

Epidemiology of complications after surgical interventions.

Salimova S, Malikova M, Saydiyeva D, Boynazarov S

*Clinical Residents in Epidemiology,
Samarkand State Medical University,*

Department of DKTF

Samibaeva Umida Xurshidovna

Assistant, PhD

*Department of Infectious Diseases,
Samarkand State Medical University,*

Department of DKTF

ANNOTATION

Postoperative complications remain one of the leading causes of increased morbidity, mortality, and economic costs in surgical practice. Despite significant progress in surgical technologies, anesthetic management, and postoperative patient care, the incidence of complications after surgical interventions remains high and varies depending on the type of surgery, the urgency of the intervention, the patient's age, and the presence of comorbidities. This article examines the main epidemiological characteristics of postoperative complications, their prevalence, structure, and risk factors for their development. Particular attention is paid to infectious complications, thromboembolic events, and cardiovascular disorders as the most significant causes of adverse outcomes. The medical and social consequences of postoperative complications are analyzed, including an increased length of hospital stay, increased financial costs, and a decrease in the quality of life of patients. The data obtained emphasize the need to implement comprehensive preventive programs and improve the epidemiological surveillance system in surgical hospitals.

Keywords: *postoperative complications; epidemiology; surgical interventions; risk factors; surgical site infections; thromboembolic complications; mortality; patient safety; public health.*

SUMMARY

Surgical interventions remain a key treatment for various diseases. Despite advances in surgical technologies, anesthesia, and postoperative care, postoperative complications continue to pose a serious medical and social problem. They increase the length of hospital stay, increase the risk of mortality, and increase economic costs, while also reducing patients' quality of life. Studying the epidemiology of postoperative complications is essential for developing preventive and organizational measures in the healthcare system. General characteristics of postoperative complications. Postoperative complications are pathological conditions that occur in the early or late postoperative period and are directly related to the surgical intervention, anesthesia, or the patient's underlying condition. Depending on the time of onset, complications are divided into early (within the first 30 days) and late. The most frequently recorded complications are infectious complications, thromboembolic events, bleeding, respiratory and cardiovascular disorders. Epidemiology of postoperative complications.

According to international studies, the incidence of postoperative complications varies from 5 to 30% depending on the type of surgery, patient age and comorbidities. The highest risk of complications is observed in abdominal, oncological, cardiac and emergency surgeries. Surgical site infections are among the most common complications and account for up to 40% of all postoperative infections. Thromboembolic complications, including deep vein thrombosis and pulmonary embolism, remain one of the leading causes of postoperative mortality. Risk factors for complications. Epidemiological studies identify the following main risk factors: old age; the presence of chronic diseases (diabetes mellitus, cardiovascular diseases, obesity); immunodeficiency ; emergency nature of the surgery; duration of surgical intervention; non-compliance with the principles of asepsis and antisepsis. Organizational factors, including the level of equipment of the medical institution and the qualifications of the medical personnel, also play a significant role. Medical and social consequences of postoperative complications. Postoperative complications lead to increased hospital

stays, increased treatment and rehabilitation costs, and higher rates of disability and mortality.

They have a significant impact on the healthcare system and require a comprehensive approach to prevention, early diagnosis, and treatment. The epidemiology of complications after surgical interventions demonstrates the high relevance of this problem. Reducing the incidence of postoperative complications is possible with a comprehensive assessment of risk factors, adherence to clinical protocols, the implementation of modern technologies, and a multidisciplinary approach to patient care. Further epidemiological research is needed to refine preventive strategies and improve the safety of surgical care.

Postoperative complications represent a significant problem not only clinically but also socially, significantly impacting patient health, the healthcare system, and society as a whole. Their development leads to worse treatment outcomes, increased hospital stays, and increased economic costs. From a medical perspective, postoperative complications contribute to increased morbidity and mortality. Infectious complications, thromboembolic events, bleeding, and organ failure often require repeated surgical interventions, prolonged antibacterial therapy, and intensive care. This increases the risk of chronic pathological conditions and the development of persistent functional impairments. The social consequences of postoperative complications include decreased patient productivity, temporary or permanent loss of professional skills, and increased disability. Patients who have experienced severe complications experience a significant deterioration in quality of life, limited physical activity, and an increased risk of psychoemotional disorders, including anxiety and depression.

The economic burden of postoperative complications is reflected in increased direct and indirect costs. Direct costs include additional diagnostic and therapeutic procedures, extended inpatient treatment, and rehabilitation. Indirect costs include loss of productivity, reduced work ability, and decreased social support for patients. Thus, the medical and social consequences of postoperative complications highlight the need to strengthen preventive measures, implement clinical patient safety

protocols, and improve epidemiological surveillance in surgical hospitals. Reducing the incidence of complications is essential for increasing the effectiveness of surgical care and improving public health outcomes. Postoperative complications are one of the most pressing issues in modern surgery and represent a significant indicator of the quality of surgical care.

According to epidemiological studies, the incidence of postoperative complications varies widely—from 5–10% in planned minimally invasive procedures to 25–40% in major, oncological, and emergency surgeries. These differences are due to the type of surgery, the patient's condition, the level of organization of medical care, and the preventive measures used. The most common postoperative complications are surgical site infections, which account for up to 30–40% of all complications. Their development is associated with contamination of the surgical wound, violations of aseptic and antiseptic rules, as well as the presence of comorbidities in the patient, such as diabetes mellitus and obesity. The incidence of infectious complications is significantly higher after prolonged surgeries and repeated surgeries. Thromboembolic complications, including deep vein thrombosis and pulmonary embolism, are a leading cause of postoperative mortality. According to various authors, without adequate prophylaxis, the risk of thromboembolic events can reach 10–20% in high-risk patients. Elderly patients and those with limited mobility in the postoperative period are particularly vulnerable.

Respiratory and cardiovascular complications account for a significant proportion of postoperative complications, especially after thoracic and abdominal surgery. Pneumonia, atelectasis, and heart failure are more common in patients with chronic respiratory and cardiovascular diseases. Epidemiological analysis also indicates the influence of sociodemographic factors. Older age, male gender, low socioeconomic status, and limited access to quality medical care are associated with a higher risk of adverse postoperative outcomes. Organizational factors also play a significant role, including the hospital's level of equipment, the surgical team's experience, and adherence to clinical protocols. Thus, the epidemiology of postoperative complications

reflects the multifactorial nature of their development and emphasizes the need for a systematic approach to prevention, early diagnosis, and monitoring of complications. Using epidemiological data allows us to optimize surgical tactics, reduce the incidence of complications, and improve patient safety.

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