Case Report of a Healthy Pregnancy in a Woman of Advanced Maternal Age at Sixteen Months Post-Roux-en-Y Gastric Bypass Revision

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Abstract

**Background/Objective:** Obesity (body mass index > 30 kg/m2) complicates maternal and neonatal pregnancy outcomes. Bariatric surgery (BS) is an option for weight reduction in reproductive-aged women. However, there is a lack of data regarding the ideal time interval between BS and pregnancy.

**Methods:** We report the case of a 43-year-old Hispanic female who underwent an initial Roux-en-Y gastric bypass (RYGB) in 2011 followed by a revision eight years later in 2019. The revision occurred 16 months prior to conception of her second pregnancy.

**Results:** Despite advanced maternal age and nutritional challenges following BS, she delivered a healthy male baby and sustained a net weight loss compared to her preoperative weight. Factors leading to this positive outcome included the patient's adherence to dietary recommendations following the procedure and the use of phentermine to promote post-procedure weight loss.

**Conclusion:** An interval of sixteen months between RYGB revision and conception can lead to positive pregnancy outcomes, even in women of advanced maternal age. Adherence to post-procedure nutrition and weight gain protocols are crucial to this outcome. Further studies are needed to explore the time interval that ensures a healthy pregnancy, as well as the use of medications as weight loss adjuncts following BS.

Introduction

Approximately 62.5% of adults in the Americas are overweight or obese [1]. In the USA, candidates for bariatric surgery (BS) must have a body mass index (BMI) > 40 kg/m² alone or 35–39.9 kg/m² with additional comorbidities such diabetes mellitus [2]. Options for BS include procedures that restrict stomach size (laparoscopic sleeve gastrectomy), limit nutrient absorption (biliopancreatic diversion), or both (Roux-en-Y gastric bypass [RYGB]). Between 1998–2005, 83% of BS procedures in the United States were performed on women of reproductive age (18–45 years old) [3].

Obesity is detrimental to fertility because it interferes with normal ovarian and endometrial physiology [4]. It can also increase the risk of gestational diabetes mellitus, preeclampsia, cesarean delivery, and infectious morbidity [5]. While one can understand why women with obesity may choose to undergo BS prior to conception, the procedure alone is not a treatment for infertility [4]. BS can lead to severe nutritional deficiencies if patients do not adhere to the appropriate diet postoperatively [5].

We report here the case of a pregnancy in a woman of advanced maternal age that resulted in positive outcomes despite an interval of only 16 months between RYGB revision and conception.

Case Presentation

We present the case of a 43-year-old Hispanic female who was G2P2A0 and eight years status-post an RYGB procedure. Sixteen months before conception, she underwent an RYGB revision (gastric pouch...
reduction) in 2019 to treat morbid obesity due to regaining weight after the initial loss. Her past medical history included treatment-resistant type 2 diabetes mellitus and microcytic anemia. A 12.70 kg weight loss was reported six months following RYGB revision. Her hemoglobin (Hb)A1c levels decreased from 5.8–5.6% within three months postoperatively.

To facilitate additional weight loss, she was prescribed 15 mg of phentermine at three months postoperatively. The dose was increased to 30 mg six months postoperatively and 37.5 mg seven months postoperatively. The patient discontinued phentermine upon confirmation of pregnancy. A 15.42 kg weight loss was measured one year later. Follow-up appointments were limited by the onset of the Coronavirus disease-2019 (COVID-19) pandemic in March 2020.

Although her first child was delivered via cesarean section, the patient experienced an uneventful planned pregnancy and delivered a healthy male naturally 25 months after the RYGB revision. The patient’s obstetrician provided dietary guidelines and instructed her to gain approximately 13.61 kg during her pregnancy. The patient reported a 15.88 kg weight gain during this time. Two months postpartum (27 months postoperatively), she weighed 103.42 kg, approximately 4.54 kg below her preoperative weight.

**Conclusions**

Obesity is defined as BMI > 30 and further subdivided into Class 1, BMI 30 to < 35; Class 2, BMI 35 to < 40; and Class 3, BMI ≥ 40 [6]. A diagnosis of obesity during pregnancy is based on the pre-pregnancy BMI. Given the growing prevalence of obesity in females ages 20–39 years, BMI has become an increasingly important aspect of preconception counseling [7]. Excess adipose tissue evolves into an active endocrine organ with harmful systemic effects, including insulin resistance and defective placental development [8]. Complications associated with maternal obesity during pregnancy include gestational hypertension, preeclampsia, gestational diabetes, preterm birth, and infants who are large for their gestational age [9]. The Barker hypothesis postulates that maternal obesity increases the propensity for adult cardiovascular disease among infants due to changes in metabolic programming in utero [10]. Thus, BS may be a suitable treatment for pre-pregnancy obesity in women that meet the established criteria.

To date, there is no consensus regarding the time interval between BS and time of conception [11]. Rapid weight loss can lead to higher fertility rates by improving menstrual regularity and relieving the symptoms of polycystic ovarian syndrome [12]. However, the dramatic weight loss following BS can hinder follicle development [13]. Studies revealed that pregnancy < 12 months following RYGB was associated with a higher incidence of urinary tract infection, inadequate birth weight, and dumping syndrome compared to pregnancies initiated 12–24 months after the procedure [14]. More research will be required to understand the full impact of the length of this interval on pregnancy outcomes.

This case is unique because of our patient's advanced maternal age and history of two BS procedures. Fecundity begins to decline at age 32 and accelerates after age 37 due to a decrease in egg quality and levels of circulating hormones [15]. While we did not have access to her obstetrical records, our patient reported no difficulties with conception. Studies report that neonates born to mothers who had undergone
RYGB surgery were more likely to have lower fetal growth rates [11]. Although our patient had undergone two BS procedures, she did not experience this complication. More research will be needed to understand the potential detrimental physiological and nutritional changes and their impact on pregnancies among women who have undergone BS.

The patient was treated with phentermine three months after the RYGB revision. The use of phentermine and topiramate as weight loss adjuncts was approved by the United States Food and Drug Administration in 2012 [16]. Studies show increased efficacy of these weight loss medications when used in conjunction with laparoscopic sleeve gastrectomy versus RYGB, in which these drugs resulted in a 2.8% versus a 0.3% loss of total body weight, respectively [17]. More data will be needed to understand the appropriate use of the adjuncts, particularly in reproductive-aged women[18].

Patients who have undergone BS should be followed up every three months for two years to screen for nutritional deficiencies [13]. Deficiencies in vitamins A, B12, K, iron, folate, and calcium can harm the health of the mother and growing fetus. After the onset of the COVID-19 pandemic in March 2020, our patient was followed by telemedicine appointments for one year. The electronic health records documenting these encounters do not indicate any desire to conceive, although our patient's obstetrician was aware. While there are currently no specific guidelines, our patient presented at advanced maternal age and thus may have benefitted from counseling regarding pregnancy after BS.

Declarations

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References


Supplementary Files

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