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Master's Thesis

**HEALTHCARE IN SURGICAL PATIENTS OF VARIOUS AGE
GROUPS**

Master of Science in Nursing

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ABSTRACT

In recent years, in connection with the rapid development of modern surgery and the expansion of the possibilities for surgical treatment of various diseases, which previously did not have effective surgical treatments or where surgical options were limited, there has been a growing demand for surgical treatment [1, 11, 17, 36, 41] in patients of various age demographics [6, 24, 27, 38, 44]. For various reasons, there has been an increase in injury rates [22, 24] among different demographics, which also calls for development of effective surgical treatment methods for pediatric, adult and geriatric patients. Nurses [1, 18, 21, 25, 29, 43] and physicians [38] of surgical departments must clearly distinguish the specific aspects of providing medical and nursing care to patients depending on their age [31, 42], which is especially true in an emergency surgery setting [2, 7, 8, 30, 39], as well as the specific aspects of patient safety [43, 45, 46]. The teamwork of nurses and physicians is vitally important in surgery of all age groups [11, 27, 42], taking into consideration all social aspects [35] of these issues. High level surgical interventions require appropriate human resources and technical training of nurses [1, 25, 29, 43] and physicians [38].

The main aim of the study is to investigate the specific aspects of healthcare in surgical patients of various age groups and to conduct a comparative analysis of the number of lethal outcomes and postoperative complications in surgical patients of different age groups.

As a result of this research study, we have reviewed the special characteristics of nursing care in surgical patients of various age groups, defined the age groups in surgery and investigated the specific aspects of disease at different ages. We have defined the main stages in surgical treatment of patients of different age groups, investigated the types of postoperative complications and the specific aspects of their treatment in various age groups of surgical patients. We have also performed a comparative analysis of the number of lethal outcomes and postoperative complications in surgical patients of various age groups.

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INTRODUCTION

The relevance of the study. In recent years, in connection with the rapid development of modern surgery and the expansion of the possibilities for surgical treatment of various diseases, which previously did not have effective surgical treatments or where surgical options were limited, there has been a growing demand for surgical treatment [1, 11, 17, 36, 41] in patients of various age demographics [6, 24, 27, 38, 44]. For various reasons, there has been an increase in injury rates [22, 24] among different demographics, which also calls for development of effective surgical treatment methods for pediatric, adult and geriatric patients. People have become more involved in sports; there are many ongoing military conflicts, and the number of car accidents is unfortunately increasing every day. These factors may lead to dangerous consequences, i.e. injuries, deformities, and complete loss of limbs or their parts. In such cases, surgical options are often used [5, 12, 33, 37], including reconstructive procedures. The main objective of reconstructive procedures is to completely or partially restore the damaged body part. This can be done in a number of ways, depending on the nature of the injury. In patients of all age groups, reconstructive procedures are indicated in impaired anatomy and biomechanics of hands, feet and fingers; birth defects of hands and feet, in the presence of sequelae of unsuccessful reconstructive surgeries and in injuries [22, 24]. Since reconstructive procedures are often performed in the finest fragments of human body, reconstruction is closely linked with microsurgery.

Nurses [1, 18, 21, 25, 29, 43] and physicians [38] of surgical departments must clearly distinguish the specific aspects of providing medical and nursing care to patients depending on their age [31, 42], which is especially true in an emergency surgery setting [2, 7, 8, 30, 39], as well as the specific aspects of patient safety [43, 45, 46]. The teamwork of nurses and physicians is vitally important in surgery of all age groups [11, 27, 42], taking into consideration all social aspects [35] of these issues.

Pediatric surgery deals with the diagnosis and surgical treatment of congenital and chronic surgical disease in children [6, 9, 16, 28, 44], both in an inpatient and an outpatient setting [43]. The physician inspects the younger patients for the presence of injuries, tumors or inflammation, and checks whether the child is free from any congenital or acquired disease. The surgeon makes a diagnosis and chooses a treatment strategy suitable for the specific situation, and decides whether a surgical intervention needs to be performed [11, 24, 38, 44]. In children, surgical care in an outpatient setting [43] involves primary surgical debridement of the wounds [20], opening of boils, carbuncles and cellulitis; surgery for ingrown nails; removal of neoplasms of the skin and soft tissues (atheromas, lipomas, warts, nevi, papillomas), the treatment of burns, dislocations, fractures and removal of postoperative sutures.

Under current conditions and with recent medical developments, the majority of these procedures is performed using CO₂ laser and under local anesthesia. Surgical care for children is also provided in a day surgery unit, when the procedure requires a general anesthesia. If a child requires a more complex surgical procedure, he/she will need to be provided with an inpatient treatment, with adherence to all safety recommendations developed by the WHO expert panels [45, 46].

For middle adults [4, 8, 10, 40] and elderly patients [14, 15], common types of surgical treatment include general [1, 5, 11, 33] and endovascular surgery, since typical problems in patients of this age demographics include cardiovascular diseases [3, 21, 23]. Endovascular surgery is a modern high-tech approach to the treatment of vascular disease of any location within the framework of a promising concept of minimally invasive interventions, which allows restoring blood flow through the vessels without the classical skin incision. Broadly speaking, this is an alternative to classic open vascular surgery.

Currently, middle-aged and elderly patients [4, 10, 14, 15, 35, 40] often require X-ray guided endovascular procedures on the vessels of the neck and the

head, pelvic vessels, the vessels of upper and lower extremities and renal vessels. In particular, such procedures include balloon angioplasty and stenting of the vessels narrowed due to atherosclerotic lesions (stenting is performed either simultaneously or after balloon angioplasty if the latter is not sufficiently effective), etc.

High level surgical interventions require appropriate human resources and technical training of nurses [1, 25, 29, 43] and physicians [38]. Therefore, if the team of surgeons is specialized simultaneously to provide surgical treatment to patients of different age demographics [31, 42], this substantially expands the range of diagnostic and therapeutic maneuvers and allows for a customized development of therapeutic approaches. At the same time, specialized care to surgical patients depending on age provides very good results [7, 10] and has excellent prospects, ensuring a higher quality of surgical procedures and management of preoperative [32] and postoperative [19, 23, 34] period.

The aim of the study is to investigate the specific aspects of healthcare in surgical patients of various age groups and to conduct a comparative analysis of the number of lethal outcomes and postoperative complications in surgical patients of different age groups.

Study objectives.

1. To investigate the specific aspects of nursing care in surgical patients of various age groups.
2. To define the age groups in surgery and characteristics of disease in patients of different age.
3. To define the main stages in surgical treatment of patients of different age groups.
4. To study the types of postoperative complications and their management in different age groups of surgical patients.
5. To conduct a comparative analysis of the number of lethal outcomes and postoperative complications in surgical patients of various age groups.

The object of research. Patients of various age groups of surgical departments.

The subject of research. Organization of healthcare in surgery for patients of different age groups, and a comparative analysis of the number of lethal outcomes and postoperative complications in surgical patients of different age groups.

The methods of study: serum biochemistry, coagulation test, blood typing, microbiological/immunological/histological and cytological studies; complete blood count and urinalysis; systematic and thorough examination of the surgical patient using subjective and objective tests, i.e.: review of patient's complaints/history of disease/health history, examination of the patient's objective status (physical examination) using the methods of inspection, percussion, palpation and auscultation; laboratory and instrumental tests, which include endoscopy, X-ray, ultrasonography and tomography (computerized tomography and magnetic resonance imaging); special assessments; a panel of microbiological test, which include microscopy, bacteriological testing with culture and sensitivity testing of the isolated bacterial flora; statistical analysis, comparative analysis, summarizing data and inferencing.

The scientific and practical value of the study. As a result of this research study, we have reviewed the special characteristics of nursing care in surgical patients of various age groups, defined the age groups in surgery and investigated the specific aspects of disease at different ages. We have defined the main stages in surgical treatment of patients of different age groups, investigated the types of postoperative complications and the specific aspects of their treatment in various age groups of surgical patients. We have also performed a comparative analysis of the number of lethal outcomes and postoperative complications in surgical patients of various age groups.

CHAPTER 1
NURSING CARE IN SURGICAL PATIENTS OF VARIOUS AGE GROUPS
(LITERATURE REVIEW)

Nurses [1, 18, 21, 25, 29, 43] are playing an important role in care for surgical patients of various age groups [31, 42]. They constantly work in very close contact with the patients and the community and provide quality treatment, quality preoperative preparation [32] and postoperative treatment [19, 23, 34], as well as the care for patients of different age groups [42], i.e. from newborns [6] to older patients [14, 15].

A substantial proportion of patients suffering from chronic and acute surgical disease [5, 17, 35] are treated in a hospital setting regardless of age. However, the course of the disease is very different in a patient in their twenties and in a patient in their sixties; the characteristic features of disease are also very different. For example, heart attacks and other cardiovascular diseases are very rare in people under the age of thirty [3, 21, 23], but in people older than fifty these diseases become very frequent causes of hospitalization, with subsequent need for surgical procedures. Therefore, it is very important that physicians and nurses correlate the age of the patient with their symptoms for better understanding of the disease and proper diagnosis.

