Data from the World Health Organization (WHO) indicate that obesity is a global problem that affects almost 650 million people. Due to obesity or excessive weight, nearly 2.8 million adults die every year. One of the factors that may contribute to obesity is a disturbance in the balance of the intestinal microbiota - dysbiosis. In people with obesity, the gut microbiota differs from that of healthy people with normal body weight. People with excess body weight often exhibit a decrease in bacterial diversity and an elevated ratio of *Bacillota (Firmicutes)* to *Bacteroidota (Bacteroidetes).* It was estimated that a 20% increase in the number of bacteria of the *Bacillota (Firmicutes)* type and the proportional decrease of bacteria of *Bacteroidota (Bacteroidetes)* type leads to an increased energy intake from food by about 150 kilocalories per day. In addition, dysbiosis leads to a disruption of the integrity of the intestinal barrier. Increasing intestinal permeability causes harmful substances such as lipopolysaccharide - a bacterial component to enter the bloodstream and causes chronic low-grade inflammation. Chronic inflammation is one of the main factors in the development of obesity-related diseases. Bariatric surgery is the only effective treatment for morbid obesity and its complications. Despite the high effectiveness and durability of this method of treatment, there is still a group of patients who, despite adhering to the medical recommendations, do not achieve the expected results. It is believed that the modulating of gut microbiota may be an indirect factor contributing to weight loss and improving inflammation and metabolic status. However, the available scientific evidence is often ambiguous and inconsistent. We want to establish whether the modification of the intestinal microbiota by 12-weeks supplementation with probiotics combined with a standardized diet may affect the outcomes of surgical treatment of obesity. We plan to divide 80 patients qualified for bariatric surgery into two groups. One group will get a multi-strain probiotic, and the other a placebo preparation. Patients will undergo the same tests and procedures at two-time points - before the intervention and 3 months after the operation. We will examine how the patients' body weight changed during this time. The inflammatory state will be assessed by measuring serum levels of pro-inflammatory (IL-6, TNF-α) and anti-inflammatory (IL-10) cytokines. The metabolic status will be assessed based on basic laboratory tests (lipid panel, thyroid hormones panel, transaminases, gamma-glutamyl transferase, alkaline phosphatase, lactate dehydrogenase, anemia diagnostic, folic acid, vitamin B12, glucose metabolism markers, C-reactive protein (CRP), total protein and albumin level, calcium metabolism markers, creatinine) and the occurrence of obesity comorbidities and their remission after surgery. In the serum, we will determine the intestinal permeability parameters - lipopolysaccharide and IFABP (intestinal fatty-acid-binding protein).The impact of probiotic supplementation on the microbiome composition will be assessed by quantitative and qualitative content of the intestinal microbiota through the new generation sequencing method. The analysis of stool samples will also include short-chain fatty acids (SCFA) - bacterial metabolism products. In addition, at visits 6 and 12 months after surgery, we will examine the long-term effects of probiotic supplementation on body weight and metabolic status. Postoperative complications will be assessed based on the Clavien-Dindo scale. Based on the collected data, we will be able to contribute to the current state of knowledge on the impact of the gut microbiota on the pathogenesis of obesity and associated diseases. The collected data will establish whether probiotic supplementation may influence the effects of surgical treatment of obesity and its complications.