

FEATURES OF THE COURSE OF PREGNANCY AND CHILDBIRTH AFTER BARIATRIC SURGERY

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Abstract

Obesity is a public health problem worldwide, affecting millions of adults each year, and its incidence is increasing, making it the most common problem in women of reproductive age [1]. In women, maternal obesity has been described if their body mass index (BMI) before pregnancy was 30 kg/m², which has many disadvantages for the mother and fetus, such as high susceptibility to gestational diabetes, hypertension, preeclampsia, congenital anomalies, and intrauterine death [2, 3].

Introduction

According to the World Health Organization (WHO), the main increase in obesity cases is severe or morbid, which are often accompanied by multiple disorders and life-threatening conditions [1]. Bariatric surgery is recognized as the most effective, radical and long-term treatment for severe obesity. doubles, and today exceeds half a million people a year. Uzbekistan is also no exception, and more and more medical specialists in various fields are faced with patients who have undergone bariatric surgery. According to clinical guidelines for bariatric surgery, surgery is recommended for morbidly obese patients aged 18 to 60 years [2]. Bariatric surgeries aimed at treating obesity are becoming more and more popular among women of reproductive age. These surgical interventions contribute to a significant reduction in body weight and an improvement in the metabolic profile, which has a positive effect on fertility and reduces the risk of obesity-related complications. Bariatric surgery is emerging as the most effective interventions aimed at reducing maternal obesity, improving pregnancy outcomes, and reducing long-term negative outcomes for the mother and fetus, as well as maintaining long-term weight loss [4, 5].

Babies of mothers who have undergone bariatric surgery have been found to have some risks, such as giving birth prematurely, with low birth weight for gestational age, as well as a higher likelihood of admission to the neonatal intensive care unit [5, 6]. Previous studies have shown that the disadvantages of bariatric surgery in children were more likely to occur if pregnancy occurred within 12 months of surgery, as there is a marked decrease in calorie intake and rapid weight loss during this period, which carries the highest risk of maternal malnutrition, and therefore a low nutrient supply to the fetus [

Thus, most patients after bariatric surgery are women of reproductive age, which makes them frequent patients of obstetricians and gynecologists. However, pregnancy after such operations requires special attention due to possible nutritional disorders, endocrine and metabolic changes



that can affect both the mother and the fetus. This article is devoted to the analysis of the course of pregnancy and childbirth in women who have undergone bariatric surgery.

Materials and methods

For analysis, 34 pregnant women who underwent various types of bariatric surgery (gastric bypass, gastric sleeve, gastric banding) were selected. The study included the analysis of medical records, ultrasound examinations, laboratory tests for nutritional status, as well as a questionnaire of patients on nutrition and well-being during pregnancy. Inclusion criteria: all patients who became pregnant and gave birth after various types of bariatric surgery, including gastric bypass, gastric bypass with single anastomosis and gastric sleeve after obtaining written informed consent for inclusion in the study.

All patients enrolled in the study gave birth between May 2020 and July 2023.

The BMI before pregnancy in all included patients was 39 (19–59). Exclusion Criteria. Patients with spontaneous abortion, surgical termination of pregnancy, diabetes mellitus, multiple pregnancies and incomplete data on the course of pregnancy were excluded from the analysis.

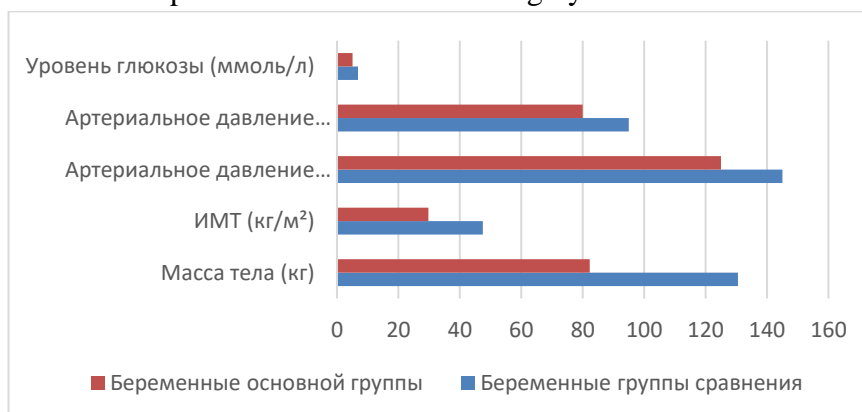
Patient outcomes. All pregnant women were divided into two groups: pregnant women with a history of bariatric surgery, ($n=35$) (study group) and pregnant women with a BMI of ≥ 35 kg/m² without previous bariatric surgery ($n=40$) (comparison group). Data were collected from medical records.