The physiological differences between children and adults, which cause differences in disease manifestations, include the entire variety of functional, endocrine and metabolic features of the growing and maturing organism. The principal characteristic in this regard is the limited capacity of the infant to maintain homeostasis (a stable internal environment) during the illness due to increased metabolic and nutritional requirements. In addition to that, a greater part of the first year of life is characterized by immaturity of renal function; the infant's kidneys are less capable of an adequate response to stress due to disease than in older children. For example, a child with severe diarrhea cannot retain water well, and may become rapidly dehydrated. In a comparable degree of

stress, metabolic disorders are likely to be more serious in infants than in older children [31, 42].

The particular characteristic features of postoperative care [19, 23, 34] are of no less relevance for the nursing aides/practical nurses, since there should be a customized approach to each patient with analysis of age, disease and other factors that influence healthcare quality. Nurses are continuously working in very close contact with the patients. In many situations, they are the personnel of first contact with the patients and deal not only with the disease-associated complications [5, 23], which primarily caused the patient's hospitalization, but also with all other problems occurring in the patients during their hospital stay. This calls for highly professional nursing skills and experience in the field.

Patient care should not be viewed as a universal therapeutic practice. The needs of the patients differ by age and other demographics, and the set of nursing skills in the workplace is variable in most medical institutions. Frequent changes of health care personnel within a patient care team [37] may jeopardize patient safety and send a wrong message to the healthcare team.

The generally accepted age ranges are as follows:

- Infant (from 0 to 1 year)
- Toddler (from 1 to 3 years)
- Preschooler (from 3 to 5 years)
- School age (from 6 to 12 years)
- Adolescent (from 13 to 18 years)
- Adult (from 19 to 65 years)
- Older adult (above 65 years)

Each of these patient groups has its own unique needs and considerations for optimal patient care and treatment. In many hospitals and other healthcare facilities, it is even required that the personnel pass a skills assessment program regarding a certain patient age group in order to demonstrate their ability to work with various groups of patients.

Care for surgical patients calls for a responsible attitude, because any wound is a gateway for infection [20]. In older people [31, 42], where the healing process proceeds more slowly, and immunity is reduced, infecting is especially dangerous and may lead to grave consequences [7, 10]. It is important that the care for the patient in the hospital setting and after discharge be provided by a composed person knowledgeable in physiology and preferably with a healthcare background. Ideally, this task should be entrusted to a professional.

The main focus during the treatment of such patients is on prevention of infectious disease and acceleration of regeneration. Surgical patients are classified into:

- clean (with non-infected ulcers, tumors, etc.);
- purulent (with abscesses and cellulitis).

The care for the second category is more complex, although in any case the responsibilities of the specialist include maintaining special hygienic norms and disinfection of the room. In order to prevent pyogenic bacteria from reproduction, not only wound care [20], but also regular moist mopping with aseptic agents should be performed; the room should be aired and flooded with UV light whenever possible. Underwear and bed linen should be changed and sterilized daily.

When caring for surgical patients, first of all, it is necessary to monitor the condition of the dressing. It should be clean and be firmly fixed, closing the postoperative suture. Bactericidal ointments are applied to the dressing. The dressing should be changed as it becomes soaked with discharge from the wound. During the dressing change, it is necessary to check the suture for the presence/absence of suppuration or bleeding. If wound content soiled the patient's clothes or bedding, they must be changed for clean ones.

In addition to that, the care responsibilities of a nurse include controlling the leak resistance of the drain and the amount of discharge. Any deviation from normal may indicate outwardly imperceptible complications. Throughout the

postoperative period [19, 23, 34], there is a high risk for [3, 32] sudden bleeding and suppuration. Early in the postoperative period, bleeding and suppuration may be caused by a ligature slipping off and by lysis of a blood clot; late in the postoperative period, these complications may be caused by erosion of vascular walls and by development of infection.

The signs of suppuration include the following:

- throbbing pain in the wound,
- abrupt onset of local hyperthermia,
- induration in the wound area,
- skin redness.

The nurse should report these events to the physician immediately [38] and continue acting in strict adherence to physician's orders.

The special aspects of care in surgical patients are determined by the following factors:

- dysfunctions of organs and systems in the body occurring as a result of the disease (abnormal focus);
- the need for and the consequences of using anesthesia;
- surgical trauma.

In this patient demographic, special attention should be paid primarily to accelerating regeneration and preventing infection.

In all their patient care-associated actions, nurses and nursing aides/practical nurses should strictly adhere to the applicable aseptic and antiseptic precautions.

Preoperative preparation [32] and postoperative patient care are playing an important role in surgical outcomes. The care also includes creating a favorable microclimate for the patient (i.e. a brightly lighted room, fresh air, a comfortable and clean bed and the necessary minimum of personal care items).

It is difficult to separate the actions of the physician [38] and the nurse [29, 43] into patient care interventions and therapeutic interventions, since many

patient care interventions are therapeutic, and therapeutic interventions serve as an essential component of patient care.

Neuropsychiatric status. Increased nervous irritability, the potential for or the presence of pain, postoperative paresis and paralysis, and the likelihood of psychosis require great attention to the neuropsychiatric status of the surgical patient already in the preoperative period [32]. Explanatory conversations with the patient are quite important; in some cases, it is advisable to demonstrate a recovering patient who has successfully undergone the same surgical intervention or a person who has had a similar operation a while ago and is feeling well.

Cardiovascular disorders and anemia due to blood loss and other causes are frequently reported in surgical patients [1, 5, 36, 37, 41], including those having thyroid surgeries [27] and abdominal procedures [40, 41]. These may lead to a decrease in blood pressure, including collapse.

Prolonged bed rest, low mobility and extensive surgery associated with blood vessel damage and formation of numerous blood clots create the conditions for the development of life-threatening thrombosis and embolism. Frequent observations include escalating anemia usually accompanied by hypoxemia, i.e. such signs as pallor, cyanosis, etc.

Respiratory function undergoes significant changes in the postoperative period [19, 23, 34], which are especially severe in thoracic and upper abdominal procedures [40, 41].

Intense pain in the surgical site is usually accompanied by restricted respiratory movements and reduced pulmonary ventilation with subsequent hypoxemia. Low mobility of patients, especially those in supine position, is leading to venous congestion in the lungs and impaired evacuation of sputum, which accumulates in bronchi and contributes to hypostatic postoperative pneumonia [3, 5, 23, 32]. This leads to an imminent danger of developing thromboembolism of the branches of pulmonary artery.

Patients at risk for pulmonary complications should better be placed on a tilting bed. The doctor and the nurse should teach the patient to make deep breaths, to cough, and make sure the patient is in a Fowler or high Fowler position.

It should be remembered that most cases of postoperative pneumonia are the result of inadequate patient care. The functions of digestive organs are disrupted to some degree in many postoperative patients, especially after abdominal procedures. Such dysfunctions are accompanied by loss of appetite, diarrhea, intestinal paresis, etc. Regular and thorough oral hygiene is necessary for recovery of salivary gland functions.

In patients with lack of stomach evacuation, gastric lavage and cleansing enemas are indicated; intestinal motility is usually restored by stimulation with respective pharmacological agents.

Postoperative impairment of salt and water metabolism [19, 23, 34] is a result of profuse and frequent vomiting, exudation and diarrhea, which, in combination, lead to a significant water and electrolyte loss, which requires replenishing. In their turn, electrolyte imbalances may trigger dysfunctions in multiple body systems, i.e. nervous system, cardiovascular system, respiratory system, excretory system, etc.

The intoxication syndrome is caused by the bacterial waste products entering systemic circulation and by necrotic tissue breakdown (due to inflammation, surgery and a number of other reasons). When this syndrome develops, the health status of the patient deteriorates rapidly. In order to relieve the intoxication syndrome, surgeons may order detoxification and transfusion therapy, extracorporeal detoxification methods as indicated (plasmapheresis, hemosorption, etc.), oxygen therapy, necrectomy (surgical removal of necrotic tissue), etc.

For surgical patients, it is important to monitor the status of dressing on the wound [20]; under no circumstances the dressing may slip and expose the postoperative suture. When the dressing is soaked with wound discharge, the

nurse should assist the surgeon to perform dressing change. An important consideration is monitoring the nature and the quantity of drainage fluid, and the leak resistance of drainage tubes. The care personnel should monitor the wound for bleeding and suppuration [5, 23]. The potential for sudden bleeding from the wound should always be under consideration. The bleeding may appear both early after surgery (slipping of the ligature, blood clot lysis) and in late postoperative period, e.g. due to infectious melting of a blood clot or erosion of the vascular wall. In suppuration, the patient usually complains of throbbing pain in the wound and fever; local manifestations in the wound area include swelling, skin redness, etc.

