Nutritional Guidelines for Post-Bariatric Patient

Pre-operative and Post-operative Concerns
Deborah Wong MPH, RD
Body By Katzen
Goals of Diet

- To preserve present protein stores
- To build protein stores
- To provide sufficient energy to spare protein
- To ensure a sufficient vitamin intake to allow for energy metabolism
- To ensure an adequate mineral intake for prevention of anemia and other outcomes of deficiency
- To ensure optimal outcome of surgery post-operatively

- http://www.asmbs.org – resources – statements & guidelines
Characteristics of Post-Bariatric Patient

• Majority are female
• Gastric Bypass 9 months – more than 20 years
• Weight loss: 90 to 400+ lbs
• Age: 30s to 60s
• Middle income
• Varied activity level
Typical Diet (24-hour recall)

- 3 small meals + 2-3 snacks
- 800-1000 total kcal/day
- 60-120 g protein/day
- protein supplements (liquid/powder/bars)
- MVI 2x/day
- Fe supplement
- Ca supplement
- B-12 supplement
Factors Affecting Nutrition Assessment

- Pre-op nutritional status
- Pre-op diet - length of time on “gastric-bypass” diet
- Post-op weight? Edema 6-8 weeks post-op
- Post-op body composition?
- Willingness to accept advice re dietary changes (hostility/who’s the expert?)
Nutrition-Related Post-Op Complications Affecting Outcome of Surgery

- Poor wound healing
- Anemia
- GI upset - Diarrhea/constipation/nausea/anorexia
- Fatigue – affects ability to comprehend/follow instructions
Protein Malnutrition

Symptoms

- Poor wound healing
- Anemia – RBC production impeded
- Impaired immune function – infection of surgical site
- Edema
- Muscle atrophy/wasting
Causes of Protein Malnutrition for Post-Bariatric Patients

- Increased need (surgery/infection)
- Chronic inadequate intake (anorexia/poor diet/nausea/intolerance of protein-rich foods)
- Chronic inadequate absorption (bariatric surgery)
- Post-op complications - increased loss (hemorrhaging)
Diagnosis of Protein Malnutrition

• **Serum albumin**
  
  Normal levels: 3.4-5.4 g/dL

  Half-life of 21 days – not a good indicator to use during immediate nutrition intervention but adequate for long-term follow-up
Diagnosis of Protein Malnutrition

- **Serum prealbumin**
  
  Normal value 17-40 mg/dL
  
  Half-life of 1.9 days – good marker to use to determine if aggressive/immediate nutrition intervention is effective
  
  <10.0 mg/dL = severe depletion
  
  10.0 – 16.9 mg/dL = moderate depletion
  
  >17.0 mg/dL = normal level
Protein Requirements

- >60g/d (RYGP); 80-120g/d (BPD, BPD/DS)
- Usually aim for minimum of 100 g protein/day
- Choose from a variety of dietary sources
- Supplemental sources – should not be mainstay of protein intake, but provides “relief” from diet
- Check PDCAA Scores for supplements
  (Castellanos VH, Litchford MD, Campbell WW, Modular Protein Supplements and Their Application to Long-Term Care, *Nutr Clin Prac* 21:485-504, 2006)
Energy Requirements (pre-op/immediate post-bariatric surgery)

- Protein-sparing
- Generally approx 8-9 kcal/lb actual BW, but not less than 1000 non-protein kcal/day
- CHO/fat as energy sources
- Avoid foods high in simple CHO to reduce dumping/diarrhea
- Fat – 30 g/day (divide into 3 meals)
  - prevent EFA deficiency (linolenic/linoleic)
  - soybean, canola or linseed oil high in EFA
Fluid Requirements

• Necessary for protein metabolism
• Includes water, juice, milk, sugar-free popsicles, coffee/tea (caffeinated/decaf), diet soda, sugar-free gelatin desserts, nutrition supplements
• Usually 0.4-0.6 oz/lb actual BW
Diagnostic Tests for B-12 Deficiency

- Methylmalonic acid assay (MMA)
- Normal 87-318 nmol/L
- Elevated with B-12 deficiency
Vitamin B-12

• B-12 more of a concern – requires intrinsic factor (secreted in stomach) for absorption in the ileum
• B-12 deficiency more common in surgeries that bypass the lower portion of the stomach (RYGP)
• No evidence-based recommendations for supplementation, but most bariatric groups recommend supplementation
Folic Acid

- Deficiency less common than B-12 deficiency because absorption occurs throughout the entire small bowel
- Some studies suggest that food intake of dietary folic may be sufficient to meet needs
- Supplementation important for the pregnant bariatric patient and all women of childbearing age
Folic Acid Supplementation Guidelines

- **Post Op Bariatric Surgery:**
  - 400ug/day in multivitamin

- **Maintenance Dose:**
  - 800-1000ug/day in multivitamin may be sufficient to prevent deficiency
Vitamin B-12 Supplementation

• Post-op Bariatric Surgery
  – 350ug/day orally
  – Or 1000ug/mo intramuscularly
  – Or 3000ug every 6 mo intramuscularly
  – Or 500ug every week intranasally

• Maintenance Dose
  - 350ug/day orally
  - Or 500ug/week intranasally
  - Or 1000ug/3 mo intramuscularly
Fat-Soluble Vitamins

