Vitamin & Mineral Needs Of Bariatric Surgery Patients

Gastric bypass and other types of bariatric surgery dramatically alter your body's ability to absorb vitamins, minerals and nutrients from the smaller amounts of food you'll be eating. The resulting vitamin and mineral deficiencies can have serious medical implications.

Vitamins and minerals contribute to your post bariatric surgery health in a number of ways, including the regulation of the metabolism and helping with the release of energy from the food you digest. In comparison to nutrients like protein, carbohydrates and fat, vitamins and minerals are needed in much smaller amounts by your body. Vitamins are classified as either *water-soluble* or *fat-soluble*. Water-soluble vitamins cannot be stored in the body and must be taken every day. Water-soluble vitamins include the B vitamins and Vitamin C. On the other hand, fat-soluble vitamins are stored in the body's fat and include vitamins A, D, E and K. Minerals are needed by your body for the proper composition of body fluids, maintaining healthy bones and teeth, formulation of healthy blood, regulation of heart, muscle and nerve functions.

As a bariatric surgery patient, it is *absolutely essential* that you take a good quality multiple vitamin and mineral product daily, for the rest of your life. You will also need to take additional calcium, Vitamin B-12 and perhaps Iron supplements. In some cases, Vitamin C and Zinc (optional) supplementation may also be appropriate. Although the specific amounts and types of vitamin and mineral supplements may vary by bariatric practice, bariatric surgeons and dietitians agree that these supplements are necessary to prevent vitamin and mineral deficiencies after bariatric surgery.

There are a variety of high quality vitamin and mineral supplements that will meet the needs of the bariatric surgery patient. If you have difficulty tolerating any of the supplements, make sure to call your dietitian of surgeon for suggestions. Consult with your bariatric health care provider before taking vitamin and mineral supplements.

Supplement	Type	Function	Schedule	Interactions
Multi-Vitamin and Mineral	Chewable or complete one-a-day multi vitamin/mineral supplement.	Multi-vitamin/mineral supplements ensure that you are getting enough of all of the micronutrients you need.	Take one to three times a day with meals or as directed by your doctor.	None
Vitamin B-12	Sublingual Vitamin B-12 tablet, (1000 mcg sublingual once per week) or injectable B-12 (1,000 mcg) per month.	Helps with proper blood cell formation and nerve function. Deficiency may cause certain types of anemia.	Take one sublingual tablet once per week or as directed by your doctor. Allow tablet to dissolve in under the tongue.	None
Calcium	Chewable or crushable Calcium Citrate (500 mg, two to three times a day) Calcium Citrate is recommended due to its superior absorption, without requiring stomach acid. A calcium citrate supplement that includes Vitamin D will also aid absorption.	Builds and maintains bone strength. Also helps the heart pump and muscles contract properly. Helps with proper blood clotting and aids in the repair of soft tissue.	Take 500-600 mg doses two to three times per day for a total of 1,000 to 1,800 mg per day, or as directed by your doctor. Take one hour apart from other vitamins and minerals (especially iron).	Do not take at the same time as iron. Calcium competes with iron for absorption. Caffeinated products, spinach and whole wheat products may also decrease absorption.
Iron	Tablets, chewables or liquids.	Vital to the formation of red blood cells tht provide	Take daily as directed by your doctor. Take with	Do not take at the same time as calcium. Iron

		oxygen to the human body. Prevents anemia.	vitamin C to aid in absorption.	competes with calcium for absorption.
Vitamin C	500 mg tablets or chewables.	Promotes wound healing and reduces chance of infection. Aids in body's calcium levels and bone formation. Enhances iron absorption.	Take as directed by your doctor. Take with iron.	Certain antacids may interfere with absorption.
Zinc	Optional. Tablets or lozenges.	Helps with wound healing and supports the immune system. Loss of hair may indicate a Zinc deficiency.	Take 10 to 20 mg per day or as directed by your doctor.	Too much zinc may interfere with the absorption of other nutrients

Protein For Bariatric Surgery Patients

Next to water, protein is the most abundant substance in the human body. The word "protein" is derived from the Greek word meaning "of first importance." This is literally true for the bariatric surgery patient. Protein is undeniably *the most important nutrient* in the bariatric diet.

Weight loss surgery causes severe trauma to the body. After bariatric surgery, you must take in sufficient protein every day to speed wound healing, preserve your lean body mass, enhance your fat-burning metabolism and minimize hair loss. Foods that are high in protein should always be eaten first during meals. The recommended long term post-surgery protein intake may vary from 55 to over 100 grams per day, depending on your individual needs and the bariatric diet provided by your surgeon or dietitian. The generally accepted *minimum* protein requirement for women is about 50 to 60 grams per day and men need at least 60 to 70 grams of protein per day. The preferred sources of protein from food include poultry, eggs or Egg Beaters, lean meats, fish, low fat cheese, skim milk, beans and lentils. Some red meats such as beef, pork, lamb or veal can be difficult for a bariatric surgery patient to digest.