Hypodynamia leads to circulatory problems, thrombosis and embolism, reduces pulmonary ventilation, increases hypoxemia, disrupts all functions of the gastrointestinal tract, causes muscular atrophy, etc. Lack of mobility in surgical patients may be either under the necessity (multiple/severe fractures, other serious injuries, extensive surgical procedures, etc.) or associated with generalized weakness due to disease. In order to manage hypodynamia, the patients may use physical therapy/exercise therapy, massage therapy, mobility aids, etc. Morning physical training is available to virtually all surgical patients with the exception of very severely ill patients. Ambulating patients may perform physical exercises in an upright position, patients with moderate health impairment may perform physical exercises in a sitting position, and bedridden patients may exercise as they lie in bed. The exercise program should involve all groups of muscles and joints with sufficient loads.

One of the most important tasks of patient care is creating and maintaining therapeutic and protective regimen in the hospital unit under the supervision of the nurse [18, 21, 36, 37]. The terminology “therapeutic and protective regimen” is referring to a set of preventive and therapeutic measures aimed at providing the patients with an optimal physical and mental rest. This regimen is based on elimination or limitation of the impact of various risks [3, 32] and adverse environmental factors on the patient's body. Creating and

maintaining such a regimen is the responsibility of the entire healthcare team in the surgical department [37].

CHAPTER 2

THE OBJECT OF RESEARCH AND METHODS OF STUDY

The object of our research included patients of various age groups in surgical departments, and the subject of research was the organization of healthcare in surgery for patients of different age groups, and a comparative analysis of the number of lethal outcomes and postoperative complications in surgical patients of different age groups.

The most frequently performed assessments in surgical patients include serum biochemistry, coagulation test, blood typing and microbiological, immunological, histological and cytological tests. Regardless of the tentative diagnosis, all patients have complete blood count and urinalysis.

Timely and correct diagnosis of the disease depends on a systematic and thorough examination of the surgical patient. At the same time, the surgeon uses subjective and objective methods of assessment: at first, the surgeon reviews the patient's complaints by interviewing the patient, obtains history of present disease and health history; The next step is the assessment of the patient's objective status (physical examination) using the methods of inspection, percussion, palpation and auscultation, which is followed by laboratory and imaging tests.

The use of special methods of study is determined by what disease is suspected in a given patient. These methods of study support or disprove the initial diagnostic assumption. In addition to the required minimum of laboratory tests (complete blood count, urinalysis, VDRL test, and HIV/hepatitis test), the patient may need serum biochemistry, coagulation test, blood typing and Rh factor, blood and urine test for α -amylase.

Also, during assessment of a surgical patient (especially of a patient with purulent disease), it is important to conduct a series of microbiological tests, which include microscopy and bacteriological culture and sensitivity test.

The instrumental methods of study include endoscopy, X-ray imaging, ultrasonography, as well as tomography (computerized tomography and magnetic resonance imaging).

In our study, we divided all patients who have had surgical procedures into 3 groups depending on age. Concerning the first group, we performed a statistical analysis of surgical morbidity in pediatric surgery and determined the number of patients who have had surgical procedures in pediatric hospital within the period of 6 months. When working with medical records of the patients, we conducted documentation of surgical procedures performed; there were 173 procedures in this group (the group of observation, which included patients less than 18 years of age).

The second group of observation included patients in the age range of 18-65 years, a total of 258 subjects.

The third group of observation included patients in the age range over 65 years; there were 189 patients in this age range who have had surgical procedures.

Statistical analysis, comparative analysis, summarizing data and inferencing have also been conducted as part of the research study.

CHAPTER 3

THE AGE GROUPS IN SURGERY AND CHARACTERISTICS OF DISEASE IN PATIENTS OF DIFFERENT AGE

Age greatly affects the treatment strategies used in a surgical patient, as there are huge differences both in diseases commonly occurring in different periods of the patient's life, and in the anatomy of the body, which also changes with age, and in systemic response to a surgical procedure. Therefore, the strategy of surgical treatment should be selected by a surgeon specialized in patients of a particular age group.

Patients of different age and with different diseases are admitted to the hospital. Nurses need to be skilled communicators to communicate effectively with patients of every age group.

Overall, surgical practice conventionally divides the patients into 4 age groups:

- Neonatal (up to 1 years of age);
- Pediatric (1-18 years of age);
- Adults (18-65 years of age);
- Geriatric (from 65 years of age).

3.1 Specific aspects of neonatal and pediatric surgery

Pediatric nurses use patient- and family-oriented approach when providing care to patients who require surgical interventions in various conditions. Using evidence-based practical recommendations, pediatric surgical nurses are focused on protection, strengthening and optimization of children's health; their patients range from neonates to adolescents with a range of surgical problems. They work as clinicians, researchers, pedagogues, mentors, patient advocates and administrators. Pediatric surgical care focuses on disease and injury prevention, restoration of health and providing maximum comfort in

health and at the end of life through diagnosis, treatment and management of a child who requires a surgical intervention.

The need in pediatric surgery as a narrow specialty has emerged when it became clear that this is not just a tiny adult surgery, but something greater than that. Neonates and children have different physiological responses and fluid requirements. Moreover, the majority of surgical problems are associated with congenital anomalies. Pathophysiological changes and structural changes are of great importance for surgical treatment.

The age of the patient is still the only reference point for admission to a pediatric unit, although pediatric surgery currently includes the following:

- fetal surgery,
- neonatal surgery,
- children's surgery,
- surgery of adolescents and young adults.

This age bar creates two problems. There are many adult patients with certain non-fatal birth defects. Rectovestibular fistula is a well-known example. Another problem is the late complications of neonatal surgery, especially after bowel surgery. A second abdominal surgical condition in a setting of intense intestinal adhesions after a neonatal surgery is hardly an easy task for a general surgeon who has no idea about the previous operation.

A pediatric surgeon specializes in the treatment of birth defects and childhood diseases through surgical procedures and ongoing care. Surgical errors that may occur during these procedures may have a serious impact on a child's physical and mental development and seriously alter the quality of their further life.

Appendectomy is a procedure performed when the appendix becomes infected and painful due to inflammation, and needs to be removed. In a rupture of the appendix, emergency appendectomy may need to be performed.

Biliary atresia a congenital malformation where the bile produced by the liver cannot be properly emptied. During the surgical procedure performed in

this condition, the bile ducts are redirected so that the liver may be drained as required.

Various methods of cancer treatment: there is a number of pediatric cancers where a pediatric surgeon may be needed, including liver cancer, abdominal cancers, kidney cancer or pancreatic cancer. A surgeon may operate in order to remove a malignant tumor before radiation therapy and chemotherapy.

Congenital defects: there is a large number of birth defects, which may affect the child's potential to thrive. Malformations of the lungs, kidneys, and the heart are the most common defects that require surgical treatment. The surgeon may need to restore a damaged organ and then prescribe a medication in order to help with current treatment of the associated disease.

Gallbladder surgery: the gallbladder may become inflamed due to an infection, stone formation, or other disease. If no other methods of treatment are working, an operation may be needed to remove a gallbladder.

Gastroschisis: this defect causes the intestines and the stomach to prolapse from the body through an opening in the infant's abdomen. A pediatric surgeon may perform an applicable procedure immediately after birth in order to return the organs to their respective places and to close the opening.

Chest deformity: this condition occurs when the sternum and the ribs of the child are growing disproportionately. A surgical intervention may be needed if orthopedic devices or other medical treatments fail at solving this problem.

Reproductive defects: if a child has a congenital defect of genitals, a surgical intervention may be required to remove the tumors or cysts or to correct organ dysfunctions.

Splenectomy: a child may need to have their spleen removed if they suffer from certain hematological problems or when they have sustained a traumatic injury of the spleen.

Removal of a part of an affected intestine: some congenital defects lead to intestinal inflammation with subsequent tissue necrosis. The only way to

manage this condition after a serious intestinal damage is to perform a surgical intervention.

Hernia surgery: if a baby is born with an opening in their groin that does not close spontaneously, the surgeon may need to perform a procedure to prevent prolapse of the intestine through this opening.

The treatment of an acid reflux, which occurs when gastric acid flows back into the esophagus. This may be corrected by narrowing the opening between the esophagus and the stomach in order to hold the acid back.

Airway abnormalities: a situation when the trachea or the esophagus of a child are deformed; this may lead to problems with breathing and/or digestion. This may even threaten the child's life and may require surgical intervention for reconstruction of airways or the passage between the esophagus and the stomach.

Imperforate anus (anal atresia): a situation when a child is born without an opening in the anus or when the opening is located in the wrong place, a surgical procedure is needed to allow the passage of waste through the intestines.

A medical error in the childhood may affect how a child grows during his or her formative years, and may set them off both physically and mentally compared to their peers. Certain defects or complications can also affect a child's social development, making them more likely to be bullied and/or ridiculed.

There are different types of surgical procedures for neonates; some of them include surgery for birth defects. This may include the procedures on extremities or thorax. An emergency neonatal surgery may be required in a newborn with complications that may endanger the child's life. Cardiac surgery to correct anomalies or congenital malformations is another type of surgery on a newborn that may be performed shortly after birth.

Premature neonates often develop complications or health problems that may need to be corrected within the first few weeks of their life. Often, these

underweight children may have underdeveloped organs or other problems. This is why neonatal surgery is more common in premature neonates than in full-term neonates.