Any pregnancy-related complications such as gestational diabetes mellitus newly diagnosed by monitoring glucose levels during pregnancy, gestational hypertension (newly diagnosed hypertension during pregnancy above 140/90 mm Hg in 2 cases), hypertension and proteinuria (preeclampsia) and ≥ 1000 mL postpartum haemorrhage were assessed.

Pregnancy-related complications. Pregnancy-related complications, such as gestational diabetes mellitus (GDM) and hypertension, were not related to the interval between surgery and conception or to the degree of weight gain during pregnancy.

None of the included patients in the study group had preeclampsia. Postpartum haemorrhage was found in (4%) of all patients included. Birth defects were found in (4%) newborns. There were no significant differences between the three patient groups included in the incidence of congenital anomalies, perinatal mortality, or admission to the neonatal intensive care unit.

Outcomes. Clinical data of patients before and after surgery.



Rice. 1. Basic clinical data of patients before and after surgery.



Pregnancy after bariatric surgery was associated with a lower risk of gestational diabetes (14.3% versus 30%, $p < 0.05$) and cesarean section (14.3% versus 31.3%, $p < 0.05$), as well as a higher gestational weight gain (10.58 ± 9.95 versus 7.33 ± 6.00 kg, $p < 0.001$). Participants in bariatric surgery who had a gestational weight gain of ≤ 10.0 kg had a higher risk of preterm birth (16.7% versus 2.5%, $p = 0.031$). No significant differences were found in relation to hypertensive diseases of pregnancy between groups (5.7% versus 12.5%).

Pregnancy after bariatric surgery was associated with a lower neonatal weight percentile (34.24 ± 21.09 versus 48.77 ± 27.94 , $p < 0.001$), a higher risk of fetal growth restriction (5.6% versus 0.6%, $p = 0.018$), and a lower risk of fetal macrosomia (0.0% versus 7.5%, $p = 0.005$).

Table 1 The course of pregnancy in the examined pregnant women

Options	Core Group	Comparison Group
Gestational diabetes	14,3 (5)	30 (12)
Hypertensive conditions during pregnancy	5,7 (2)	12,5 (5)
Large fetus for gestational age	0	7,5 (3)
Small fetus for gestational age	14,3 (5)	7,5 (3)

The course of pregnancy in patients after bariatric surgery. Out of 35 patients, 9 (25.7%) had complications in the form of hypovitaminosis and anemia, which required correction with iron and vitamin preparations. 11 women (31.4%) had a tendency to have preterm birth, which required additional monitoring and hospitalization. The average delivery time was 38 weeks, which is comparable to population data.

Risks to the fetus. The study showed that 11.4% of newborns had a low birth weight (< 2500 g), which may be due to insufficient nutritional support during pregnancy. In other cases, the body weight of the fetuses was within the normal range. There were no cases of congenital anomalies or complications associated with surgery.

The course of labor in women who have undergone bariatric surgery is presented in Table 2, this table shows the outcomes of labor in the women studied.

Table 2 Birth outcomes in the examined pregnant women

Parameter	Core Group		Comparison Group	
	(%)	n=35	(%)	n=40
Natural childbirth	85.7	30	68,6	24
Caesarean section	14.3	5	31,4	11
Preterm birth	8,6	3	17,5	7
Complications during childbirth (bleeding, hypotension of the uterus)	11,4	4	20	8

The table shows the main complications observed in women after bariatric surgery that require medical correction.



Discussion

Pregnancy in women after bariatric surgery is associated with an increased risk of complications related to malnutrition and metabolic changes. Hypovitaminosis, anemia, as well as the risks of premature birth and low fetal weight, require careful monitoring and timely correction. Weight loss after surgery usually has a beneficial effect on the course of pregnancy and reduces the risks associated with obesity, such as gestational diabetes and hypertension.

Thus, women who have undergone bariatric surgery can successfully carry and give birth to children, provided that their health is regularly monitored and metabolic disorders are corrected. An important aspect of the management of such pregnancies is the prevention of hypovitaminosis and anemia, as well as constant monitoring of fetal growth.

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