Review of Medical Nutrition Therapy In Surgical Treatment of Obesity

Bariatric Care Team Panel
Objectives

1. Identify surgical weight loss options
2. Identify key nutrition practice guidelines outlined in the 2008/2013/2016 ASMBS Guidelines
3. Identify key elements of nutrition assessment and treatment of obese patients in a clinical setting
Bariatric Care Team Panelists

- Tiffany Tanner, MD
  - Bariatric surgeon
- Melissa Monzu-Sparks, RN, BSN, CBN
  - Case manager
- Justin Weeks, PhD
  - Psychologist
- Shawn Post, MS, RDN, LMNT
  - Dietitian (moderator)
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Multiple Factors Influencing Obesity
**Estimate of Bariatric Surgery Numbers, 2011-2015**

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<td>42.1%</td>
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<td>1%</td>
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<td>Balloons</td>
<td>~700 cases</td>
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<td>V-Bloc</td>
<td>18 cases</td>
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Less than 1% of eligible individuals get surgery.
Types of Bariatric Surgery

**Malabsorptive and Restrictive**

- Roux-En-Y Gastric Bypass
- SIPS
- BPD/DS (Biliopancreatic diversion/duodenal switch)

**Restrictive**

- Sleeve Gastrectomy
- Intragastric Balloon
- LAGB (laparoscopic adjustable gastric band)

To qualify for bariatric surgery:

- BMI $\geq 35$ + 1 co-morbid condition
- BMI $\geq 40$ without any co-morbid conditions
Roux-En-Y Gastric Bypass

- 150 cm Roux Limb → increases malabsorption and increases weight loss
- Duodenum is 70 cm
- Common Channel: >250 cm for absorption of nutrients
- Average weight loss: 60-70% of excess BW in 1-1.5 years
- At 10 years, most patients regain 10-15% of BW (old habits die hard!)
- At risk to malabsorb: Ca, Fe, B12, D, folate, thiamine
Risks Associated with Gastric Bypass

Short-Term

• Leak at staple line or bowel connection
  • Abdominal infection or abscess
• Blood clot in leg veins
• Pulmonary embolus
• Wound problems (infection, hernia, scar)
• Nausea/vomiting
• Injury to the spleen, stomach, esophagus
• Pneumonia
• Risk for death (30 day mortality): 0.1-0.4%

Long-Term

• Internal hernia
• Bowel obstruction/blockage
• Narrowing (stricture) of intestinal connections
• Flatulence/gas
• Diarrhea/constipation
• Dumping syndrome
• Failure to lose weight/weight regain
• Vitamin/protein deficiencies/malnutrition
• Gallstones
• Ulcers
Benefits of Gastric Bypass

- **Diabetes**: 90% become diet controlled
  - Most patients leave the hospital on **NO** medicines
- **High blood pressure**: 66% resolved; 33% less medications
- **Reflux/Heartburn**: 95% resolved
- **Sleep apnea**: 90% resolved
- **Stress Incontinence**: 90% resolved
- **High cholesterol/triglyceride**: 90% resolved
Sleeve Gastrectomy

- Newer procedure created for a two-step procedure
- Restrictive effect from the stomach
- Removes ~80-85% of the stomach - NON-reversible
- NO malabsorption
- Big benefit → reduced ghrelin production, so patients do not feel hungry
- Average weight loss: 50% of excess BW in 1-1.5 years
- Nutrients of concern: B12, iron, thiamine, calcium
Risks of Sleeve Gastrectomy

- Leak
- Post-op bleeding
- Nausea/vomiting
- Blood clot in leg veins
- Pulmonary embolus
- Wound problems - infection, hernia, scar
- Injury to spleen, stomach, or esophagus
- Pneumonia
- Risk of death (30-day mortality rate): 0.1-0.2%
Benefits of Sleeve Gastrectomy

• Early data shows good resolution of co-morbidities similar to the gastric bypass
• No intestinal bypass
  • No internal hernias
  • No dumping syndrome
  • Less vitamin deficiencies, protein malnutrition, anemia, osteoporosis
• Second stage operation available if inadequate weight loss
Duodenal Switch (BPD/DS)

- Much more malabsorptive than RyGB/SIPS
- Typically for severely obese (BMI >50)
- 75% stomach removed; 75% of GI tract bypassed
- Common channel: 50-150 cm (essentially short gut)
- Malabsorb fat >70% and protein ~25%
- ADEK supplementation is crucial due to increased risk for nutrition deficiencies
- Average weight loss: 70-80% excess BW
- Considered best treatment for T2DM
- At risk to malabsorb: iron, calcium, zinc, B12, folate, ADEK, protein
Risks of BPD/DS

- Essentially short gut syndrome
- High level of malabsorption
  - Must supplement fat soluble vitamins (ADEK)
  - Carefully monitor labs
- Bacterial overgrowth
SIPS (Stomach Intestinal Pylorus Sparing Surgery)

- Newer procedure to create more malabsorption → essentially a hybrid of a bypass and a sleeve
- Common channel is 300 cm
- Less side effects than BPD/DS
- Can be used as a primary surgery or revision surgery
- Current data shows 70% EBW lost at 1 years, but still too early to tell
Risks Associated with SIPS

- Leak
- Stricture
- Intussusception
- Obstruction
- Hernias
- Malabsorption
- Vitamin and Mineral deficiencies
Benefits of SIPS