Neonatal surgery to correct intestinal disorders occurs both in term and preterm infants. Intestinal neonatal surgery may be performed to correct a block. This can be life-threatening for the infant if surgery is not performed as soon as possible. Bowel obstruction can cause sepsis and massive infections in the newborn, and the infant may deteriorate rapidly if surgery is not performed immediately.

Lung malformations may need to be corrected with neonatal surgical procedures. Any structural deformities of the lungs can cause complete collapse, leading to respiratory distress. This type of surgery is usually performed in an emergency.

Birth defects affecting the abdominal wall may require neonatal surgery. Such defects can interfere with digestion and, if left uncorrected, the infant is at high risk of malnutrition and rapid weight loss. Dehydration and other critical complications may develop if the operation is not performed as quickly as possible.

Although less common, the birth of Siamese twins may require emergency surgery within the first few days or weeks of life. Neonatal surgery may be necessary to save one or both lives. This type of surgery is often considered the most risky. The survival rate may not be high, but there can be no other alternative.

Inguinal hernias are a common type of surgery performed on newborns and are usually performed in a neonatal unit. While it is more commonly seen in male infants, girls can also develop the condition. When a hernia affects a child's circulation, immediate surgery may be required to avoid complications.

Other causes of neonatal surgical procedures include umbilical cord disorders and undescended testicles in male infants. Gastroesophageal

abnormalities may be another condition that requires surgery in newborns. Esophageal deformities that require immediate surgery can be a related problem.

The effectiveness of medical care for newborns is determined not only by the implementation and honing of high-tech treatments, but also by creating a special nursing regimen for such children.

In order to create optimal conditions for nursing of premature infants, protective mode technologies were implemented: the effects of light, sound and tactile stimulation of the patients were limited, which required changes in the department's operating mode and the behavior of the personnel, as well as acquiring the skills of working with modern incubators, ICU monitors, dosing equipment and related supplies.

Nursing a premature child in the “artificial nest” of an intensive incubator, shading the incubator/the eyes, limiting loud speaking, audible equipment signals and all non-essential examinations and procedures allowed modeling intrauterine fetal conditions and improving therapeutic outcomes.

It is necessary to take care of keeping the child warm from the first seconds after birth. The greatest amount of heat loss in the first minutes of life is due to evaporation from the skin of the child. Therefore, it is important that the neonate is wiped dry immediately after birth, wrapped into warm dry sheets and immediately placed under a heating device.

In domestic neonatology, three main methods are used to maintain adequate body temperature in premature infants:

- using incubators,
- using heated beds,
- using open resuscitation systems (i.e. special tables equipped with a source of radiant heat).

Skin to skin contact (the kangaroo method) ensures the following:

- rapid and complete warming of the child without using additional heat sources;

- close emotional contact and communication between the child and the mother.

For infants, nursing is very important, which is why properly trained health care personnel is a key factor in pre- and postoperative period of neonatal surgery.

In our study, we have performed statistical analysis of incidence of disease in pediatric surgery and determined the number of patients under 18 years old who were operated upon. When working with medical records of the patents, we conducted documentation and analysis of surgical procedures performed; there were 173 procedures in this age group (the group of observation, which included patients less than 18 years of age). We also analyzed the occurrence of complications and death rates in pediatric patients with surgical disease.

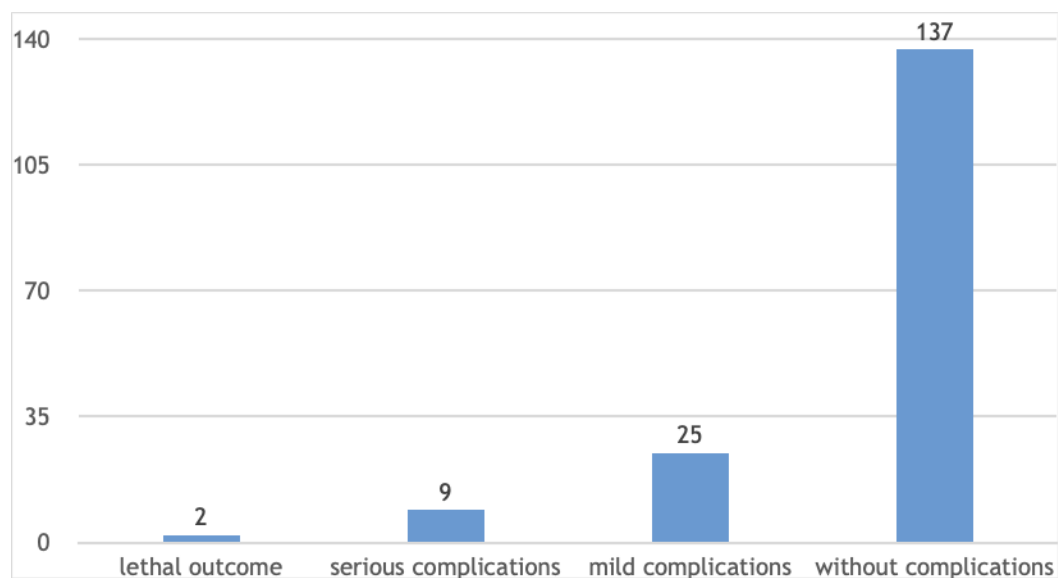


Diagram 3.1. The number of complications and lethal outcomes in pediatric patients in the postoperative period

3.2 Specific aspects of surgery in middle-aged patients

This age demographic has a very high incidence of surgical diseases, since after 35 years of age the body begins to age and metabolism begins to slow down. Regenerative capabilities are significantly exhausted; therefore, any surgical intervention will require a longer recovery period. The immune system begins to falter and the risk of cancer increases significantly.

Some of the most common surgical procedures performed in this age range include the following:

Appendectomy, i.e. a surgical removal of the appendix (a small tubular blunt section of intestine that branches off from the large intestine) for the treatment of acute appendicitis. Appendicitis is an acute inflammation of this tubular structure due to infection.

Biopsy of the mammary gland. A biopsy is a diagnostic test that involves removing tissue or cells for examination under a microscope. This procedure is also used to remove abnormal breast tissue. A biopsy may be performed using a cannula to remove tissue (needle biopsy), or the tumor may be partially or completely removed for examination and/or treatment.

Carotid endarterectomy is a surgical procedure to remove blockage of the carotid arteries, i.e. the arteries in the neck that supply blood to the brain. If untreated, a blocked carotid artery can lead to a stroke.

Cataract surgery. A cataract is a turbidness of the lens of the eye. The cataract surgery includes removal of the turbid lens, which is replaced by artificial lens, a transparent implant.

A Cesarean section is a surgical delivery by incision into the maternal abdomen and uterus. This procedure is performed when physicians determine that it is a safer alternative to vaginal delivery for the mother, the baby, or both.

A cholecystectomy is an operation to remove the gallbladder. The gallbladder may need to be removed if the organ is prone to forming gallstones, if it is infected, or if its wall harbors a cancerous tumor.

Coronary artery bypass grafting. This procedure, most commonly referred to simply as "bypass surgery", is often performed in people with angina pectoris (chest pain) and coronary artery disease (when plaques have formed in the arteries). During the procedure, a bypass is created by grafting a piece of vein above and below the blocked section of the coronary artery, which allows the blood bypass the block. Veins are usually harvested from the lower extremity, but thoracic arteries can also be used to create a coronary bypass.

Debridement of a wound, burn or infection. Such surgical procedure includes surgical removal of foreign material and/or necrotic, damaged, or infected tissues from a wound or burn. After damaged or necrotic tissue is removed, healthy tissue is exposed, which ensures a more effective healing.

Skin grafting. This type of surgery is necessary for the surgical treatment of burns or plastic surgery. A skin graft involves removing healthy skin from one part of the body to replace areas of lost or damaged skin in other part(s) of the body. Skin grafts are frequently used for replacement of a skin area missing as a result of burns, injuries or surgical removal of affected skin. They are most often done when the area is too large to be repaired with sutures or by natural healing.

Hemorrhoidectomy is the surgical removal of hemorrhoids, swollen veins in the lower rectum or anus.

Hysterectomy is a surgical removal of a woman's uterus. This can be done laparoscopically through an abdominal incision or vaginally. The ovaries may be removed at the same time.

Hysteroscopy is a surgical procedure used to diagnose and treat many diseases of the uterus. A hysteroscope (a visual instrument inserted through the vagina to visually inspect the cervical canal and the inside of the uterus) can transmit an image of the canal and uterine cavity to a television screen.

Inguinal hernia repair. Inguinal hernias occur when the small intestine protrudes through a weak spot in the lower abdominal muscles. An inguinal

hernia occurs in the groin. Surgical repair returns the bowel to its original anatomy.

Surgical treatment of low back pain. Low back pain can be caused by various etiologies, including spinal development abnormalities, load on the back, injury or an abnormal process where the bones of the spine are affected. Usually, surgery is not considered until other options have been exhausted, including rest, medications and light physical exercise. The type of back surgery depends on the diagnosis.

