

ORIGINAL RESEARCH

Medicine Science 2019;8(3):620-3

Pregnancy outcome of patients who conceive after bariatric surgery

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Received 8 February 2019; Accepted 11 March 2019

Available online 10.05.2019 with doi:10.5455/medscience.2019.08.9031

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Abstract

The aim of the study was to determine the outcomes of pregnancy in the reproductive period among patients with previous surgery due to obesity. 14 women who had a live birth after bariatric surgery enrolled in this study. The primary targets were gestational age and birth weights. The median duration of pregnancy was 270 days (minimum 256, maximum 281 days), with 2 patients giving birth from 36-37 weeks gestation. The mean birth weight was 3017 ± 285 g (minimum 2390, maximum 3380 g), with 2 patients having birth weight below 2500 g. The result of this study suggests that patients who undergo bariatric surgery have acceptable obstetric outcome.

Keywords: Pregnancy outcome, bariatric surgery, obesity and pregnancy

Introduction

Obesity is defined as a clinical situation characterised by excessive fat intake on the body, which significantly affects survival, duration of life and quality of life [1]. The most commonly used method for diagnosis of obesity is the body mass index (BMI) calculation and this value is defined as obesity above 30 kg/m² [2]. Globally about 300 million adults are obese, with 1 billion people accepted as being overweight and more than 100 million people known to experience significant problems from premature death to lowered quality of life [3]. The World Health Organization (WHO) has added obesity to the list of deadliest diseases along with HIV and malnutrition due to the dramatic increase in obesity worldwide. In Turkey, there is no clear data related to the obesity incidence in pregnancy; however, it is reported that 40% of all pregnant cases in the USA are overweight or obese at the start of pregnancy (28% obese, 8% morbidly obese) [4]. Studies in England have reported the incidence of obesity in pregnancy as 10.9-18.5% [5,6].

One of the foetal risks related to maternal obesity is increased first trimester and recurrent miscarriages [7]. Studies since the 1990s have shown correlations between maternal obesity with GIS anomalies like anencephaly, cardiac anomalies and omphalocele and with central nervous system anomalies [8,9]. Obesity is a well-known cause of macrosomia leading to difficult birth, shoulder

dystocia and increased Caesarean rates [10]. Maternal obesity carries increased risk of foetal distress and foetal meconium aspiration and is associated with at least a two-time increase in stillbirths and neonatal deaths [11]. Maternal obesity is related to increased gestational diabetes mellitus and hypertensive diseases like preeclampsia [12]. Another worrying situation is that one of the most significant causes of maternal mortality of thromboembolism is increased with obesity [13]. Due to reasons such as intubation difficulty and anaesthesia failure in obesity, there is an increase in hypoxic complications [14] and in the postpartum period this is associated with increased infection and prophylactic antibiotic use [15].

The first strategies in dealing with obesity are lifestyle changes like diet and physical exercise and additionally, currently increasing numbers of obese female patients are treated with bariatric surgery [16]. Bariatric surgery had been found to be more effective than other treatment choices for weight loss and reducing comorbid situations in obese patients with BMI above 40 kg/m². Bariatric surgical procedures are divided into two main classes as restrictive procedures and combined restrictive/malabsorptive procedures. Restrictive surgical procedures aim to achieve early feeling of fullness, while malabsorption procedures aim to reduce the area of absorption. The primary aim of bariatric surgery is to improve medical problems related to obesity. In the first 1 year after bariatric surgery when weight loss is greatest, it is recommended that patients not become pregnant [17].

The increase in obesity to epidemic dimensions throughout the

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world has taken obesity from being a situation with significant psychological and social outcomes to becoming a significant public health problem. Along with this global increase in obesity, a similar increase has occurred among women of reproductive age. This situation may cause critical outcomes in the antepartum, intrapartum and postpartum periods for both fetus and mother[18].

In this study our aim is to investigate the outcomes of pregnancies in the reproductive period among patients with previous surgery due to obesity.

Material and Methods

The files of patients attending Balıkesir Atatürk City Hospital Department of Gynaecology and Obstetrics from 01.09.2016 to 01.01.2019 with previous history of bariatric surgery due to obesity were retrospectively screened.

The patient group included patients with singleton birth from 01.09.2016 to 01.01.2019 with previous bariatric surgery. Only data from the first birth after surgery were included in the study.

The primary targets in this study were gestational age and birth weight, with these data assessed as preterm, small for gestational age (SGA) and large for gestational age (LGA).

Secondary outcomes were preeclampsia, birth induction, Caesarean section, postpartum haemorrhage (500 ml), Apgar score below 7 at 5 minutes, neonatal intensive care requirements and perinatal mortality.

Preeclampsia was accepted as blood pressure above 140 mmHg and diastolic above 90 mmHg, accompanied by proteinuria of 0.3 g in 24-hour urine or above 100 mg/dl in urine in accordance with ACOG criteria [19].

The diagnosis of GDM was made with a value of 0, 1 and 2. hour measurements performed after 75 g oral glucose tolerance test, with a minimum value of 92, 180 and 153 respectively [20].

