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LETTER TO THE EDITOR

The Role of the Nutritionist in a Multidisciplinary Bariatric Surgery Team

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Bariatric surgery (BS) is the most effective long-term solution for the treatment and control of morbid obesity. However, the nutritional deficiencies and malnutrition associated with BS present major challenges for patients and clinicians. Herein, we use clinical experience and evidence-based recommendations to review the role of a nutritionist in a multidisciplinary bariatric team before surgery and in postoperative follow-up.

Although data is lacking from randomized controlled trials, large prospective studies or meta-analysis supporting mandated pre-BS weight loss, we recommend a preoperative diet to reduce body weight, liver volume, and intraabdominal fat; identify and correct micronutrients deficiencies (MD); transform the quality of diets and eating habits post-surgery [1].

Obese patients scheduled for BS often have an enlarged steatotic liver that may render the surgical procedure technically challenging, resulting in longer operative times, increased risk of intraoperative bleeding, anastomotic complications, and compromise long-term results [2]. Increased intra-abdominal fat may also reduce the working space which, in turn, complicates the exposure of anatomical landmarks and impairs complex surgical tasks such as knotting and suturing. Therefore, preoperative interventions to reduce hepatomegaly and decrease intra-abdominal fat before laparoscopic BS could benefit surgeons and patients alike [3]. Three studies have investigated the effect of a pre-BS diet and report a relatively easy approach to the gastroesophageal junction during surgery. Colles et al. [4] and Lewis et al. [5] report that a low-energy preoperative diet substantially reduces liver volume and allows the liver to be manipulated easily during surgery thereby minimizing the difficulty of BS. In addition, Iannelli et al. [3] reported an easier liver retraction during surgery in patients who were treated with omega-3 polyunsaturated fatty acids for 4 weeks before BS.

However, the updated position statement on mandated preoperative weight loss requirements by the American Society for Metabolic and Bariatric Surgery [6] considers preoperative weight loss as important only if it benefits the related outcomes. Currently, no well-designed randomized studies with sufficient power demonstrate that preoperative weight loss has a clear impact on postoperative outcomes or weight loss [6]. However, it was recently shown that a preoperative low-calorie ketogenic diet was not only able to reduce liver volume and visceral fat [7] but also influenced the surgical outcome, drainage output, postoperative hemoglobin levels, and hospital stay [8].

Difficult intraoperative conditions may be managed in different ways by different surgeons, including the creation of a large pouch and limitation of the posterior gastric fundus dissection, resulting in a reduced restrictive effect and predisposition for weight loss failure and/or regain. The common

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scenario of performing a sleeve gastrectomy (SG) instead of a Roux-en-Y gastric bypass (RYGB) is the response of some surgeons to difficult situations that should instead be addressed before surgery. The net result is often an SG with a partial fundal resection, which, in turn, may need conversion in a second procedure. For these reasons, patients with complex conditions should be managed with combined strategies before surgery including loss of weight and the use of omega-3 fatty acids, which have been shown to reduce liver steatosis and systemic inflammation [3].

MD after BS are frequent [9], and patients with obesity often show MD before BS with a reported prevalence of deficiencies in 25-vitamin D, folate, vitamin B1, vitamin B12, vitamin A, vitamin E, zinc, iron, and selenium serum levels [10]. Compounding the problem, BS may exacerbate pre-existing MD and promote other severe conditions, most commonly anemic, metabolic, and, especially, neurological disorders [9]. Ben-Porat et al. showed that MD is the strongest predictor of MD in the postoperative period [11], suggesting that a specific supplemental program for each individual may consistently prevent postoperative MD. However, although a micronutrient assessment should be a considered routine, preoperative screening for MD has not been the norm in the majority of weight loss surgical programs [9]. Furthermore, there is still a gap in the knowledge about whether pre-BS correction of micronutrient status has a positive impact on the micronutrient status of patients' post-BS.

After BS, an important goal is to maximize fat mass (FM) loss while preserving metabolically active fat-free mass (FFM). Recently, we showed that a protein-enriched diet is more effective than a normal protein diet in determining FM loss and is associated with a lower decrease in FFM and resting metabolic rate (RMR) in male patients after SG [12]. Therefore, a nutritionist plays a crucial role in helping the patient not only achieve an adequate intake of macro- and micronutrients during the different phases of the postoperative diet progression (from liquid to solid diet) but also to maximize weight loss while preserving FFM [13]. Indeed, a significant decrease in FFM may negatively affect the RMR, slow the rate of weight loss, and predispose patients to weight regain [14].

Surgically induced alteration of gastrointestinal physiology can affect the nutrition of patients, especially those who have undergone malabsorptive procedures. To mitigate these deficiencies, empiric supplementation with multivitamins is mandatory [9]. Periodic surveillance should be performed for common MDs, including vitamin B1, B6, B9, B12, iron, copper, zinc, and lipid-soluble vitamins [9].

An important complication of BS is dumping syndrome (DS) [15]. The symptoms of DS can result from the rapid delivery of simple carbohydrate-rich osmotic fluids to the small intestine. Most patients with mild symptoms respond well to dietary changes [15]. However, in approximatively 3–5% of patients, severe symptoms can continue despite dietary modifications. Acarbose (a glucosidase inhibitor that slows carbohydrate digestion) has been found to be effective in promoting remission of both early and late DS in post-bariatric patients [16]. Furthermore, the administration of octreotide before a meal has been shown to be effective in retard gastric emptying, slow small bowel transit, and inhibiting the release of vasoactive peptides [17]. However, the side effects of octreotide, such as steatorrhea, diarrhea, and sometimes gallstone formation, suggest limiting its use for patients with severe or refractory DS. Therefore, in patients experiencing DS, blood glucose levels should be monitored to calibrate meals and/or pharmacological therapy.

Postprandial hyperinsulinemic hypoglycemia after BS is an uncommon and rarely reported metabolic complication, most commonly associated with RYGB [18]. The majority of patients can be successfully managed with dietary modifications. These include multiple small meals, high in fiber and protein but low in rapidly absorbable carbohydrates, throughout the day to avoid large-volume carbohydrate feeding [18].

In conclusion, through years of clinical experience with BS patients in a comprehensive medical management program and evidence-based recommendations, we highlight how the role of a nutritionist in a multidisciplinary BS team has evolved beyond the traditional role of diet counseling. Indeed, the role of the nutritionist has become crucial not only for the therapeutic success of BS but also to avoid nutritional risks linked to rapid weight loss, such as FFM, malnutrition, and MD.

Compliance with Ethical Standards

Conflict of Interest Statement The authors declare that they have no conflict of interest.

Statement of Informed Consent This is a Letter to the Editor in which we do not directly involve human beings.

Statement of Human and Animal Rights This is a Letter to the Editor in which we do not directly involve human beings or animals.

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