A mastectomy is the removal of all or part of the mammary gland. A mastectomy is usually done to treat breast cancer. There are several types of mastectomy, including the following:

- A partial (segmental) mastectomy involves removing the breast cancer tumor and most of the normal breast tissue around the breast cancer tumor.
- A total (or simple) mastectomy, in which the surgeon removes the entire breast, including the nipple, the areola (the colored round area around the nipple), and most of the skin, and may also remove some of the lymph nodes under the arm, also referred to as axillary lymph nodes.

A modified radical mastectomy in which the surgeon removes the entire breast (including the nipple, the areola, and the surrounding skin), some of the lymph nodes in the armpit, and pectoral muscles. In some cases, a part of chest wall muscles is removed.

A partial colectomy is the removal of part of the large intestine (colon) and may be performed to treat colon cancer or inflammatory conditions such as ulcerative colitis or diverticulitis.

Prostatectomy. Surgical removal of all or part of the prostate gland, the male gland surrounding the neck of the bladder, and the urethra. Prostatectomy may be performed for an enlarged prostate in benign prostatic hyperplasia, or for prostate cancer.

Tonsillectomy. Surgical removal of one or both tonsils. The tonsils are located at the back of the mouth and help fight infections.

Postoperative care is provided by nurses. They often have experience in a specialized field of surgery that requires special attention to the intervention being performed. Postoperative patients should be observed and carefully assessed for any deterioration in their condition, and an appropriate postoperative care plan should be implemented.

Vital signs should be assessed according to the recommended clinical standards and compared with the baseline data obtained preoperatively, during surgery and during the postoperative period.

Nurses should also be aware of the parameters of these observations and what is normal for the patient under observation. When assessing the recovery of patients after anesthesia and surgery, these observations should not be considered in an isolated fashion; rather, the nurse should inspect and examine the patient objectively. Patients may only be discharged promptly when they experience little to no postoperative complications, many of which are avoidable and identifiable with proper and careful monitoring of clinical signs and symptoms.

In this part of our research study, we have performed a statistical analysis of incidence of disease in patients within the age range of 18-65 years and determined the number of patients who were operated upon in the surgical department within the period of 6 months. When working with medical records of the patients, we conducted documentation of surgical procedures performed; there were 258 procedures. We also conducted an analysis of the incidence of lethal outcomes due to operations performed and complications in surgical patients of this age group.

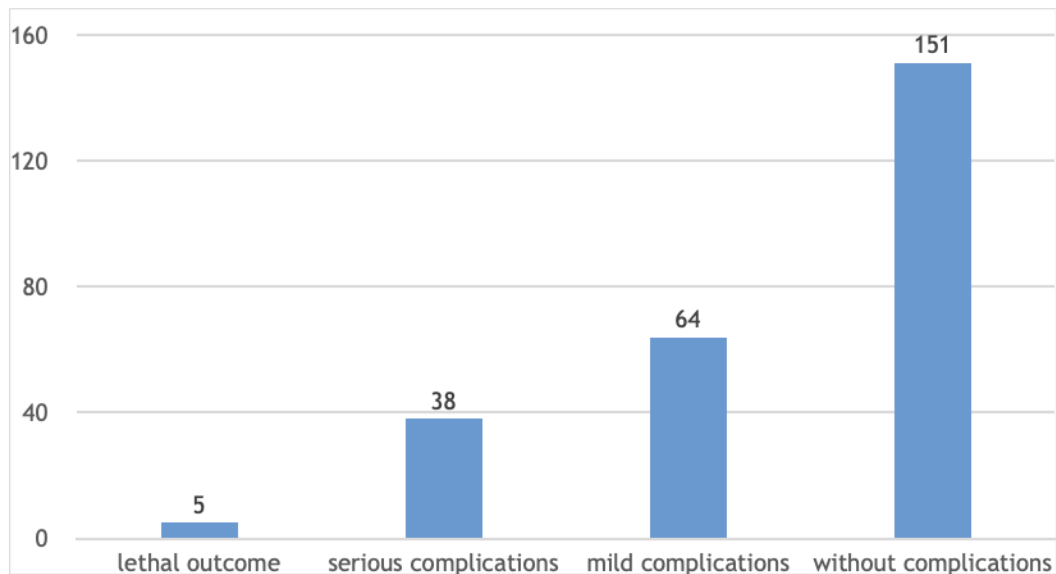


Diagram 3.2 The number of complications and lethal outcomes in adult patients in the postoperative period

3.3 Surgery in geriatric (elderly) patients

Preservation of the duration and quality of life remains a current goal of surgery in elderly people. Surgery can be an effective way to improve both duration and quality of life in older people. Minimally invasive techniques and operations under local anesthesia are less demanding on geriatric physiology; given that comorbidities are a more important predictor of surgical outcome than age, this is an important consideration.

The elderly have been largely excluded from high-quality studies, and most of the evidence comes from case series of individual patients that demonstrate that this is possible. Major elective heart/vascular, oncological, and orthopedic procedures can be performed in patients over 75 years of age with favorable outcomes and with an incidence of adverse events approximately the same as that in younger patients.

Coronary artery bypass grafting (CABG) is performed with an increasing frequency in patients older than 75 years. The success of percutaneous intervention means that those who are subject to open heart

surgery have more pronounced heart disease than in the past. Despite this, the CABG-associated mortality is declining. In elective surgical procedures, the mortality rate is less than 5%; more than 90% of the patients are discharged directly to their homes, and approximately 95% of the patients are angina-free within 2 years. The average performance status improves from "hospitalized with active support" to "self-care in the home". The early benefits of CABG persist even beyond the age of 90, although long-term mortality is understandably higher. Some studies have shown natural life expectancy to exceed the 5-year survival rate after CABG; thus, mortality rates are almost the same as for the rest of the older population.

Cerebrovascular disease is insufficiently studied and insufficiently treated in people above 80 years of age. A systematic review has shown that the risk of death due to carotid endarterectomy increases with age, probably due to a higher risk of stroke where no surgical intervention is used. Indeed, the contribution of age into surgical mortality is lower than that of gender; the risks for people older than 75 years are lower than for females overall.

Colorectal cancer is the most common malignant neoplasm in people older than 65 years, and surgery is performed with an intent to cure the disease and to prevent late complications. If the surgery is undertaken with a curative intent, cancer-specific survival will be identical to that in younger patients. As with many types of abdominal surgery, there is a small increase in perioperative mortality and morbidity in the elderly compared to younger patients, but as soon as the high-risk period is over, long-term results are becoming identical to those in younger patients. Laparoscopic resection of colon promises accelerated convalescence in patients older than 75 years.

Minimally invasive thoracotomy for benign disease has a mortality 2–5% in elderly people, and early resection of lung cancer has similar prognosis in the elderly and young people.

Thyroidectomy and parathyroidectomy are not associated with higher mortality or morbidity in older people compared to younger people, despite the

fact that endocrine disorders in older patients are generally more severe. The cure rate in hyperparathyroidism is as high as 99.5%, with a mortality rate of 0-2%, and a complication rate of 8-18%. Radical nephrectomy and cystectomy have been performed in some octogenarian patients with perioperative mortality of less than 10%.

Major orthopedic surgeries, including hip and knee arthroplasty, can be performed in patients above 80 years of age with little to no mortality, and with significant pain relief and functional improvement. Of the octogenarians who have undergone a hip replacement, 70% are able to walk without assistance. Although most of these case series selected patients based on their premorbidity and comorbidity status, comorbidities remained frequent and therefore these studies were applicable to many of our patients.

Lumbar stenosis is another age-related condition that can be treated surgically in people older than 75 years of age, with approximately 80% of these patients experiencing complete or partial relief of back or leg pain, which is similar to the data obtained in younger patients.

In neurosurgery, “older patients” is a term usually applicable to people over 65 years of age. Meningiomas are quite a frequent finding in this age group of patients; these are usually benign neoplasms, which can nonetheless become life-threatening due to mass effect. Surgical interventions can be curative and equally effective both in healthy individuals over 65 years of age and in younger people, with minimal morbidity and mortality. General health improves in patients undergoing surgery, while patients receiving medical treatment experience deterioration of their general health. Surgery for malignant tumors of the brain, including glioblastomas and metastases, appears to improve survival, although no quality of life data are available.

Unlike elective surgeries, emergency surgery in elderly people is associated with disproportionately high risk, since these patients generally delay seeking medical attention, their disease is often more difficult to diagnose, and they have lower functional reserve. For example, appendicitis in people older

than 65 years of age is associated with more than twice the mortality and risk of complications compared to younger patients, which is related to the initial absence of fever, leukocytosis and localization signs, as well as an earlier perforation. Coronary artery bypass grafting in octogenarians leads to a mortality rate of 33% in emergency surgery and 14% in urgent surgery compared to 3% in elective surgery.

The majority of emergency surgeries performed in older people is associated with injuries, such as hip fractures. Older people are at high risk for falls due to impaired vision, musculoskeletal problems and impaired balance. Their injuries are more frequent than in young people, and are more severe, with greater long-term morbidity. The incidence of fractures when falling on a flat surface may reach up to 40%. Of those who are hospitalized after a fall, 43% end up in nursing homes, and one-year survival rate is a miserable 50%.