• Supplement Vitamin D in conjunction with calcium (400-800 IU/day)
• Will likely need a comprehensive supplement of fat-soluble vitamins (ADEK) due to decreased fat intake and decreased absorption
Calcium

• Levels may be compromised
  - due to decreased intake because of possible lactose intolerance
  - decreased absorption due to shortened gut
• More aggressive evaluation?
Calcium Supplementation

- 1200-2000mg/day + 400-800 IU Vitamin D
- Calcium carbonate more available in chewable form, but must take with meals to enhance absorption
- Calcium citrate preferred as absorbed without presence of stomach fluids
- Take separately from Fe supplement (minimum 2 hours apart)
Iron Supplementation

- Routine (Post Bariatric)
  - 40-65 mg/day
- Malabsorption
  - 320mg twice a day of ferrous sulfate/fumarate/gluconate, especially in menstruating women
- Take separately from calcium supplement (minimum 2 hours apart)
- Some Fe supplements contain Vitamin C to aid in Fe absorption (Trinsicon, Bariatric Advantage)
- Severe cases of anemia – transfusions
Other Vitamins/Minerals

• Requirements likely met with multi-vitamin/mineral supplement
• Exception: pre-existing deficiencies, or conditions that may cause deficiencies (i.e. hyperemesis/prolonged episodes of emesis)
• Thiamin deficiency possible, especially if persistent emesis – include in MVI
• Biotin – wound healing – include in MVI, some bariatric surgeons supplement additionally
• Zinc – may need to monitor for deficiency

Recommendations for Vitamin/Mineral Supplements

- **Massachusetts General Hospital Weight Center.** Multivitamin Supplementation for Patients Following Gastric Bypass. Sep 30, 2009.

- **Massachusetts General Hospital Weight Center.** Calcium Supplementation-Calcium Citrate. 2009.

- Supplements specific to bariatric patients (Bariatric Advantage) – convenient one-stop shopping, but cost may be a factor
Nutrition Protocol Post-Bariatric Surgery
Dietary Recommendations

• 100 g protein/day
• 8-9 kcal/lb/day
• 0.4-0.6 fl oz/lb/day
• Vitamin B-12 supplement
• Folate supplement if indicated
• Calcium supplement with vitamin D
• Iron supplement
• Multi-vitamin supplement with B-complex and fat-soluble vitamins – 1-2/day
Nutrition Protocol for Post-Bariatric Surgery

Pre-Operative Screening

• Nutrition screening at least one month prior to surgery – relevant labs/24 hour diet recall
• Nutrient analysis of diet taken from 3-day food record if labs are abnormal
• Body composition data?
• Weekly follow-up if nutritional status is a concern
Practical Guidelines for the Patient PRIOR to Surgery

• Sample Menus
• Grocery List to prepare them for post-op
• Tips on what to do in the event of complications such as nausea, vomiting, diarrhea
• List of foods high in protein, iron, other micronutrients of concern specific to the patient
• Involve caregivers/family members
• Gives patient/caregivers sense of control over diet/outcome as well as a feeling that their overall well-being is addressed
Nutrition Protocol for Post-Bariatric Surgery

Post-operative Follow-up

- Monitor nutritional status as needed
- Re-evaluate adequacy of dietary intake as needed
- Address any concerns resulting from surgery (nausea/vomiting/anorexia)
- Continue with supplementation as needed
- Re-assess protein/energy/fluid needs after edema no longer a factor
- Talk to caregivers
Optimal Outcome

• Shorter hospital stay
• Optimal healing of surgical wound
• Most of protein stores intact
• Healthy, balanced dietary intake
• Return to ADL as soon as possible, including participating in a regular exercise regimen (muscle-building)
Resources

- ADA Weight Management DPG
- ADA Bariatric Sub-unit - Listserv
  - References
  - FAQs
- American Society for Metabolic & Bariatric Surgeons (asmbs.org – resources – statements & guidelines)
- Bariatric Times (bariatrictimes.com)
- ObesityHelp.com
- WLSLifestyles.com (WeightLossSuccess)
Words from the Wise (Patient Suggestions)

• Would have liked more one-on-one education including what to expect immediately post-op and months down the road (physical changes, ongoing dietary adjustments) after bariatric surgery
• Counseling immediately post-op not well received as patients are too “high” on pain meds
• More information about vitamin/protein supplementation
• Stress importance of lifestyle changes to prevent re-gaining weight
• Need nutrition counseling up to one-year after gastric bypass
• Would have paid for nutrition counseling if it was a requirement of bariatric surgery depending on cost
• Practical tips for diet: menu planning, foods generally tolerated, foods generally not tolerated, portion sizes, food textures, eating out – how to order?
• If can’t eat prior to post-bariatric surgery, need TPN
Nutrition Intervention for Bariatric Patients (Wish List)

- Mandatory nutrition assessment prior to bariatric surgery
- More aggressive intervention after bariatric surgery – regular evaluation of nutritional status - minimum of one year
- Nutritional status already compromised when receive post-bariatric surgery
- Cost a factor
- Education of bariatric surgeons
- Centers of Excellence
MOST IMPORTANTLY

KEEP IT SIMPLE