctoral thesis the same year. Since 1905, he was a professor at the Department of Surgical Pathology and Therapy at Kharkiv University, and since 1913, he was a professor at the Faculty Surgical Clinic.

M. Trinkler is the author of 78 scientific papers on oncology, neurosurgery, abdominal surgery, and traumatology. He proposed his own method of draining the ventricles of the brain, was one of the first to use X-ray therapy to treat cancer patients, and wrote monographs on wound care and syphilitic lesions of internal organs.

The first professor of surgery at Kyiv University was V. Karavaiev, one of the best surgeons of the nineteenth century.

Volodymyr Karavaiev (1811-1892) graduated from the Medical Faculty of Kazan University in 1831, worked for two years in St. Petersburg, then was on a business trip to Germany, worked in Derptha (Tartu) under the guidance of M. Pyrohov in 1836-1838, and defended his dissertation on 'De phlebitides traumatica' in 1838. In 1841, he was invited to Kyiv University to become the Dean of the School of Medicine and Professor of Surgery.

V. Karavaiev's achievements in Ukrainian medicine are very significant. He was one of the organisers of the Medical Faculty of Kyiv University, a talented teacher, an outstanding clinician and scientist. Being a good expert in topographic anatomy, operative surgery, and a master of surgical technique, he achieved brilliant success in performing many complex operations, particularly in ophthalmology, and paid much attention to the work of higher education students and doctors with patients, in the operating room and in the outpatient clinic. Under his influence, many hundreds of doctors became surgeons and worked in Ukraine not only in cities but also in villages. His students included such prominent surgeons as M. Volkovych, K.Sapezhko, I.Sabanieiev, O. Bahaievskyi, Ya.Zilberberg, and others.

V.Karavaiev's scientific works were devoted to ophthalmology, rhinoplasty, ovariotomy, and amputation. He wrote a manual on operative surgery and 'Operative Surgery' (Kyiv, 1886), which for a long time were the reference books for doctors and students of higher education.

V. Karavaiev laid the foundations for the use of ether anaesthesia and antiseptics in surgery. In 1839, he was the first in the world to perform an extremely complicated operation for puncture of the pericardial sac, and developed a technique for performing such an operation for effusive pericarditis. He was one of the first scientists in Ukraine to perform ovarian removal operations, developed and applied his own method of cataract removal, cleft lip surgery, etc.

The Kyiv City Duma elected V.Karaiev an honorary citizen of the city, named the street where he lived after him, a bronze bust of the scientist stands in the auditorium of the faculty surgical clinic, and his grave is carefully maintained at the Baikove Cemetery.

M. Volkovych was an outstanding Ukrainian surgeon who began his scientific work in the nineteenth century.

Mykola Volkovych (1858-1928) was born in Chernihiv region. In 1882, he graduated from the medical faculty of Kyiv University, worked as a resident at the hospital surgical clinic of Professor Bornhaupt, and then as the head of the surgical department of the Oleksandrivska Hospital in Kyiv. In 1903, the scientist was elected a professor of the hospital surgical clinic, and in 1911 - head of the department of the faculty surgical clinic of Kyiv University (later the medical institute). From 1923 until his death, M. Volkovych headed the research department of medicine at the Kyiv branch of the Main Department of Science. In 1908, he founded the Kyiv Scientific Surgical Society, of which he was the chairman until the end of his life. In 1928, he was elected a full member of the All-Ukrainian Academy of Sciences.

M.Volkovych was one of the first in Ukraine to perform complex abdominal surgeries, worked extensively in the field of traumatology, in particular, he became famous for his device for treating bone fractures (Volkovych splint).

M. Volkovych was a talented surgeon, author of more than 80 scientific papers, several of which are classic works on surgery and are known not only in Ukraine but also abroad. His scientific research was devoted to various problems of surgery, including traumatology, abdominal surgery, rhinoscleroma, goiter, etc. One of his first major scientific works was a monograph, which he defended as a doctoral dissertation and published in 1888 in Kyiv. This work has not lost its scientific significance to this day.

In 1926. M. Volkovych published his famous monograph ‘Appendicitis, cholelithiasis, turbecular peritonitis’ (Kyiv, 1926), and in 1928 - ‘Damage of joints and bones’ (Kyiv, 1928), which became major works that declared M. Volkovych as an outstanding expert in traumatology and abdominal surgery and an original thinker.

M. Volkovych trained a number of Ukrainian surgeons and was highly respected among students, doctors, professors and the Ukrainian public.

After M.Volkovych, the Department was headed by O.Krymov in 1930.

Oleksii Krymov was born in 1872 in the family of a prominent artist, a member of the Academy of Arts. In 1898, after graduating from University, O. Krymov was awarded a gold medal for his scientific paper ‘Kidney Stones and Their Treatment’, which he wrote in the final years of medical school under the guidance of Professor Bobrov, with whom he remained a resident.

In 1913, O. Krymov was invited to work at the Clinic of Hospital and Faculty Surgery of Kyiv University. With his arrival, the entire way of life of the clinic changed, endoscopic methods of research were widely introduced, a pathological museum was created, and creative scientific work was widely developed. It was here that O. Krymov and his students conducted scientific research, adding new pages to the beautiful chronicle of national surgery.

Oleksii Petrovych published 135 scientific papers, including ten monographs. One of them (‘The Doctrine of Hernias’), written in 1911, was awarded the Bush Academy Prize and is considered one of the most important sources of world literature on this subject. The scientist devoted 30 scientific papers, which, by the way, have not lost their significance to this day, to topical issues of military field surgery.

The textbook ‘Private Surgery’, written by O.Krymov, became the main textbook on surgery for medical institutes of Ukraine at that time and in 1940 was awarded the S.Fedorov Prize.

O. Krymov responded to everything new and progressive. Thus, under his leadership, since 1933, the faculty surgical clinic has been using tissue therapy as one of the active biological methods of treatment. Oleksii Petrovych focused on the use of such therapy in the fight against pain syndromes and its impact on the functional activity of the stomach. Since 1943, at the suggestion of the scientist, only live tissue (fresh peritoneum or its aqueous extract) has been used for tissue therapy in the surgical clinic, which maximises the therapeutic effect.

Under the leadership of O. Krymov, 20 doctoral and about 20 PhD theses were completed and successfully defended.

The School of Medicine at Lviv University operated from 1784 to 1805. The second year of study at this university taught general surgery, and the fourth year - special surgery. In 1795, several clinics were opened at the university. Surgery was taught by August Kriegel, Fried, France, and Mazel. The medical faculty had no Ukrainian professors at that time.

In 1805, a two-year medical and surgical school was founded in Lviv instead of the medical faculty, and in 1833 it was reorganised into a three-year school. The second and third years of this school taught surgery.

In 1894, the School of Medicine was re-established at Lviv University. In 1897, L. Ridiger became a professor of surgery. Professor Ridiger was the first in the world to perform a gastric resection for duodenal ulcer. He is a well-known authority in emergency surgery, urology, orthopedics, proctology, and plastic surgery.

In the twentieth century, various areas of surgical science and practice were further developed and eventually separated into independent specialities. For example, Ukrainian doctors have been quite successful in the field of cardiac surgery, which was founded in Ukraine by M. Amosov.

In the 20s and 30s of the twentieth century, S. Briukhonenko and Kyiv pathophysiologist V. Yanovskyi created the world's first heart-lung machine (HLM). This invention largely determined the further development of cardiac surgery on a global scale.

