

**BARIATRIC SURGERY AS THE PRIMARY TREATMENT FOR MORBID OBESITY
IN MODERN MEDICINE**

(Review Article)

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Abstract

Obesity is a chronic, progressive disease with a multifactorial etiology and diverse clinical manifestations, characterized by excessive accumulation of adipose tissue in the human body. Key factors contributing to the development of metabolic syndrome primarily include changes in dietary patterns—namely, increased consumption of high-calorie processed foods and fast food—as well as physical inactivity, which is typical of the modern lifestyle.

In order to prevent the adverse consequences of obesity and to achieve more rapid weight reduction, modern medicine offers the use of bariatric surgical methods. This review article presents an analysis of the outcomes of contemporary bariatric surgical interventions, and also considers alternative perspectives on the causes of obesity and possible approaches to managing this chronic progressive condition.

Keywords: morbid obesity, bariatric surgery, physical inactivity, dumping syndrome, gastroplasty, BMI, ghrelin.

Introduction

Obesity is currently regarded as one of the key medical and social problems and is often referred to as the “non-communicable epidemic of the 21st century.” According to the World Health Organization (WHO), obesity affects approximately 100 million people worldwide. At the same time, morbid obesity, as the most severe form of the disease, is identified in about 3–5% of the adult population in economically developed countries [2].

Obesity, as a progressive disease, is associated with a high risk of developing numerous complications, including arterial hypertension, coronary artery disease, stroke, type 2 diabetes mellitus, and disorders of carbohydrate metabolism, as well as non-metabolic conditions such as gastroesophageal reflux disease (GERD), nonalcoholic steatohepatitis, liver cirrhosis, neoplasms,

sleep disorders, depression, degenerative diseases of the musculoskeletal system, and reproductive dysfunctions [1].

In the development of morbid obesity, which represents the most severe form of the condition, conservative treatment methods are often insufficiently effective, bringing surgical approaches to the forefront. Modern surgical interventions are aimed not only at achieving sustained weight loss but also at correcting metabolic disturbances, including the remission or significant improvement of associated diseases [2]. Population-based studies investigating the prevalence and development of obesity in various ethnic groups confirm the significant role of genetic factors [3].

Objective of the Study:

The aim of this study is to review and analyze the available scientific and literature data on the effectiveness of surgical treatment for morbid obesity.

The relevance of this research is determined by the increasing prevalence of overweight and obesity, accompanied by the development of various comorbid conditions, which in severe cases may even lead to fatal outcomes. The wide range of clinical manifestations necessitates a multidisciplinary approach to the study and treatment of this pathology, involving physicians of various specialties.

Materials and Methods:

The authors of this study conducted a comprehensive review of scientific publications from the past 5–10 years, retrieved from databases and search engines such as eLIBRARY, Google Academy, CyberLeninka, Science-Education, PubMed, Google Scholar, and ResearchGate, using the above-mentioned keywords.

Main Body

Bariatrics (from the Ancient Greek βάρος — “weight, heaviness” and ἰατρεία — “treatment”) is a relatively new field of medicine focused on the treatment of obesity [2]. Nowadays, according to researchers, this approach is considered one of the most effective methods for managing obesity, accompanied by pronounced physiological changes in both the short- and long-term periods. In addition to the well-known reduction in gastric volume and limitation of nutrient absorption, such interventions exert a significant influence on hormonal regulation: the secretion of hormones and peptides involved in the control of appetite and satiety is altered. As a result, not only does food intake decrease, but eating behavior is also transformed, including changes in taste preferences. Furthermore, shifts in the composition of the intestinal microbiota and its gut–brain interactions play an important role, affecting metabolic processes, including bile acid metabolism and the efficiency of nutrient absorption [4]. Over time, patients who have undergone surgery develop an improved quality of life, regain functional capacity, and adopt a more active lifestyle [2].

According to research data, there are specific indications and contraindications for the surgical treatment of obesity.

Indications for surgical intervention include:

- Body mass index (BMI) greater than 40 kg/m², regardless of the presence of comorbidities;
- BMI over 35 kg/m² in the presence of severe obesity-related conditions (arterial hypertension, coronary artery disease, diabetes mellitus, obstructive sleep apnea syndrome, etc.);
- Ineffectiveness of previously conducted medical (pharmacological) therapy.

Absolute contraindications to surgery include:

- Exacerbation of peptic ulcer disease of the stomach and duodenum, as well as the presence of erosive and ulcerative lesions of the gastrointestinal tract;
- Pregnancy;
- Harmful habits, including chronic alcoholism and drug addiction, as well as severe psychiatric disorders;
- Malignant neoplasms that have not undergone radical treatment;
- Severe and irreversible dysfunction of vital organs, such as decompensated cardiac, respiratory, renal, or hepatic failure [2].

Bariatric procedures are generally classified into three main groups:

Restrictive procedures — aimed at reducing gastric volume by creating a small reservoir (“small stomach”) in the upper part of the stomach, connected to the remaining portion by a narrow channel. This leads to a decrease in food intake (e.g., gastric banding);

Malabsorptive procedures — involve excluding a portion of the small intestine from the digestive process, thereby reducing nutrient absorption;

Combined (mixed) procedures — incorporate both restriction of food intake and reduction of nutrient absorption [5].

Among the most commonly performed bariatric procedures are:

- *Gastric banding;
- *Gastric bypass;
- *Various types of gastropasty, with sleeve gastrectomy (longitudinal gastric resection) currently being the most widely used technique;
- *Biliopancreatic diversion [6]. Let us briefly consider each of these bariatric procedures.