The head injuries sustained by older people are generally less serious than those in young people, possibly due to lower impact energy, i.e. falling on the spot. In spite of this, the mortality rate in people over 65 years of age is higher, functional outcomes are worse, and they are more likely to require long-term care.

Older people with head injuries are less promptly assessed and less frequently admitted to neurosurgical departments than younger patients with head injuries.

Chronic subdural hematoma is an exception, since draining through a burr hole is attainable under local anesthesia in all patients (with the exception of very critical ones), and the results are usually good.

Modern methods may allow performing a minimally invasive emergency procedure for stabilization of condition of older people, which allows for full resuscitation and optimization before the final surgery. For instance, emergency percutaneous draining of an empyema of the gallbladder or endoscopic sphincterotomy for obstructive jaundice may eliminate the need for an extensive emergency surgery, making delayed elective cholecystectomy possible.

Decision-making is often difficult in emergency situations, especially in case of older people. This is due to incomplete information about comorbidities and the need to help the patients and their families to make important decisions in a timely manner. Assessment, optimization and discussion may delay an important surgery in elderly people who require emergency care.

In an advanced age, the body cannot maintain optimal levels of all vital functions, which often results in serious disease. Serious disease may make patients literally bed-ridden. Patients need constant health assessment, competent therapy and properly managed general care.

It is important to understand that the family members who may decide to take care of their sick relative, more likely than not will lack adequate medical knowledge. Therefore, there is a large room for errors, which may cause deterioration in general health of a bedridden patient.

The importance of mental condition of the patient is difficult to overestimate. According to psychosomatic principles, chronic stress may make overall situation substantially worse. Advanced age deprives a person of the opportunity to perform household chores independently, to lead a normal life and/or to eat whatever they previously could.

The nursing care for a sick person should be primarily based on the individual parameters of patient's health. The patient also needs certain types of support.

- Such support may include controlling the patient's daily routine. A bedridden patient may often confuse day and night. The nurse should carefully monitor the daily routine of the patient. This will help regulate the natural circadian rhythms of the patient.
- Selection and adjustment of the diet. Proper diet is the basis of rehabilitation after any past illness. Depending on the disease, useful food products are selected and purchased. These foods should be rich in vitamins.

- Professional medical care. The nurse should carefully monitor the patient's medication schedule and be able to administer intramuscular injections and intravenous injections/infusions. If the patient's condition is critical, nursing care is essential. Untimely medical care is very likely to result in an unfavorable outcome.

- Monitoring health status. Nursing care includes daily measurement of vital signs (body temperature, blood pressure, pulse rate and respiration rate). Monitoring the patient's general health perceptions on a daily basis allows evaluating treatment efficacy and predicting improvements in patient's well-being over time.

- Organization of motor activity. Many seriously ill patients may not/cannot ambulate independently. However, short walks under supervision/with assistance of specially trained personnel are possible. In an emergency, the nurse will provide professional first aid as required.

- Organization of activities aimed at regeneration after a past illness. Modern rehabilitation uses a great number of modalities of exercise therapy. However, it is important not only to choose the right rehabilitative interventions, but also to make sure that the patient does everything correctly.

- Organization of leisure activities. Entertainment is equally important to a healthy person and a sick individual. Absence of entertainment may lead to dangerous depressive states. Nursing care involves creating a list of leisure activities that will not harm the patient.

- Psychological and moral support. When caring for seriously ill and bedridden people, it is very important to provide them with due attention and care. The absence of these important social components entails a deterioration in psychoemotional health and unfavorable clinical prognosis.

- Ensuring adequate personal hygiene. A bedridden person is physically incapable of full independent self-care. Nursing care may

involve washing the body, cutting and washing hair, cutting nails and shaving men's beards.

Nursing care has an enormous additional advantage of healthcare worker being able to provide a professional rescue intervention in case of emergency and, therefore, save a life.

It should be emphasized that a visiting nurse is quite often the only connecting link between the patient and the world outside. Friendly communications, finesse, emotional support, taking the patient for a walk may sparkle an interest in life in an elderly and/or sick person and recruit internal resources to maintain a stable psychoemotional status.

When assessing elderly surgical patients, we have performed a statistical analysis of incidence of disease in patients over 65 years of age and determined the number of patients who were operated upon in the surgical department within the period of 6 months. When working with patients' medical records, we have conducted documentation of surgical procedures performed; 189 surgical procedures have been performed in patients of this age group. We have performed an analysis on the occurrence of complications and lethal outcomes in surgical patients of this age group.

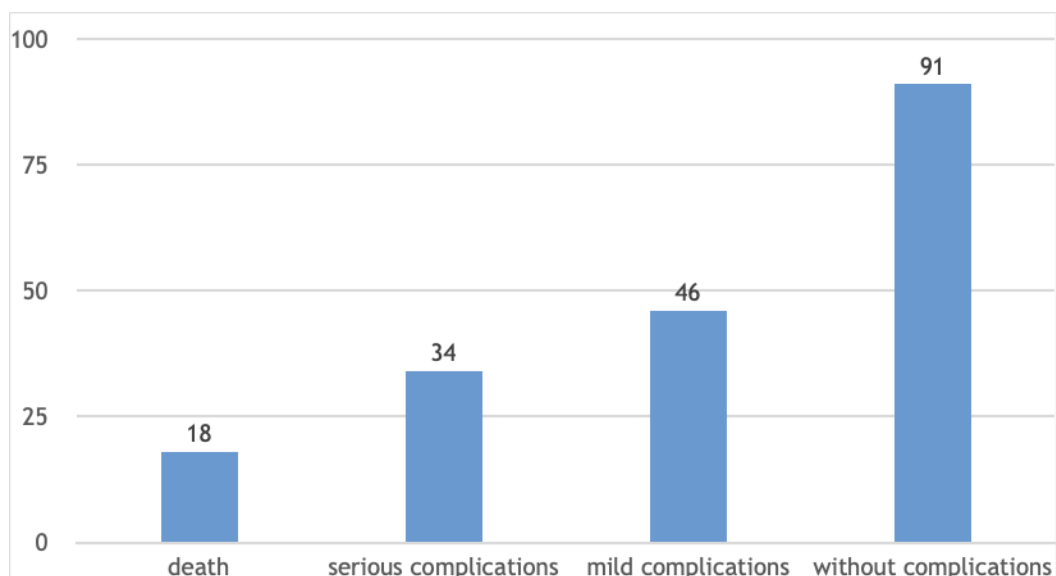


Diagram 3.3. The number of complications and lethal outcomes in elderly patients in the postoperative period.

Comparative analysis of the number of complications and lethal outcomes in the postoperative period in patients of various age groups has shown that the lowest incidence of lethal outcomes was reported in the group of pediatric surgical patients; a somewhat higher incidence was seen among the adults and a substantially higher incidence was seen among the elderly patients who had surgical treatment.

Significant complications have been documented in all age groups of patients, predominantly in adults and the elderly.

The same tendency was observed in an analysis of the number of minor complications: these have been documented in all age groups of patients, predominantly in adults and the elderly. patients.

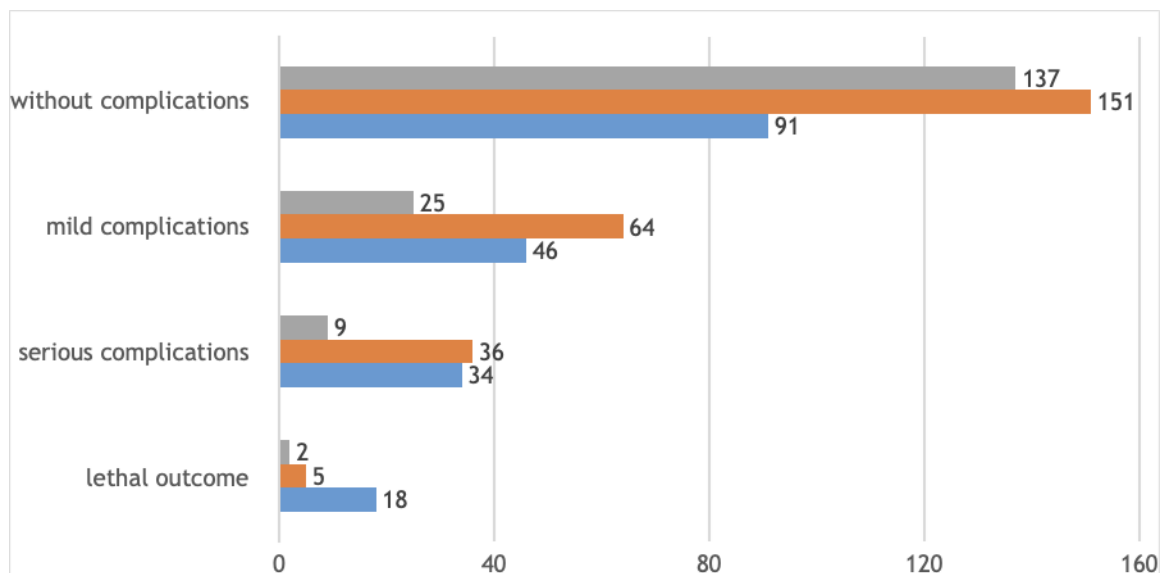


Diagram 3.4. Comparative analysis of the number of complications and lethal outcomes in the postoperative period in patients of various age groups

Comparative analysis of cases of surgical procedures with uneventful postoperative period in patients of various age groups has shown that children and adults had a greater number of such surgical procedures, which indicated that the risk of complications in the group of pediatric and adult surgical patients was lower than in elderly patients who had surgical treatment.