Mykola Mykhailovych Amosov
(born 6.12.1913)

Academician of the National Academy of Sciences (1969) and the Academy of Medical Sciences (1993) of Ukraine, Doctor of Medicine (1953), Professor (1953), Honoured Worker of Ukraine (1955), Laureate of the State Prizes of Ukraine (1978, 1988), Honorary Director of the Institute of Cardiovascular Surgery of the Academy of Medical Sciences of Ukraine (since 1988).

He is the author of more than 400 scientific papers and 19 monographs. He has trained 35 doctors and 80 PhDs.

He is the author of the following scientific works: ‘Essays on Thoracic Surgery’ (1958); ‘’Physical Activity and the Heart' (1975, 1984, 1989); “Therapeutic Aspects of Cardiac Surgery” (1982, 1990);

Amosov is the founder of resection lung surgery and heart surgery in Ukraine, one of the country's leading surgeons and biocybernetics scientists. He was the first in Ukraine to perform lung resection in 1952, surgical treatment of heart defects in 1955, and heart surgery with cardiopulmonary bypass in 1958. In 1965, N.M. Amosov was the first in the world to create and introduce antithrombotic prosthetic heart valves. He created the first cardiac surgery clinic in Ukraine (1955), which was reorganised in

1983 into the Institute of Cardiovascular Surgery, which became one of the most important cardiac surgery centres in the world.

In 1955, M.Amosov founded the Department of Thoracic Surgery and Anaesthesiology at the Kyiv Institute for Advanced Training of Physicians. In 1959-1990, he headed the Department of Biocybernetics at the Institute of Biocybernetics of the National Academy of Sciences of Ukraine. He made a great contribution to the development of biological, medical and psychological cybernetics.

In 1958, M.M. Amosov and his colleagues created the original model of a heart-lung machine (HLM) in Kyiv, and since then, HLM operations have been widely used in Ukraine. Original models of HLM were created in Kharkiv (O. Shalimov) and Lviv (M. Danylenko).

Oleksandr Oleksiiovych Shalimov
(born 20.01.1918)

Academician of the National Academy of Sciences (1978) and the Academy of Medical Sciences (1998) of Ukraine, Doctor of Medicine (1958), Professor (1961), Honoured Scientist of Ukraine (1967), Laureate of the State Prize of Ukraine (1977), recipient of the Honorary Award of the President of Ukraine (1993), Honorary Director of the Institute of Clinical and Experimental Surgery of the Academy of Medical Sciences of Ukraine.

Highly qualified specialist in the field of surgical gastroenterology, hepatopancreatology, vascular and thoracic surgery.

He is the author of 802 scientific papers, including 25 manuals and monographs, 112 inventions confirmed by copyright certificates and patents. He has trained 48 doctors and 82 PhDs.

The main scientific works of O. Shalimov are: ‘Diseases of the Pancreas’ (1970); ’Surgery of the Stomach and Duodenum‘ (1972); 'Atlas of Operations on the Esophagus, Stomach and Duodenum' (1975); 'Surgery of the Esophagus' (1975); 'Surgery of the Stomach' (1977); 'Atlas of Operations on the Liver, Biliary Ducts, Pancreas and Intestines' (1979).

The establishment of surgical societies was of great importance for the development of surgery in Ukraine.

The first society of surgeons in Ukraine was founded in 1908 in Kyiv. It was initiated and organised by M.Volkovych, who was its chairman for 20 years. Minutes of the Society's meetings for 1911-1912 show that abdominal surgery, including gastrointestinal and hepatic pathology, as well as orthopaedics and neurosurgery, was the main topic of discussion.

The second society of surgeons in Ukraine was the Odesa Society, founded in 1920 by K. Serapin. At the society's meetings, reports were discussed and patients were demonstrated. Most of the reports were devoted to abdominal surgery, cancer, and bone tuberculosis.

Later, unified scientific medical societies were organised with sections in all regional centres.

In 1926, the First All-Ukrainian Congress of Surgeons was held in Odesa under the chairmanship of Ya. Zilberberg, where such pressing issues as errors in abdominal surgery, breast cancer, biliary tract surgery, treatment of bone tuberculosis, surgical treatment of pulmonary tuberculosis, treatment of bone fractures, and the state of surgical care in rural areas were discussed.

Kharkiv played a leading role in the development of surgery in these years, becoming a methodological and scientific centre for the organisation of trauma, orthopaedic, neurosurgical, oncological and other types of specialised surgical care. In 1930, the following research institutes were established in Kharkiv: the Institute of Emergency Surgery and Blood Transfusion, the Institute of Ear, Nose and Throat, and the All-Ukrainian Institute of Experimental Medicine.

In September 1927, the Second All-Ukrainian Congress of Surgeons was convened. The programme included surgical tuberculosis, tissue and organ transplantation, purulent surgical infection, surgical treatment of pancreatitis, postoperative thromboembolism, peptic ulcers, colon cancer, spontaneous gangrene, acute appendicitis, and agricultural trauma. The Third All-Ukrainian Congress of Surgeons was held in 1928 in Dnipro. It was attended by S. Spasokukotskyi, S. Fedorov, N. Napalkiv, S. Yudin. The programme included renal stone disease, colon surgery, wound infection, free autoplasty, and intra-articular fractures.

From 7 to 10 September 1930, the Fourth All-Ukrainian Congress of Surgeons was held in Kharkiv; the issues of treatment of bone fractures, blood transfusion, and postoperative suppuration were discussed.

The Fifth All-Ukrainian Congress of Surgeons was devoted to peptic ulcer disease, traumatism, and treatment of osteomyelitis. It provided convincing data in favour of gastric resection for peptic ulcer disease.

In February 1935, the All-Ukrainian Conference on Medical Education was held to discuss the need to expand the training of scientific and pedagogical staff through postgraduate studies and clinical residency. To this end, the conference recommended expanding the clinical bases of the institutes.

The planned surgical work of Ukrainian physicians was interrupted by the Great Patriotic War; a significant number of Ukrainian surgeons worked in frontline hospitals, while a smaller number were evacuated to the rear and worked partly in hospitals or rear hospitals. Many Ukrainian surgeons worked in partisan units.

Ukrainian surgeons made many new and original contributions to the organisation of surgical care for the wounded. For example, M. Milostanov proposed and put into practice a number of important measures for the prevention and comprehensive therapy of shock; B. Shmarevych and B. Babych introduced into the medical practice of hospitals a comprehensive therapy of traumatic injuries of the musculoskeletal system, skin and bone plastic surgery, treatment of contractures, and preparation for prosthetics.

During the war, Ukrainian surgeons successfully developed vascular and thoracic surgery. O. Melnikov, K. Dvuzhylna and I. Deyneka made a significant contribution to the development of methods for treating the consequences of abdominal injuries, in particular, the treatment of intestinal fistulas.

In the post-war years, hospitals for disabled veterans were established in Ukraine's regional centres. Specialised hospitals were also established in Kharkiv and Kyiv (neurosurgical and orthopaedic), and in Odesa, hospitals for thoracic and eye surgery.

In 1946-1947, ambulance stations were set up in almost all cities of Ukraine, and air ambulances were created. At the Seventh Congress of Surgeons of Ukraine, held in January 1948, it was decided to certify surgeons every two years. In 1949, outpatient

clinics and hospitals were merged, which allowed outpatient surgeons to improve their skills in surgical departments.

The Eighth Congress of Surgeons of Ukraine discussed the need for dispensaries and related planned health improvement.