This study was approved by the local ethics committee of Balıkesir Atatürk Hospital

Statistical Analysis

Data were analysed using the SPSS 11.0 program. The results were presented as mean + standard deviation, minimum and maximum.

Results

The mean age of the 14 patients included in the study was 29.9 ± 3.6 years. The youngest participant in the study was 24 years, while the oldest was 37 years. Of patients participating in the study, 11 were nulligravida, 2 had 1 previous pregnancy and 1 had 2 previous pregnancies. All of the patients included in the study were nullipara. The mean BMI before operation was 41.7 ± 1.6 kg/m² (minimum 40.00- maximum 44.10 kg/m²). The duration from the operation until pregnancy was mean 17.5 ± 4.5 months (525 ± 135 days) (minimum 11 months, maximum 26 months). The BMI before pregnancy was 29.5 ± 1.6 (Minimum 26, Maximum 32.3). Five patients had BMI above 30 kg/m². The mean weight gained during pregnancy was 9.2 kg (minimum 6, maximum 13 kg). The median duration of pregnancy in the 14 patients was 270

days (minimum 256, maximum 281 days), with 2 patients giving birth from 36-37 weeks gestation, 2 patients from 37-38 weeks, 6 patients from 38-39 weeks, 3 patients from 39-40 weeks and 1 patient giving birth at 40 weeks 1 day. For the 14 patients, mean birth weight was 3017 ± 285 g (minimum 2390, maximum 3380 g), with 2 patients having birth weight below 2500 g. Only 2 neonates required the intensive care unit. One mother developed both preeclampsia and GDM simultaneously during pregnancy. Additionally, one mother had HT diagnosis placed and birth induced, and one mother had GDM diagnosis. Of the 14 patients, 11 gave birth with the normal vaginal route, while 3 patients had Caesarean section.

Discussion

There was no significant differences were noted regarding the risk of gestational diabetes mellitus, preeclampsia, labour induction, Caesarean section, postpartum haemorrhage, Apgar score less than 7, admission to neonatal intensive care unit or perinatal death in our study.

This study suggests that patients who undergo bariatric surgery have acceptable obstetric outcome. Bariatric surgery was first performed in the 1960s, in patients with BMI of 40 or more, or in patients with BMI 35 and other comorbidities. Bariatric surgery is the most effective treatment method for obese individuals and provides a complete disappearance of comorbidities and an increase in quality of life [21].

Although the data in our country is not clear, the number of surgeries has increased dramatically in the USA. Between the years 2011-2016 in the US, the number of these operations reached 1.1 million [22]. More than 80% of those undergoing operation are women, half of whom are on average 40 years old [23]. Weight loss is the most effective method for improving comorbidities such as diabetes and hypertension. Bariatric surgery improves lipid and glucose metabolism and many diabetics are cured almost immediately after the surgery [24]. A reduced risk of GDM is therefore expected after bariatric surgery, which also has been reported in a recent study from Burke et al comparing pregnancies before and after bariatric surgery [25]. On the other hand, some studies suggest that bariatric surgery has not shown a positive effect on GDM [26].

Previous comparisons of pregnancies in women before and after bariatric surgery have shown a lower risk of pregnancy induced hypertension and preeclampsia [27,28]. There are studies showing that average weight gain during pregnancy decreases after bariatric surgery [29,30]. In one study, the risk of PPROM was shown to increase after bariatric surgery, but in most studies no increase in the risk of preterm birth was reported [31,32]. Although some studies show increased cesarean rates after gastric surgery, a recent study has also been associated with decreased C / S ratios [33,34]. There were no complications related to surgery in our series but In the literature, complications such as intestinal obstruction, gastrointestinal haemorrhage, and maternal mortality were reported during pregnancy [35-37]. For this reason, careful examination is necessary in patients with previous gastric surgery in the presence of significant abdominal symptoms.

The risk of congenital anomaly is not increased after bariatric

surgery [38]. Some studies show that mean birth weight is reduced after bariatric surgery [39-41]. In a study by Kjaer et al., Which included many factors such as BMI, parity, age, gestational week and smoking, the risk of SGA was shown to increase after bariatric surgery. Infants born after maternal bariatric surgery have lower birthweight, lower gestational age, 3.3-times lower risk of large for gestational age, and 2.3-times higher risk of SGA than infants born by a matched group of women without bariatric surgery [26].

It is recommended that pregnancy should be postponed at least for 1 year after gastric surgery. However, recent studies show that there is no significant risk increase in pregnancies during the first year [42]. Gastric bypass operations are associated with more weight loss than gastric banding surgery. Gastric bypass not only reduces the volume, but also bypasses the major part of the small intestine, leading to food restriction and malabsorption leading to many essential vitamins and minerals [43]. In our study, patients had undergone sleeve gastrectomy prior to conception.

Conclusion

In conclusion, Bariatric surgery is the most effective treatment for morbidly obese patients with BMI of more than 40 kg / m², and can be safely recommended to women in reproductive age. There is a need for large series of studies in which more patients are included.

Financial Disclosure

The authors declared that this study had received no financial support.

Ethical approval

Ethics committee approval was obtained from Balıkesir Atatürk Hospital

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