CHAPTER 4

THE MAIN STAGES IN SURGICAL TREATMENT OF PATIENTS OF DIFFERENT AGE GROUPS

The main stages in surgical treatment of patients include preoperative period, surgical procedure and postoperative period.

Preoperative period is a time interval from the beginning of preparation of the patient for surgery to the start of the operation. It is conventionally divided into two phases: the diagnostic phase and the preparatory phase. In the diagnostic phase, patients are assessed with an intent of a more accurate diagnosis of the underlying disease (for which the patient is planned to be operated upon) and any comorbidities, which may have a negative impact on the course of the surgical procedure and the postoperative period. In the preparatory period, all organs (i.e. heart, lungs, liver, kidneys, etc.) and systems of the patient's body are being prepared for the surgery in order to increase its reserve capacities. This is required for a robust compensation of functional and abnormal changes in the body (caused by the disease), as well as those disturbances, which will be associated with the surgical procedure, the anesthesia and the postoperative status of the body.

Surgery is a “bloody” or bloodless method of treatment or diagnosis, carried out via “open” or “closed” mechanical or physical effect upon organs or tissues. In terms of timing, there are emergency, urgent and elective surgeries. Emergency surgeries include the procedures that should be done immediately (within the first minutes, at the most within the first 2-3 hours upon arrival), since the disease/injury poses an immediate threat to patient's life (for example, an injury to the heart or a large artery) or may abruptly worsen the patient's condition in the short term (for example, in acute appendicitis, perforated gastric ulcer, strangulated hernia, etc.). Urgent procedures include the surgeries that need to be performed shortly (within the first 1-7 days), because the patient's condition, while being life-threatening in itself, allows postponing the surgery

for assessment and preparation of the patient. Patients with advanced malignant tumors are a good example. Elective surgeries include the procedures, which can be performed at any time, since the disease does not pose an immediate threat to patient's life. Examples include patients with non-strangulated hernias, chronic calculous cholecystitis, lipoma, etc.

Postoperative period is a time interval from the end surgery to patient's discharge from the hospital. It is divided into two phases: early postoperative period (the initial 3-5 days) and late postoperative period (5 days later). The greatest challenge for the patient and the highest responsibility for the healthcare team are during the early postoperative period, as there are pronounced changes in the functions of respiratory, cardiovascular, digestive, urinary and nervous systems of the body. During this period, the patients are at the highest risk of experiencing complications on part of different organs and systems, primarily those organs and systems where abnormal changes are seen. The most important factor in prevention and treatment of postoperative complications is qualified patient care, which is provided by registered nurses and nursing aides/practical nurses.

The scope and the nature of patient care in the emergency room/admissions office depends on the type of the disease, the need for an emergency or urgent surgery, the presence of severe comorbidities, age, and a number of other factors. As a rule, during scheduled hospitalization, patients are admitted in a satisfactory condition. Usually they have already been completely or almost completely assessed in an out-patient setting. Therefore, after inspection by a surgeon, the nursing aide/practical nurse fills out the personal information part of the inpatient medical record, including temperature sheet and medication administration record, performs decontamination and takes the patient to their room.

The greatest amount of attention and the most meticulous care should be reserved for the patients who need emergency surgery. This is because emergency surgeries are performed where vitally indicated, and

decontamination is performed as quickly as is possible without compromising safety. Usually these are very critical patients with severe pain, intoxication or shock, or in an unconscious state; this is why these patients cannot survive without prompt professional attention. In addition to that, such patients usually arrive to the emergency room/admissions office without the applicable basic assessments. Therefore, they should be completely assessed, moreover, within the shortest time possible. The main role in assessment and observation of such patients belongs to the surgeon on duty.

The nursing aide/practical nurse is fulfilling the surgeon's orders concerning control of the patient's condition, and participates in assessments and administration of medications. The nursing aide/practical nurse is responsible for the following:

- measuring body temperature,
- filling out the orders for complete blood count, urinalysis and clinical biochemical tests, and summoning laboratory technicians and consulting physicians,
- helping the patient collect samples for test, including urine,
- transporting or escorting the patients to diagnostic units (X-ray, endoscopy, physical examination room, etc.), to the surgical dressing room, and to decontamination room,
- assisting the physician with dressing changes and physician's interventions (handing instruments/dressings/gloves for rectal and vaginal examination, administering cleansing enemas, etc.),
- performing subcutaneous and intramuscular injections (if having applicable skills),
- performing decontamination of patients.

Decontamination of patients is performed depending on their general condition and the type of the disease.

In critical patients, decontamination is performed by rubbing body parts with soapy water or other detergents. In an emergency surgical setting, the

decontamination step may be skipped altogether (in case of immediate threat to life, e.g. in heart injuries) or performed in a shortened version, i.e. washing the dirty body parts, preparation of surgical site and shaving).

The hairs in the area of the planned surgical site is usually removed with a dry safety razor far beyond the intended incision, since the incision may be expanded (extended) during the operation. Thus, the entire anterior abdominal wall is shaved in abdominal operations; the lower part of the chest is additionally shaved before liver and stomach surgery; the anterior surface of the thighs is shaved during interventions on the lower abdomen. After the shaving, the surgical site is treated with alcohol (e.g. Alcohol – Furacillin) or with other antiseptic agent.

After decontamination is complete, the patient is helped with changing into clean linen, trousers/pajamas (males) or gown (females). The practical nurse/nursing aide helps the patient with dressing. Outerwear and shoes are usually issued to the family; if no family is available on-site, then, after documentation, the clothes are handed over to the health facility warehouse. Only items of personal hygiene are allowed to be taken by the patient to the surgical department.

After the patient requiring emergency surgery is dressed in hospital clothes, they will need to be taken to an operating room or to a patient room for intensive preoperative preparation (which may take 1-2 hours), or, in some cases, to an intensive care unit. Elective patients should be escorted to patient rooms of surgical department along with their medication administration record and temperature sheet. In the surgical department, the patient is handed over to the care of a ward nurse. The ward nurse assigns the patient with their place (bed, bedding, bedside table, etc.), introduces them to the requirements and policies of the department, provides treatment and files requests for diagnostic tests according to the medication administration record.

In course of assessment, decontamination, preoperative preparation and transportation of the patient to the operating theater or patient room, the

healthcare team must do everything possible to mentally prepare the patient for surgery.

Preanesthetic medication is usually administered 20-30 minutes before the surgery. Enemas are contraindicated in many acute abdominal surgical conditions (only as ordered by the physician). If the stomach is overflowing, its contents is evacuated with a gastric tube.

The functions of the care-providing health care personnel include implementation of patient assessment plan as ordered by the physician. This personnel fills out order forms for blood tests, urinalysis and biochemical panel; orders diagnostic tests of cardiovascular system/lungs/liver and kidneys, escorts or transports critical patients to diagnostic units (X-ray, ultrasound, etc.), summons consulting physicians and prepares the patients for instrumental and imaging tests. Thus, prior to an x-ray examination of the gastrointestinal tract and urinary system, the nurse gives the patient an enema in the evening before the examination and in the morning on the day of the examination. In order to reduce the amount of gas in the intestines, the nurse may give the patient carbolene the day before the examination and restrict dairy products in the patient's diet as ordered by the physician.

In order to prepare the patients for surgery, the nurse is fulfilling the physician's orders, i.e. monitors the timely intake of medicines, performs all intravenous drug administrations, performs intramuscular and subcutaneous injections of drugs, feeds seriously ill patients, prepares food orders for the patients as necessary and monitors the patients' compliance with sanitary and hygienic standards.

In the postoperative recovery room or in an intensive care unit (as applicable), the patient is transferred to the bed. This is performed in the same manner as transferring the patient from a surgical table, with the only difference being that the patient is transferred from the gurney onto a bed. The bed should be ready with clean bedding without folds. Patients are most often laid on their backs and covered well with a warm blanket, leaving only their face and neck

open. When indicated, a warm water bottle may be put at the patient's feet, wrapped in soft tissue (in order to avoid burns). This all needs to be done to warm the patient, because narcotics and muscle relaxants disrupt thermoregulation of the patient during the surgery (the patient feels cold). To improve oxygen supply to the body, the patient is given supplementary humidified oxygen via a nasal catheter. After that, the anesthesiologist hands over the patient to the care of ward physician and ward nurse. At the same time, the healthcare personnel should pay attention to the presence of independent breathing and stable cardiac function in the patient (i.e. pulse rate, blood pressure, etc.). In addition to that, the ward nurse assists the surgeon to connect drainage tubes from the postoperative wound to containers or suction devices for collection of fluid (i.e. bile, pus, exudate, etc.). An icepack (wrapped in a towel) or weight can be applied to the wound site.

