


Bariatric surgery in infertile women with morbid obesity: definitive solution?

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Obesity is a global public health problem affecting over 650 million people during all stages of life, especially in the reproductive period¹. In Brazil, this condition has increased dramatically: in 2006, it affected 11.8% of the population, rising to 18.9% in 2016. The numbers appear to be even worse during reproductive age: in 2013, obesity affected 20.8% of Brazilians over 18 years of age, the percentage being higher among women (24.4%) when compared to men (16.8%)².

Clinical comorbidities of obesity, such as systemic arterial hypertension and diabetes mellitus, have an impact on the health and quality of life of this population. However, the effect on male and female fertility is another major concern^{3,4}. There are several mechanisms associated with this subfertility, such as chronic anovulation, insulin resistance, reduction of oocyte quality and reduction of embryo implantation rate^{5,6}. Obesity is also associated with worse obstetric and perinatal outcomes, such as high risk for preeclampsia, gestational diabetes, macrosomia, and foetal distress⁷.

In men, obesity can affect spermatogenesis by in-

creasing testicular temperature and also by elevated serum oestrogen levels, due to the greater peripheral conversion of androgens in adipose tissue, which consequently determines inadequate feedback in the hypothalamic-pituitary-gonadal axis, altering the testicular function⁸. Some researchers have shown reduced concentration and sperm motility in obese patients⁹.

Obese female patients are often advised to lose weight before becoming pregnant, but evidence in literature is conflicting when assessing the actual effect of lifestyle changes on the couple's reproductive outcomes. There are several protocols with nutritional guidance and physical activity to reduce pre-conception weight with an increase in the spontaneous ovulation rate, but without significant repercussions on the number of pregnancies and, especially, on the number of live births¹⁰. In this sense, Best et al.¹¹ systematically reviewed the impact of lifestyle changes, including adequate nutritional guidance and physical activity, on fertility. Despite considering randomized clinical trials, they concluded that it may increase the chance of pregnancy, but did not show an increase in

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the live birth rate. Another problem is the difficult adherence to the lifestyle change protocols by the patients, especially those with morbid obesity¹².

Bariatric surgery may be an alternative for morbidly obese women or those with comorbidities who were unsuccessful at attempts to lose weight with behavioural measures and lifestyle changes. This surgical technique aims at reducing the capacity of food intake and/or absorption. Data from literature show a sustainable weight loss over a shorter period of time, and reduction of morbidity associated with obesity¹³. It is an option for morbidly obese women with infertility who have failed with other therapies. In a survey with over 15,000 women who underwent bariatric surgery in the United Kingdom, 53% were between 18 and 45 years old¹⁴.

Bariatric surgery restores the regular menstrual cycle, correcting ovulatory dysfunctions and adjusting the length of the follicular phase (often long in obese patients). In addition, it improves women's self-esteem, having a positive impact on the sexual function¹²⁻¹⁷. However, there are still few studies that have evaluated reproductive outcomes in patients who underwent bariatric surgery. Milone et al.¹⁸ concluded that 58% of women with infertility and submitted to bariatric surgery became pregnant spontaneously, after a systematic review of the literature. This result should be interpreted with caution, since the included studies showed a large variation (22% to 92% of spontaneous gestation) and the evidence quality is still low in many studies^{18,19}.

Weight reduction after bariatric surgery leads to less need for drugs during assisted reproduction techniques. Tsur et al.²⁰ found that there was need for lower amounts of gonadotrophins for ovarian stimulation as the body mass index was lower before and after bariatric surgery. Other researchers also

found a similar finding and obtained a higher number of oocytes and high quality embryos for transfer²¹. However, other studies have not shown such significant results²².

In a study of 596 pregnancies of women who underwent bariatric surgery and data compared to 2,356 pregnancies in a paired cohort comprised of obese, non-operated women, there was a higher risk of newborns small for its gestational age (OR = 2.20; 95% CI, 1.64-2.95, $P < .001$) and higher risk of prematurity between 32 and 36 weeks and 6 days (OR = 1.30, 95% CI, 1.05-1.60) in the women with bariatric surgery. On the other hand, these patients had a lower risk of gestational diabetes (OR = 0.25, 95% CI, 0.13-0.47, $P < 0.001$) and foetal macrosomia (OR = 0.33, 95% CI, 0.24-0.44, $P < .001$). Therefore, there are negative and positive consequences that should be discussed with patients in the decision for bariatric surgery.

Some considerations should be made when evaluating the impact of bariatric surgery on fertility. First, it must be recognized that there are several techniques and the repercussion of each of them on the reproductive outcomes can also have its nuances and be different. We do not yet know what the preferred technique would be in patients during the reproductive age. In addition, there is uncertainty about the optimal time interval after surgery to attempt to conceive^{24,25}. However, some guidelines suggest the minimum interval of 12 months, and others, 24 months. However, the waiting time for women over 35 years old and with low ovarian reserve raises concerns about the feasibility of pregnancy¹⁷⁻²⁶.

Bariatric surgery may be an alternative for infertile women with morbid obesity but there is still the need for studies to know the ideal type of surgery as well as the time span required to minimize the complications of such procedure on gestation.

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