Gastric banding is considered one of the least invasive and relatively safe bariatric procedures. It is indicated for patients with obesity and a body mass index (BMI) of 35–45 kg/m². The procedure involves placing an adjustable silicone band around the upper part of the stomach, creating a small gastric pouch with a volume of approximately 10–15 mL. This promotes early satiety due to the activation of stretch receptors.

The intervention is typically performed laparoscopically, which facilitates faster recovery and reduces the rehabilitation period. The procedure is organ-preserving and does not disrupt the anatomical continuity of the gastrointestinal tract. Its advantages include adjustability of weight loss, good tolerability, reversibility, and a relatively quick return to daily activities.

According to statistical data, patients lose on average about 50–60% of their excess body weight; however, in a subset of patients (approximately 15–20%), the outcomes may be less pronounced due to difficulties in adhering to new dietary habits.

Long-term complications may include enlargement of the gastric pouch or band slippage (2–3%), band migration into the gastric lumen (1–3%), as well as device-related issues or inflammatory changes in the area of the access port and connecting components [2].

Roux-en-Y gastric bypass is a bariatric procedure with a combined restrictive and malabsorptive effect. It is performed in the form of the Roux-en-Y gastric bypass or as a mini-gastric bypass and allows for a reduction of approximately 60–70% of excess body weight [6].

The procedure involves the creation of a small gastric pouch with a volume of 20–30 mL, which is then anastomosed to the small intestine. In doing so, a significant portion of the stomach, the duodenum, and the proximal jejunum is excluded from the passage of food. This results in the rapid delivery of nutrients to the distal intestine and activation of the incretin response.

According to researchers, this method is characterized by high efficacy, a relatively low rate of recurrence, and significant improvement in metabolic parameters, particularly in patients with type 2 diabetes mellitus. Due to these advantages, it is often regarded as the “gold standard” of bariatric surgery.

However, malabsorption may be associated with deficiencies of protein, vitamins, and micronutrients, including the development of iron deficiency anemia and disturbances in calcium–phosphorus metabolism [6,7]. Therefore, patients require lifelong monitoring of nutritional status, adequate protein intake, and regular use of vitamin and mineral supplementation [8].

Possible complications include dumping syndrome, bile reflux (in single-anastomosis procedures), as well as ulcers and stenosis at the site of the anastomosis. In some cases, revisional surgery may be required to correct these complications [8].

Sleeve Gastrectomy (Longitudinal Gastric Resection) is one of the most commonly performed restrictive bariatric procedures. The operation involves resection of a significant portion of the stomach with the formation of a narrow, tubular gastric reservoir calibrated using a 36–40 Fr bougie. The pylorus is preserved, which reduces the likelihood of developing dumping syndrome.

Research findings indicate that after surgery, patients achieve early satiety when consuming small amounts of food (approximately 50–100 g). In addition, appetite decreases due to the removal of the ghrelin-producing zone, as ghrelin is a hormone that stimulates hunger.

The effectiveness of the procedure largely depends on adherence to dietary recommendations; failure to follow the prescribed diet significantly reduces the overall outcome. On average, excess weight loss is about 40–60%. Therefore, preoperative consultation with a nutrition specialist and continuous postoperative follow-up are essential.

It should be noted that this procedure is irreversible, as a portion of the stomach is permanently removed. It is contraindicated in patients with severe gastroesophageal reflux disease (GERD) and large hiatal hernias [9].

Biliopancreatic diversion (BPD) is among the most effective bariatric procedures, providing significant weight loss and improvement of metabolic syndrome components, including diabetes mellitus and dyslipidemia. In some cases, normalization of glucose and lipid levels can be achieved without pharmacological therapy. A key feature of this method is the calculation of the length of the excluded intestinal segments from the ileocecal junction.

The most commonly used variants are the Hess–Marceau modification (BPD/DS) and SADI (Single Anastomosis Duodeno-Ileal bypass). In the Hess–Marceau technique, sleeve gastrectomy is performed with preservation of the pylorus, followed by the creation of a duodenoileal anastomosis. A substantial portion of the small intestine is excluded from digestion. The mixing of ingested food with bile and pancreatic enzymes occurs only in a short terminal segment of the intestine (50–100 cm), which enhances the malabsorptive effect and reduces the risk of dumping syndrome.

The SADI technique involves the creation of a single duodenoileal anastomosis following sleeve gastrectomy, which technically simplifies the procedure.

Despite its high efficacy, BPD is associated with the risk of serious metabolic disturbances, including protein deficiency, anemia, vitamin and mineral deficiencies, as well as decreased bone mineral density. These conditions require continuous medical monitoring and timely correction [10].

Conclusion

Thus, the problem of obesity is becoming increasingly relevant and represents a significant social threat affecting populations regardless of social or occupational status, place of residence,

age, or gender. The path to recovery for patients with obesity is long and challenging, beginning with pharmacological therapy; however, only a small proportion of patients achieve meaningful results through conservative treatment. In addition, the risk of progression of obesity-associated diseases remains high.

For this reason, many patients choose surgical treatment in order to achieve faster and more pronounced outcomes. Although any surgical intervention can be performed successfully, postoperative care plays a crucial role. It requires an individualized dietary approach, targeted nutritional support (vitamin and mineral supplementation, probiotics), continuous monitoring of the intestinal microbiota, and overall patient condition.

In the long term, regular follow-up is essential, including monitoring of endocrine and metabolic parameters, as well as the implementation of behavioral strategies aimed at improving dietary adherence and preventing weight regain.

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