It's very difficult to consume enough protein from foods alone during the first several months after weight loss surgery. Most bariatric surgery patients integrate liquid protein supplements such as shakes, cold drinks, hot drinks, soups and puddings into their diet after surgery, and many continue to use them as a balanced, convenient source of protein and nutrition for the rest of their lives.

Protein provides many important benefits to the bariatric surgery patient:

- **Protein aids in proper wound healing after bariatric surgery.** It helps to build and repair body tissues including skin, muscle and major organs.

- **Protein helps keep your hair, skin, bones and nails healthy.**

- **Protein helps form hormones, enzymes and immune system antibodies to help your body function properly.**

- **Protein helps your body burn fat instead of muscle for a healthier weight loss.** When you are trying to lose weight after bariatric surgery, you reduce calories. Unfortunately, the human body tends to view fat stores as more precious than lean muscle tissue, and will burn or "catabolize" muscle tissue, before it goes to fat for energy. By consuming sufficient protein each day, you will spare and preserve your muscle tissue, which forces your metabolism to go to your fat for energy. This particular benefit of protein is often referred to as "protein sparing" or "anti-catabolic".

- **Protein supports your natural metabolism so you lose weight quicker.** The more muscle you have on your body, the *higher your metabolism* and the more fat calories your body will burn, even while at rest. Pound for pound, your lean *muscle burns 25 times more calories* than fat! Conversely, less muscle tissue means a slower metabolism. To illustrate this, one pound of muscle can burn 30 to 50 calories in a day, or 350 to 500 calories a week. On the other hand, one pound of fat only burns about 2 calories a day, or 14 calories a week. Therefore, building and preserving lean muscle tissue not only makes fat loss easier, put more permanent.

- **Protein curb's your hunger between meals and avoid "snacking temptation".** One of the amino acids in protein, tryptophan (a precurser of serotonin) has been shown to work on the satiety (hunger) center in the brain.

Your body is actually made up of thousands of different proteins. Because your body is constantly making new proteins and because you don't store amino acids (the building blocks of protein) as you do fats, you need to intake a new supply of protein each day. The body can make 13 amino acids, but 9 amino acids are *essential*, meaning they cannot be made by your body and must come from food sources. There are both *complete* and *incomplete* protein sources. Complete proteins contain all the essential amino acids needed for the body to make new protein. Incomplete proteins are lacking one or more essential amino acids. A good source of complete proteins is *animal protein* which includes meat, fish, eggs and dairy products. Vegetable or *plant protein* is incomplete protein.

As you follow your bariatric diet, keep in mind that plant proteins are not "complete" proteins. (A complete protein is one food item that contains all of the essential amino acids). Plant proteins should be used together with animal protein sources to provide you with all of the essential amino acids you need.

Protein Content of Selected Foods

Examples of Animal Protein Foods	Amount	Grams of Protein
Beef, lean	1 ounce	7 grams
Cheese (American, cheddar, provolone, Swiss)	1 ounce	7 grams
Cheese, cottage	1/4 cup	7 grams
Cheese, ricotta	1/4 cup	7 grams
Chicken	1 ounce	7 grams
Egg or egg substitute	1 egg	7 grams
Fish, catfish	1 ounce	7 grams
Fish, clams	1 ounce	7 grams
Fish, cod	1 ounce	7 grams
Fish, crab	1 ounce	7 grams
Fish, flounder	1 ounce	7 grams
Fish, haddock	1 ounce	7 grams
Fish, herring	1 ounce	7 grams
Fish, lobster	1 ounce	7 grams
Fish, orange roughy	1 ounce	7 grams
Fish, oysters	1 ounce	7 grams
Fish, salmon (fresh or canned)	1 ounce	7 grams
Fish, scallops	1 ounce	7 grams
Fish, shellfish (imitation)	1 ounce	7 grams
Fish, shrimp	1 ounce	7 grams
Fish, trout	1 ounce	7 grams
Fish, tuna (fresh or canned in water only)	1 ounce	7 grams
Milk, skim (recommended)	8 ounces	12 grams
Pork	1 ounce	7 grams