At the Ninth Congress of Surgeons held in 1958, Chief Surgeon M.Kolomiichenko noted the high activity of district surgeons. A thoracic surgery clinic was established at the Kyiv Institute for Advanced Training of Physicians, headed by the outstanding surgeon M.Amosov. Later, he performed heart surgery and valve prosthetics; this clinic provided assistance to residents of various villages and cities of the former Soviet Union.

Academician O. Shalimov made a significant contribution to the organisation of surgical care for the population of Ukraine.

In 1959, he was appointed head of the Department of Thoracic Surgery at the Institute for Advanced Training of Physicians.

Since 1965, he has been the rector of the Kharkiv Research Institute of General and Emergency Surgery. With his participation, he developed a heart-lung machine and experimentally developed a method of pancreas transplantation. In 1971, he was appointed Director of the Kyiv Research Institute of Clinical and Experimental Surgery, where he organized the departments of liver and pancreas surgery, gastric and intestinal surgery, vascular and heart surgery, and the department of experimental surgery. Organ-preserving surgeries on the stomach and duodenum in case of peptic ulcer were introduced into the practice of Ukrainian surgical departments. Thanks to the initiative of O. Shalimov, centers for vascular surgery, gastrointestinal bleeding, acute pancreatitis, portal hypertension, and microvascular surgery were established in major cities of Ukraine; the methods of esophageal resection with colon surgery, programmed laparotomy, gastric resection, reconstructive and plastic surgery of the bile ducts, developed by the Institute's staff, were introduced.

The use of ultrasound equipment, fiber optic and laser equipment has been introduced into the practice of the surgical departments. Minimally invasive methods of intervention, such as laparoscopic, video thoracoscopic, and puncture surgeries, are being rapidly introduced, which allows for quick and high-quality surgical care.

Organization of surgical care in Ukraine

The scheme of organization and scope of surgical care depends on the type of medical institution.

1. A paramedic and obstetric station provides emergency pre-hospital first aid.
2. District hospital - provides emergency and urgent hospital and general surgical care for acute surgical diseases and trauma.
3. The surgical department of the district hospital provides surgical care to patients with acute surgical pathology and trauma, patients with the most common diseases (hernias, stomach ulcers, cholecystitis) in a planned manner.
4. In addition to the above types of care, regional and municipal hospitals also provide special types of surgical care (urological, orthopedic, and oncological). Polyclinics provide outpatient surgical care.
5.In addition to general surgical care and certain types of specialized surgical care, surgical clinics of medical institutes and institutes for advanced training of doctors conduct scientific development of a particular section of surgery.

6. Research institutes, in accordance with their profile, provide specialized surgical care and carry out scientific development of surgical problems (e.g., emergency care institute, institute of traumatology and orthopedics, institute of thoracic surgery, oncology institute, etc.).

II. Ethics and deontology in surgery

The following principles should be observed in the practice of the surgical department:
1. Harmonious organization of work based on a reasonable distribution of rights and responsibilities of the main employees of the surgical department.
2. Constantly take into account the importance of the patients' psyche for the outcome of treatment and protect the patients' psyche.
3. Reconciling scientific knowledge about various diseases with the specific characteristics of each patient (determining the most complete individual diagnosis and prescribing a clear treatment plan).
4. Clear implementation of the principle “surgery for the patient, not the patient for surgery”.
5. Identifying and discussing mistakes and thus gaining experience through one's own work, which corresponds to the surgeon's training, and not at the expense of the patients undergoing surgery - through the surgeon's courage, which exceeds his or her skills.

One of the most important areas of surgical deontology is the protection of patients' mental health in all surgical facilities, starting with the outpatient clinic. For example, in an outpatient clinic, it is not uncommon for a doctor to tell a patient after an examination that he or she has cancer and that surgery is no longer possible. This leads to psychogenic shock and suffering for the patient. A certificate with a true diagnosis should be issued only when necessary. A diagnosis such as cancer should be communicated to the patient in the form of an assumption and only if the patient refuses the necessary treatment.

In doubtful cases or where radical treatment is readily available, a certificate of tumor or ulcer should be issued and the patient referred to an oncology clinic or hospital surgical department.

The main deontological rule in major interventions is to refrain from decisive, ill-considered actions if there is no possibility of

to bring the operation to a reasonable conclusion. A surgeon's benefits to his patients may result not only from the operations he performs, but also from those he refrains from.

One should never tell an incurable surgical patient that it is impossible to perform surgery; one should always assure the patient that he or she does not need surgery at this time; such a patient should be prescribed conservative therapy for a long period of time, sometimes 3-4 months.

III. New technologies in surgery. Modern methods of diagnosis and treatment.

Modern surgery has not only a year or month, but also a day of its birth: October 16, 1846. On this day, at the Massachusetts General Hospital, dentist William P. Morton put to sleep a young man with sulfuric ether, who was being operated on by surgeon John C. Warren, who was undergoing surgery for a vascular tumor of the upper jaw.

Since then, surgery has gone through several stages in its development - from the invention of ether and the use of asepsis and antisepsis to modern minimally invasive high-tech methods of treating complex diseases. Modern surgery has reached

unprecedented heights, and rapid specialization has contributed to this in many ways. It is no coincidence that the best results of the most complex operations on the heart, blood vessels, lungs, and liver have been achieved in large, highly specialized centers. Many people believe, not without reason, that the time of universal surgeons, such as Pyrohov, Bilrot, Kocher, Spasokukotskyi and other great predecessors, who managed to successfully operate on all types of surgical pathology, from aortic and esophageal lesions to hemorrhoids and osteomyelitis, has passed.

Modern diagnostics in surgery

The reason for the breakthrough in the treatment of complex diseases is the active widespread introduction of modern technologies that are rapidly changing the face of surgery. This applies to both diagnosis and treatment of patients. The revolution in computer technology and the design of video systems that took place in the last 20 years of the last century made it possible to create highly informative diagnostic methods and fundamentally improve the technology of performing many operations. Standard X-ray, endoscopic, and ultrasound examinations have become routine procedures. In recent years, computed tomography has been replaced by multiplanar computed tomography. Spiral tomography has opened up the possibility of creating three-dimensional, so-called 3-D images. Computed angiography is becoming the most informative method for diagnosing pulmonary embolism. Positron emission tomography allows to recognize cancerous lesions of lymph nodes with a diameter of less than 1 cm. Optical coherence tomography, which has a spatial resolution 1-2 orders of magnitude higher than ultrasound, makes it possible to obtain a two-dimensional image of an optical section of living tissue in real time. Thus, it becomes possible to perform intraoperative optical tissue biopsy with a resolution close to histological, which helps to more accurately determine the boundaries of tumor growth and judge the presence of cancer metastases without removing lymph nodes.

The introduction of three-dimensional echocardiographic methods of cardiac examination into clinical practice has made it possible to achieve progress in the topical diagnosis of valvular heart disease. The cardiac surgeon has the opportunity to examine the valve of interest from different angles in real time on a contracting heart, i.e. to obtain information that is significantly greater in volume than even intraoperative information, since the surgeon works in a stopped heart and sees it from one access. The emergence of new diagnostic techniques goes hand in hand with the integration of existing ones.

Endoscopic ultrasound examination combines the capabilities of both techniques, allowing to determine with a high degree of confidence the intra-mural spread of the tumor process and the presence of metastatic altered lymph nodes. Endoscopic techniques are used in cardiac surgery, traumatology, and vascular surgery.