As a rule, immediately after the surgery, the patients are in an inhibited state due to central nervous system depression caused by anesthesia. This is why after these patients are put to bed, they fall asleep and sleep for 2-4 hours. For the first 2 hours, the patients should be in a supine position (they may lie on their right side if that's more comfortable) or with the head of bed slightly down, without a pillow. This position improves blood supply to vital organs (the brain and the heart), and serves as one of the measures to prevent hypoxia and cardiovascular insufficiency. In 2 hours, the nurse should lift up the head of bed or place a pillow under the patient's head. Subsequently, the head of the patient's bed should be elevated 30-35 degrees. Such a position facilitates the function of the heart and lungs, and promotes the outflow of pleural/abdominal exudate to sloping places, from where it will exit through the drains.

Healthcare institutions usually employ 4 regimens of physical (motor) activity of patients:

- strict bed confinement;
- bed rest;
- room privileges;

- general (out-of-room) privileges.

Strict bed confinement is generally used in patients at the very beginning of severe acute illness (initial stage of acute myocardial infarction, unstable angina pectoris, etc.). The patient is strictly forbidden not only to get up, but also to sit down, and in some cases even turn around in bed on their own. All hygienic procedures (i.e. change of linen and bedclothes, washing the patient, bowel movements and urination), as well as feeding the patient, are performed only with the help of a nurse and/or nursing aide. Special care and caution should be exercised by nursing personnel when transporting such patients and when performing therapeutic and diagnostic procedures. The duration of strict bed confinement should be determined by the physician on a case-by-case basis, depending on the specific aspects of the patient's disease.

When general condition of the patient improves and in the absence of complications, the physician will change the patient's privileges to bed rest. Bed rest is characterized by a somewhat higher physical activity of patient in the bed: the patient is allowed to turn, perform light exercise under the supervision of a doctor or a nurse and, finally, after a certain time, sit down on the edge of the bed with their feet down.

A patient with room privileges is allowed to sit in a chair by the bedside, stand up and even walk around the room for a certain time. The patient eats and has their bowel and bladder routines in the room.

A patient with general (out-of-room) privileges may walk down the corridor, use the stairs and have walks on the hospital premises; such patients are often mostly or completely independent in their self-care (they may eat in a dining-room, go to the bathroom, take shower, etc.).

Monitoring of patients' compliance with their assigned privileges and direct implementation of such physical activity are important duties of nursing personnel.

Immediately after surgery, some patients are placed into an elevated position. Usually these are the patients recovering after thyroid gland/pulmonary

surgery, as well as the patients recovering from other procedures in presence of decompensated cardiac activity.

These are very important aspects to consider when providing care to surgical patients. Some of these may differ depending on the age group, which should be taken into account by nursing personnel when providing care for such patients.

CHAPTER 5

THE TYPES OF POSTOPERATIVE COMPLICATIONS AND THEIR MANAGEMENT IN DIFFERENT AGE GROUPS OF SURGICAL PATIENTS

Every year, 234 million major surgical interventions are performed globally; minor complications occur in 6-25% of cases, serious complications occur in 3-16% of cases, and permanent disability or death accounts for 0.5-0.8%.

There are several classifications of postoperative complications in such specialties as cardiac surgery, pulmonary surgery and abdominal trauma.

The degree of postoperative discomfort depends on many factors, including the type of surgery performed. Typical discomforts may include the following:

- Nausea and vomiting due to general anesthesia
- Sore throat (caused by a tube placed in the trachea to ensure breathing during surgery)
- Tenderness, pain, and swelling around the incision site
- Anxiety and insomnia
- Thirst
- Constipation and gas (flatulence)

Occasionally, complications may occur after the operation, they include the following:

Shock is an abrupt drop in blood pressure causing a dangerous reduction in systemic blood flow. Shock may be caused by blood loss, infection, brain injury or a metabolic disorder.

Treatment may include any or all of the following:

- Stop any blood loss
- Help with breathing (using mechanical ventilation if necessary)
- Reducing heat loss

- Administration of intravenous (IV) fluids or blood
- Providing oxygen
- Using medications to increase blood pressure

Controlling bleeding (hemostasis). Rapid loss of blood from the surgical site may lead to severe shock. Treatment for rapid blood loss may include the following:

- IV fluid or plasma
- Blood transfusion
- Additional surgical intervention to stop the bleeding

Infected wounds. When bacteria enter the surgical site, infection may occur. Infections may delay healing. With bloodstream, wound infections may spread to nearby organs or tissues or to remote areas in the body. Treatment of wound infections may include the following:

- Antibiotics
- A surgery or a procedure to clean or drain the infected area.

Deep vein thrombosis (DVT) and pulmonary embolism (PE). These conditions are collectively referred to as venous thromboembolism (VTE). This term is used because these conditions are very closely interconnected. Their prevention and treatment are also closely connected.

Deep vein thrombosis means formation of a blood clot in a major vein deep inside the lower extremity or in other parts of the body. Symptoms include pain, swelling, and redness in the leg, arm, or other area. If the patient has these symptoms, the patient or a caregiver should call a doctor or an ambulance immediately.

Pulmonary embolism. A clot may separate from a vein and get to the lungs, blocking a blood vessel. This causes pulmonary embolism. In the lungs, a blood clot may immediately block blood flow. This is a medical emergency, which, depending on the caliber of the blood vessel, may lead to death. The patient should call 911 or other emergency medical service immediately if they experience the following symptoms. Symptoms may include chest pain, labored

breathing, cough (the patient may cough up blood), sweating, rapid heartbeat/palpitations and syncope. The treatment depends on location and size of the blood clot. The treatment should include the following components:

- Anticoagulants (blood thinners to prevent further clotting)
- Thrombolytic agents (to dissolve thrombi)
- Surgery or other procedures

Lung-associated (pulmonary) complications. Pulmonary complications may occur due to lack of deep breathing and coughing exercises within 48 hours after surgery. They may also occur as a result of pneumonia or inhalation of food, water or blood into the patient's airway. Among other things, symptoms may include wheezing, chest pain, fever and cough.

Urinary retention. Temporary urinary retention or inability to empty the urinary bladder may occur after the surgery. Anesthesia-induced urinary retention is usually managed by having a urinary catheter in place to drain the urinary bladder until the patient regains their control of the urinary bladder. Sometimes, drugs for stimulation of the urinary bladder may be used.

Response to anesthesia. Allergy to anesthetics is rare. Symptoms can range from mild to severe. Treatment for allergic reactions includes discontinuing certain medications that may cause allergic reactions. In addition, this may include administration of other drugs to manage allergy.

As for the specific features of postoperative complications in newborns, a critical approach in the management of surgical disease and prevention of critical conditions in perioperative neonates is the early prediction and prevention of these complications.

There are currently no reliable markers that allow predicting the development of complications in early postoperative period. The development of such complications depends on many factors that are difficult to distinguish, including the blood levels of polypeptides (vasoactive intestinal peptide, cholecystokinin-octapeptide, etc.) and proteins (zonulin, etc.). These proteins are able to play an integral role in regulation of intestinal motility and in the

changes of intestinal wall permeability. An important consideration is the selection of therapeutic and diagnostic approach to management of neonates with malformations of the gastrointestinal tract, which would increase the efficacy of surgical treatment, reduce preoperative preparation time and eliminate critical hemodynamic disturbances in the perioperative period. Performing a surgical intervention, as well as the associated complications and sequelae, triggers not only medical problems, but also psychological and social problems, which, when taken together, form a comprehensive concept of "quality of life".

This parameter is one of key outcomes when studying the ultimate therapeutic outcomes. A substantial component, which determines the quality of life of a child in a surgical in-patient setting, is the presence and intensity of pain. However, there are no uniform approaches that would allow objectifying this outcome in the neonatal period. The knowledge of the specific aspects of surgical treatment of neonates with congenital gastrointestinal tract malformations is a current issue for the nurses and physicians of pediatric surgery, as well as for the anesthesiologists and critical care physicians, while the pathogenetic substantiation of therapeutic and diagnostic approaches in this group of patients contributes to improved therapeutic outcomes and prevention of postoperative complications.

Therefore, the training of surgical nurses and surgeons in the specific aspects of surgical treatment of patients depending on age is an important task and will contribute to improvement of surgical outcomes in patients of various age groups.

CONCLUSIONS

1. We have investigated the specific aspects of nursing care in surgical patients of various age groups.
2. We have determined the age groups in surgery and investigated the specific aspects of disease in patients of different age.
3. We have defined the main stages in surgical treatment of patients of different age groups.
4. We have studied the types of postoperative complications and special aspects of their management in different age groups of surgical patients.
5. We have conducted a comparative analysis of the number of lethal outcomes and postoperative complications in surgical patients of various age groups.

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