

The Dangers OF NOT TAKING Vitamin and Mineral SUPPLEMENTS after Bariatric Surgery

by Cassie I. Story, RDN

Do you ever think about how you felt on the day you had bariatric surgery?

Most people celebrate the day and may even refer to their “surgeryversary” as their new birthday. But have you ever stepped back and thought of the flood of emotions that came on that day?

Fear. Will this surgery work for me?

Anticipation. I hope the surgeon is on time, I'm really thirsty!

Fear. What if I don't wake up from surgery?

Disbelief. I can't believe this day is here. All of that prep work to get to this spot, and now I'm here.

Fear. What if I can feel the surgery happening? (My own worst nightmare)

Hope. This is it! I will do anything they tell me to do now that I've been given this shot – a new lease on life.

Hit the fast forward button and life is moving along. Your new normal continues to shock you at times, but the initial transition period is over and your day-to-day activities are undoubtedly different than they once were. Perhaps you've acquired a new taste for foods that would have never touched your plate before. Maybe some of your old favorites are now simply distant memories. Relationships may have changed; you may have a new job – a new circle of friends. Whatever has happened in your life since surgery, there's a good chance that things look different!

When pondering the emotions you felt on the day of your surgery and the hope you had, likely one of the things you hoped for was the resolution or improvement of a health condition. Whether it was better blood sugar control, better blood pressure control or an improvement in joint pain – the reasons for having surgery were well beyond a number on the scale. You had surgery to improve your health.

Did you achieve some of those health-related goals following surgery? Has your medication pill count decreased, only to be replaced by a handful of vitamin and mineral supplements? Do you find yourself wondering why you need to take supplements in the first place - surely, the further out from surgery you are the



less of these things you need, right? Actually, you may be surprised to learn that the further out from surgery you are the chances of a nutrition deficiency actually increases!

You had surgery to improve your health. Don't put yourself at risk for a nutrition deficiency. Maybe it's been awhile since you checked in with a healthcare provider – or maybe you haven't purchased supplements in a few months because you're feeling good and didn't realize how important they were to your health. Whatever the case, I hope this article helps to shed some light for you on the critical reasons that you need specialized nutrition supplementation lifelong after surgery.

What Do the Guidelines Say?

Before we explore the current micronutrient supplementation guidelines, I want to give you a brief history of how we (healthcare professionals who specialize in treating people who have had bariatric

surgery) got these recommendations. In 2008, the first 'guideline' was published regarding nutritional needs of someone who has had bariatric surgery. A guideline or position statement isn't just some document that's been thrown together haphazardly. When a professional society (in this case the American Society for Metabolic and Bariatric Surgery (ASMBS)) publishes a guideline, hundreds, if not thousands, of hours go into its development. Several authors come together and pour over the latest evidence-based publications that are relevant to the particular topic – in this case, the nutritional needs of someone who had bariatric surgery. Once the document is completed, it goes into further review by other healthcare professionals to ensure that the data was analyzed correctly and that it provides sound evidence.

Since 2008, we have had five other position statements or society-endorsed published guidelines pertaining to the specific nutrient needs of someone who has had bariatric surgery.

"You had surgery to improve your health, don't put yourself at risk for a nutrition deficiency."



Current Available Guidelines for Micronutrient Supplementation

1. Aills L, Blankenship J, Buffington C, et al. ASMBS Allied Health Nutritional Guidelines for the Surgical Weight Loss Patient. SOARD. 4 (2008); S73-S108.
2. Mechanick, Jeffrey I. et al. “Clinical Practice Guidelines for the Perioperative Nutritional, Metabolic, and Nonsurgical Support of the Bariatric Surgery Patient: Cosponsored by American Association of Clinical Endocrinologists, The Obesity Society, and American Society for Metabolic & Bariatric Surgery.” Obesity (Silver Spring, Md.)2009;17 Supl 1:S1–70.
3. Heber D, Greenway F, Kaplan L et al. Endocrine and nutritional management of the post-bariatric surgery patient: an endocrine society clinical practice guideline. J Clin Endocrinol Metab. 2010;95(11):4823-4843.
4. Mechanick, Jeffrey I. et al. “Clinical Practice Guidelines for the Perioperative Nutritional, Metabolic, and Nonsurgical Support of the Bariatric Surgery Patient—2013 Update: Cosponsored by American Association of Clinical Endocrinologists, The Obesity Society, and American Society for Metabolic & Bariatric Surgery.” Obesity (Silver Spring, Md.) 21.0 1 (2013): S1–27.
5. Parrot J, Frank L, Dilks R, et al. ASMBS Integrated Health Nutritional Guidelines for The Surgical Weight Loss Patient — 2016 Update: Micronutrients. Surgery for Obesity and Related Diseases, <http://dx.doi.org/10.1016/j.soard.2016.12.018>

What Vitamins Were You Told to Take?