The general trend towards non-invasive examination methods, in particular, ultrasound, which can be used in outpatient settings, is extremely valuable. If earlier angiography was considered the “golden” standard in the diagnosis of vascular lesions, nowadays this place is firmly occupied by duplex angioscanning. At the same time, it should be noted that high accuracy of angioscanning is possible only in the hands of an experienced specialist working in this area.

Endoscopic diagnostic methods

Endoscopic examination methods are the basis of modern diagnostics in surgery. The use of endoscopic techniques underlies the diagnosis of a number of common

diseases of the digestive system. Related therapeutic manipulations make it possible to effectively solve problems that were previously available only with the use of surgical aids. Endoscopy is invaluable in improving the theoretical understanding of the pathogenesis of digestive diseases, developing and testing new methods and therapeutic agents.

The effectiveness of modern methods of endoscopic diagnosis and treatment is based on the use of advanced equipment that allows for clear visualization of the examined object and, if necessary, additional diagnostic and therapeutic manipulations. The use of video endoscopy and special devices makes it possible to evaluate the information and archive the material in the most complete way (including collegial). Almost all sections of the intestinal tube can be the subject of endoscopy in surgery, and when using combined and special techniques, the biliary tract, pancreas, liver and regional organs and tissues can be examined. Among the diseases of the esophagus, the most important place is occupied by its peptic lesions (in particular, Barrett's esophagus), which are considered primarily in the context of precancerous changes.

The most important task of esophageal endoscopy is the early diagnosis of malignant tumors. The results of direct visual assessment of the lesion and biopsy are used, as well as colorful techniques and transendoscopic ultrasound diagnostics, which allows to assess the depth of the lesion and the presence of regional metastases. The gastric diseases, the detection and monitoring of which are mainly or exclusively within the competence of endoscopy, include erosive and ulcerative lesions of a symptomatic nature or arising as part of peptic ulcer disease - chronic gastritis and related precancerous changes, as well as benign and malignant tumors. Modern equipment allows for antegrade examination of the small intestine along its entire length. Among the diseases that can be detected or excluded during esophagoscopy and ileoscopy are a complex of lesions united by malabsorption syndrome, search for hidden sources of bleeding, and detection of malignant tumors of the small intestine.

The most important section of diagnostic endoscopy is the examination of the biliary tract, pancreas and liver using a combined fluoroscopic technique. The accessibility of the colon by means of colonoscopy allows to effectively diagnose or exclude almost the entire range of diseases related to this organ. We are talking about inflammatory diseases of the colon - ulcerative colitis and Crohn's disease, differential diagnosis of these lesions and detection of precancerous changes and malignant tumors.

Modern endoscopic techniques involve the use of combined diagnostic tools. A new direction is represented by a combination of endoscopic and ultrasound techniques. The use of an ultrasound endoscope or special probes makes it possible to assess the nature and depth of the lesion of tumor genesis of the esophagus, stomach and colon, to clarify the presence of regional metastases, to assess the nature of the bile duct and pancreatic duct stricture, the presence of tumors and calculi in them.

Therapeutic manipulations performed with the help of endoscopic techniques contribute to a significant reduction in the frequency of “major” surgical interventions, while achieving a similar effect. These include methods of stopping bleeding caused by erosive and ulcerative lesions of the upper gastrointestinal tract, esophageal varices. In this case, various local hemostatic agents can be used - drug injections, thermal effects, including laser radiation and argon-plasma coagulation, clipping and ligation of the affected areas. Modern therapeutic techniques performed with the help of an

endoscope include the removal of benign and malignant tumors at the initial stages of development.

In these situations, the method of choice is endoscopic resection of the mucous membrane, which in some cases allows avoiding abdominal surgery. Dilatation and recanalization of the esophagus and colon using high-energy laser radiation or other means of exposure with the installation of stents in strictures of tumor and benign genesis is also the prerogative of this specialty. Manipulations on the biliary tract related to the restoration of patency, removal and crushing of calculi, prosthetics have been an “ordinary” manipulation for many years, which allows to achieve a radical therapeutic effect with a relatively small amount of intervention with a fairly high frequency.

A special place among endoscopic diagnostic methods is occupied by capsule endoscopy. This is a new diagnostic method designed to examine the small intestine. Endoscopy with a capsule - a device measuring 11x26 mm, which opens up truly new opportunities in medicine, was developed in 1981 by Given Imaging Ltd (Israel) for a complete examination of the small intestine.

Unfortunately, standard endoscopic examination techniques allow to examine only limited areas of the proximal and distal small intestine. And the examination of the distal small intestine by probe enteroscopy is a long, often painful examination that causes a lot of discomfort to the patient. The capsule is devoid of all these disadvantages and, in addition, allows you to examine the small intestine along its entire length.

The capsule consists of four LEDs, a lens, a color camera chip, two batteries, a radio frequency transmitter, and an antenna. The camera is based on a CMOS matrix (CMOS is a complementary metal oxide semiconductor). This type of matrix requires significantly less power than the CCD matrix (charge-coupled device) built into video endoscopes and digital cameras, so it can operate in very low light levels. The capsule captures images of the small intestine at a rate of two frames per second and transmits the data via radio frequencies to a recording device worn on the patient's belt. As soon as the recording is completed, the data from the recording device is processed on a computer workstation, the software of which allows for a complete analysis of the image on a computer screen. The capsule is disposable and is excreted from the body naturally. On average, 50,000 frames are recorded during an 8-hour examination.

The obvious advantages of this method are: higher information content, the possibility of early diagnosis of small intestine tumors. Until now, this diagnosis has been made extremely rarely due to the lack of adequate early diagnostic methods. Early diagnosis of small intestine cancer, in turn, allows laparoscopic surgery to be used as a treatment, which significantly improves the prognosis of the disease and accelerates the patient's rehabilitation. The ability to accurately localize the process or source of bleeding.

Safety: the capsule does not disrupt normal processes in the colon, does not injure the intestines. No radiation exposure.

Ease of use: the new test method provides the doctor with new opportunities to improve quality by increasing the accuracy of diagnosis and, accordingly, improving treatment results.

Of course, it is good to have a huge diagnostic base with all modern ultrasound, endoscopic, angiographic, radionuclide diagnostic methods, computer and magnetic

resonance imaging, and other peak achievements of modern diagnostic technologies, as well as specialists who are proficient in them. These research methods often provide invaluable information. At the same time, trust in technology, numbers and graphs is no substitute for clinical thinking. Only a clinician with a broad outlook, who knows the strengths and weaknesses of all existing diagnostic techniques, can properly evaluate and integrate the data obtained.

Combining the strengths of specialization and integration in medicine in general and surgery in particular is one of the primary tasks of our time, and its importance will only grow with the advent of new diagnostic technologies.

Modern methods of treatment in surgery

Endoscopic surgery

The last decade has been a period of rapid introduction of new technologies in the treatment of patients. First and foremost, it is minimally invasive surgery that has made it possible to combine what many generations of surgeons have dreamed of: radicalism, cosmetic effect, low trauma and rapid rehabilitation of patients. In many cases, it is access, not the scope of the intervention, that determines the overall tolerability of the operation, the rate of recovery, and the time to return to work.

Minimally invasive surgery is a rather broad concept. It combines endoscopic interventions performed through natural anatomical openings, endoscopic interventions performed through punctures of the chest or abdominal wall, and open operations through small surgical accesses. Endoscopic operations have raised the art of surgery to a new technological level. Endoscopic surgery, immediately after the recent entry into “big life,” spread rapidly, meeting little or no resistance. Surgeons have gained a new working principle that can be applied in all medical specialties. Although one may ask, what is new here? Endoscopy itself has been known since the beginning of the century, television, computers, and electronics have been around for decades, not to mention precision mechanics.

