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EDITORIAL

Adequate Nutritional Supplementation for Pregnant Women Post-Bariatric Surgery: a Necessity

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Metabolic bariatric surgery (MBS) improves fertility in women of reproductive age resulting in more spontaneous or planned conception after surgery. It is recommended to postpone pregnancy until weight loss stabilizes, occurring typically a year after MBS [1]. This helps to achieve maximal weight loss and lowers the risk of nutritional deficiencies [2]. However, a considerable number of women become pregnant after MBS, even within this period. There's an increased risk of developing macronutrient and micronutrient deficiencies following MBS. Nutritional deficiencies should be considered due to anatomical changes and food restrictions following this procedure [3]. Moreover, nutrient needs increase during pregnancy as the fetus grows and maternal blood volume increases, leading to more significant deficiencies [2]. These deficiencies can have a negative impact on fetal development and growth and maternal health. Therefore, nutritional considerations and adequate nutritional supplementation are essential for pregnant women with a history of MBS.

Micronutrients play a significant role in pregnancy. Calcium, vitamin D, iron, iodine, and zinc are essential for fetal growth and development [4]. Vitamin B9 and B12 deficiencies are associated with higher risks of abortion and preterm birth [5]. Vitamin B1 deficiency can cause cardiac and neurologic complications and folate deficiency causes neural tube defects, preterm birth, and placenta-related complications [6, 7]. Moreover, vitamins C, E, zinc, selenium, and iron deficiencies are also associated with a higher risk for preterm birth [5]. Consequently, adequate supplementation is crucial for the required micronutrients during pregnancy. However, micronutrients such as iron, vitamin B1, folic acid, vitamin D, calcium, and vitamin B12 decrease following MBS [3]. Therefore, traditional pregnancy multivitamin supplements are not sufficient. Vitamin A deficiency is commonly reported following MBS, specifically after gastric bypass procedures [3]. Vitamin A supplementation is essential during pregnancy as its deficiency can lead to intrauterine growth restriction, retinal damage, and childhood blindness [5]. However, the retinol form of vitamin A is considered a teratogen during pregnancy and the beta-carotene form is recommended [2]. Unfortunately, traditional MBS supplementations contain the retinol form of vitamin A. Therefore, many physicians discontinue them and put patients on routine pregnancy supplements. However, these supplements are not sufficient for their higher nutrient needs. There's a need for tailored MBS supplements for pregnant women containing beta-carotene vitamin A and higher dosages for essential micronutrients, considering their nutrient needs.

There's no consensus on the optimal micronutrient supplementation for pregnant women with a history of MBS yet. Different supplement compositions and dosages for essential vitamins and minerals, including iron, zinc, vitamin B12, vitamin D, and calcium are recommended in the literature. Furthermore, some of these studies do not provide specific recommendations for other crucial micronutrients such as iodine, vitamin K, magnesium, copper, and selenium [5]. The majority of studies recommend the following daily dosages: folic acid (0.4–1 mg), iron (45–60 mg), thiamine (> 12 mg), beta-carotene (vitamin A, 5000 IU), vitamin E (15 mg), zinc (15 mg), copper (2 mg), and selenium (50 µg) [1, 2]. However, comprehensive evaluations by a healthcare

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specialist and regular monitoring are essential for tailoring supplements to each patient's needs.

During pregnancy, protein demands increase as it is essential for fetal growth and survival. A moderate dietary protein intake is recommended as both low and high protein intake lead to low birth weights and intrauterine growth restriction [8]. The daily protein intake recommended for pregnancy is 46 g (0.8 g/kg) during the first and 71 g (1.1 g/kg) during the second and third trimester [9]. Pregnant women are encouraged to obtain their daily intake through food sources of protein and the use of formulated protein supplements is generally not recommended [10]. Following MBS, the daily protein intake should increase to a minimum of 60 g and up to 1.5 g/kg ideal body weight, based on the individual's needs [1]. However, no specific recommendations are available for pregnant women after MBS. The specific daily protein intake requirements in each trimester according to the increased needs of these patients and whether we should advise protein supplementation or not are important questions.

Despite the availability of general recommendations, adequate supplementation and required daily dosages remain a topic of ongoing debate. There is a need for evidence-based guidelines on supplementation for pregnant women with a history of MBS. Furthermore, tailored supplements must be developed based on the requirements of this population to ensure maternal and fetal health. We recommend developing and implementing a comprehensive guideline for adequate nutrient supplementation in pregnant women with a history of MBS. Such guidelines should be informed by the latest evidence, considering the diverse needs of this population, ensuring that pregnant women with a history of MBS receive adequate nutrients and promote optimal maternal and fetal outcomes.

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Declarations

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