It’s important to understand that supplements you were instructed to take when you had surgery may no longer be adequate. When I first began seeing patients in 2004, we didn’t have any society published guidelines – the vitamin supplement suggestions I gave at that time are vastly different than what I tell my patients to take today. It is important to note that we will continue to have guidelines published as new evidence emerges around the specific nutrients that you need to take life-long after surgery. This is why continued annual follow-up care with a healthcare provider who knows your nutrient deficiency risks is critical to ensure you don’t develop one of these devastating, unintended and oftentimes avoidable consequences of surgery and inadequate supplement intake.

What Could Happen Without Regular Follow-up Care and not Supplementing at Appropriate Levels?

Before we take a look at specific conditions that can be affected by inadequate vitamin and mineral intake, it’s important to note that nutrients work together, not independently. The body relies on a steady supply of these essential nutrients – not just massive amounts of an individual nutrient. Remember that you are also taking in vitamins and minerals when you eat a variety of foods that support your health. Because you’ve had bariatric surgery, you simply can’t eat enough food and potentially can’t absorb nutrients the same way you did prior to surgery, which is why you must supplement your daily healthy food intake with vitamin and mineral supplements.

Anemias

Anemia is the term for a group of different blood disorders and occurs from a lack of different nutrients. It can be caused by several factors including inadequate intake or absorption of: iron, vitamin B12, folate, copper or zinc. It can leave you feeling very tired or weak, or can cause pain from nerve damage in the hands and feet. Iron deficiency anemia has been reported to occur in as many as 1 out of 2 post-operative gastric bypass surgery patients who are more than five years out from surgery.

Bone Disorders

One of the greatest nutritional consequences of surgery is various bone disorders. Although you may think of the bone as an inactive skeleton, that is hardly the case. Bone is active and is constantly turning over, just like every other cell in our body. In order to maintain a strong bone structure, the body needs a certain amount of: vitamin D, calcium, vitamin K, magnesium, essential fatty acids, b-vitamins, and the list goes on! Without proper nutrition, the bone can become weak, porous (containing holes), or soft, which puts you at risk for a fracture.

Neurological Disorders

One of the most acute (meaning quickly occurring) nutrition disorders that can occur is an inadequate intake of vitamin B1 (or thiamin). Vitamin B1 isn't stored in the body for very long, so just like all of the other essential nutrients, your body needs

a constant supply of it. Without adequate intake, a serious nutrition complication can occur where you become confused, can't walk straight or unfortunately become paralyzed. If this is caught early enough it can often be reversed. However, I've had the unfortunate experience of counseling patients who are in wheelchairs due to a thiamin deficiency that was not caught in time. (Again – this highlights the importance of annual follow up with your healthcare provider)

Muscle Health

Oftentimes when we hear the word muscle, we think of protein. This is for good reason. We don't store protein in our bodies in the way that we store fat and carbohydrates. Dietary protein feeds our muscles – it doesn't "build" muscle for us. Only resistance training can do that. Certain conditions put the body at risk for not being able to maintain the appropriate amount of muscle, which can result in weakness or a more unfavorable body composition – meaning more fat mass to muscle mass than is generally considered healthy. Most recommendations for post-operative patients include a minimum of 60 grams of protein daily – which many patients find difficult to achieve. If you are unsure of how much protein you are taking in, spend a few days tracking your intake. If you aren't reaching the minimum level, talk to your dietitian for ideas of how to increase your daily intake.

Why do you need a “bariatric” micronutrient supplementation every day after surgery?

You had bariatric surgery to improve your health. After surgery, your body needs more vitamins and minerals than prior to surgery due to a change in anatomy, decreased intake and potential malabsorption of nutrients. Over the counter multivitamin and mineral supplements often do not provide the specific level of nutrients your body needs to prevent the consequences of a nutritional deficiency. They are designed for the “general population,” not someone who has unique nutritional needs. In fact, to reach bariatric nutrient guideline recommendations using general over-the-counter vitamin supplements, it could take nine (or more) pills each day!