But it was only when the achievements of science and technology merged into one and the psychological readiness of the current generation of surgeons was added to this that a certain critical mass was reached and a breakthrough occurred. The first endoscopic surgery performed in 1987 in France is called the second great French revolution. Now it is difficult to name a field of surgery where successful attempts to adapt endoscopic technologies have not been made.

Surgery of the biliary tract

The “long life” of endoscopic abdominal surgery began with laparoscopic cholecystectomy. Now this operation has been developed to the smallest detail, with some open questions remaining only regarding the tactics and techniques of endoscopic treatment of acute cholecystitis and the combination of cholecystolithiasis with choledocholithiasis. To date, the world has accumulated experience of hundreds of thousands of laparoscopic cholecystectomies, the variants of the technique mainly concern the position of the patient on the operating table, the points of insertion of the trocar, the use of a laser or electrocoagulation for preparation, as well as an electric hook or scissors: all this depends on the individual preferences of the surgeon and ultimately gives equally good results.

Acute cholecystitis has been considered a relative contraindication to laparoscopic cholecystectomy, although many authors with considerable experience report quite large series of laparoscopic cholecystectomies for acute cholecystitis. Edematous, infiltrated tissues require special techniques (use of powerful fixation clamps, puncture and emptying of the gallbladder, use of intraoperative cholangiography to clarify the anatomical relationships in the operation area, use of plastic containers when extracting the gallbladder to reduce local infectious complications in the paraumbilical zone, the need to drain the subhepatic space in all cases).

Endoscopic tactics for suspected choledocholithiasis are now undergoing some revision. In the early 90's of the last centuries, the main place was occupied by fibroendoscopic rehabilitation of the common bile duct. In general, the tactic was as follows: at the first stage, duodenoscopic transpapillary intervention was performed, and then laparoscopic cholecystectomy was performed. If several small calculi were detected during intraoperative cholangiography, they were removed through the gallbladder ducts using a thin choledochoscope. In cases where the gallbladder duct was too narrow, it was stretched to the required diameter using a pneumatic balloon. If such techniques were unsuccessful, in particular with stones with a diameter of 8 mm or more, depending on the surgeon's skill, laparoscopic or open choledocholithotomy was performed, ending with choledochostomy with a T-tube or primary choledochal suture. Moreover, if the clinic had a qualified endoscopist, it was possible to complete laparoscopic cholecystectomy without attempting to remove calculi from the choledochus. This work was left to the endoscopist in the postoperative period.

Thus, the treatment of choledocholithiasis was a two- or three-stage process. Nowadays, based on medical and economic considerations, choledocholithiasis surgery is being tried to be a one-stage procedure. Preoperative endoscopic retrograde cholangiography and papillosphincterotomy are performed according to strict indications: in elderly and senile patients with concomitant pathology, as well as in patients with severe mechanical jaundice, severe liver dysfunction and pancreatitis against the background of a large duodenal nipple block, that is, in cases where the surgical and anesthetic risk of cholecystectomy and choledochotomy is high. In other patients with reliable prognostic criteria for choledocholithiasis, intraoperative cholangiography and the above-described laparoscopic interventions on the choledocha are performed. Using modern techniques (choledochoscopy, contact mechanical, laser or ultrasound lithotripsy), it is possible to achieve choledochal rehabilitation in 90-96% of cases. Concretions up to 3 mm in diameter can be effectively washed out of the common bile duct to the duodenum through the ducts of the gallbladder without choledochotomy or left for postoperative observation. Intraoperative retrograde and integral papillotomy and balloon papillodilatation are also in the surgeons' arsenal.

Almost all operations performed in open surgery are used for laparoscopic treatment of tumor obstruction of the biliary tract. The most common is cholecystoenteroanastomosis. Another option for palliative surgery in such situations is laparoscopic cholecystoduodeno-anastomosis. In this case, the duodenum is mobilized according to Koher, then the opened lumens of the intestine and gallbladder are connected with a continuous suture. A more radical variant of biliodigestive bypass in such a situation is the imposition of a choledochoduodenoanastomosis: the Koher

maneuver mobilizes the duodenum, the choledochus is opened transversely and sutured to the opening to the duodenum.

Gastric surgery

The most frequent interventions in gastric laparoscopic surgery are various modifications of anti-reflux surgery for esophageal reflux disease. Laparoscopic gastric resection in the early stages of cancer is becoming increasingly important. On the contrary, the number of operations performed for peptic ulcer disease (vagotomy and gastric resection) is significantly reduced.

Currently, more and more gastroenterologists are inclined to believe that the treatment of peptic reflux esophagitis should be surgical, since the anatomical defect leading to reflux in the form of a hiatal hernia or diaphragmatic hernia or straightening of the esophagogastric angle cannot be eliminated by medication. Laparoscopic reflux surgery may be more attractive to patients than lifelong drug therapy.

A number of anti-reflux interventions are performed laparoscopically. The operation, which was first performed in open surgery by Narbona (1979), involves separating the circular ligament of the liver from the anterior abdominal wall and passing it between the esophagus and the gastric arch in such a way that when it is tensioned and fixed to the anterior wall of the stomach, an acute esophagogastric angle is restored. The Angelchik operation is used in laparoscopic surgery, which consists in fixing a silastic ring around the abdominal esophagus. The Toupet operation is used, in which the gastric vault is sutured to the right leg of the diaphragm and to the esophagus. However, the most commonly used operation is the Nissen operation in the form of free fundoplication, in which the gastric vault is fixed around the esophagus in the form of a short and free-lying cuff. This modification can significantly reduce the number of typical complications of anti-reflux surgery, such as dysphagia and stomach bloating due to the inability to burp.

All types of vagotomy can be performed laparoscopically, but in practice, the most commonly performed are bilateral stem vagotomy with endoscopic dilatation of the gastric band, selective proximal vagotomy in its classical sense, and posterior stem vagotomy in combination with anterior gastric seromyotomy (Taylor operation). The long-term results of laparoscopic vagotomy are identical to those of open surgery and are accompanied by an 80% reduction in acid gastric secretion.

Laparoscopic suturing of perforated gastric and duodenal ulcers is possible within the first 12 hours after perforation. The usual technique of suturing with serous-muscular sutures in the transverse direction is used or suturing is supplemented with sealing with a strand of omentum, which is pulled into the lumen of the organ with an instrument passed through the working channel of the fibre-endoscope.

In case of oncological diseases accompanied by gastric evacuation disorders, gastroenteroanastomosis can be performed using both manual laparoscopic sutures and endostaples. The availability of high-quality endoscopic suturing devices, which allow for maximum standardisation, simplification and acceleration of various endoscopic manipulations, such as ligament dissection and anastomosis, made it possible to perform technically complex gastric resection without manual suturing.