Turkey	1 ounce	7 grams
Yogurt, nonfat or low-fat fruit flavored	3/4 cup	12 grams
Yogurt, plain nonfat	3/4 cup	12 grams
Examples of Plant Protein Foods	**Amount**	**Grams of Protein**
Beans and peas (black-eyed, garbanzo, kidney, pinto, split, white)	1/2 cup	7 grams
Cereal, ready to eat	3/4 cup	3 grams
Corn	1/2 cup	3 grams
Lentils	1/2 cup	7 grams
Lima beans	2/3 cup	7 grams
Non-starchy vegetables (tomatoes, green beans, cucumbers)	1/2 cup cooked	2 grams
Oats	1/2 cup	3 grams
Pasta	1/2 cup	3 grams
Potatoes, baked or mashed	1/2 cup	3 grams
Soy burger, veggie burger	1 ounce	3 grams
Soy milk	8 ounces	7 grams
Tofu	4 ounces	7 grams

Water & Fluid Needs Of Bariatric Surgery Patients

Drinking adequate water and fluids is an important aspect of any diet. It is especially important for the bariatric surgery patient.

- **Do not drink fluids with your meal.** All liquids should be consumed between meals.

- **Choose fluids that are non-carbonated.** The gas produced from a carbonated beverage can stretch the stomach pouch or it's outlet.

- **Best choices for fluid are water** (flavored, artificially sweetened, with squeezed lemon), Crystal Lite®, decaf coffee or tea, herbal teas and diluted fruit juices.

How 8 Glasses Of Water A Day Helps Keep Fat Away

Incredible as it may seem, water is quite possibly the single most important catalyst in losing weight and keeping it off. Although most of us take it for granted, water may be the only true "magic potion" for permanent weight loss.

Water suppresses the appetite naturally and helps the body metabolize stored fat. Studies have shown that a decrease in water intake will cause fat deposits to increase, while an increase in water intake can actually reduce fat deposits.

Here's why: The kidneys can't function properly without enough water. When they don't work to capacity, some of their load is dumped onto the liver.

One of the liver's primary functions is to metabolize stored fat into usable energy for the body. But, if the liver has to do some of the kidney's work, it can't operate at full throttle. As a result, it metabolizes less fat, more fat remains stored in the body and weight loss stops.

Drinking enough water is the best treatment for fluid retention. When the body gets less water, it perceives this as a threat to survival and begins to hold on to every drop. Water is stored in extracellular spaces (outside the cells). This shows up as swollen feet, legs and hands.

Diuretics offer a temporary solution at best. They force out stored water along with some essential nutrients. Again, the body perceives a threat and will replace the lost water at the first opportunity. Thus, the condition quickly returns. The best way to overcome the problem of water retention is to give your body what it needs-plenty of water. Only then will stored water be released.

If you have a constant problem with water retention, excess salt may be to blame. Your body will tolerate sodium only in a certain concentration. The more salt you eat, the more water your system retains to dilute it.

But getting rid of unneeded salt is easy-just drink more water. As it's forced through the kidneys, it takes away excess sodium.

The overweight person needs more water than the thin one. Larger metabolic loads. Since we know that water is the key to fat metabolism, it follows that the overweight person needs more water.

Water helps to maintain proper muscle tone by giving muscles their natural ability to contract and by preventing dehydration. It also helps to prevent the sagging skin that usually follows weight loss-shrinking cells are bouyed by water, which plumps the skin and leaves it clear, healthy and resilient.

Water helps rid the body of waste. During weight loss, the body has a lot more waste to get rid of-all that metabolized fat must be shed. Again, adequate water helps flush out the waste. Water can help relieve constipation. When the body gets too little water, it siphons what it needs from internal sources. The colon is one primary source. Result? Constipation. But, when a person drinks enough water, normal bowel function usually returns.

So Far, we've discovered some remarkable truths about water and weight loss.

- The body will not function properly without enough water and can't metabolize stored fat efficiently.
- Retained water shows up as excess weight.
- To get rid of excess water you must drink more water.
- Drinking water is essential to weight loss.

How much water is enough? On the average, a person should drink eight 8-ounce glasses every day. That's about 2 quarts. However, the overweight person needs one additional glass for every 25 pounds of excess weight. The amount you drink also should be increased if you exercise briskly or if the weather is hot and dry.

Water should preferably be cold-it's absorbed into the system more quickly than warm water. And some evidence suggests that drinking cold water can actually help burn calories.

When the body gets the water it needs to function optimally, its fluids are perfectly balanced. When this happens, you have reached the "breakthrough" point. What does this mean?

- Endocrine-gland function improves.
- Fluid retention is alleviated as stored water is lost.
- More fat is used as fuel because the liver is free to metabolize stored fat.

- Natural thirst returns.
- There is a reduction of hunger almost overnight.

If you stop drinking enough water, your body fluids will be thrown out of balance again, and you may experience fluid retention, unexplained weight gain and loss of thirst. To remedy the situation you'll have to go back and force another "breakthrough".