Current Daily Micronutrient Recommendations

Nutrient	AGB*	LSG*	RYGB*	BDP/DS*
Vitamin B1	At least 12 mg (At risk patients 50-100 mg)			
Vitamin B12	350-500 mcg			
Folate	Males 400-800 mcg Females 800-1000 mcg			
Calcium	1,200-1,500 mg		1,800-2,400 mg	
Vitamin A	5,000 IU		5,000-10,000 IU	10,000 IU
Vitamin E	15 mg			
Vitamin K	90-120 mcg			300 mcg
Vitamin D	At least 3,000 IU			
Iron	18 mg (male and post-menopausal females)	45-60 mg *ASBMS guidelines recommend taking iron separately from calcium by at least 2 hours for maximum absorption		
Zinc	8-11 mg		8-22 mg	16-22 mg
Copper	1 mg		1-2 mg	2 mg
Selenium	(Multivitamin must contain)			
Magnesium	(Multivitamin must contain)			
Additional B-vitamins	100%	100-200%	200%	200%
Trace Minerals	(Multivitamin must contain) (Examples: Molybdenum, Manganese, Chromium)			



*AGB=adjustable gastric bypass
 *LSG=sleeve gastrectomy
 *RYGB=roux-en-Y gastric bypass
 *BDP=biliopancreatic diversion
 *DS=duodenal switch

When’s the Last Time you saw your Provider or had Labs Drawn?

It’s important to remember that no guideline is a substitute for individualized medical care. If you’ve moved since you had your surgery, or for any reason fallen out of contact with your bariatric healthcare team, please make sure you follow up with a medical professional who understands your unique nutrition needs and that you have annual labs measured. These need to include specific nutrient labs that are not part of a typical lab panel. Feel free to bring this chart (table 2) with you to your appointment to help your provider order the correct labs!

Although many of us turn to Dr. Google to diagnose our particular ailments, please resist! I am a firm believer that you know your body best and that you know when things feel “off” or not quite right – but please have these feelings confirmed with lab tests. That way you can tell if the hair loss you’re experiencing two years after surgery seemingly out of nowhere is due to inadequate zinc, protein, biotin, stress, etc. Getting your labs checked also allows you to correct any potential deficiencies by supplementing at a level that your healthcare provider instructs, and then redrawing labs one to three months later to ensure that this level of supplementation is working for you and your lab values are trending in the right direction.

Just Remember:

1. Remember why you had surgery – the hope you felt on the day of surgery for improved health has likely been realized! Don’t put yourself at risk for a devastating nutritional deficiency.
2. Take vitamin and mineral supplements every day (as recommended by your healthcare provider) lifelong to avoid harmful nutrition consequences.
3. Nutrients work together – mega doses of certain nutrients without appropriate intake of others can do more harm than good.
4. Eat a variety of foods. Include as many vegetables (they contain many vitamins and minerals) as you can while still achieving your protein goal. Talk to your dietitian about whole grains and fruits based on your tolerance, length of time since surgery and personal nutrition goals.
5. Follow up with a healthcare provider every year lifelong after surgery to ensure you are living your healthiest life possible!

Common Micronutrient Deficiencies after all bariatric surgery procedures

Micronutrient	Post-operative deficiency rates	Example of physical symptoms	Examples of labs to screen every year - lifelong after surgery
Vitamin D	25-80% (all)	Often none until bone fracture occurs	Serum 25(OH)D, iPTH, DEXA (every 2-5 years)
Vitamin A	RYGB 8-11% BPD 61-69%	Loss of nocturnal vision, itching, dry hair	Plasma retinol, serum vitamin A, retinol binding protein
Vitamins E and K	Unreported (currently)	Weakness, gait ataxia, easy bruising	Plasma alpha tocopherol, Plasma vitamin K / DCP
Vitamin B12	4-62% (all)	Tingling extremities, confusion, depression, dementia	Serum B12, MMA, Homocysteine, MCV, H&H
Iron	17-45% (all)	Fatigue, low productivity, iron deficiency anemia	Full iron panel (to include: ferritin, TIBC, Iron, H&H)
Vitamin B1 (Thiamin)	Up to 49% (all)	Mild to severe confusion, temporary to permanent paralysis, coma	Plasma thiamin, TDP, ETKA
Folate	9-38% (all)	Heart palpitations, fatigue, neural tube defects to fetus	RBC folate, MCV, Homocysteine, H&H
Zinc	SG: 12%; RYGB 21-33%; BPD / DS 74-91%	Skin lesions, poor wound healing, hair loss	Plasma Zinc
Copper	10-20% RYGB; 90% BPD/DS	Hypopigmentation of skin, hair, or nails	Serum or plasma copper, ceruloplasmin



About the Author:

Cassie I. Story, RDN, is a dietitian who has been working with surgical and non-surgical weight-loss patients for the past 12 years. She is the Clinical Science Liaison for Bariatric Advantage where she helps educate other healthcare professionals around the unique nutrition needs of weight-loss surgery patients. She has her own food blog, www.WLSDailyPlate.com, which provides recipe inspiration for all members of the family – including those who have had metabolic/bariatric surgery. She enjoys traveling, hiking and spending time outdoors with her two daughters in Arizona.