Obesity treatment (gastric banding)

Obesity is not a physiological condition. Pathological (morbid) obesity causes the development of hypertension, diabetes mellitus, coronary heart disease, deforming osteoarthritis of the knee and hip joints). The problem of overweight can be solved radically only by surgery. One of the methods is gastric banding. The surgical technique of laparoscopic gastric banding for the treatment of morbid obesity is spreading very rapidly. With the emergence and development of minimally invasive surgery methods, an effective, non-harmful and reversible surgical procedure of laparoscopic gastric banding has become possible. Gastric banding uses a special system for adjustable gastric banding to reduce patients' weight by reducing food intake. This system is a 'cuff' made of soft and durable silicone, which, when fitted, divides the stomach into two parts: a small upper part and a large lower part. Due to the fact that satiety receptors are located in the upper part of the stomach, they receive a 'full' signal as soon as the small part of the stomach is filled. The system is installed laparoscopically, through 4 punctures, allowing to reduce the trauma of the intervention (the stomach cavity is not opened), reduce the risk of surgery and the possibility of developing postoperative complications, minimise patient discomfort, and is also adjustable without affecting the blood supply and inertia of the stomach. As a result, the patient's body weight is reduced to 50-70 kg, but not below the physiological level.

Intestinal surgery

The most commonly performed laparoscopic procedure is resection of the sigmoid colon. The operation can be performed in two modifications - a purely laparoscopic technique and a combined method, in which the mobilisation of the intestine with the tumour and dissection of the mesentery are performed laparoscopically, and the actual resection and anastomosis are performed through a small (4-5 cm) incision in the left hypochondrium. A similar technique is used for anterior resection of the rectum. As a rule, the combined technique is used for left- and right-sided hemicolectomy. Laparoscopic technology can also be used for resection of the small intestine.

Hernia surgery

Laparoscopic inguinal hernia surgery is currently performed by closing the hernia gate with a special mesh that is fixed to the tissues using so-called hernia staplers. Mesh plastic surgery is performed in three ways: the first one is fixed directly to the peritoneum covering the hernia gate, the second one is attached to the musculo-aponeurotic layer and covered with the previously dissected peritoneum, the third one is when the instruments are not inserted into the abdominal cavity at all, but the tissues of the anterior abdominal wall are stratified, reaching the hernia gate, and all manipulations are performed in the pre-peritoneal space.

Thoracoscopic surgery

The use of minimally invasive interventions is very favourable in thoracic surgery, where the traditional access is thoracotomy, which sometimes creates more problems for surgeons and patients than the surgical intervention itself at the pathological site. Thoracotomy causes one of the most severe pain reactions, is largely

responsible for postoperative respiratory complications, and results in persistent pain, long-term disability, and cosmetic disorders. Alongside traditional thoracoscopic procedures, major interventions such as lung resections using endostaplers, lung decortication for empyema, removal of mediastinal tumours, ligation of the thoracic lymphatic duct, and a number of cardiac surgical procedures such as ligation of the botal duct and pericardiotomy have recently been performed. Thoracoscopic surgery is also used to perform operations such as vagotomy, myotomy for oesophageal achalasia, treatment of oesophageal perforations and even removal of the oesophagus in case of cancer.

Urology

The most common urological laparoscopic procedure is pelvic lymphadenectomy as a part of the complex treatment of prostate cancer. There is currently no consensus on the advisability of performing other urological operations laparoscopically, although there is a tendency to do so. Laparoscopic nephrectomy is a rather labour-intensive operation that takes 4-5 hours. The bottlenecks of this intervention are the crossing of the renal pedicle and ablative extraction of the removed organ, although the use of endostaplers and plastic bags, where the kidney is crushed by a special device - a morcellator, partially solves these problems. Quite a lot of experience has been gained in laparoscopic varicocelectomy. The operation is recognised as equally effective compared to inguinal and retroperitoneal access, and both ligation of venous structures with preservation of the testicular artery and en bloc clipping are possible.

Paediatric surgery

In paediatric surgery, the same surgeries are used as in adults, but with minor differences. For example, the most common laparoscopic surgery in children is appendectomy, seromyotomies for pyloric stenosis, nephrectomies, Nissen operations for reflux esophagitis, and adhesion dissection are often performed.

Robotic surgery

The use of a robot during surgery is a technology that has emerged quite recently. In 1985, the first successful robotic brain surgery was performed. The use of robots has allowed us to establish two unique areas in medicine. The first area is telesurgery. During the operation, the surgeon himself controls the robot without directly contacting the patient. In other words, the surgeon operates with the robot's hands. The second area is minimally invasive surgery. The use of robots in various operations allows you to operate literally ‘without a trace’. The main advantages of robotic surgery are precision, the use of micro-tools, and a reduction in the human factor during surgery.

The main advantages of robot-assisted surgery are: minimal pain after surgery; reduced risk of wound infection; quick recovery and short postoperative period; minimal risk of complications typical of traditional surgery; improved cosmetic effect due to the absence of large postoperative scars.

The robot-assisted surgery is performed through very small holes, leaving only a few small marks that heal quickly. At the same time, the robot is under the full control of the surgeon and assistants. The risk during surgery is reduced to zero, and the patient has virtually no postoperative scars. Robotic surgery is now widely used around the

world, as this new technology makes it possible to perform many operations that were previously considered impossible.

Robot Da Vinci S

The latest achievement in medical technology, the Da Vinci robot, helps to perform operations in three areas of medicine: urology, gynaecology and digestive tract surgery. Robotic laparoscopy is a minimally invasive technology that allows the use of a telemanipulator with three-dimensional vision to create conditions for a classic operation, but at a distance from the patient. The operator controls 3 robot arms, 2 of which supply all the necessary surgical instruments, and the 3rd arm manipulates the 3D camera. The unique ability of the robot's arms to move in six different directions gives an additional perspective on the quality of the operation and patient safety The system is based on 3 main elements:

Vision In Site: provides the surgeon with an accurate three-dimensional spatial view of the operating room. Surgeon's control panel: the handles of the control panel transmit the movements of the surgeon's hands to the EndoWrist instruments, which in turn reproduce them in the operating unit. Operating table: EndoWrist instruments, 3 robotic ‘arms’ provide freedom and precision of movement far exceeding the capabilities of the human hand.

Improvements for the patient: increased safety, precision sectioning, small incisions, reduced risk of bleeding, infection, pain, shortest hospitalisation and recovery time Advantages for the surgeon: exceptional 3D vision (three-dimensional space); easy access to hard-to-reach areas; ergonomic position; precision movements due to the absence of oscillations, reduced movements, rotation of instruments in 6 directions.

Vascular surgery

The invention of thin, flexible catheters was a special step in the development of vascular surgery. They can be used to diagnose vascular diseases and immediately treat them. For example, the so-called transluminal angioplasty, which means that a thin catheter with a balloon at the end is brought to any narrowed part of the artery. The balloon is inflated and the lumen of the artery expands. The creation of special materials made it possible to create stents - frames made of special wires that prevent the lumen of such a dilated artery from narrowing again. Another of the newest methods of treating blood vessels, namely the veins of the lower extremities, is also endoscopic methods of ligation of the so-called ‘perforated’ veins, the insufficiency of which leads to the development of varicose veins. In addition, methods of vein sclerosis are currently widely used in the treatment of varicose veins. This technique involves the injection of a special substance into the vein lumen, which causes it to fuse.