• ~70+% of excess weight loss at 12 months
• Early weight loss data shows promising results, but too early to tell
• Nutrition monitoring and supplementation mirrors DS recommendations, but malabsorption is less

Mitzman et al, 2017
LAGB (Laparoscopic Adjustable Gastric Band)

- Restricts amount of food upper stomach can hold (~1/2 cup)
- Normal absorption of nutrients
- Need frequent adjustments of the band (fill to make tighter)
- Easily reversible
- Average weight loss: 40% of excess BW
- Complications: erosion in the stomach, slip, chronic n/v
- Nutrients of concern: folate, thiamin, B12, calcium
- 1 in 5 LAGB patients undergo reoperation

Ibrahim et al, 2017
Nutritional Considerations Post-Surgery

Dependent on surgery (malabsorptive + restrictive versus restrictive)

- Risk for protein-energy malnutrition
- Protein supplementation, fat/carbohydrate restriction is a MUST
- Adequate hydration
- Daily vitamin and mineral supplementation is also a MUST
- Ability to follow nutrition and program recommendations lifelong
Potential Nutritional Complications Post-Surgery

- Dumping syndrome
- Dehydration
- Protein/vitamin/mineral deficiencies
- Binge eating and/or grazing
- Weight regain
Migraines
57% resolved

Pseudotumor Cerebri
98% resolved

Dyslipidemia
Hypercholesterolemia
63% resolved

Non-Alcoholic Fatty Liver Disease
90% improved steatosis
37% resolution of inflammation
20% resolution of fibrosis

Metabolic Syndrome
80% resolved

Type II Diabetes Mellitus
83% resolved

Poly cystic Ovarian Syndrome
79% resolution of hirsutism
100% resolution of menstrual dysfunction

Venous Stasis Disease
95% resolved

Depression
55% resolved

Obstructive Sleep Apnea
74-98% resolved

Asthma
82% improved or resolved

Cardiovascular Disease
82% risk reduction

Hypertension
52-92% resolved

GERD
72-98% resolved

Stress Urinary Incontinence
44-88% resolved

Degenerative Joint Disease
41-76% resolved

Gout
77% resolved

Quality of Life-improved in 95% of patients

Mortality-89% reduction in 5-year mortality
Pre-Operative Process/Screening for Patients at NMC

- Information session
- Meeting the PA to screen patient
  - Full body analysis using InBody Scale (bioelectrical impedance analysis)
- Bari Block: meet with RD, psychologist, exercise physiologist
- Possible supervised weight management requirement
- *New protocol*: lose certain amount of weight based on BMI

- **Goals:** Pre-op compliance/understanding to be successful post-op
Components of Nutrition Assessment

- Weight History
- Weight Loss Attempts
- Medical History
- Labs
- Psychological History

- Psychosocial
- Drug/alcohol/tobacco abuse
- Physical activity
- Motivators and barriers
- Diet Intake/food recall
Focus of Pre-Operative Nutrition Education/Counseling

- Personal responsibility + lifestyle choices
- Self-monitoring
  - Food Logs, phone apps
- Post-Operate intake/diet progression
  - Diet/nutrition/hydration
  - Vitamin and mineral supplementation (malabsorption)
  - Use of protein shakes-supplements
- Mindful Eating
Post-Op Diet Progression

**Night of Surgery** - sugar-free clear liquids; water (GB1)

**4 days after surgery** - add protein shakes (GB2)

**1 week after surgery** - add in cottage cheese, Greek yogurt (GB3a)

**2 weeks after surgery** - high protein, pureed consistency (GB3b)

**4-6 weeks after surgery** - High protein, soft foods (GB4)
Nutrition Goals Post Surgery

0-6 Months Post-Op

• 60-70 grams protein/day
• <90 grams of carbohydrates/day
• <850 calories/day

12+ Months Post-Op

• 80-120 grams protein/day
• <130 grams of carbohydrates/day
• <1300 calories/day

For Life

• Focus on protein at all meals and supplementation as needed
• Limiting carbohydrates, grains, junk foods, sugary foods/drinks, fast food
• Vitamins+minerals
• Hydration, hydration, hydration - 64 ounces minimum!
• Regular physical activity
# Vitamin and Mineral Supplementation

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<td>Multivitamin-Mineral</td>
<td>Recommend: 200% of daily</td>
<td>Begin with chewable or liquid Progress to tablets as tolerated Choose a</td>
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<td>Supplement</td>
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<td>complete formula with: 45-60 mg elemental iron, 400-1000 ug folic acid, 12</td>
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<td>mg thiamine, and contains selenium and zinc in each serving. Avoid</td>
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<td>Vitamin B-12</td>
<td>350-1,000 mcg per day</td>
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<td>Calcium Citrate</td>
<td>1,200-1,500 mg per day</td>
<td>Begin with chewable and progress to tablets as tolerated. Split into 500-600</td>
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<td>mg doses. Space evenly throughout the day and take with food.</td>
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<td>Vitamin D-3</td>
<td>3000 International Units</td>
<td>Often found in gel capsules, but is now made in chewable form. Often</td>
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<td>per day</td>
<td>found in combination with Calcium.</td>
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Reference Source: 2016 Clinical Practice Guidelines Bariatric Surgery Patient ASMBS and AACE
Amanda: Gastric Bypass
References

3. ASMBS. 2017. [https://asmbs.org/](https://asmbs.org/)
Questions?

Contact information:
spost@nebraskamed.com