

Short Communication

Nutritional Complications after Bariatric Surgery

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Postoperative interurrences and complications

Whether due to failed care, low adherence to treatment, or even unknown causes, some patients present postoperative interurrences with smaller or greater clinical and nutritional repercussions. Intercurrences or complications can be divided into early, when they occur in the first 30 days after surgery, and late. The main early complication is dumping syndrome, but late complications are many and have different degrees of severity. Food intolerances, micronutrient and protein deficiencies, persistent vomiting, excessive weight loss, and weight regain are some of the occurrences reported in clinical practice. Since the severity of these conditions increases with time, these patients need regular monitoring to avoid the development of malnutrition or, in the case of weight regain, recurrence of obesity-related comorbidities [1].

Dumping syndrome and food intolerances

Dumping syndrome is characterized by an excessively fast arrival of high-osmolarity food in the jejunum, causing osmotic overload. It may be classified as early, when it occurs during or immediately after a meal, or late, if it occurs from one to three hours after food intake. The most common symptoms are abdominal distention and colic, head ache, nausea, vomiting, diarrhea, sweating and tachycardia, but dizziness, asthenia, and fatigue may also occur in late-onset dumping syndrome [2]. Some patients may develop aversion to some foods associated with the syndrome, especially those with high energy, lactose, and added sugar contents. Dietary adjustments are required to avoid the dumping syndrome, such as replacing the foods associated with the syndrome, consuming a diet with low glycemic load, meal fractioning and slow meal intake to try to delay gastric emptying.

After bariatric surgery, many patients develop some degree of food intolerance, characterized by an abnormal physiological response to a food, which may or may not be associated with the dumping syndrome. Some intolerances depend on surgical technique and postoperative food habits, but they vary greatly and are often difficult to assess. Rice, white bread, sweets, pasta, milk, and beef are often not accepted by this group of intolerant patients. Rice intolerance has been described in the early postoperative period. It is associated with the hydration and gelatinization of rice during cooking, which impairs amylase action. On the other hand, intolerance to foods high in lactose may be due to the intestinal bypass, which compromises

lactase production, also described in the dumping syndrome [2]. Intolerance to red meat may be associated with inadequate chewing and low gastric production of pepsin.

The problem may appear when patients with multiple intolerances refuse many foods or food groups, making their diet restricted and monotonous. Although intolerances are more common in the first semester after surgery, these foods may be excluded from the diet indefinitely for fear or psychological disorders. Some examples of nutritional deficiencies secondary to severe food restrictions are iron, vitamin B12, folate, calcium, and vitamin D deficiencies [3].

Micronutrient and protein deficiencies

The key micronutrients to be monitored after gastric bypass are calcium, iron, vitamin B complex (in particular, thiamine, folic acid and cyanocobalamin), and liposoluble vitamins. Nutritional supplementation should be started within the first few weeks (Table 1).

Other specific nutrients such as selenium, copper and zinc should be supplemented whenever there are cases of unknown etiology of anemia or symptoms such as fatigue, persistent diarrhea, heart disease, bone disease, healing difficulty, hair loss, hypogonadism and erectile dysfunction.

Patients submitted to more restrictive techniques, such as duodenal switch (DS), are at greater risk of thiamine deficiency right in the first months after surgery, and of vitamin A deficiency in the first year after surgery [3]. The mechanisms proposed to explain these deficiencies are malabsorption secondary to the surgical technique, recurrent vomiting, and inadequate adherence to diet and nutritional supplements [1]. Calcium deficiency is associated not only with milk and dairy product intolerances, but also with intestinal bypass, which excludes the site responsible for calcium absorption. Moreover, the occurrence of steatorrhea, caused by poor fat absorption, may also worsen malabsorption of vitamin D as this is a fat-soluble vitamin. Intolerance to red meat may predispose patients to protein deficiency and impair vitamin B12 absorption due to lower gastric production of the intrinsic factor responsible for its absorption in the terminal ileum [4]. Beef intolerance, intestinal bypass, and low secretion of hydrochloric acid in the stomach may also cause iron deficiency.

The main macronutrient deficiency after bariatric surgery is protein malnutrition. Some Roux-en-Y gastric bypass (RYGB) patients may present protein malnutrition secondary to inadequate protein intake and absorption, associated with persistent vomiting, diarrhea, and food intolerances. Protein supplementation should be ensured to avoid this deficiency, since gastric capacity, even long after surgery, may hinder dietary protein digestion. Additionally, high-protein diets could facilitate weight loss, preserve fat free mass, and increase satiety, important aspects to avoid weight regain, which will be discussed in the next section along with possible complications associated with excessive weight loss.

Table 1: Dosage of nutritional supplementation for patients after gastric bypass Y-of-Roux³.

Multivitamin plus minerals	1-2 tablets a day. Prefer chewable tablets and multivitamin in liquid form until the third month of postoperative.
Iron	45 a 60 mg a day, with supplementation of vitamin C to aid absorption.
Calcium citrate	1200 - 1500 mg, split twice a day.
Vitamin B12	1000 mcg/dia, sublingually or intramuscularly.
Vitamin D	3000 UI a day (vitamin D3)

Clinical and metabolic effects of bariatric surgery that favor better health condition are enhanced by behavioral changes, aimed at establishing and maintaining a healthy lifestyle. However, more studies are needed on the mechanisms involved in nutritional deficiencies after bariatric surgery, as well as research to investigate strategies to improve adherence to nutritional supplementation and how to model eating behavior [5]. Therefore, to avoid severe nutritional complications after bariatric surgery, it is necessary behavioral management, appropriate feeding practices and regular physical activity, either with individual activities or group.

References

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