Cardiac surgery

Cardiac surgery is the treatment of congenital or acquired heart disease through surgical intervention; heart surgery is now performed in many developed countries. Less than a hundred years ago, any touching of the heart, any attempt at surgery (even in case of a heart injury) was considered adventurous. Nevertheless, in the first quarter of the last century, surgeons began to suture heart wounds. The ability to approach the heart was made possible primarily by progress in anaesthesiology. The beginning of

cardiac surgery is associated with operations for congenital heart disease, due to organic changes in the anatomy of the heart as a result of either a genetic error in the development of the fetus, or a maternal illness during pregnancy or as a result of underdevelopment. Later, they began to operate on acquired heart defects (the consequences of past illnesses, such as rheumatic heart disease). Initially, they could only operate on a heart that was still functioning. The next stage in the development of cardiac surgery is associated with the creation of heart-lung machines. The emergence of biologically inert plastics that can be left in the body without fear of rejection made it possible to prosthetically replace defective parts of the heart. In the case of coronary artery disease (ischaemic heart disease), which is a lesion of the blood vessels supplying the heart muscle that are narrowed due to atherosclerotic plaque, coronary artery bypass grafting is performed to create an additional pathway to bypass the affected area. Usually, a piece of vein is cut out for this purpose, which is sutured to the aorta at one end and to the heart artery below the narrowing site at the other. A separate shunt is made for each affected artery, sometimes the number of shunts reaches five. This is a difficult operation that requires opening the chest, disconnecting the heart and connecting it to a heart-lung machine.

Today, minimally invasive surgeries are promising - surgeries with minimal damage to the external membranes, which can avoid stopping the heart and thus avoid many postoperative complications. These are operations using endoscopic techniques.

In addition to coronary artery bypass grafting, the so-called balloon angioplasty is used, in which a special tube with a balloon at the end is inserted into the artery, the balloon is inflated at the site of vessel narrowing to restore the patency of the artery. For reliability, a rigid frame made of a special alloy, a stent, is inserted to support the vessel walls. Laser vascularisation also gives good results - a laser makes many holes in the myocardium, while the integrity of the myocardium is not compromised, and blood flows through the holes into the heart muscle. And the highest achievement of cardiac surgery is heart transplantation. Moreover, there is already an artificial heart made of inert materials with a motor, which, although not for long, distills blood. So far, we know about three years of life of patients with an artificial heart. The artificial heart device is being improved all the time and observations are ongoing. It is believed that cardiac surgery is currently one of the most dynamically developing branches of surgery.

Endocrine surgery

Endocrine surgery (surgical endocrinology) has grown so much in depth and breadth over the past 2-3 decades that its interdisciplinary nature cannot be overemphasised.

Impressive successes are associated not only with the multifaceted rapid development of clinical and experimental endocrinology, in particular with various diagnostic, functional studies based on the use of methods for determining hormone levels, but also with the successes achieved in the study of the histological structure of endocrine glands using modern cytological, immunohistochemical and electron microscopic methods, preoperative visualisation of tumours due to the widespread introduction of ultrasound, computerised tomography and other methods into clinical practice. High-end ultrasound technologies allow for real-time three-dimensional volumetric imaging of organs, including endocrine glands, which, on the one hand,

allows for a more complete picture of their structure and, on the other hand, facilitates puncture biopsy.

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A special place is occupied by simultaneous operations that are performed from different accesses. They are performed using both video endoscopic techniques and open access. With different approaches, we are talking primarily about simultaneous operations on the adrenal, thyroid and mammary glands. The search for alternative and, at the same time, minimally invasive, low-traumatic approaches continue. In

abdominal and adrenal surgery, these include direct transabdominal and lateral extraperitoneal mini-approaches using a set of special instruments.

A special section of endocrine surgery is radiotherapy and chemotherapy. While radiotherapy has long been recognised for thyroid cancer, it is not widely used for parathyroid and adrenal cancer.

Laser surgery

Laser surgery is one of the most striking examples of the use of high technology in medical practice. Lasers have confidently entered the surgeon's arsenal due to the following advantages of the laser beam as a cutting tool sterilisation of purulent wounds, prevention of possible infection of postoperative wounds (including HIV and hepatitis); coagulation of small (and, when using clamps, medium-sized) vessels in the incision area, which allows for dissection of the blood supply to organs, reduction of blood loss, and work on a dry surgical field; reduction of operative and postoperative pain reduction of the postoperative period and treatment time, expansion of the area of surgical interventions performed on an outpatient basis; convenience of exposure during laparoscopic and endoscopic operations, especially when using fibre-optic radiation transport; possibility of precise dosing of exposure, which simplifies the surgical technique.

Laser radiation sources and fibre-optic technology have made it possible to create a number of new effective minimally invasive technologies, many of which can be classified as non-surgical. These include, in particular, thermotherapy (laser hyperthermia), canalisation and perforation of soft and bone tissues, photodynamic therapy, technologies using thermal coagulation and thermal ablation. All of them have found wide application in oncology, otolaryngology, dermatology, urology, neurosurgery, cardiac surgery, cosmetology and many other areas of medicine.

The word laser is an acronym for Light Amplification by Stimulated Emission of Radiation, which translates into Russian as light amplification by forced emission of radiation. Usually, this word is used as a simple noun ‘laser’, not as an abbreviation. A laser is a device that creates and amplifies a narrow, intense beam of coherent light. Lasers vary in size and in their technical characteristics.

Until recently, the introduction of laser surgical technologies into practical healthcare was hampered by the high cost of surgical lasers, their bulkiness, and the difficulties of operation, which requires a powerful three-phase electrical network, liquid cooling, and qualified technical personnel. However, the situation is currently changing radically and rapidly due to the development and rapid improvement of semiconductor (diode) lasers. With their much higher efficiency, these lasers are rapidly replacing traditional lasers in almost all medical applications. A new generation of medical devices has already been created on their basis, characterised by: small size and weight; low power consumption from a conventional single-phase network; no need for liquid cooling; high reliability and long service life; high parameter stability; ease of operation and maintenance that does not require significant technical staff; and low sensitivity to mechanical and climatic influences. It is important to note that these advantages of diode lasers over traditional lasers are already combined with their lower cost, which continues to decline as the technology develops.

Examples of laser application in surgery

Laser-induced interstitial thermotherapy of the thyroid gland. The method of laser-inducing interstitial thermotherapy (LIT) is based on the irreversibility of damage to pathological cells and tissues when exposed to high temperature and the absence of such damage from healthy surrounding tissue. This effect can be achieved by local heating of tissues with an increase in their temperature within 43-45°C. At this temperature, pathological cells die, while healthy cells do not. Such a thermal field can be created using lasers emitting in the near-infrared range (0.8-1.1 microns), with the laser energy delivered to the pathological focus through a flexible fibre optic guide.

In recent years, minimally invasive percutaneous interventions under the control of ultrasound examinations have been increasingly used in the treatment of various thyroid diseases. They allow to eliminate the pathological focus as a result of direct exposure to physical (laser) and chemical (ethanol sclerotherapy) factors, while preserving the bulk of the hormone-producing thyroid tissue. The Litt method has been used with a positive effect in the treatment of advanced forms of thyroid malignancies and colorectal cancer metastases in the liver.

Laser osteoperforation in the treatment of osteomyelitis.

The treatment of purulent bone disease (osteomyelitis) is a difficult task and is still of great interest to researchers. This is a cost-effective method that does not require major surgery. Using high-power laser radiation transported through a thin quartz light guide with a special heat-resistant coating, several holes are perforated in the bone tissue in the inflamed area. Without removing the light guide, the bone marrow canal is thermotherapy at a reduced power. No additional incisions, drainage of soft tissues and the marrow canal are performed.

Laser photodynamic therapy of malignant tumours.

