



# ENDOCRINOLOGÍA Y NUTRICIÓN

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## EDITORIAL

### Pregnancy after bariatric surgery: What should we tell our patients? ☆



### Gestación tras cirugía bariátrica: ¿qué responder a nuestras pacientes?

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Obesity during pregnancy is associated with an increased incidence of gestational diabetes mellitus (GDM), high blood pressure (HBP), preeclampsia, prolonged pregnancy, an increased number of cesarean sections, macrosomy, fetal malformations, and miscarriage after fertility procedures.<sup>1</sup> Moreover, obesity also impairs recovery after delivery.

Although weight loss achieved through diet improves these results, there are still many questions pending about pregnancy after bariatric surgery (BS) which will be briefly discussed here. It should be kept in mind that the number of BS procedures has greatly increased in recent years, and virtually half of them are performed on women of childbearing age.<sup>2</sup>

1. Fertility increases after BS, both as an increase in unplanned pregnancies due to an improvement in oligoanovulation and due to psychosocial factors such as increased libido and self-esteem. The inclusion of polycystic ovary syndrome as a major comorbidity associated with obesity and its potential indication for BS has also been considered.

2. What is the most adequate time for pregnancy after BS? Until a few years ago, it was general agreed that pregnancy should be delayed for two years after BS because of the hypothetical risk of malnutrition secondary to rapid weight loss. However, several studies comparing pregnancies before and one year after BS found no significant differences in maternofetal outcome (GDM, HBP, preeclampsia, newborn weight, malformations). Based on these studies, most of them observational and case-control studies, including a multicenter study conducted by the Obesity Group of SEEN, a 12 month wait after BS is now recommended.<sup>3</sup>

3. As regards adequate supplementation during pregnancy to prevent malnutrition and vitamin deficiency, it should be noted that nutritional deficiencies are minimal after the fitting of a gastric band or a gastric bypass procedure (GB). However, this risk exists after biliopancreatic diversion (BPD) and all other mainly malabsorptive procedures. In a study of females who had had a GB, vitamin B12 (53.4%), ferritin (41.7%), calcium (16.7%) folic acid (16.1%), and iron (6.7%) deficiencies were the most common. On the other hand, a study of 15 pregnancies after different malabsorptive procedures conducted by our group (70% of them BPD) found iron deficiency in 80%, vitamin deficiency in 46.7%, vitamin A deficiency in 20%, vitamin E deficiency in 13.3%, and vitamin B12 deficiency in 26.7%.<sup>4</sup>

Although no clinical practice guidelines are available regarding supplementation to pregnant women after BS,

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general nutritional recommendations for pregnancy after BS include the following: (i) the same weight gain during pregnancy (based on pregestational BMI) as for women in the general population should be recommended; (ii) folic acid requirements should be the same as in the general population during the first trimester in order to reduce the risk of neural tube defects (400 mcg/day of folic acid, which should be increased to 5 mg/day when maternal BMI is higher than 30 kg/m<sup>2</sup>, although no consensus exists as to when this higher dose should be started and ended); (iii) potassium iodide supplements (150 mcg/day throughout pregnancy and lactation) should also be similar to those given to all other pregnant women; (iv) polyvitamin and mineral preparations should be given, either by adjusting specific pregestational supplements, including intramuscular vitamin B12, or switching to specific supplements for pregnant women; (v) there should be an intake of 1200–1500 g/day of calcium and at least 3000 IU/day of vitamin D to achieve plasma levels > 30 ng/dL); (vi) because of potentially decreased absorption, delayed release oral iron formulations should be avoided in mixed surgical procedures.<sup>5</sup>

Laboratory test monitoring should include the measurement of complete blood count, iron, ferritin, and vitamin B12 every trimester, regardless of the surgical procedure performed. Vitamin 25-OH-D, parathormone and folic acid should only be measured after mixed procedures. Vitamin A measurement is optional after GB and mandatory after BPD, while no specific recommendation exists for vitamins E and K. Serum zinc levels should only be measured after BPD. Other measurements such as those of copper, selenium, and thiamine should only be made if deficiency is clinically suspected.<sup>6</sup>

The risk of pathology due to nutritional deficiency in newborns resulting from maternal hypovitaminosis is low, but isolated cases of intraventricular bleeding due to vitamin K deficiency or blindness and ocular malformations due to hypovitaminosis A have been reported.<sup>7</sup> The teratogenic dose of vitamin A is 50,000 IU/day, but as a precautionary measure, doses lower than 10,000 IU/day are recommended for supplementation (except in the event of inadequate controls). Beta-carotenes have shown no teratogenic effects.

4. The GDM development rate after BS is lower as compared to pregnant women undergoing no surgery.<sup>8</sup> This has been related to metabolic and absorption changes after surgery (involving the incretin system) beyond mere weight loss. This may also be due to the lower sensitivity of screening tests due to their poor tolerability such as, for example, an increased risk of dumping syndrome. Potential alternatives in these cases include capillary blood glucose controls before and two hours after meals between weeks 24–28 of pregnancy. Similarly, a decrease is seen in gestational HBP and preeclampsia rates.<sup>9,10</sup>
5. Gastrointestinal symptoms (nausea, vomiting, or abdominal pain), so common in normal pregnancies, should be interpreted with caution after BS because they may mask surgical problems such as internal hernia, intestinal obstruction, peptic ulcer, and acute pancreatitis, which may even lead to fetal and maternal death. There is no agreement regarding patients who have had a gastric band fitted, but some surgeons deflate the

balloon if nausea and vomiting start, and others only if hyperemesis gravidarum occurs.

6. It is well known that the risk involved in cesarean section doubles in obesity and triples in severe obesity as compared to women with a normal BMI. The prevalence of cesarean section is 30% in pregnancies after BS, with great variations depending on the series. However, although these women often continue to be obese one year after surgery, there is no physiological reason for performing more cesarean sections in these women.<sup>9</sup> That is, BS should not alter the course of labor or condition the performing of an elective cesarean section.<sup>11</sup>
7. Although fetal results should be interpreted with caution, a recent analysis of data from the national Danish registry of pregnant women after BS concluded that newborns to mothers undergoing BS had lower birthweight, shorter gestational age, and a 3.3-fold higher risk of being small for gestational age.<sup>12</sup> This study also showed a reduction in macrosomy after BS as compared to obese women undergoing no surgery. It may also be stated that although few studies have been reported to date, BS does not increase perinatal mortality or the malformation rate. As regards fetal losses, they appear to be less common in women undergoing surgery as compared to non-operated women and possibly similar to the general population.<sup>7</sup>
8. Newborn care should be the same as for newborns to women not undergoing surgery.

It may be concluded that women who have undergone BS should plan their pregnancy with a multidisciplinary team to correct any potential prior nutritional deficiencies. Pregnancy is not recommended until at least 12 months after BS (or until weight loss stabilizes and nutritional deficiencies have been corrected). Although well-designed prospective studies are needed, the current evidence suggests that the course of pregnancies may be more favorable in women undergoing BS as compared to non-operated obese pregnant women and similar to that seen in the general population.

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