Among modern laser technologies, a special place is occupied by methods of treating malignant tumours based on the selective accumulation of certain light-absorbing drugs (photosensitizers) in tumour tissue, which can cause photoreactions after irradiation with light of a certain wavelength. The destruction of photosensitised tumours by light is called photodynamic therapy (PDT). PDT compares favourably with traditional methods of treating malignant tumours (surgery, chemotherapy and radiotherapy) due to its high selectivity of the lesion, absence of severe local and systemic complications, and the possibility of repeating the treatment session several times. At the same time, one procedure can combine therapeutic effect and diagnostics (using fluorescent or light-absorbing properties of the sensitizer).

Conclusions

Undoubtedly, the state of surgery today is determined primarily by technical progress and the implementation of its achievements in the work of surgeons. What awaits surgeons in the near future? The so-called intellectual surgery, which is based on the use of robots, micro-robots and teleoperation systems, has already moved from the field of science fiction to the field of experimental performance. In the more distant future, the appearance of surgery and many surgical operations will change completely, and there will be a need to equip operating rooms for tissue engineering, genetic, biochemical interventions. The transplantation of stem cells and autologous skeletal

myoblasts into the area of the post-infarction scar is already experimentally used to improve the functional state of this area. As a rule, the most advanced, revolutionary diagnostic and treatment technologies are used in the provision of planned surgical care. However, this does not mean that the role of emergency surgery is decreasing. It was and remains the most difficult part of the surgeon's profession. Surgeons will have to face acute appendicitis, intestinal obstruction, pinched hernias, and injuries at any level of development of society, science, and technology. In an urgent situation, there is no time for complex diagnostic studies, and the most responsible tactical decisions have to be made in conditions of a lack of information. At the same time, the complexity of "ordinary" surgical interventions for destructive processes, peritonitis, bleeding can significantly exceed the technical problems of planned reconstructive operations. Therefore, the most important thing for the patient in modern surgery is the personality of the surgeon, his professionalism, intelligence, honesty, ability to make decisions in favor of the patient.

6. Lesson plan and organizational structure.

№	Main stages of lessons, their function and content	Learning objectives in levels	Control and training methods	Methodological support materials	Time (min.).
1	2	3	4	5	6
	I. Preparatory stage				
1.	Organization of the lesson				5 min.
2.	Setting educational goals and motivation of the topic				10 min.
3.	Control of the initial level of knowledge, skills, abilities. 1. History of the development of surgery in Ukraine 2. Organization of surgical care in Ukraine 3. Ethics and deontology in surgery	(a –II) (a- II) (a – III)	Level II methods 1 Individual survey. 2. Written theoretical survey. 3. Solving atypical situational problems	Question. Question. Question. Tasks	90 min.
	II. Main stages				
4.	Formation of professional skills and abilities				

1. 2.	Organize the work of the surgical department of the district polyclinic Organize the operation of the hospital's surgical department	(a -III)	Solutions to typical and atypical profession al tasks Solutions to typical and atypical professio nal tasks	Situational tasks Level III Situational tasks	90
3.	Carry out curation of the patient, provide pre-operation screenings, obtain the patient's consent to the operation	(a -III)	Method of formation of skills: a) professiona l training in the classroom; b)treatment of the patient	Situational tasks Level III	
III. Final stage					
5.	Control and correction of the level of professional skills	(a -III)	A method of monitoring skills in the classroom and at the patient's bedside		70
6.	Summarizing the results of the lesson				3
7.	Homework, educational literature on the topic			Oriented map (algorithm, independent work with literature.)	2

6. Materials on methodical support of the lesson.

6.1. Control materials for the preparatory stage of the lesson.

1. Tell about the stages of development of surgery in Ukraine.
2. Congresses of surgeons of Ukraine - time of holding, issues discussed.
3. Contribution of Ukrainian surgeons to the development of surgery in Ukraine. (M. Amosov, O. Shalimov).
4. Organization of polyclinic surgical care in Ukraine.
5. Organization of inpatient surgical care in Ukraine.
6. Ethical and deontological principles of work of surgeons in Ukraine.
7. Define invasive and non-invasive methods of diagnosis and treatment.
8. Principles of ultrasound scanning in studies of human internal organs.
9. Define the concept of minimally invasive surgery.
10. Name the fields of application of endoscopic research methods using flexible fiber optics.
11. Name the advantages of computed tomography over conventional x-ray methods.
12. What do you know about the use of lasers in surgery and medicine in general?
13. What are the advantages of laparoscopic operations over traditional ones
14. What is endovascular surgery?
15. What do you know about the use of robotic technology in surgery?
16. Name the methods of studying coronary vessels known to you.

Materials for methodical support of the main stage of the lessons.

Situational tasks:

1. Patient K., 65 years old, hospitalized with a diagnosis of a tumor of the sigmoid colon, complicated by complete intestinal obstruction. What should a patient be warned about before surgery?

2. Patient M., 60 years old, hospitalized in a surgical hospital with a diagnosis of stage IV stomach cancer. IV class-group. What treatment do you prescribe for her? How would you explain your tactics to a patient? What should the patient's close relatives be warned about?

3. The patient has a perforated duodenal ulcer, confirmed by X-ray examination. The patient refuses surgery. Your actions?

1. Which scientist is considered the founder of modern Ukrainian surgery?
a) Mykola Pyrohov
b) Mykhailo Subbotin
c) Oleksandr Bohomolets
d) Vasyl Karavaiev
2. What is the role of Mykola Pyrohov in the history of military surgery?
a) ***Introduction of anaesthesia***
b) Invention of sterile dressings
c) Development of surgical instruments
d) Establishment of the first battlefield surgery

3. In which century did the active development of surgery begin in the Ukrainian lands?
a) **19th century**
b) 18th century
c) 17th century
d) 20th century
4. Which Ukrainian surgeon is the inventor of the first heart-lung machine?
a) ***Mykola Amosov***
b) Yurii Voronoi
c) Mykola Pyrohov
d) Vasyl Karavaiev
5. Which robotic system is the most famous in the world for surgical interventions?
a) **Da Vinci**
b) ROSA
c) MAKO
d) Navio
6. The main advantages of robotic systems in surgery are:
a) **Increased precision and control of the surgeon's movements**
b) Reduced blood loss
c) Lower cost of operations
d) Reduced use of anaesthesia

7. How does genomic research influence the choice of surgical tactics, especially in oncological surgery?
a) Determine the predisposition to disease recurrence and help in choosing the extent of surgery
b) Provide only general information about the patient
c) Determine the response to antibiotics
d) Reduce the risk of infections during surgery

8. How does genomic research influence the choice of surgical tactics, especially in oncological surgery?
a) Determine the predisposition to disease recurrence and help in choosing the scope of surgery
b) Provide only general information about the patient
c) Determine the reaction to antibiotics
d) Reduce the risk of infections during surgery
9. Which method of minimally invasive treatment is most often used for choledocholithiasis?
a) **Laparoscopic choledochotomy with endoscopic stone removal**
b) Traditional open choledochotomy
c) Transduodenal sphincterotomy
d) Chemotherapeutic treatment without surgery

10. How does endoscopic retrograde cholangiopancreatography (ERCP) differ from laparoscopic choledochotomy and when is this method preferred?
a) **ERCP is a less invasive procedure, performed through an endoscope without large incisions, and allows for simultaneous diagnosis and treatment of obstruction.**
b) It should be used only in urgent cases
c) Does not require anaesthesia
d) It is used only after unsuccessful surgery

Literature:

1. https://www.saudedireta.com.br/catinc/tools/e_books/Oxford%20Handbook%20of%20Clinical%20Surgery,%204th%20Edition.pdf
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